Ministry of Commerce

Final Report
On
Diagnostic Studies about Export Pomotion of Agro-Processing Sector In Bangladesh Under Bangladesh Regional Connectivity Project-1

(Package No.: BRCP1/MOC/SD 08)

June 2021

Ministry of Commerce

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Diagnostic Studies about Export Promotion of Agro-Processing Sector in Bangladesh under Bangladesh Regional Connectivity Project-1

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June 2021

Tipu Munshi, MP
Commerce Minister
Govt. of the People's Republic of Bangladesh

D. O No.

Date: 17.10.2021

Message

I feel delighted to know that Bangladesh Regional Connectivity Project-1 (BRCP-1) of the Ministry of Commerce, Government of the People's Republic of Bangladesh has conducted a study on "Diagnostic Studies about Export Facilitation of Agro-processing Sector" with a view to have a comprehensive idea about the present status, challenges, potentials and interventions required to promote agro-commodity processing and facilitation of women entrepreneurs in export trading. At the advent of increased demand in the domestic and global markets for agro-food products, it is pertinent to promote processing and export of both fresh and processed products for economic growth of the country so as to translate the dream of the Father of the Nation, Bangabandhu Sheikh Mujibur Rahman- "a hunger and poverty free Bangladesh".

The present people-centric government under the dynamic leadership of the Hon'ble Prime Minister Sheikh Hasina, making persistent efforts to build the country prosperous. The government put special emphasis on more export earning from agro-commodities and women participation in processing and export trading. The Ministry of Commerce is playing a key role in facilitating and expansion of export trade through accelerating capacity and competitiveness of the sector.

The study findings indicate that, despite, positive growth in fruits, vegetables and potato production, the contribution of the food manufacturing industry remain static at 2% of GDP since 2005 and is not at par with the economic growth of the country. The study indicates that the reason for sluggish growth in processing and export of fresh and processed products are due to various gaps along the value chains, which results in high post-harvest losses, limited processing, lower returns to farmers, low quality production etc. It also disclosed that women play major roles in production, and primary processing but in processing sub-sector along with export trade their participation is meagre.

The initiative of the BRCP-1 to publish their research output, which will reduce the existing gaps and will help in formulating future plan of action to address the constraints and to facilitate value addition, ensure quality and safety of agro-food commodities, vitalizing trading through simplifying tariff and non-tariff systems

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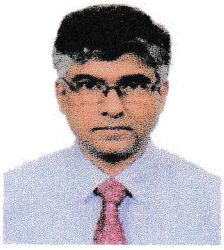
mainstreaming them in cross-border and international trade by providing continued support and guidance arranging low interest loan and special financial incentives for women entrepreneurs to compete in the domestic and global markets.

I appreciate the work and express my sincere thanks to the Project Director of BRCP-1 and his colleagues for their sincere efforts in line with the developing goals of the country. I hope that this report will be useful for stakeholders and actors engaged in agro-processing and trading in Bangladesh.

Joy Bangla, Joy Bangabandhu, Long Live Bangladesh

(Tipu Munshi, MP)



Secretary
Ministry of Commerce
Government of the People's Republic of Bangladesh

MESSAGE

Agriculture is the driving force of Bangladesh economy. Transformation of this sector from subsistence to commercial one through producing value added fresh and processed products can bring significant change in the lives of the people as well as the economy. Agro-food processing sector in Bangladesh has been increasingly playing an important role in the economy in terms of contribution to GDP, employment and investment.

I am happy to know that Bangladesh Regional Connectivity Project-1 has recently completed the" diagnostic studies about export facilitation of agro-processing sector in Bangladesh". The overall objectives of the study is to develop an in-depth understanding about the present situation, export potential and support required for promotion of exports by women traders in key value chains in agro-processing sector.

I believe that this study report with detailed information of the present situation of agro-processing sector, challenges in development, and way forward will guide the policy makers and other relevant stakeholders to formulate future action plan towards the aspired goal.

I would like to express my thanks to all concerned for their efforts in implementing the project works which compliments for the economic growth and well-being of its people and establishing the Sonar Bangla, as dreamt by the Father of the Nation- Bangabandhu Sheikh Mujibur Rahman.

Tapan Kanti Ghosh

Md. Hafizur Rahman

Director General
WTO Cell
Ministry of Commerce
Government of the People's
Republic of Bangaladesh

MESSAGE

I am pleased to know that despite the pandemic, the Bangladesh Regional Connectivity Project-1, of the Ministry of Commerce, has been continuing its timely and noteworthy endeavours, relating to trade promotion and facilitation in Bangladesh. Under the strong and visionary leadership of the Hon'ble Prime Minister Sheikh Hasina, Government of the People's Republic of Bangladesh has already undertaken necessary policy measures and initiatives to build local capacity capability towards export-driven robust economy.

Agriculture is the driving force for the economy of Bangladesh. It contributes about 13.64 per cent in National GDP. Since independence, Bangladesh agriculture achieved appreciable growth. Despite, the positive growth trends in agriculture, the growth in agro-food processing has remained far behind the expectation. It is most important to know the causes for lagging behind of the sub-sector for future action planning towards improvement.

It is undeniably a noble initiative, to identify key gaps in the production and processing, infrastructure and technology in value addition through product diversification, improved packaging, labelling, and quality standards for entering into the international markets. It is also essential to assess the strengths and weaknesses of the regulatory regime, business environment, women's involvement in value addition of fresh commodities and processing, barriers in export trading, required policy supports and regulatory assistance on the part of the government agencies for promoting export of agro-commodities from Bangladesh and facilitating women's participation in export trade.

It is important to note that this attempt is not the end, rather start of the aspired job towards development in processing agro-commodities for value addition and export promotion of both fresh and processed agro-commodities. This report will definitely improve the awareness of the stakeholders involved in the value chain of agro-commodities and trading in the domestic and international markets with more women engagement.

I convey my sincere thanks to the Project Director BRCP-1, MoC, and his colleagues involved in pursuing the development project, conducting the study and publishing this important document.

Md. Hafizur Rahman
Director General

PREAMBLE

Since independence, agriculture sector in Bangladesh has made appreciable progress towards commercialization. Production of non-cereal high value crops has grown dramatically and played a significant role in crop diversifications, and created opportunities for value addition and processing of agro-commodities into finished/ semi-finished products for both domestic and international markets. The drivers of the progress are rapid technological advancement, expansion of access to electricity, development of rural communication infrastructure, access to credits for the poor in informal business, improvement in education to facilitate occupational mobility from low-paid to relatively high-paid jobs, increased earnings from remittance and expansion of service sector stimulated by the government strategies.

However, the potential growth in the agro-processing sector and its export are being constrained by multifarious factors impacting production, value addition, processing and exporting to global markets. These constraints of diverse nature are to be addressed through appropriate strategies, policy reforms, review of regulatory regime, developing infrastructure and by increasing investment from both public and private sector.

In this context, Bangladesh Regional Connectivity Project-1 of the Ministry of Commerce, Government of Bangladesh has undertaken an initiative to conduct a 'Diagnostic studies about Export Promotion of Agro-processing Sector' by hiring a consulting firm 'Development Training and Consultants Limited' (DTCL).

This report contains the findings of the study which provides useful information about export promotion of agro-commodities with special emphasis on women participation. The study identifies gaps in the production, postharvest handling, technologies and infrastructure development for enhanced value addition to the primary produces and processing of agro-commodities into finished products and provides a road map for export promotion of both fresh and processed agro-products.

We are hopeful about the policy recommendations and proposed action plan which would be beneficial for policy makers and other stakeholders for the improvement of agro-processing sector, export promotion of agro-products and empowerment of women in export trading.

Date: 14th June, 2021

Md. Mijanur Rahman
Project Director and Joint Secretary
BRCP-1, Ministry of Commerce

ACKNOWLEDGEMENTS

It is our great pleasure that the Bangladesh Regional Connectivity Project 1 (BRCP-1), Ministry of Commerce has entrusted ***Development Technical Consultant Pvt. Ltd. (DTCL)*** to carry out the "Diagnostic Studies about Export Promotion in Agro-processing Sector". The final report of the study has been prepared based on study which involved review of relevant literatures, field surveys, focus group discussions, in-depth interviews, public consultations and case studies.

The study encompasses overviewing of agro-processing sector, field data collection, data processing and information synthesis; value chain analysis of selected key tradable fresh, processed and dehydrated products; overviewing of current export status of fresh and processed products, existing legal, regulatory and policy framework and reforms required along with value chain constraints; identification of constraints in agro-processing and trade barrier, and opportunities and suggested interventions including status of women in SMEs involvement trading of agro-products, and way forward to overcome the barriers. The study also reflected the value chain upgrading strategies, suggested interventions, policy recommendations and action plan for improvement of agro-processing, export promotion and women empowerment for export trading of agro-products along with implementation frame work.

We are grateful to Mr. Md. Mijanur Rahman, Project Director & Joint Secretary, BRCP-1, Ministry of Commerce, Mr. Md. Munir Chowdhury, National Trade Expert and Dr.Md. Shahab Uddin, Project Manager, BRCP-1 for their sincere cooperation and support in conducting the study.

We cordially express our indebtedness to Mr. Md. Hafizur Rahman, Director General (Additional Secretary), WTO Cell, Ministry of Commerce for his continuous aspiration and guidance to conduct the study. We are also thankful to all the officials and participants who took part in the consultation meetings and workshops for helping us with their constructive criticisms and valuable suggestions during the study period.

We extend our sincere thanks to Dr. M. Amir Hossain, Managing Director, DTCL, study team members and the staffs of DTCL for their sincere cooperation made during the study period.

Thanks are also due to the all respondents of interviews, FGDs, KIIs and Case studies who helped us by providing their information during data collection period.

The contribution and support provided by everyone for the study is greatly appreciated.

Date: 14th June, 2021

Dr. Md. Saleh Ahmed
Team Leader

ACRONYMS AND ABBREVIATIONS

ADB	:	Asian Development Bank
BAB	:	Bangladesh Accreditation Board
BARI	:	Bangladesh Agricultural Research Institute
BARC	:	Bangladesh Agricultural Research Council
BAEC	:	Bangladesh Atomic Energy Commission
BCSIR	:	Bangladesh Council for Scientific and Industrial Research
BFTI	:	Bangladesh Foreign Trade Institute
BSFA	:	Bangladesh Food Safety Authority
BFVAPEA	:	Bangladesh Fruits, Vegetables and Allied Products Exporters' Association
BLPA	:	Bangladesh Land Port Authority
BRCP	:	Bangladesh Regional Connectivity Project
BSTI	:	Bangladesh Standards and Testing Institution
BTP	:	Bangladesh Trade Portal
CAC	:	Codex Alimentarius Commission
DAE	:	Department of Agricultural Extension
DTCL	:	Development Technical Consultants Pvt. Ltd.
EPB	:	Export Promotion Bureau
ESCAP	:	Economic and Social Commission for Asia and the Pacific
EC	:	European Commission
EU	:	European Union
FAO	:	Food and Agricultural Organization
FGD	:	Focus Group Discussion
FSP	:	Food Safety Program
GAP	:	Good Agricultural Practice
GLP	:	Good Laboratory Practices
GHP	:	Good Handling practices
GMP	:	Good Manufacturing Practice
GoB	:	Government of Bangladesh
GSP	:	Generalized Systems of Preferences
H.S. Code	:	Harmonized Commodity Description and Coding System
HACCP	:	Hazard Analysis and Critical Control Points
HO	:	Harmful Organization
HIES	:	Household Income and Expenditure Surveys
Hortex	:	Horticultural Export Development Foundation
IDA	:	International Development Association
ISO	:	International Standard Organization
ISPM	:	International Standard for Phytosanitary Measures
IPM	:	Integrated Pest Management
IPPC	:	International Plant Protection Organization
KII	:	Key Informant Interview
MoA	:	Ministry of Agriculture

MoC	:	Ministry of Commerce
MoF	:	Ministry of Finance
MoS	:	Ministry of Shipping
MRL	:	Maximum Residue Analysis
MVA	:	Motor Vehicle Framework Agreement
NARS	:	National Agricultural Research System
NBR	:	National Board of Revenue
NCDP	:	Northwest Crop Diversification Project
NFSL	:	National Food Safety Laboratory
NGO	:	Non-Government Organization
NPPO	:	National Plant Protection organization
NTB	:	Non-tariff Barrier
NTM	:	Non-tariff Measure
NTTFC	:	National Trade and Transport Facilitation Committee
PC	:	Phytosanitary Certificate
PIU	:	Project Implementation Unit
PIWTT	:	Protocol on Inland Water Transit and Trade
PTAC	:	Pesticide Technical Advisory Committee
PRA	:	Participatory Rural Appraisal
PQW	:	Plant Quarantine Wing
PPW	:	Plant Protection Wing
QAQC	:	Quality Assurance and Quality Control
SAARC	:	South Asia Association of Regional Co-operation
SCDP	:	Second Prop Diversification Project
SOP	:	SOP- Standard Operation Procedure
SPS	:	Sanitary and Phytosanitary
SRS	:	Simple Random Sampling
TBT	:	Technical Barriers to Trade
TL	:	Team Leader
TOR	:	Terms of Reference
TQM	:	Total Quality Management
UAE	:	United Arab Emirates
UK	:	United Kingdom
USA	:	United States of America
USAID	:	United States Agency for Aid and Development
WED	:	Women Entrepreneurship Development
WG	:	Working Group
WTO	:	World Trade Organization
PPP	:	Public Private Partnership
SME	:	Small & Medium Enterprise
R&D	:	Research and Development
UNIDO	:	United Nations Industrial Development Organization
UNCTAD	:	United Nations Conference of Trade and Development

GLOSSARY

Allocative efficiency-: the extent of possible reduction in the cost of producing a specific level of output from using the correct input proportion.

Efficiency-: generally, describes the extent to which time, effort, or cost is well used for the intended task or purpose.

Efficiency measure-: the ratio of actual output to maximum potential output obtainable from a given input level, or the ratio of minimum potential input to actual input required to produce a given output.

Agro-processing-: is the process or action taken by manufacturers of converting primary (raw) agricultural products into consumable commodities suitable for consumption.

Manufacturing-: refer to the transformation of raw materials (inputs) into finished products that are supplied to consumers and this includes processing.

Productivity-: refers to the ratio of output that a firm produces to the inputs that are used to produce that output.

Upstream: in a value chain where materials are transformed from a raw status into products that are marketed to consumers, upstream means refers to the activities related to and the flows towards primary production.

Downstream: refers to the activities further down the chain and flows of products towards consumption.

A node: the point in a value chain where a product is exchanged from one actor to the next or goes through a major transformation or agro-food processing.

A segment: A vertical part of a value chain between two nodes, for example from production to export, or from import to retail.

Value chain development: a concerted effort to improve the conditions in the value chain. It usually implies a change in participation of beneficiaries in value chains enhancing rewards and/or reducing exposure to risks. Rewards and risks should be understood not only in financial terms but also in relation to the environment, poverty alleviation and gender equity.

Value chain interventions: are focused on improving or forging vertical linkages along value chains (in production, processing and trade functions) with the view of improving the functioning of the value chain and/or the terms of participation of selected beneficiaries. Interventions may be targeted at domestic, regional or international value chains.

Primary activities: inbound logistics, operations (production), outbound logistics, marketing and sales, and services (maintenance).

Support activities: activities include-administrative infrastructure management, human resource management, R&D, and procurement.

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EXECUTIVE SUMMARY

Bangladesh Regional Connectivity Project-1 (BRCP-1) of the Ministry of Commerce, Government of the People's Republic of Bangladesh has under taken an initiative to conduct "Diagnostic Studies about Export Facilitation of Agro-processing Sector" by hiring a consultancy firm "Development Technical Consultants Pvt. Limited (DTCL)" with the objective to conduct a diagnostic analysis about export promotion of agro-processing sector to acquire an comprehensive idea about the present status, challenges, potentials and interventions required to promote agro-commodity export and facilitation of women entrepreneurs in export trading.

The consulting firm conducted the study deploying a team of key experts and a group of non-key experts having vast experience in the area of the studies. As per the TOR, the study team considered three categories of products- fresh produce (mango, lemon, potatoes and chillies); potato based processed products (chips and flakes) and dehydrated fruits (jackfruit, pineapple and mango). The experts adopted participatory approaches and a mix method of field data collection, requisite measures have been taken for data quality control. Collected data were properly analyzed using appropriate statistical techniques. The study also includes the mapping of various channels along with identification of key gaps in the production and processing, infrastructure and technology, packaging and labelling issues, quality standards, knowledge and skills, role of women along the value chain etc. It also assess the strengths and weaknesses of the regulatory regime, business environment, women's involvement in value addition of fresh commodities and processing of products, barriers in export trading, regulatory and policy supports required for promoting export of agro-food commodities from Bangladesh and facilitating women participation in export trade.

Production and Export of Fresh and Processed Agro-products

In Bangladesh, fruits and vegetables contribute to 4.6% of the agricultural GDP. The area of vegetables production increased from 0.25 to 0.45 mn Ha while production of vegetables increased from 1.60 mn MT to 4.37 mn MT during the period from 2000-2001 to 2018-2019. The area of fruits production increased from 0.19 hectare to 0.60 mn Ha and production of fruits increased from 1.56mn Ha to 4.95mn MT during the period from 2001-2002 to 2017-2018. The area of potato cultivation increased from 444,000ha to 469,000ha and production also increased from 8.60mn MT to 10.90mn MT during the period from 2012-13 to 2018-19. Despite, the positive growth trends in fruits, vegetables and potato, the contribution of the food manufacturing or food processing industry in Bangladesh has remained mostly static at about 2% of the GDP since 2004-2005. This indicates that the growth achieved in agro-food processing is not at par with the economic growth of Bangladesh.

Export market analysis shows that export of fruits and vegetables was US$18 million in 1995-96 which significantly raised to 209.38 million US$ in 2013-14 and further reached at US$ 147.2 million in 2019-2020. The export value of primary commodities increased from 1154.08 million US$ to 40535.04 million US$ during the period from 2014-15 to 2018-19. Export of vegetables declined from 103.24 to 99.68 million US$ and drastically the export value of fruits reduced from 38.48 to 0.33 million US$ while export value of spices increased

from 23.24 to 41.31 million US$ during the same period. The highest growth of export value was observed in case of dry food items from 244.4 to 227.09 million US$. In the FY 2017-18, the major exported products were juice, drinks, puffed rice, snacks, spices, chanachur, biscuit, pickle, frozen vegetables, vermicelli, potato flakes/starch, jam-jelly, candy, mustard oil and flattened rice etc. The study made by USAID reported that the anticipated food processing market size in 2023 shall be 8.23 billion.

The study finds that the principal reason for sluggish growth in export of fresh and processed products can be attributed to various gaps along the value chain of the key commodities. These gaps results in high post-harvest losses, limited processing, lower returns to farmers, low quality production etc., which requires immediate steps to address the existing gaps. The study also disclosed that women play major roles in production, like seed preservation, sowing, harvesting, postharvest handling and primary processing etc., and for efficiency enhancement in value addition in the value chains.

Findings of the Value Chain Analysis

Growth productivity rate of fruits and vegetables increased more intensely than food grains. Majority of the producers are small and follow poor technological and management system due to less capital, lack of knowledge in modern technologies. Marketable amounts are very small and seasonal production which do not support processing industry and export trading optimistically. Post-harvest management is much below the level of expectation resulting in to huge loos and quality deterioration before reaching the consumers. It is estimated that about 30-40 per cent spoilage occurs during the supply chain of perishable goods. Also there remains a huge gap of price between what producers have and the consumers pay, because the middlemen fix price considering the loss during supply chain and ultimately the consumers get low quality produces with maximum prices. the quality control is virtually non-existent, farmers do not follow proper guidelines in applying chemicals harmful to human health and environment for better production, coloration and in case fruits ripening.

Major Constraints Facing the Producers and Exporters are as follows:

Value chain analysis shows that farmers are facing problems of quality seeds and planting materials of high yielding varieties, modern technologies, pest & diseases infestations, in-sufficient storage facility, high amount of discard, poor pricing, lack of proper government supports, insecurity and uncertainty, syndicate of traders', improper government support, fund crises, insufficient transport facility, respectively. Exporters are facing problem with insufficient cargo space, improper government support, high freight charge, high Bank interest rate, respectively. These problems affect adversely in export of fruits and vegetables. The processors are facing problems in sourcing of quality raw materials, limited technology, shortage of capital, inadequate support services, quality maintenance of products, compliance of standards and certification, poor facilities in ports, packaging materials and high air freight costs etc. Besides, limited knowledge on export market requirements and food standards and regulations, trade barriers such as SPS and NTBs etc., are impeding their business.

Challenges of Market Access

Agro-trading in Bangladesh suffers from a range of constraints, these include cumbrous custom procedures, poor capacity to meet standards and certification, unavailability appropriate logistic support, lack of finance and infrastructural facilities and these significantly impact on agriculture trade facilitation and competitiveness. International market access with agro-products are facing difficulties due to issues like SPS and TBT measures, stringent quality control need and other technical barriers. Major issues include lack of knowledge on GAP, GMP, HACCP and hygienic issues. Sometimes the products are contaminated with toxic chemicals, bacteria and pathogens due to exposure to spraying of pesticides and handlings in unhygienic conditions. Contamination exposure also occurs due to poor postharvest operations and marketing. Detection of food borne pathogens and pesticide residues is limited in absence of accredited testing laboratories, shortage of trained man power and modern equipment. At present is denied from upstream export markets due to non-compliance with the basic requirement of GLOBAL GAP, including traceability. NTM barriers are impeding export of Bangladesh products.

Exporters are highly affected by burdensome non-tariff measures of SPS and TBT and procedural obstacles (POs) in Bangladesh. Conformity Assessment is a major issue for exporters. Product testing and quality certification-conformity assessment regulations in destination markets make up over half of the NTM cases. Difficulties in compliance with these requirements are mostly due to administrative delays, informal payments and associated high fees. Exporting of some selected agro-products from Bangladesh to EU countries requires Conformity Certificate (COC). Very recently the Kingdom of Saudi Arabia has also announced for COC for export of agro-products. Key gaps identified from the value chain analysis are as follows:

Key gaps identified in the Key-products value chain are provided below:

Area of Gaps	Identified Key Gaps
Production Gaps	- Limited availability of quality seeds/ healthy saplings and high yielding varieties - Inadequate knowledge on modern production technologies - Limited accessibility to financial services - Lack of technical knowledge in pest and disease management, and - Low quality of produce.
Post-harvest Gaps	- High post-harvest losses - Lack of cold chain infrastructure - Lack of pack houses and collection centres - Low practices for grading and sorting of produce - No quality standard in place for fresh produce, and - Improper packaging
Processing Gaps	- Limited technological developments - Lack of availability of raw materials - Limited knowledge on export market requirements - High export price fluctuations in processed products, and - High costs of labour, packaging material, electricity etc.

Export Gaps	- Scattered production places for export production - Seasonal production of commodities - Low produce quality and lack of standard packaging - Absence of GAP certification with traceability system - Lack of integrated modern packing house, and - Storage, cargo and airfreight problems.
Knowledge Gaps	- Limited sources of information for farmers and market players - Lack of knowledge on food safety issues/standards of the stakeholders - Lack of market information - Scarcity of business related information
Gender Gaps	- Women participation is limited in production and more in value addition - Limited participation of women in agro-product trading - Lack of capital and limited access to technologies and resources - Limited entrepreneurship among women
Capacity building Gaps	- Lack of adequate knowledge on business information and management - Limited interventions for capacity development of farmers & entrepreneurs - Limited awareness about techniques and post-harvest management - Lack of knowledge on export markets, and - Limited knowledge on regulations and food quality standards.

Agro-processing in Bangladesh

Bangladesh's processing industry is highly fragmented and is dominated by the unorganized sector, most of the players are small, about 42% of the output comes from the unorganized sector, and only 25% from the organized sector and the rest from small scale players. The organized sector is relatively bigger in the secondary processing segment than the primary processing segment. Bangladesh's agro-processing market has been growing at a rate of 15% for the last five years which is currently valued at approximately $4.81 billion including both domestic and export market of general industrial production.

Key Challenges facing the Agro-processing sector

The major constraints of agro-processing are lack of access to finance, appropriate technology, inadequate infrastructure, lack of testing facilities for quality control, lack of cool chain and preserving facilities, improper management of wastes, inadequate training facilities and business advisory services, business hostile tax, tariff measures & compliance issues and lack of entrepreneurial skills. Stringent food safety norms, standards and regulations, coupled with poor processing infrastructure, etc. Besides, the exporters are highly affected by non-tariff measures (NTM) including burdensome NTM barriers, procedural obstacles (POs). Difficulties in compliance with these requirements are mostly due to administrative delays, informal payments and associated high fees. In addition, border clearance procedures long waiting time, inefficient procedure as well as informal payments.

The key challenges facing the agro-processing sector are as follows:

- Irregular supply of raw materials and low quality of produce
- Lack of efficiencies of stakeholders engaged in SMEs in production, post-harvest handlings, packaging, quality maintenance, shelf life of the processed products
- Lacks of access to finance are for SMEs and export-oriented firms.
- Weak linkage between producers and processors
- Seasonality of operations of processing factories and low capacity utilizations.
- Poor institutional supports in supply chain development.
- Shortage of skilled technicians and workers.
- Lack of accredited laboratory testing facilities.
- Inadequate focus on quality and safety standards.
- Lack of product development and innovation, and
- Insignificant efforts to engage women in export oriented business.

Challenges Facing by the Women Entrepreneurs

Women involvements in agro-processing and export trading shows that majority of them (88%) are engaged in trading and only 16 per cent entrepreneurs are doing business with agro-based enterprises and facing tremendous challenges. The major challenges are inadequate capital, problems in getting permission to start-up a business, slowness in sales promotion, gender discrimination in every sphere; illiteracy and lack of knowledge, in-adequate training and technical support. Personal qualities of hard work and perseverance, weak management and marketing skills, less support provided by their husbands or family are the main reasons behind the success of the women entrepreneurs. Besides, Most of the women entrepreneurs facing loan related obstacles followed by marketing, social, environmental, family, and business related constraints. Where loan related barriers include insufficient credit, high interest rate, delay for loan processing, extra charges in addition to interest rate, banks claim for additional document, inadequate supply of seasonal credit, shorter grace period, requirement of collateral, short term loan with larger instalment, women dedicated desk headed by male official, etc.

Based on the preliminary analysis of the selected value chains, the present diagnostic study proposes a number of recommendations and those are presented below:

Recommendations

1. Policy level: to address gaps in sectoral rules and their application

1.1 Integrate the needs and concerns of women, including those in the informal sector into SME policy formulation and programme.

1.2 Include the development of women's entrepreneurship as a priority in sectoral policies and master plans for agro-processing

1.3 Develop a strategic policy framework for WED and establish a national focal point for the promotion and coordination of women's entrepreneurship development.

2. Market level: to address gaps in accessibility to appropriate financial and nonfinancial services and to markets.

2.1 Encourage financial service providers and build their capacity to target women entrepreneurs with gender sensitive credit and loan products that take into account women's lack of access to land and collateral, including in the informal sector, and provide them with adequate support to launch and grow their enterprises.
2.2 Reinforce the capacity of local service providers to offer gender-responsive entrepreneurship development training and support.
2.3 Develop business support infrastructures for women, notably, online and physical women's desks where they can easily access information, referral, and advice on how to access finance, business support and markets.
2.4 Support women entrepreneurs associations and sectoral organizations to establish mentoring schemes for women entrepreneurs.
2.5 Encourage government, multinational and national enterprises, UN and donor procurement Recommendations for Export promotion programmes, especially in the agro-processing sector to adopt gender responsive procurement practices.
2.6 Implement an awards programme to recognize and celebrate the achievements of women entrepreneurs in the sectors of agro-processing.
2.7 Support advocacy of women associations for business development.
2.8 Reinforce the representation and participation of women entrepreneurs and their associations in the Chamber of Commerce and Industry and sectoral associations to better ensure that the concerns and interests of women entrepreneurs are raised in public-private sector dialogue.

3. Enterprise level: to address gaps in productivity and competitiveness of women's businesses

3.1 Link women entrepreneurs to various financial schemes of the government.
3.2 Implement women-focused training and information events to educate women about sources of financing, the criteria used in making funding decisions, and how to prepare proposals and plans to secure financing. This training should also include components on financial literacy.
3.3 Establish and expand entrepreneurship and cooperative training programmes for women entrepreneurs.
3.4 Sensitize women entrepreneurs in the various dimension of the value chain they operate in to take advantage of opportunities and engage with actors in the chain to create opportunities for direct, indirect and induced employment.

4. Export promotion

4.1 **Strengthen Hortex Foundation as Nodal Agency:** There is a crucial need to strengthen Hortex Foundation by restructuring it as a Nodal Agency which will support promotion of export oriented production and development of the products, setting the standards and specifications of the products, registration of exporters and improve packaging, provide export market access supports by collaborating with other related public and private agencies.

4.2 **Crop Zoning and Contract Farming:** Crop zoning is to be made for production of export oriented crops. Discontinuing the current approach of *market-market* encourage supervised production systems. Contract farming needs to be encouraged not only to provide a broad base for fresh produce supply to exporters and raw materials for processing but also for the supply of the right type of inputs and other linkages necessary for the acceptability of the quality standards for competitive exports.

4.3 **Support for Infrastructure Development:** A major constraint to promoting exports is the lack of adequate infrastructure, particularly cold storage facilities and transportation. There is need to encourage public-private partnership in building such facilities and ensuring their proper maintenance. Incentives are essentially needed as capital investment subsidy.

4.4 **Strengthen the services of the Plant Quarantine Wing of the DAE:** Establishment and effective fictionalization of National Quarantine Authority as per Plant Quarantine Act 2011 is urgently needed. Effective efforts needs to be undertaken to strengthen PQW of DAE by improving its capacity for quarantine inspection and monitoring through one-stop quarantine inspection and certification facilities.

4.5 **Increase Logistic Support:** Increasing of facilities of temporary storage, establishment of more scanners and improvement of cargo handling facilities at the HSIA are the need of hour. Besides, automation of PC processing and issuance are also urgently required. The current service provided by the Central Packing House is highly appreciable and more infrastructural supports are to be made to upgrade its facilities to fulfil the need of the exporters.

4.6 **Upgrade Standards and Certification:** Continue the current efforts to ensure integrity and quality of the products (both fresh and processed) and starts functioning of closer inspection/auditing following IPPC rules to increase the reliability of certificates specifying product quality. Ensure production and distribution of good-quality products following Good Agricultural Practice (GAP), GMP and based on Total Quality Management (TQM) principle. Adoption of risk-based quality assurance procedures and harmonization with CAC standards and compliance with the GMP and HACCP systems.

4.7 **Upgrading of Testing Laboratory:** An urgent need pressing the country to upgrade the facilities of testing laboratories to follow Good Laboratory Practices (GLP) and for international accreditation.

4.8 **Human Resources Development:** There is also a vital need for human resources development and to train the officers, exporters, producers about the quality standards and the sanitary and phytosanitary measures that need to be complied with.

4.9 **Market Access and Information:** There is a need to provide continuous updating of data on market information, data compilation, market access, procedures and processed etc. Side by side Bangladesh Embassies working in different importing countries should play more active role in providing market information/intelligence services.

4.10 **Credit Facilities:** It is essential to provide easy access of credit facilities to the exporters with liberal terms in addition as capital investment subsidy. Introduce different schemes to provide financial assistance to the SMEs for the export promotion.

CHAPTER – 01
INTRODUCTION

1.1 Background of the Study

Despite, decreasing its contribution to GDP since liberation, agriculture is still remaining the driving force of Bangladesh's economy. Food security of a vast segment of the country's population is dependent on headways in the agricultural sector. Agricultural development is linked to poverty alleviation, living standard of the people, employment generation, agro-based industrial growth etc. Its contribution to Gross Domestic Product (GDP) currently stands at 13.64 per cent, while it provides employment to 40.6 per cent of the labour force (BBS, 2020). The labour force survey of 2005-2006 of the country showed that 68.1per cent women are directly engaged in agriculture and mainly performed tasks on cattle rearing, fisheries and poultry farming, paddy husking, boiling and drying, processing and preservation of food etc.

During the post-liberation era, Bangladesh made appreciable progress in agriculture, especially in food grain production. Since the last decade, fruits and vegetables production increased significantly. Despite increasing climatic hazards, through technological breakthrough and innovative endeavours, agricultural growth particularly in production of fisheries, meat, milk, eggs, vegetables and different kinds of fruits has increased manifolds. The country has made significant agricultural policy reforms since the 1980s, which largely contributed to achieving self-sufficiency in rice production. These policies are however contributing to a strong bias against a more diversified production. There exist substantial market opportunities for productive diversification and increased value addition for the agro-food sector in Bangladesh (World Bank, 2020).

But we have no scope to be complacent with these successes. Our arable land is declining at the rate of 2 per cent per year, when population is increasing at 2.6 per cent per year and at present per capita arable land is about 12.5 decimals (World Bank collection of development indicators, compiled from officially recognized sources). Moreover, the country is on the threshold of natural disasters due to climate changes. So, with a view to maintain our hard-earned self-sufficiency in food production, we are to concentrate our all-out efforts to vertical development in agriculture sector through intensive cultivation for productivity enhancement, reduction of postharvest losses and value chain development.

In Bangladesh, an impressive agricultural growth above 3.0 per cent per year over the recent decades has proved to be the master key to generating income and employment and reducing poverty and hunger. Food grains production quadrupled since independence. Structural change in agriculture shows clear signs of shifts toward high value crops and non-crop enterprises with increasing penetration of market led production system. Production and marketing of non-cereal commodities has grown significantly during the last a few decades. Fruits, vegetables, fisheries and livestock are claiming a larger part of the incremental income. In addition, there is a growing export market particularly for horticultural commodities and shrimps (fresh, processed and frozen).

In response to the increasing demand, farmers are shifting from producing cereals to spices, fruits, vegetables, flowers and aquaculture etc. These developments have created opportunities for value addition through improved postharvest management and processing of agro-commodities into semi-finished and finished products both for the domestic and export markets.

The agro-food processing industry now contributes about 8.0 per cent to manufacturing output (1.7 per cent of GDP) of the country and is currently valued at US$ 2.2 billion. The industry now employs about 2.2 per cent of total workforces of the country of which close to 70 per cent are unskilled labor. Its share of total exports now stands at around 1.5 per cent (Mahmud, 2019).

Optimal agro-climatic conditions, widespread technological breakthrough, strong corporate leadership, wide consumer-based market are the key drivers for the industry. But decreasing arable lands due to rapid urbanization, inconsistencies in the supply of sufficient raw materials throughout the year, shortage of power supply and or high electricity tariff, absence of modern technologies are some of the challenges encountering by the sector and barring its progress. In addition, the most persistent is the safety issue, starting from the field, where the harmful pesticides, excessive chemical fertilizers are used for production and movement of produces from farm to fork. These altogether impact negatively on the access to export market and the products become less competitive in respect of quality and price. Still other challenges remain as non-tariff barriers in exporting, inadequate storage capacity and other physical and financial facilities. As a result, the exporters face serious competition in the export markets both in terms of price and quality, despite the government export subsidy (World Bank, 2020).

In Bangladesh context, women participation in agro-commodities export trading is quite dismaying. According to Bangladesh Economic Census 2013, only 5.87 per cent women entrepreneurs are in the country while the World Bank Enterprise Survey (2013), reported only 12.7 per cent firms had female ownership in enterprises. According to SMEF only 11.0 per cent of women entrepreneurs are involved in the agro-processing sectors (SME Foundation, 2019). As the Bangladesh economy continues to grow, the size of the middle-income population will continue to rise from its current population of around 35 million. Urbanization, change in food habit with expansible cash in hands or demand for ready to eat or ready to cook food products increased during the last decades, which indicates the future prospects of business of processed food products in Bangladesh. Again, the increase of two-income families also escalating the demand of processed and packaged food items in the country.

In Bangladesh, diversification of agriculture in favour of high-value commodities are emerging as a promising source of income acceleration, employment generation, poverty alleviation and export promotion. Further, the scope of the agro-processing industry encompasses all operations of agro-commodities moving from the farm to the consumers in the desired form of packaging, with quality and safety and at reasonable price. Agro-commodity processing is of two basic categories- primary processing and secondary processing.

Depending on the type of commodity, equipment needed for primary processing is completely different from that of secondary processing or major adjustments/ modifications need to be done to suit either. Secondary agro-processing is largely done by agro-industry, an enterprise that processes agricultural raw materials.

Export promotion and access to global markets with nutritious and safe agro-food commodities is of crucial importance for national economic augmentation of Bangladesh**.** Inadequate attention to agro-processing sector in the past put both the producers and the consumers at a disadvantage and also impedes the economic prosperity. Despite, having huge potentials of product diversification, demand in the export markets a few challenges like tariff and non-tariff barriers, non-compliance of GAP, GMP, certification of quality and standards, etc., hindering export of agro-food commodities to the international markets.

The government of Bangladesh has declared agro-processing as a thrust sector and realizing challenges and opportunities undertook several interventions. The endeavours will expedite the growth of agro-processing sector with added value, diversify commodity production and processing, minimize postharvest losses, ensure safety of products, generate large-scale employment of rural populations including women folks and ultimately benefit both producers and consumers. As nearly half of the populations in Bangladesh are women and they are making appreciable contribution to garment sector, it will be pertinent to engage women in primary agro-processing and in export oriented agro-processing industries for their socio-economic empowerment, and economic growth of the country. In the above context, the BRCP-1 project of the Ministry of Commerce, Government of Bangladesh, has taken an initiative to undertake a robust diagnostic study of agro-processing sector by hiring DTCL.

1.2 Objectives of the Study

The overall objective of the study is to develop an in-depth understanding about the present situation, export potential and support required for promotion of exports by women traders in key value chains in agro-processing sector.
The specific objectives are:

- To identify the export potentials and support required for promotion of exports with a focus on women traders in three key value chains in the sector;
- To examine the regulatory regime and propose necessary adjustments for facilitation of export with a focus on women traders;
- To enable the government to take appropriate measures for enhancing the capacity of traders through facilitation for development in the sector; and
- To promote export of agro-processed products by empowering women traders in regional and international markets.

1.3 Scope of the Study

The scope of this study revolved on-examining all relevant issues including the following five agendas for effective promotion of export potentials with priority focus on women traders in key selected value chains in the agro-processing sector.

i) Value Chain Selection: The value chain selection involves the followings;

a) A broad overview of the agro-processing industry in Bangladesh, including the overall legal and regulatory environment, its contribution to the Bangladesh economy, potential for growth, and impact on employment and income generation, especially for women;

b) Identification of value chain of three categories of commodities- tradable fresh produces, processed and dehydrated agro-food commodities, within the agro-processing sector that offer prospects and development for women, and

c) Reviewing the legal, regulatory and procedural environment in which the selected value chains operate in Bangladesh and how it impacts women's participation in export trading of agro-products.

ii) Value Chain Mapping: The value chain mapping involves- a) Creating a map of the selected agro-processing chains which describes the structure and flow of the chains in logical clusters- the various actors of the chain, the links among them, and b) Quantifying the value chain through adding details to the basics.

iii) Analysing Value Chain Activities and Performance: The steps involve in analysing value

Chain activities are:

a) Identifying key quantitative and qualitative indicators;

b) Analysing the value chains of external sources of competitiveness, including its economic and social environment and its industrial and technological environment;

c) Analysing the value chain technological capacities, including utilization of inputs, the production system and the products manufactured; and

d) Carrying out an economic performance analysis and benchmarking against potential competitors.

iv) Identifying value chain performance constraints and development opportunities:

The constraints and opportunities analysis address the following questions- what does the value chain have to reach and take advantage of lucrative market opportunities; are the small and micro enterprises especially the women entreprene able have access to these markets?

v) Defining Development Interventions: Value chain interventions are focused on improving or counterfeiting vertical linkages along value chains (in production, processing and trading functions). The interventions include:

a) Developing a strategy for value chain up gradation with focus on actions that will benefit women;

b) Recommending policy measures and support programs to be undertaken in order to enhance the competitive performance of the sector and increase women's participation; and

c) Clarification of the roles and responsibilities for the implementation of the upgrading strategy.

1.4 Structure of the Report

The report is divided in seven chapters. The chapters are as follows:

Chapter-1: Introduction, the current chapter delineate the background information of the study with objectives, and scope of the study.

Chapter-2: Describes the study approach and methodology with a short description of sample size and sample locations for field investigation.

Chapter-3: Presents overview of production and marketing of fruits & vegetables in Bangladesh. It briefed the present status of production, supply chain structures & operations, institutional & infrastructural facilities, human resource, research & development constraints of processing sector. It also highlighted potentials of agro-processing in Bangladesh and recommended required actions.

Chapter-4: Elaborates value chain analysis of key products of fruits (mango, jackfruits, pineapple, and vegetables (potato, tomato and chilli) that include supply chain structures and cost of the value chains actors and constraints in the value chains.

Chapter-5: Presents existing status and performance of export of agro-products, profitability analysis of exporters, put light on constraints and challenges and suggested measures for export promotion, key gaps identified in the value chains and highlights the trade barriers and obstacles of women participation in trade and key gender gaps identified in the value chain and proposed measures to reduce barriers.

Chapter-6: Illustrates value chain upgrading strategies and suggested interventions for promoting competitiveness.

Chapter-7: Reflects the recommendations, conclusion and action plan for the growth and promotion of agro-food processing and export trading with active participation of women entrepreneurs in Bangladesh.

CHAPTER – 02
APPROACH AND METHODOLOGY

2.1 Conceptual Framework

The study aimed to evaluate the present status of agro-food processing and participation of women in agro-processing & export trading of both fresh and processed agro-commodities. It also attempted to identifying priority areas and way forward to support small and medium level women entrepreneurs' competitiveness and value chain development. It further put light into investments and technical assistance needed in improving competitiveness and support to access to finance along with the value chain.

In line with the ToR as well as based on review of literature and discussions with relevant experts, the study team has selected the following three categories of crops/products to conduct the value chain analysis considering their potentials for growth and development.

- Fresh produce: Mango, Lemon, Potato and Chilli;
- Potato based processed products (Chips & Flakes); and
- Dehydrated fruits (Jackfruit, Pineapple & Mango).

Like other Asiatic countries women entrepreneurship or 'a women business' is a recent phenomenon in Bangladesh. Women entrepreneurs are mostly involved in small and medium enterprises (SMEs). Supportive activities to the SMEs and making the sector more women friendly required going a long way towards economic development of the country. According to the Economic Census of 2013, there are 7.80 million enterprises (economic activities) in Bangladesh of which 7.30 million are male-headed and 0.60 million are female-headed. That is only 7.2 per cent of the total enterprises are female headed. Though these enterprises include large enterprises, the picture is true for SMEs as 99 per cent of the enterprises are micro, small or medium in size.

Women focused approach to value chain has three-fold goal: (i) understanding women's roles and relationships in the chain; (ii) examining the gendered difference in access to, and control over, key productive assets necessary for participation in the chain; and (iii) analysing how gender power relations affect economic actors throughout the chain. These analyses would then lead to the development of interventions required to create opportunities, enabling women to participate in the chain.

The strategy, approach, methodology and tools for implementing the study are described in the following paragraphs.

The study activities entail, preparation and pre-testing of tools for data collection; developing checklist and guidelines for FGDs and KIIs, PCs and questionnaire for conducting sample survey among women entrepreneurs and checklists for purposive visits and sharp observation.

The key indicators have been selected in agreement with the client and based on the purpose and objective of the study. Finally, a work program for field data collection has been

developed and shared with the client. The study team has maintained close contact with the client and all other stakeholders regarding inspection, monitoring of the field activities and to accomplish the assignment in time.

2.2 Sources of Data

The present diagnostic study concentrated on collecting relevant project documents/reports from the PD and MoC/WTO Cell authority and reviewed. Then secondary data has been compiled from various published sources. Later on, the team of consultant with help of field staff, conducted field investigation to generate the stipulated primary data. To develop the study instruments accurately and to reveal the inherent characteristics of various dimensions of the study and its contribution to the agro-processing, the secondary data have carefully been scanned and collated with the study data. The qualitative data has been collected from various stakeholders of the supply chain of agro-food commodities through in-depth interviews, formal group discussions and public consultancy workshops.

Table 2. 1: Data Sources

Source	Types of data	Nature of data	Methods of collection
Internal	Secondary	Quantitative and qualitative	Reviewing of documents
External	Secondary	Quantitative and qualitative	Reviewing of published reports and documents, literature and browsing internet.
	Primary	Quantitative	Sample survey
		Qualitative	FGDs, KIIs, PCs CSs and Purposive visits indirect discussions

2.3 Approach of the Study

The most effective approach for the diagnostic study bestowed in examining all relevant critical issues starting from investigating technology for production, post-harvest handling, capacity & capability of the actors, physical infrastructural facilities for value addition complying national and international standards, access to information, inputs, congenial policy & regulatory framework for women entrepreneurs, etc. The diagnostic study has been designed to cover a broad spectrum by addressing the whole agro-processing sector with special emphasis on women entrepreneurs to accomplish the objectives of the study.

It entails the legal and regulatory environment, potentials of the selected commodities for growth, competitiveness, overview of the agro-processing industry in Bangladesh. The study put insight into the verification of drivers, constraints and potentials of investment in export of fresh and processed agro-food commodities by the women-based industries, reviewing policies, licensing, incentives, available export promotion tools, financing tangible and intangible capital outlays, scope of employment, profitability, bankability, certification, standardization, competition in the domestic and global markets, public private partnership, etc. In addition, value chain mapping of the selected items, showing structure and flow of the

value chains in logical clusters, analysing value chain activities, internal and external support systems required, identification of constraints, challenges & prospects with interventions.

The approach was in line with the main objectives of the study seeking to gather information with a view to provide a complete picture of the present situation of agro-processing in the country, mapping the value chain of the selected commodities level of women participation, constraints & prospects of women's involvement in each phase of supply chain and access of women export trade. The approach involved wide ranging and sequenced discussion with project management and professionals of the MoC, GoB, and the officials of the relevant agencies to develop an in-depth understanding about the present situation, export potential and support required for promotion of agro-food exports by women involved in the value chains.

The approaches include desk review, collection of secondary data from different relevant sources; participatory rapid appraisal for primary data collection and finally expert analysis of value chain activities and performance to identify key quantitative and qualitative indicators (time, cost, value added and productivity at each stage) for the selected value chains; value chain's external sources of competitiveness, including its economic and social environment; and its industrial and technological environment, technological capacities, including utilization of inputs, the production system and the products manufactured. This approach involves wide-ranging and sequenced discussion with Project Director and MoC professionals and officials related to develop an in-depth understanding about the present situation, export potential and support required for promotion of exports by women traders involved in key value chains.

The reconnaissance field visits covered substantial part of the project areas. During the field visit the consultants interacted with the project personnel working in the field, different value chain actors and policy stakeholders in selected agro-processing value chains and other concerns personnel of the study areas. The detailed description of the common activities of the study has been presented in the following pages.

As per ToR, the study team has completed successfully the activities outlined for inception phase within specified time period. During the inception phase, the study team of consultants was engaged in an open and inclusive process with the client and other relevant stakeholders in order to collect and assimilate all relevant current information that enabled to make an in-depth understanding about the present situation, export potential and support required for promotion of exports by women traders involved in key value chains in this sector and of the pertinence of the ToR, vis-à-vis the actual situation. After several discussions with the consulting firm, DTCL, the Project Director finally approved the inception report.

2.4 Preparatory Works for Data Collection and Quality Control

During the inception phase, the study team performed several activities briefly described below:

2.4.1 Design of the Study

The study has been designed accentuating on appropriate sample frame and sampling techniques that is statistically sound and acceptable to the client. The study design included specific timeline for every activity aiming to complete the activities in time. The design includes proper deployment of manpower and systematic monitoring, supervision and coordination among all activities so that the activities to be accomplished following a critical to path-most for efficient for efficient and effective time use. The design also included techniques of both primary and secondary data from various sources. The team also identified indicators and measuring scales in details.

2.4.2 Sample Framework

For selecting respondents from the target areas snowball sampling has been adopted when a qualified participant shares an invitation with other subjects similar to them who fulfilled the required qualification defined for the target population. The procedure followed to select sampling units i.e. agro-processing based beneficiaries and enterprises and households concentrated those are engaged in the export from 19 districts from different divisions is as follows:

First, 19 districts from the eight administrative divisions were selected by Jugdemental sampling in consultation with project officials that represents the country. Then, agroprocessing based beneficiaries, enterprises and household engaged in the export trading in the sample area were selected as sampling units by the Purposive Snowball Sampling (Berg, S.2006). It also was based on the probability proportional to agroprocessing based beneficiaries and enterprises and household concentraced those are engaged in export business from the selected district. The population under the study is comprised of value chain actors like policy makers, women entrepreneurs/exporters in the selected agro-processing value chain areas.

To determine the representative sample size from the population the consultants have used appropriate formula as provided below.

2.4.3 Sample Size Determination

The following sampling method was applied for determining the required minimum sample sizes to conduct the diagnostic study.

The formula is given below used by the World Bank, (SME, 2019).

$$n = \left[\frac{1}{N} + \frac{(N\text{-}1)}{N} * \frac{1}{PQ} * \left(\frac{K}{Z}\right)^2\right]$$

Where

N= Number of Population, for this study we consider as population is the number of female-headed enterprises form Bangladesh Economic Census 2013, which is about 5, 63,368 (BBS,2013).

P = Proportion of Female employment Indicator in Agriculture according to the Labour Statistics in Bangladesh-An empirical analysis (BBS, 2018). In this study, we apprehend the proportion of female employment in agriculture is about 59.7per cent (P=0.597).

Q = 1 – P
K = level of desired precision or allowable margin of error is the maximum risk in the sample size estimation.

Conventionally, an 'absolute' allowable error margin at ±5 per cent is chosen, but if expected p is <10 per cent, the 95 per cent confidence boundaries may cross 0, which is quite impractical.
Hence, for an expected value p when 10 to 90 per cent then the value of d is ±5 per cent might be a reasonable choice. The choice of 'relative' allowable margin error as opposed to an absolute value is independent of expected p and one might choose it for mid-range values of p, which is a valid approach. However, in this study, the level of precision, K= 3per cent is 0.03.

Z = Standardized normal deviate usually set at 1.96, which corresponds to the 95 per cent confidence interval at 5 per cent level of significance.

Thus, assuming these parameters, and using the above formula the estimated sample size was 1025. In order to reach the stipulated respondents, a list of different types of respondents has been collected from PD, BRCP-1 before the study. The lists of different respondents by type of producers, agro-processors and traders aimed at identifying targeted population of respondents in the value chain areas, which have been finalized in consultation with PIU/PD. From this sampling frame, the allotted numbers of respondents have randomly been chosen using Two Stage Sampling (TSS) procedure to draw a representative sample of men and women traders with agriculture/agro processing sector-specific coverage and probability proportional to size. The study has primarily selected the districts from the BRCP-1 project districts and proportion of samples from each district by sectors.

2.4.4 Sampling Technique

The Snowball technique has been used for identifying respondents for qualitative data collection through FGDs and KIIs. The tool is a way of selecting participants and then using other tools, such as interviews or surveys. Having identified those with the skills and/or knowledge or characteristics required, and then these people were requested to invite others in a community consultation process.

In this method formation of a sample group starts with only one subject and the subject provides only one referral. The referral is recruited into the sample group and he/she also provides only one new referral. This pattern is continued until the sample group is fully formed.

Immediately after commencement of the task of the study, the team of experts has started analysing relevant documents and existing data on the current development in agro-processing sector in Bangladesh including review of recent studies and researches in Bangladesh and abroad. Some of those documents have already been collected during the phase of preparation of the technical proposal. Those background relevant documents have been reviewed and analysed by the team of experts in order to provide an outline of the initial assessment and fact finding to be included in the study period.

Table 2. 2 No. of Respondent by District and Gender

Division	District Name	Sample Women	Sample Men	Total
Dhaka	Dhaka	100	66	166
	Narsingdi	34	23	57
	Gazipur	32	22	54
	Manikgonj	6	4	10
	Tangail	18	12	30
Barisal	Barisal	23	15	38
Mymensingh	Mymensingh	34	22	56
Rajshahi	Bogura	41	27	68
	Rajshahi	23	15	38
	ChapiNobabganj	26	18	44
	Pabna	25	17	42
Khulna	Magura	10	6	16
	Jessore	35	23	58
	Jhenaidah	14	9	23
	Satkhira District	22	14	36
Rangpur	Rangpur	29	19	48
Chattogram	Chattogram	85	56	141
	Cumilla	49	32	81
Sylhet	Moulvibazar	11	8	19
	Total	617	408	1025

2.4.5 Pre-testing of Data Collection Instruments (DCIs) and Training of Field Staff

i) Training of field staff

A rigorous three days training has been imparted to the field staff so as to keep uniformity of the data collection techniques and approaches, and maintain the desired quality of data. The training included introduction to the study with duties and responsibilities of each category of field investigators, snowball selection of respondents, approach to respondents for interviews and techniques of selecting alternative respondents if situation arises. In the following day, practical training was organized in the field for pre-testing and sharing field experiences with each other and experts. On the final day of training reviewed the experiences of field testing and apart from the foundation lectures on how to fill-in the questionnaire, conduct group discussions, KIIs, and question and answer sessions have been arranged. The experts and the senior key personnel of the consulting firm acted as resource persons in the training.

i) Pre-testing of DCIs

Data collection instruments (DCIs) were tested in two field areas similar, but outside the study areas. The test locations were nearest to the Project headquarters at Dhaka with respondents from households that resemble respondents of the project participants. During the pilot survey/pre-testing, the project (client) representative worked in shoulder to shoulder with the pre-testing team to refine and finalize the survey tools to make sure that it is very well-tailored to the country context; the pre-testing has been done in 1-day.

Each enumerator/supervisor filled up at least two complete questionnaires/schedules in the

field. Based on pre-testing results and in consultation with the PD/PIU, necessary modifications and improvements have been made in the DCIs and finally translated the questionnaire in Bangla.

2.4.6 Design of Online Platform for Data Collection

The DTCL has developed a program for electronic version of the questionnaire with the support of the PIU of BRCP-1 and the study team. The required number of Mobile/tablets have been provided to the enumerators so that Survey Solutions Software can run with a version of Android Operating system that is 4.3.1 or higher, minimum 1GB of RAM, 8GB of flash memory storage with at least 1GB of available space, a Wi-Fi module, 3G/4G connectivity, and GPS technology plus. The program included a built-in geo-referencing facility to capture the geo-location of each household visited. The DTCL server has been used for Survey Solution so that PIU/PD and the study team can access anytime anywhere throughout the data collection period. This online platform has been used for tracking and uploading data.

The study team constantly monitored the data collection using this online platform tracking system and ensured quality of collected data. The data uploading and analysis software was linked with DTCL server. Both PIU and DTCL team monitored data collection and uploading status from the server.

2.4.7 Design of Data Quality System

The study team has outlined strategy for ensuring the collection of high standard data. The DTCL server and GPS system has been used for ensuring quality data collection on a daily basis and progress tracking using the Survey Solutions, Online management and tracking system including field management and organization.

The following procedures have been followed for data quality control:

- Defining roles and responsibilities of the data collection team;
- Periodic supervision of data collection by the Team Leader and other consultants;
- Surprise visit to monitor the activities of the enumerators by consultants and supervisors;
- Re-interviewing, when found inconsistency;
- Checking dataset everyday (consultant, PIU and supervisor etc.);
- Creating automated feedback files on errors of interview on daily basis;
- Showing zero tolerance against data manipulation;
- Setting logical in all applicable fields for numerical data;
- Supervising n data input and uploading in server;
- Processing (editing, cleaning.); and
- Sharing with clients (PIU) at every step.

2.5 Methodology of Data Collection

As per ToR a mixed approach has been employed in field data collection and analysis. These are as follows:

i) Quantitative Data Collection

ii) Qualitative Analysis

2.5.1 Quantitative data collection

a) Secondary data collection through literature reviewing: The study team collected and reviewed different literatures, abstracts, guidelines, reports related to the legal, regulatory and procedural environment of value chain activities of the selected commodities, and how those impacting women's participation. The review also focused on policies, licensing, incentives, availability of export promotion tools, financing of tangible and intangible capital outlays, training, employment, quality promotion, certification (GAP, GMO, HACCP & ISO), standardization, competition, research and development, and partnerships.

b) Primary data collection:

The field survey team conducted a sample survey through administering a semi-structured questionnaire amongst 1025 selected respondents (shown in table 3). The field enumerator personally contacted with the respondents and collected desired information by explaining the objectives of the survey to the respondents. The field supervisors supervised field activities. The supervisors have cross-checked 15 per cent of the filled in questionnaires for quality assurance of data collection.

2.5.2 Qualitative data collection

Qualitative techniques have been used primarily to collect in depth/ perceptual information on selected indicators related to the study. Among various participatory approaches, the most prominent ones for the present study were "Stakeholders Analysis" and "Participatory Rural Appraisal (PRA*)", In-depth interviewing, formal and informal discussions with stakeholders at various levels, etc. The techniques used were (Figure 2.1).

Figure 2. 1: Techniques of Qualitative Analysis

a) Focus Group Discussion (FGD)
b) Key Informants Interview (KIIs)
c) Public Consultations (PCs), and
d) Case Studies (CSs).

The detailed description of the activities has been presented in the following paragraphs.

Focus Group Discussions (FGDs): For qualitative data collection total 21 Focus Group Discussions (FGDs) have been conducted considering two-three for each of the division. The participants for each FGD were 10-15 drawn in mix or separate male/female such as producers, agro-processors, traders/entrepreneurs at study areas.

Key Informant Interviews (KIIs): Using pre-designed schedules for particular respondents, 50 In-depth interviews have been conducted among women entrepreneurs/exporters, policy makers and representatives of regulatory and service providing agencies (DAE, DAM, WTO Cell etc.), exporters, processors. BFPVEA and BAPA leaders to validate collected quantitative data and have in-sight into the sector in respect of problems, prospects and interventions required.

Public Consultations (PCs): To have opinion of various stakeholders, experts, service providing agencies and target people not included in other techniques of data collection, public consultations have been organised at regional and national level. As per TOR of the study, the following two types of Consultation were organized at selected locations inviting relevant stakeholders:

Local level: As per ToR four Local level consultations with the stakeholders and institutional consultations been conducted with the agricultural extension officers and marketing officials, women, local producers, processors and traders, business and trade bodies and local government authorities.

National level: One National level consultations/workshop was organized virtually due to Covid-19 pandemic with the relevant officials of government, non-government agencies, experts in the relevant field representatives of donor agencies, private sector representatives, agro-processors, chambers of commerce, business associations, women's chambers and associations etc. In total 100 persons have participated in these national level events at Dhaka.

Case Studies: With a view to have a holistic view of women participation in production, processing and trading of both fresh and processed agro-food commodities, capture a range of perspectives opposed in the survey or interviews and to have greater understanding of the subject and reduce the potential of any biasness, the study team conducted, nine (09) numbers of case studies have been conducted. The inherent strengths and weaknesses as well as opportunities of agro-processing and export of agro-food items have been unearthed through the case studies.

Informal discussions with stakeholders: In addition to the above techniques of data collection, the team has made several purposive visits to the study area and has informal discussions with different stakeholder involved directly or indirectly in the value of agro-food commodities. The team member noted the valuable information received during discussions and incorporated in the discussion of research findings.

Table 2. 3: Summary of Data Collection with Numbers of Respondent

Techniques	Target group	No. of participants/ Events	Participants
Quantitative Analysis			
Desk Review	Project documents, published articles, reports, research findings, policy documents, etc.		
Questionnaire survey	Value chain actors/ exporters	1025 (Women: 617 and Men: 408)	Producers, Processors and Traders
Qualitative Analysis			
FGD	i) Producers ii) Agro-processors iii) Traders iv) Policy Makers	i) 6 Events ii) 6 Events iii) 6 Events iv) 2 Events	Producers, Processors and Traders
Key Informants Interview (KIIs)	Managers/ Officials	50 Persons	Women entrepreneurs/ exporters, policy makers and PIU officials in the selected areas.
Public Consultations (PCs)	Local/regional Level	4 Events	Agricultural extension officers, marketing officials, women, local producers & traders, business & trade bodies & local government authorities.
	National Level	1 Event	Government agency officials, think tanks, donors, NGOs, private sector, chambers, associations and women's chambers and associations etc.
Case Study	Producers Agro-processors Traders	9 studies	Processors, Exporters, Cold Storage owners etc.

2.6 Data Quality Assurance Measures

For quality control in the field data collection, the experts including the team leader repeatedly visited study area and ensured data quality through (i) field checking both in presence and absence of the field staff. For quality data collection each field staff was provided with a comprehensive data collection manual through administering electronic devices, interview schedule, check list for FGD, recording and reporting. All the experts and a number of field officials supervised the field works so that the enumerators can seek instructions on the concept, definitions and difficulties encountered in carrying out the field work under the actual operational conditions. All the experts including the team leader made field visits in selected areas at random to verify and confirm the survey findings with the actual situation. On an average, 10per cent of respondents have been re-interviewed to ensure quality of data collected by the enumerators. This re-interview has been conducted by the supervisors to minimize errors.

2.7 Data Management, Processing and Analysis

2.7.1 Linking Data with Deliverables:

On completion of field data collection, the consulting firm DTCL organised a day long feedback session with field personnel to get some deeper insights on certain issues, and to get some qualitative information which can substantiate quantitative data on the basis of field level observation and experiences.

2.7.2 Data Management, Editing and Coding of Questionnaires:

Data management, processing and analysis include registration of the questionnaires, code construction, coding, data verification and quality control, data punching, data processing and finally the analysis to facilitate the required output generation. After receiving filled in questionnaires data management activities- cleaning, registration, triangulation by cross checking etc., were done. During data collection from the respondents, some errors aroused creep in various forms such as inaccuracy, incompleteness, inconsistencies etc. Each questionnaire, therefore, needed editing, and coding before entry into the computer. Editing of the questionnaire will be undertaken in order to ensure that the questionnaires have been accurately and completely filled in by the enumerators and that were consistent with the responses.

2.7.3 Data input to computer:

Data input to computer included (a) developing appropriate computer program, and (b) data entry operation. The computer programmer in consultation with the team leader, experts and the concerned personnel of PIU/MOC have been designed using software suitable for the study. Keeping the objectives of the impact study in view, the consultant used the most suitable latest version of SPPS program.

2.8 Information Synthesis and Visual Representation

After analysis of the collected data, information necessary for the analysis have been synthesized by the expert team members and prepared visual representations- graphs, table, curves, etc. A thorough interpretation has been made for each visual representation before finalizing the report.

2.9 Preparation of Final Report

The final report has been prepared based on the interpretation made by the team members on different issues and result of analysis presented using different graphs, tables and curves, and also adding the suggestions/comments made on the draft final report during the Validation Workshop.

CHAPTER – 03
OVERVIEW OF AGROPROCESSING SECTOR

3.1 Overview of Production and Marketing of Fruits and Vegetables

The production of horticultural crops especially vegetables and fruits are increasing day by day, though the annual productions of these crops are far below than annual requirement. Fruits and vegetables contribute to 4.6 percent of the agricultural GDP. Bangladesh produces about 160 types of vegetables; major ones are eggplant, various gourds, aroids, spinach, Indian spinach, cucumber, cabbage, cauliflower, radish, tomato, beans, etc. Both production area and production of vegetables increased during recent past. In 2000-01 total area under vegetables was 0.25 million hectares, which increased to 0.38 million hectares in 2012-13 and 0.45 million hectares in 2018-19. Also there has been a significant improvement in terms of productivity, as per hectare yield has risen from 6.4 t/ha in 2000-01 to 7.63 t/ha in 2012-13. Now the productivity is quite high with 9.71 t/ha in 2018-19 (BBS, 2020). Vegetables production increased over the last two decades from 1.6 million MT in 200-01, to 4.37 million MT in 2018-19. There was a sharp increase in production since 2012-13 (2.9 million MT) that to 4.37 million MT in 2018-19. According to the Ministry of Agriculture more or less 72 fruits are grown in Bangladesh. The major fruits are- mango, jackfruit, banana, coconut, guava, pineapple, water melon, litchi, lime and lemon; when minor fruits are pumelo, blackberry, wood apple, tamarind, olive, star apple, *latkon*, etc. Total annual fruit production is about 4.95 metric tons. Some fruits and vegetable crops have concentrated areas of production because of favourable agro-ecological condition and better marketing facilities. Total production of fruits and vegetables reached 12.10 and 18.44 million tons respectively in FY 2019-20 while it was only 2.15 tons and 2.9.1 million tons in FY 2008-09 (BBS, 2020). According to FAO, Bangladesh has maintained 11.5 per cent annual growth in terms of fruit production for the last 18 years. Unfortunately, due to the absence of storage facilities and processing capacity, Bangladesh wastes up to 45 per cent of its fruit production as post-harvest losses every year (USAID, 2019).

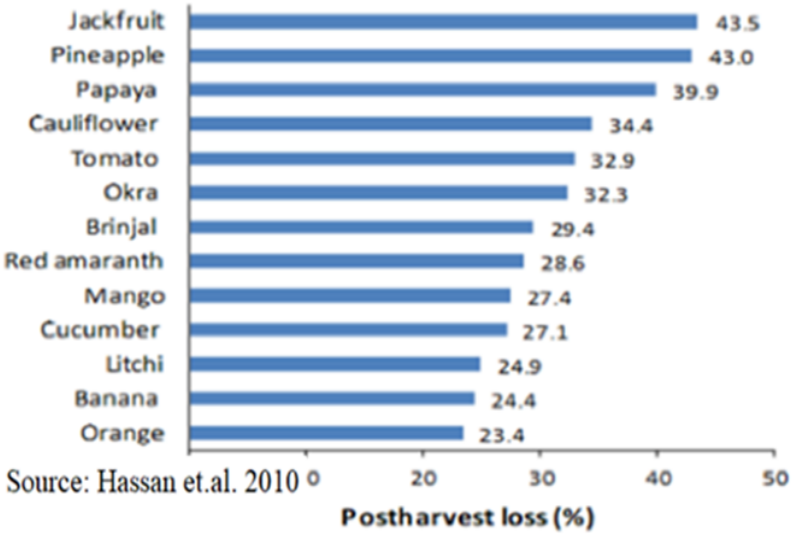
3.1.1 Production of Potato in Bangladesh

According to the Department of Agricultural Extension (DAE) Bangladesh is the seventh largest producer of potatoes. Their nutritive content has made it a valuable food and cash crop for millions of farmers in Bangladesh. Potatoes grow more in Cumilla, Chandpur, Munshigonj, Rajshahi, Naogaon, Joypurhat, Bogura and Rangpur. During the past several years, Bangladesh is producing higher quantities of potato than its annual domestic demand. The area of potato cultivation increased from 444,000 ha to 469,000 ha and production also increased from 8.60 mn MT to 10.90 mn MT during the period from 2012-13 to 2018-19. The growth fluctuated from year to due to natural disasters and unpredictable climatic variability.

3.1.2 Post-harvest loss of Fruits and Vegetables

Due to absence or defective postharvest management a considerable portion of vegetables produces here lost are every year. Hassan et.al. (2010), reported that the post-harvest loss of fruits and vegetables in Bangladesh ranged from 23-44per cent (Figure 3.1). Hence, there is general support among scientists for the proposition that increased returns to growers and other stakeholders might come from proper management after harvest rather a further boost to production in the field.

Figure 3. 1: Postharvest losses of horticultural crops in Bangladesh



Source: Hassan et.al. 2010

The losses are due mainly to the sub-standard postharvest handling practices, inadequate transport, lack of storage facility, and ignorance of the stakeholders. This is a fact that cent per cent loss would not be checked but definitely a significant proportion of the loss could be avoided, and thereby millions of dollars would be saved annually. The post-harvest losses varied from crop to crop and within different stages. Among the selected crops, the highest loss was recorded in tomato (37per cent) followed by okra (34per cent) and lowest loss was found in chillies (14 per cent). Post-harvest spoilage of fruits and vegetables are enormous and vary from 18-44 per cent that causes a loss of Tk. 339.2 million. In Bangladesh about 2.2 million tons of produce is lost due to post-harvest spoilage in focused crops that provides enormous negative impact on the economy of the country (NFPCSP, 2010). This loss has two-fold social impacts. Firstly, the country is overburdened by the enormous annual monetary loss. Secondly, the consumers are deprived of consumption of the highly nutritious fruits and vegetables.

3.1.3 Domestic Marketing of Fruits and Vegetables

Due to seasonality of production and perishable in nature, logistic challenges of high weight-to-value shipments, marketing of fruits and vegetables are complex and risky. The spectrum of prices from producer to consumer, which is an outcome of gap demand and supply, transaction cost among movement between various intermediaries in the marketing system, is also unique for fruits and vegetables.

Moreover, the marketing arrangements at different stages also play an important role in price levels. These features make the marketing system of fruits and vegetables quite different from other agricultural commodities, particularly in providing time, form and space utilities. The fruits and vegetables markets are not well developed and well managed rather congested and unhygienic. Multiple actors such as local collectors, traders, *aratdars* and their agents, urban

wholesalers and their commission agents, and urban retailers constitute the important components of the marketing system. This is the most common marketing structure. It is estimated that, in the process of marketing, as much as 10-40 per cent of the produce is lost due to mishandling, improper packing and transportation. Market price is determined by the marginal cost of supply and demand.

The wholesalers are able to pass on their entire risks, partly to farmers in terms of lower farm gate prices, and partly to consumers in terms of higher wholesale prices than what would have been the outcome had the farmers been able to sell their products directly to consumers. This partially explains the large difference between farm gate price and wholesale/retail price as observed in the market. The more elastic is the demand, the higher would be the farm gate wholesale price differential. The pattern of agricultural markets in Bangladesh consists of the following:

Primary rural markets: this market is composed of farmers and small retail traders having few permanent shops. This market operates usually twice in a week.

Rural assembly markets: traders from distant places gather in these markets with a view to collecting marketable surplus. Because of the presence of sizeable number of traders, commercial trading takes place in these markets. Significant numbers of permanent shops (i.e.,"*mokam*") and processors are found in these markets.

The presence of commission agents, banks and easy transport systems make these markets more useful to the operators. This type of market operates every day, or every other day.

- ***Secondary markets:*** this market is large and composed of traders who operate nationally. Commission agents, *jotdhar*s, wholesalers, processors, exporters – all are active in this market. Normally, such markets are easily accessible by various means of transport. With large numbers of permanent shops and service institutions, these markets operate on all working days.

- ***Urban wholesale markets:*** these are specialized markets operating in a particular line of products (e.g., rice, vegetable, and fruits). These markets bridge the gap between distant wholesalers and large number of retailers. Commission agents called *aratdars* organize and operate these markets.

- ***Urban retail markets***: in these markets, consumers collect their necessary items directly. The retailers present a variety of items in these markets to meet the daily necessities of the consumers.

The markets located in the rural or semi-urban areas are mostly in poor condition with limited logistics, infrastructural, management and institutional facilities. Roads, especially the link and approach roads of the rural markets are not in good condition. Road transportation has relatively improved, but the cost remains very high which, in turn, raises the product price at consumers' level.

Horticultural crops are generally sold by farmers immediately after harvest because of their need for cash and lack of storage facilities. According to FAO, about 82 per cent of farmers in all the regions of Bangladesh sell their horticultural produces immediately after harvest.

The said survey indicates that about 19 per cent of retailers, 41per cent of traders and 21 per cent of consumers buy vegetables directly from farmers. The two major marketing channels are- i) producer-trader-retailer-consumer and ii) producer trader- wholesaler/commercial agent-small holder/retailer-consumer. The commission of intermediaries varies by region and from crop to crop. The margin between the trader's price and the retailer's price could be as high as 150 per cent during peak season and 200 per cent during off season.

Farmers use head loads or rickshaw-vans to carry the produce to markets. Traders, wholesalers and buyers mainly use rickshaw-vans and trucks. About 66 per cent of the farmers sell their produce in the weekly markets and 22 per cent, in the daily markets. Farmers usually get price information from other farmers, traders, radio, television and newspapers. Marketing channels and involvement of intermediaries vary among regions (Hanemann & Ahmed, 2006). Retail and wholesale prices of vegetables fluctuate substantially from year to year and also from month to month, depending on the supply situation. Seasonality, under developed marketing and transportation system, poor infrastructure and insufficient storage facilities intensify price volatility.

3.1.4 Supply Chain Structure and Operations

A sub-sector map of fruits and vegetables supply chain which graphically represents the relationship between different actors in moving a commodity from the producers to the consumers. Different channels are currently operating in different ways and degrees, in the agro-marketing system in Bangladesh.

Major Actors in the supply chains

The main actors in the fruits and vegetable sub sector are input suppliers, producers, small and large traders, transporters, retailers and consumers. The short description of the actors and their functions are as follows:

- **Input suppliers:** Supplying seeds, fertilizers, pesticides, packaging materials etc.
- **Producers/farmers:** Primary actors in the supply chain, mostly poor and belongs to marginalized section of rural population, engaged in cultivation of fruits and vegetables.
- ***Faria*:** Small rural traders, purchase vegetables and fruits from the farmer's field or rural assemble markets and sell to different intermediaries (*baparies*/selected agents and *paikers,* etc.).
- ***Paikers*:** Group of intermediaries, who purchase fruits and vegetables from the producers and *Faria*s in the farm gate or in the local primary markets and sell to the wholesalers.
- ***Beparies*:** Selected agents in the fruits and vegetables production area and in the wholesale market of the urban area. They perform most of the marketing activities- buys commodities directly on the spot, as per purchase orders he has received from the exporter/wholesaler.
- ***Aratdar*:** Big merchants and licensed traders, having fixed business premise and godowns. Their business premises usually are situated at the well-communicated areas in the big wholesale markets (*Karwanbazar* and *Shambazar*) of Dhaka city and

Riazuddinbazar of Chittagong city. They usually hire labourers or part time/full time salaried men for performing various marketing functions. Most of the super marketing authority and exporters of vegetables, purchase produces from *Aratder* in the wholesale markets of *Kawranbazar, Shambazar* of Dhaka city.

- **Transporters:** Person involved in carryings of goods (fruits, flower, and vegetables) from market places to whole sale areas. The transports are truck, van, rickshaw, bus etc.
- **Superstores:** Large retail stores in the city stock diversified products, such as fruits, vegetables, etc., most cases in small quantity due to perishable nature of the commodities.
- **Exporters:** Exporters collect fruits and vegetables from different sources and exports to foreign countries.
- **Retailers: S**mall business men who buy and sell fruits, vegetables, flowers etc. in smaller quantity and sell directly to the consumers/end users, and
- **Consumers/ End users:** The final customer who consumes the produces.

Physical Flow of Products

The major marketing channels/flow of fruits and vegetables from the farmers to the consumers is summarized below. The most common marketing channels are:

Supply Chain of Agro-commodities

Farmers					Own consumption
Farmers	*Hat*/Bazar	Local Trader			Consumers
Farmers	*Hat*/Bazar	*Faria*	Wholesaler	Retailer	Consumers
Farmers	*Hat*/Bazar	*Faria*	Wholesaler		Processor/Exporter

The quality and quantity of fruits and vegetables varied depending on actors involved and price level vary from channel to channel.

3.1.5 Superstores

The appearance of the supermarket was seen in Bangladesh right after the Liberation war. At the time Ministry of Defense managed to operate a superstore chain in Major Military bases by Canteen Stores Department (CSD). Supermarket culture again enters Bangladesh and Agora first started this supermarket in 2001. Since that time the Bangladeshi supermarket has taken constant and confirm extend forward. Usually, Supermarkets are growing across in the urban areas in Bangladesh and the top 10 supermarkets in Bangladesh are as follows.

1. Shwapno

Shwapno Superstore started its journey in 2008. ACI Logistics Ltd. was launched this superstore in Postogola Dhaka on 28 October 2008. Recently, it has 130 outlets across the country where around 3000 employees working in these outlets. Out of these 130 outlets, 61 have their own outlets and the rest have franchises. The opening hours of these outlets vary to space differences. At present, SHWAPNO is the first leader in the distribution network in Bangladesh. In Bangladesh supermarket, 45% of market share possession by SHWAPNO

reported by “Rahimafrooz and Lankabangla Primary Research”. Their outlets are smaller than Agora, Meenabazar and, Unimart and there is not much space for parking.

Besides, local produces, Shwapno also selling imported products. They do no import their products themselves. They supply products through suppliers like importers, distributors, and agents. These suppliers supply the products to the SHWAPNO. Most of their products are Thai like Vegetables (broccoli, basil leaf), Fruits (papaya, mangosteen, rambutan, mango, longan, sweet tamarind, dragon, guava, etc), Food items (noodles, curry paste, sauces, soft drinks, juice, honey, candy, tempura floure, chocolate), Cosmetics item (personal care, skin care, hair care), Home Care and Cleaning, Stationery, Sports, etc.

2. Agora

Agora started its journey in 2001. It is the first superstore in Bangladesh. Rahimafrooz Superstores Ltd. was launched this superstore. It has many outlets in major locations in Dhaka including other major cities in Bangladesh. Agora strives to meet the regular needs of its customers by providing the right quality products and prices through stores in different forms and shapes. At present, Agora has 14 outlets in Dhaka, 1 in Chittagong, and 2 in Sylhet. More than 100 people are working in their retail chain shops. In Bangladesh supermarket, 22% of market share possession by Agora reported by “Rahimafrooz and Lankabangla Primary Research”. It is the second-largest supermarket and playing an immense role in the development of industry in Bangladesh.

3. Meena Bazar

Meena Bazar is an international standard supermarket in Bangladesh. Meena Bazar started its journey by opening outlets in Dhaka, Chittagong, and Khulna in 2002. It is the third-largest supermarket in Bangladesh. It provides maximum customer service with the facility of easy parking for their customers. It is a subsidiary of the Gemcon Group. It also generates vital products, prepared food, dairy items, and herbal products.

At present, Meena Bazar provides customer service through their 18 outlets in Dhaka, Chittagong, and Khulna division. In Bangladesh supermarket, 18% of market share possession by Meena Bazar reported by “Rahimafrooz and Lankabangla Primary Research”. Its product category includes Baby care, Bakery and Snacks, Beauty and Hygiene, Beverages, Dairy, Fish, Fresh Produce, Grocery, House and Cleaning, Meat, Pet Care, etc.

4. Unimart

Unimart started its journey on 4 July 2013 as the first hypermarket in Bangladesh. United Group is the owner of this Supermarket. It is a perfect and proper decoration center with 40,000 sq. feet floor space. Usually, imported products are selling by Unimart which collect from all over the world. The products category includes Clothing, Bag and Shoes, Electronics, Vegetables, Fish, Meat, Grocery, House and Cleaning, etc.

5. Lavender superstores

Lavender superstores provide customers with an enjoyable shopping and enhanced shopping facilities through the digital and store networking system. Lavender superstores have 2 outlets in Dhaka.

Customers like to visit here because their imported product price is less compared to other superstores in Bangladesh. Their product category includes Baking Needs, Baby Needs, Beverage, Commodities, Condiments, Cleaning Needs, Home Essential, Living, Personal Care, Cereals. Food Spreads, Spices, Milk, Snacks & Confectionery, etc.

6. Khulshi Mart

Khulshi Mart started its journey on 10 February 2006 in Chittagong. Mart Promoters Ltd. is the owner of the Khulsi Mart supermarket. The goal of this supermarket is to provide quality products and shopping facilities to the residents of Chittagong. They provide high-quality fresh products at a fixed price to customers. All the products are granted and computerized billing systems. Here customers will get all their daily and necessary products under one roof. Their product category includes Foods items, Vegetables, Grocery, Cleaning Needs, Home Essential, and more.

7. Pick & Pay

Pick & Pay started its journey in 2008 in Uttara, Dhaka. They provide high-quality customer service. It has only one outlet in Uttara, Dhaka. A customer gets all the daily and essential products here under one roof. It provides comfortable shopping facilities and granted products to customers. Their products category includes Vegetables, Meat, Fish, Fruits, Cleaning Needs, Home Essential, Living, Personal Care, and more.

8. Almas Super Shop

Almas Super Shop has more than 5 outlets in Dhaka. It has 3 outlets in Dhanmondi, the other one at Uttara and the rest one at the Bashundhara City Shopping Complex. It is a sister group of Azamshop. Generally, they sell cosmetics items. Their product category includes household, toiletries, personal care, health & hygiene, child care, teen, outfits, gift items, chemicals, and more.

9. Prince Bazar Ltd.

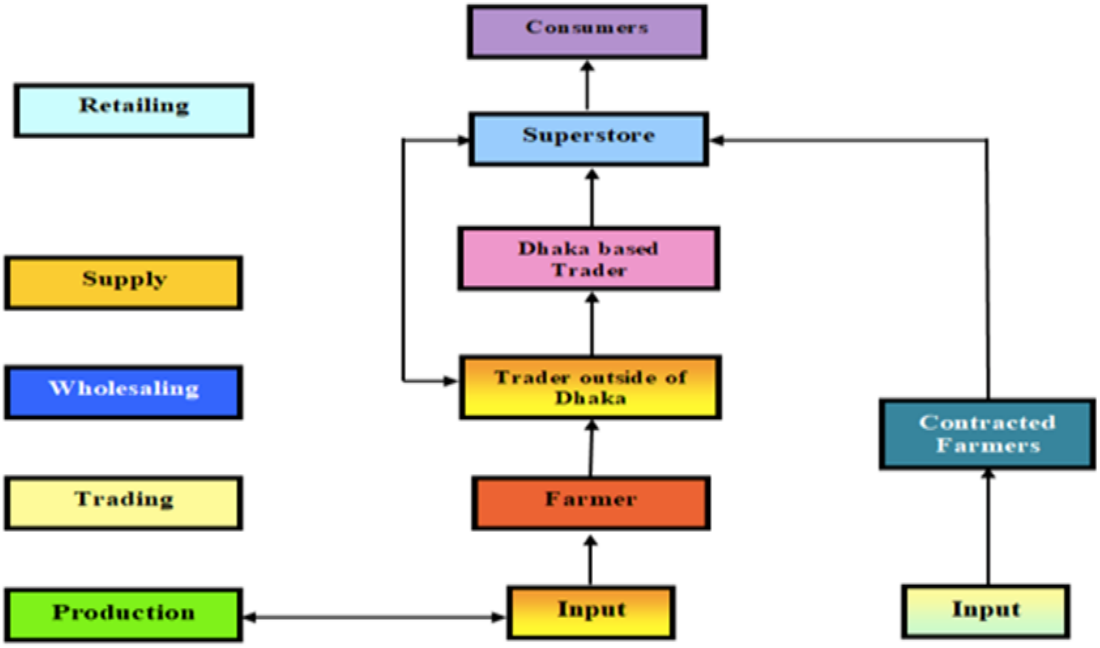
Prince Bazar Ltd. has 4 outlets in Dhaka city like Mirpur, Pallabi, Mohammadpur, and Shyamoli. This supermarket is well known across Bangladesh for its food items e.g. Jelly, Jam, Prince Pani, Prince Lascha Semai, Prince Dora Cake, and more. Their product category includes Home Essential, Living, Personal Care, Foods items, Vegetables, Grocery, etc.

10. Saad Musa City Center

Saad Musa City Center has one outlet in Dhaka city. The slogan of this supermarket is "wholesale to every door". The purpose of the supermarket is to provide different kinds of goods, the best customer service, advantageous shopping facilities, and more (https://mybangla24.com/supermarkets-bangladesh).

Generally, the super market owners collect fruits and vegetables from the whole sale markets or through agents and display in the rack without sorting, grading, while a few have separate storage and sorting/grading facilities. Some superstores, like Agora have contacted farmers in different areas and collect fruits and vegetables from them. The profitability also varies from store to store starting from 5per cent-15per cent (net profit). Customers have the preference of quality, service, bargain less and shopping environment which is ensured in the supermarkets. Although, the coverage of chains is still very low, not even 1per cent of the retail sector (Hossain, 2004), reports that they are creating an impact on quality production of horticultural crops and that consequently farmers are getting increasingly exposed to requirements related to IPM and organic cultivation. Besides, the traditional way of fruits and vegetable marketing, a significant portion of these produces are consumed through hotels, restaurants, and hospitals etc. Figure 3.2 presents the generalized supply chain map of superstores

Figure 3. 2: Generalized Supply Chain Map of Superstore



Hospitals are one of the consumers of fruits and vegetables for their patients. In most cases the hospitals are consuming beans, sweet gourd, snake gourd, potato, cabbage, cauliflower, bottle gourd, papaya, pointed gourd, red amaranth, bitter gourd, and eggplant. The quantity of vegetable consumption varies from hospitals to hospitals. The constraints identified in superstore supply chain are summarized below:

a) Product Centred Issues

- Absence of an effective quality control and monitoring system results in a general non-compliance of quality benchmarks in terms of health and hygienic practices at all levels.

- Lack of quality testing facility for perishable produces results in quality control based on simple observation, and rejection without proper assessment.
- Lack of proper shortage facilities, lack of technical knowledge and skills on sorting, grading, handling, and packaging, results in wastage, and non-conformation of quality standards.
- Monitoring of quality and safety of marketed fruits & vegetables is absent in the super-store supply chains and the consumers are being deceived.
- There exists no branding of perishable products in the super stores.

b) Finance and Pricing Issues

- Price is determined each morning on the spot, which is obviously not an efficient way of operation.
- Super stores do not have any uniform suppliers credit system. Suppliers do not have easy access to institutional credit since the financial institutions find it difficult to put them into any credit-worthy category for offering loans.
- Inconsistent government policy results in shift in demand and thus has a direct impact on price.
- Most of the suppliers procure commodities from wholesale markets in Dhaka and then sort and grade those to meet superstores specifications in their own facility. This may have an impact on pricing and profits also remain quality and health concern.

c) Distribution and Storage Issues

- Current volume of supplies to super stores does not allow suppliers to depend solely on super stores, which drives them to look for other markets/clients. This often does not encourage suppliers to foresee a stable, long-term relationship with super stores, and establish downstream independent supply links.
- The downstream linkages between superstores and the first level producers and suppliers are not adequately established.
- Lack of access to cold chain facilities for transportation, preservation and maintenance of fresh produce makes it difficult for suppliers to maintain quality standards, and results in deterioration of quality of the produce as well as rejections.
- Under its current scale of operation, superstores are not capable of purchasing large quantities since the size of the superstores shared for perishable items does not permit to store large quantities.
- Small-scale of operation in terms of volume results in weak demand for business services.
- Insufficient extension services
- Indiscriminate use of chemical fertilizers and pesticides and other growth regulators increased production costs and reduces quality of fresh produces.
- Farmers lack knowledge on off-season vegetable production those results in non-availability of certain vegetables and fruits having demand round the year.
- Lack of availability and timely supply of good quality seeds in small quantity package discourage small farmers to grow certain high value vegetables agro-commodities.

Major urban and peri-urban centres tend to be over-served by all types of markets. Due to market risks and economies of scale, urban markets have developed faster than rural markets. All rural markets do not have equal access to urban markets. Links are tenuous, more so when one considers the supermarkets and upscale restaurants that are coming up in increasing numbers in many cities. These establishments require regular and timely supply of quality products. Under the Agricultural Commodities Wholesale Market Infrastructural Development Project implemented by DAM, six markets (one in each division) have been developed. Another project NCDP (Northwest Crop Diversification Project), implemented by the GoB and the Asian Development Bank (ADB) has renovated and upgraded 16 wholesale and 61 growers' markets throughout the Northwest region, consisting of one wholesale market per district and one grower's market in each upazila in the project area. The Department of Agricultural Marketing (DAM) has taken several initiatives for a gradual transition of market hierarchy and balanced spatial distribution and stronger linkages between different levels of markets. The areas of activities of DAM are presented in Box 3.1.

Box-3.1: Areas of Activities of DAM

- Management of agricultural marketing information
- Development of marketing price policy and implementation
- Determination of quality standards of agro-products and monitoring
- Management of agricultural marketing based organizations
- Fixation of lowest and highest price of agro-products & implementation
- Provide price support on agro-commodities, and
- Support for agro-processing and processed products marketing, etc.

Source: Agricultural Marketing Act. 2018

These markets are provided with loading and unloading areas, covered areas for produce display and storage, a fresh water supply, sanitation, women corners, as well as packinghouse and waste disposal facilities. Moreover, 16 reefer vans are procured and established 16 mini-cold storages in the wholesale markets by the NCDP and to established a central market (Terminal market) in Dhaka for marketing perishable high value crops. NCDP has developed an alternate supply chain through the introduction of Farmers Marketing Group (FMG), replacing traditional marketing system. Direct marketing shall enable farmers to meet the specific requirements of wholesalers from the farmers' inventory of graded produce and of retail consumers based on consumers' preferences, thus enabling farmers to take advantage of favourable prices and improve their net margin. It encourages farmers to undertake grading of their produces at farm gate and obviates the need for farmers to haul produces to regulated markets that are not necessarily spaced on the principles of efficiency.

The Government of Bangladesh has enacted "Agricultural Marketing ACT, 2018" for promotion of marketing systems by DAM through restructuring the major areas activities. The Directorate of Agricultural Marketing (DAM) has examined existing policies, rules and regulations with a view to minimize the conflict between successful private sector operations.

Box- 3.2: Expected Outcomes of National Agricultural Marketing Policy, 2021

- Minimum price support to the farmers
- Highest fixed price for the traders
- Development of market infrastructure in required locations
- Empowerment of women in trading
- Youth empowerment in agri-business
- Development of organised supply chain for agro-commodities
- Increase export of both fresh and processed agro-products
- Increase the female entrepreneurs in agri-business
- Reduce economic disparity between rural and urban populations
- Ensure control in agri-business
- Give impetus in agricultural commodity marketing, and
- Strengthen national economy by ensuring fair price to the farmers.

Source: National Agricultural Marketing Policy,

The DAM has critically reviewed and revisited the existing laws and regulations that regulate the participation in markets, such as licensing, commodities traded, controls on packaging and labelling, laws affecting market place access, and supply including controls on movement of produces and volume of commodities traded. In consultation with the stakeholders and experts developed a demand driven "Agricultural Marketing Policy, 2021" with the expectations that successful implementation will provide the expected outcomes (Box 3.2).

- **Institutional Constraints**

The institutional constraints are many in the existing marketing system. In terms of physical markets, there are problems of multiple ownership and control of the land on which the markets are operated. Market infrastructure development, market operations and market revenue collection systems are all plagued with problems. There is no coordination between the stakeholders for effective operations. Everybody operate independently and without any consideration of competing interests. Private sector organizations also have institutional problems. Individual firms practice a top-down approach to management that stifles innovation, while industry associations rely heavily on political patronage and the availability of a strong motivational leader.

- **Infrastructural Constraints**

Though a few in numbers most of the agro-commodity markets developed by government interventions are unplanned, having infrastructural constraints. The markets are congested and lack basic support facilities such as godowns, cool storage, potable water, drainage, and vehicle access for loading and unloading. Storage facilities for food grains, fish and potatoes are developed; but for perishable high value horticultural crops (vegetables, fruits and spices), storage facilities are badly lacking. However, small scale cold storage facilities of perhaps 10-20 tons within a market would be sufficient for day to day operations, and could be constructed with minimal cost by insulating existing buildings and installing the appropriate refrigeration. Most of these facilities could be created with appropriate use of the collected market revenues.

- **Human Resource Constraints**

There is also shortage of adequate human resources with requisite skills and experience in market management. Weak performance of the Market Management Committee is partly due to a lack of experience and management skills. Most of those who are involved in market management have limited management background. No one including GO-NGO staff has adequate market management skills.

- **Information Constraints**

There is no organized market information system. The majority of the market participants rely on their own information network (traders, wholesalers, commission agents, etc.), including the private sector. Many traders and wealthy farmers are now using mobile phones to collect market information, but the small and medium farmers have no access to such market information. They are not even aware of the importance of market information. Market intelligence services to all intents and purposes are non-existent in Bangladesh.

3.1.6 Quality Control System in the Markets

Most of the markets do not properly follow the standard weights and measures determined by BSTI (Bangladesh Standard and Testing Institutes). Different weights and measures are used in the markets and the growers are being cheated. The established monitoring system is not working properly. There is no standard grading system for different products in rural markets. Sorting and grading systems are under developed and out-dated. Recently with the intervention of donor agency, an initiative has been undertaken to develop grading standards of some selected fruits and vegetables. The Department of Agricultural Marketing has undertaken various approaches/activities as per new agricultural marketing policy.

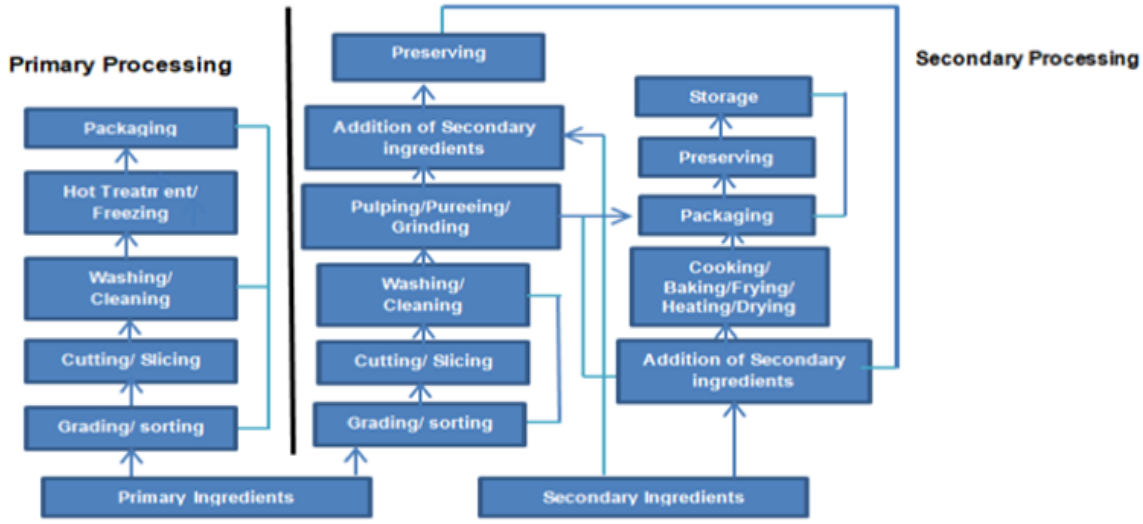
3.2 Agro-Processing Sector

According to the UN Food and Agriculture Organization (FAO) agro-processing involves the transformation of products originating from crop, forestry and fisheries sub-sectors. Agro-food processing involves primary and secondary processing. The former is associated with processing of agricultural products in their basic form and the latter requires conversion into final products like jams, jellies, pickles, biscuits etc. The primary inputs for the industry include crops, poultry and livestock, fishery and some forestry product.

The agro-food processing or food manufacturing industry includes companies that transform agricultural produces into products used for intermediate or final consumption. Processed foods are products in which a raw commodity is transformed into a processed product through the use of materials, labour, equipment, and technology. Any product that requires some degree of processing is referred to as a processed product regardless of whether the amount of processing is minor, such as canned fruit, or more complex, such as snack foods (U.S. Census Bureau, 2004). Agro-processing activities comprise two major categories; primary and secondary operations. *Primary processing operations* involve activities such as crop drying, shelling/threshing, cleaning, grading, and packaging. These activities are mainly carried out at the farm and only transform the commodity into a slightly different form prior to storage, marketing or further processing. *Secondary processing operations* entail

increasing nutritional or market value of the commodity and the physical form or appearance of the commodity is often totally changed from the original- milling grain into flour, grinding groundnuts into peanut butter, pressing oil out of vegetable seeds, pressing juice out of fruit, making cheese out of milk and manufacturing of mincemeat.

Figure 3. 3: Types of Agro-Processing



Source: Katalyst report, 2016.

Depending on type of commodity, equipment needed for primary processing is completely different from that used in secondary processing or major adjustments/ modifications need to be done to suit either. Agro-food processing may vary from simple preservation operations such as drying products in the sun to more complex, capital-intensive processes. These industries are typically comprised of upstream and downstream industries. Upstream industries refer to the initial processing of agricultural commodities such as rice and flour milling, fish canning, etc. Downstream industries, involved in more complex processing of intermediate products made from agricultural materials and include the making of bread, biscuits, etc. (FAO,1997).

Agro-processing firms are characterized by crucial backward and forward linkages. Backward linkages arise when local producers are able to satisfy their demand for raw materials and services from local suppliers. This may refer to the supply of credit, inputs, and other production-generating services. Backward linkages may be established by the procurement of capital goods and equipment from other industries; or the purchase of agricultural inputs from farmers.

Forward linkages on the other hand refer to the creation of additional opportunities in other parts of the economy, from the activity of agro-processors, through the sale of processed products. This refers to the marketing of these products and the generation of employment opportunities through the value-addition processes. Forward linkages have positive implications for increased export earnings, employment generation, and greater food security and may be established through sale of processed goods to final consumers; and sale of

processed gods as inputs to other firms who use these as inputs to their own production processes.

Agro-processing exhibits strong backward linkages with agriculture, forestry and fishing, which supplies 40per cent of its intermediate inputs.

At the manufacturing level, the food, beverages and tobacco sector exhibits internal linkages, sourcing 13per cent of its intermediate inputs from within the sector. Further downstream, food processing has strong forward linkages to wholesale and retail trade, and business services which account for 15per cent and 9 per cent respectively of intermediate inputs and costs.

3.2.1 Structure and Composition of Agro Processing sector

The agro-processing sector of Bangladesh represents one of the most potential manufacturing industries in the country in terms of employment and value added (Shams-Ud-Din, 2005). Industry includes companies that transform agro-commodities into products used for intermediate or final consumption. Processed foods are products in which a raw commodity is transformed into a processed product regardless of whether the amount of processing is minor, such as canned fruit, or more complex, such as snack foods (U.S. Census Bureau, 2004). Through agro-processing value is added to the agricultural or horticultural produce by using various techniques including grading, sorting, packaging etc., which enhance the shelf life of food products.

A strong and dynamic food processing sector plays significant role in the overall economic setup of a country. The sector provides vital linkages and synergies between industry and agriculture and has been identified as a sector having immediate potential for growth of the economy. Processing also helps in generating rural employment, additionally processed fruits and vegetables are a source of earning foreign exchange. With the growing middle class population of over 30 million, the food processing sector is expected to grow positively in the coming years. Despite, the positive growth trends, the contribution of the food manufacturing or food processing industry in Bangladesh has remained mostly static at around 2 per cent of the GDP since 2004-2005. This indicates that the growth achieved in agro-food processing is not at par with the economic growth of Bangladesh and the sector is currently under-performing. Bangladesh agro-food processing industry is comprised of six segments: Dairy, fruits & vegetable processing, Grain, Meat & Poultry processing, Fisheries and Consumer foods including packaged foods, beverages and packaged drinking water. In Table 3.1 various segments of Bangladesh's food processing industry and examples of products produced in these sectors are shown.

Table 3. 1: Segments of Food Processing Industry and Products in Bangladesh

Sub-sectors	Product
Grains and Cereals	Flattened rice, Flour, Bakery, Starch, Glucose, Flakes, malt, Vermicelli, Beer, Malt Extract, etc.
Fruits and Vegetables	Beverages, Juices, Concentrates, Pulps, Slices, Frozen & dehydrated fruits & vegetables, Pickles, Sauces, Jam, Jellies
Potatoes	Potato powder, Chips, Fries, Flakes, Wafer, etc.
Livestock	Frozen meat/chicken, Curd.
Dairy	Whole milk powder, Skimmed milk powder, Condensed milk, Ice-cream, Butter, Ghee, Cheese, etc.
Consumers' Foods	Snack food, ready to eat, ready to cook and non-alcoholic Beverages.

Source: Study Survey

Sheel (2014), citing the reference of BAPA stated that there are 47 agro-based enterprises mainly engaged in production agro-processed foods. These enterprises producing and marketing Juice & Drinks, Mineral water, Flavoured Water, Mango bar, Tea, Fried snacks, Powder drinks, Candy, Bubble gum, Jam/Jelly, Chuteny/Pickles, Cup Jelly, Sauce/Ketchup, Ice pop drinks, Fresh milk, Flay milk, Powder milk, Ghee, Rice, Mustard oil, Mixed spices, Kashundi, Kheer mix, Haleem mix, Pickle, Snacks, Lassa Semai, Flaked rice, Spices powder-Chili, Turmeric, Coriander, Cumin, Curry powder, Soybean oil, Vegetables oil, Aromatic rice, Puffed rice, Vermicelli, Carbonated Beverage etc. Table 3.2 presents the list of major agro-processed products of Bangladesh.

The manufacturers produce fruits and vegetables products mainly from mango, pineapple, orange, and some other exotic fruit commodities. In some cases, the products are prepared using only flavours and emulsions instead of original fruits. On the other hand, although there are bright prospects of processing of other indigenous fruits and vegetables into various types of products, these commodities often remain unutilized. The quality of processed products produced by majority of fruit processing industries is not improved in comparison to the foreign products. As a result, foreign products dominate in the local market.

Table 3.2: List of major agro-processed products of Bangladesh

Sub-sector	HS code chapter	Food products
Crop based	11 and 12	Rooti, biscuits, noodles, pasta, porota,papor, snakes prepared from crops, singara, samucha, semai, dal puri, pitha, muri, chira,. Fragment rice, dal fry,chanachur, motor suti fry, halim mixed etc.
Vegetable products	07	Frozen and canned vegetables
Fruit products	20	Jam, jelly, pickles, mango bar, fruit juices, sauce, ketchup etc.
Potato products	20	Chips, crackers, flex, starch and French fry etc.
Mushroom products	07	Fresh and powder mush room.
Spice products	09	Powders (Ginger, turmeric, chilli, coriander, cumin, onion, garlic and cassia-leaf etc.
Pulse and oil seeds	07,15	Pulses of different types, fried pea, mung, dhal, mustard, *til, tishi*, sunflower etc.

Sub-sector	HS code chapter	Food products
Sugar products	17	Syrup from date molasses, sugar, gur, candy, vinegar etc.
Honey	04	Processed honey.
Ayurveda products	21 and 22	Food supplements and vitamins.

Source: EPB, 2016.

Bangladesh's processing industry is highly fragmented and is dominated by the unorganized sector. A number of players in this industry are small. About 42per cent of the output comes from the unorganized sector, 25per cent from the organized sector and the rest from small scale players. Though the unorganized segment varies across categories but approximately 75per cent of the market is still in this segment. The organized sector is relatively bigger in the secondary processing segment than the primary processing segment.
The primary processing is a major industry with a highly fragmented structure that includes hundreds of thousands of rice mills and hullers, flour mills and oil seeds mills, several thousands of traditional bakeries; food units and fruits, vegetable and spice processing units in the unorganized sector. Rising dual-income households with increased purchasing power and changing the momentum of urbanization have transformed the structure of food value chains and the markets worldwide.

Keeping consistence with that, Bangladesh's agro-processing market has been growing at a rate of 15 per cent for the last five years which is currently valued at approximately $4.81 billion including both domestic and export market. According to the USAID/Bangladesh Comprehensive Private Sector Assessment report USAID, 2019, the sector has fetched export earnings worth US$ 635 million. With this positive growth trend, the study estimated that the food processing sector in Bangladesh is poised to reach $8.23 billion by 2023 which is very encouraging.

3.2.2 Present Status of Agro Processing Industries

Agriculture sector in Bangladesh contributes to around 14.23 per cent to GDP (constant prices) and provides employment about 40.62 per cent of the labour force according to Quarterly Labour Force (Survey, 2016-17). The agro-food processing industry remains closely integrated with the agriculture stratum being a part of the manufacturing sector. The agro-food processing industry contributes about 8.0 per cent to manufacturing output in Bangladesh which now accounts for about 1.7 per cent of gross domestic product (GDP) of the country. This industry now employs about 2.2 per cent of total workforce in the country of which close to 70 per cent are unskilled labour. Its share of total exports now stands at around 1.5 per and has a huge potential to achieve a higher growth rate relative to other industries of the country. (BAPA, 2019).

It is reported that around 6,000 industries are engaged in agro-food processing. Agro-food industry has been growing at almost 8per cent per year, comparable to growth rates in India (7.8per cent) and China (9.4per cent). The vast majority of Agro-processing firms in the

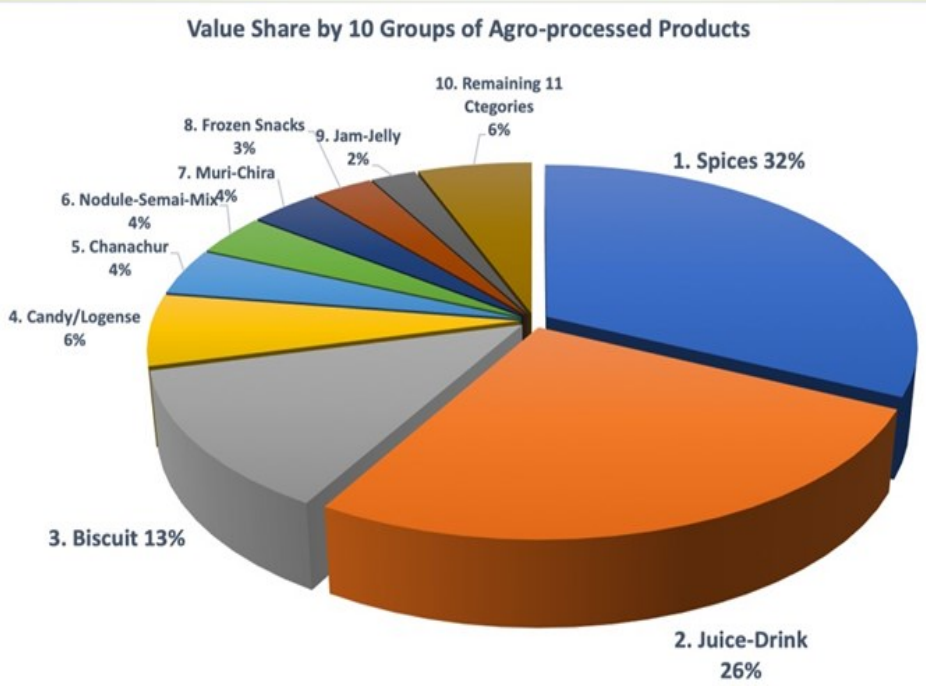
country are very small, with <=50 workers. There are only about 246 medium sized food processing firms (>50 and <=100 Workers), 184 large firms (firms with more than 100 workers). Food processing firms account for 19per cent of manufacturing industries and about 8per cent of total employment in manufacturing firms' Rural areas generate roughly 70per cent of the jobs related to food processing.

Rice mills account for the largest share of employment in the food processing industry, generating 40per cent of the employment. Manufacture of bakery products accounts for another 14per cent and processing of tea and coffee accounts for 19per cent. However, about 100 firms are formally engaged in processing of one or more consumer products like:

1. Fruit based- Juice, Drink, Fruit Pulp, Fruit bar, Pickles, Jam, Jelly, Chuteny, Sauce, and Ketchup etc.
2. Vegetable based- Frozen Vegetables, Alupuri, Veg. Chop, Singara, Samacha etc.
3. Spice and Condiments based -Spice powder, Mustard oil & Kasundi etc.
4. Cereal, pulses and potato based (Mainly oil fried)- Chips, Crackers and Chanachur, French Fry, Real potato chips etc.,
5. Completely rice based- Aromatic Rice, Muri, Chira,

Figure 3.4, shows that among the processed products, highest market share is occupied by spices (32 per cent) followed by Juice/drinks (26per cent) and biscuits (13 per cent) while rest of others share is less than 10 per cent.

Figure 3.4: Value Share by 10 Groups of Agro-processed Products

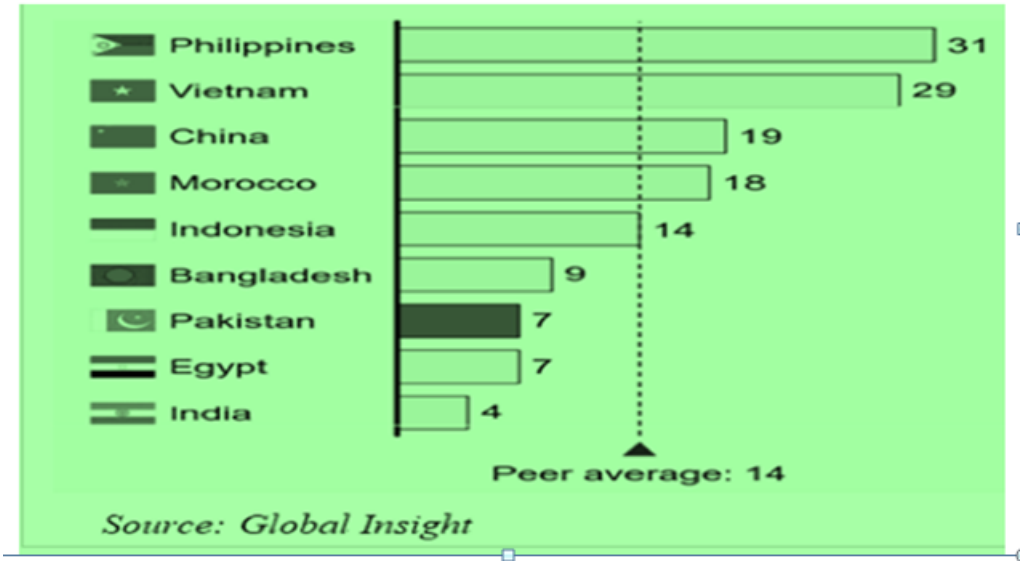


(10 groups have been made taking the 1st 9 categories of product followed by integrating the remaining 11 categories and renamed as other categories.
Source: Sheel,2021.

Bank (2020), in its study report highlighted that the food processing industry is still in its infancy in Bangladesh, it is starting to expand to meet local demand. As seen when analysing the production node of the agri-food value chain, the number of agri-food processors remains however limited, which in turn does not provide formal off-take opportunities for farmers and which contributes to the limited focus on higher product standards along the value chain. Indeed, the agri-food business sector in Bangladesh is dominated by micro and small businesses. Majority of agri-food enterprises engage 2 to 5 persons and about one-third of these enterprises just create jobs for one person.

According to the global insight report value-added transformation rate is low in some of the Asian countries including Bangladesh that varies from 4 to 31 while peer average is 14. The situation of Bangladesh is comparatively better (9 per cent) that of Pakistan, Egypt and India while China is ranking 3rd position. The higher rates of value-added agro-products are found in Philippines and Vietnam (Figure 3.5).

Figure 3.5: Processed Food Value Added as Share of Total Agri and Processed Food (%)



Manufacturing enterprises among agro-food businesses are relatively larger in size (both in terms of employment and fixed capital) and generate more jobs compared to service enterprises among the agri-food sector. Over 85per cent of enterprises in the agri-food sector have fixed capital less than BDT 500 thousand, which is less than US$ 6,000. Besides, most of the enterprises in the agri-food sector are retail businesses and over half of agro-food manufacturing enterprises are household-based enterprises.

Research & Development Support for Value Addition/Processing

Summarizing the study findings depicts that development of agro-processing technologies has not received the level of research support it deserves. There are limited and isolated research efforts mostly in public sectors and very rare in private sector. In the public sector, budget for Research & Development (R&D) is low. Although qualified and specialized research staffs are

available, there is a critical shortage of appropriate laboratory equipment and other related facilities including required lack of skill development to carry out the research work.

However, the universities and R&D institutes have conducted considerable research relating to agro-processing. Useful research results have been generated but extension of these results to the private sector (manufacturers) and farmers has generally been poor. The linkages that exist between the university and the public sector and NGOs facilitate transfer of technologies to end-users is very weak for which a strong interface between education, research and industries needs to be established to improve the situation.

The R&D institutions have experienced the following common problems:

a. Inadequate and inappropriate infrastructure like laboratories, workshops, libraries which are not adequately equipped with facilities and tools (like laboratory equipment, workshop machinery, chemicals, computers, reference books, scientific and engineering journals, audio-visual equipment, etc.) for carrying out research and development work effectively.
b. Lack of adequate, competent and well-trained high-level manpower such as scientists, engineers, technologists, technicians etc. and
c. Inadequate funding.

These shortcomings, along with poor management lead to inefficiency and poor competitiveness. Except the few large food industries, all other categories of food industry do not absorb food science and technology professionals nor utilize local research findings; but much could be learned from them, and much could be done to optimize their production. Thus, there exists a scope for accelerating the potentiality of main as well as by-products for domestic and export markets.

A wide range of technology options are available today and can be adopted depending on raw material availability and quality, product range, scale of operations, desired product quality as per consumer preference, buyer specification or trade regulations, shelf life required, destination markets and so on. Decisions regarding each of these and other parameters need to be made carefully for each unit or plant in a context-specific manner.

Processing of fruits and vegetables allows for different production operations to be taken up at different levels, each level making products or intermediates as required, which can be integrated downstream. Suitable technologies are available and can be selected for multiple, decentralized and semi-processing facilities to prepare, preserve and protect produce for later centralized processing, packaging and marketing.

3.2.3 Potentials of Agro Processing in Bangladesh

From the present study, it has been observed that, some fruits and vegetables have high potentials to produce value added products on commercial scale and the prospective products are (i) Mango bar, Chuteny and pickles; (ii). Fruit juice beverage; (iii).Frozen vegetables, vegetable spring roll and alupuri; (iv). Canned pineapple, peeled tomato, and canned tomato paste, jackfruit bulb etc.; and Vacuum fried chips from jackfruit, pineapple, banana, sweet potato and potato.

Agro and food processing activities represent a potential source of livelihood for many poor people in Bangladesh. The overall potential of agro and food processing is huge as it can:

- Increase the value crops of poor farmers and thus yield higher returns;
- Expand marketing opportunities;
- Improve livelihoods of people;
- Extend shelf-life of commodities;
- Improve palatability of commodities;
- Enhance food security;
- Overcome seasonality and perishability constraints; and
- Empower women who are often involved in agro-processing.

3.2.4 Major Constraints Faced by the Agro-Processors

- Poor equipment backs up service, shortage and high cost of equipment and spares;
- Inadequate support services from training institutions, research institutions and
- Engineering workshops, private sector consultants, small enterprise advisors;
- Limited access to appropriate packaging materials;
- Lack of marketing skills especially for export market;
- Erratic supply and increased cost of fuel coupled with frequent power cuts;
- Unreliable and regular supply of raw materials;
- Often failure to meet food processing regulations pertaining to food safety and hygiene practices (BSTI Standard) due to lack of knowledge;
- Limited capacity to mobilize capital for equipment purchase and working capital.

Table 3.3: Challenges and Opportunities of Agro processing

Commodities/Products	Challenges	Opportunities
Fruits & Vegetables	- Low quality of raw materials - Irregular supply of raw materials - High post-harvest losses - Poor infrastructure for marketing including packaging, transportation & storage - Natural stress environment (Flood/drought/cyclones) - Limited technology - Lack of skilled manpower.	- Favourable climate & soil - Wide diversity of fruits (60); vegetables (>100); spices (28); flowers & ornamental plants etc. - Scope of year round protective agriculture - Scope exists for increasing productivity & reducing post-harvest losses and value addition - High export potentials (fresh & frozen/ dried and other value added products). - Increasing trend of domestic demand of quality products. - High potentials of diversified processed products and export demand.

3.2.5 Responding to the Challenges

Growth of the agro-processing industries would result in value addition, crop diversification, shelf life enhancement, reduction of wastage, availability of hygienic food to consumers at affordable prices, anytime, anywhere, as well as generation of employment, thus benefiting farmers, processors, consumers and the economy of the country as a whole. To harness these opportunities, an integrated holistic approach should be initiated through public-private partnership to motivate farmers and food processors and also to provide linkage between technology, economy, environment and society for speedy development of food processing industries to build up a substantial base for production of value-added food products for domestic and export markets with a strong emphasis on food safety and quality.

3.2.6 Enabling Policies, Institutions & Services

Develop strategies for implementing agro-processing policy, legal and regulatory frameworks, institutions & services. The strategies should be designed to implement agro-processing policy and institutional strengthening through following activities on developing business linkages, reducing transaction costs aligning capacities of farms & firms, ensuring fair governance within chains, improving market practices, strengthening producer organizations, upgrading technologies and financial assistance schemes;

- Improve delivery of services through establishing a Nodal Agency;
- Reinforce compliance & certification systems for food safety standards and industry quality requirements and market information services & financial institutions for market-oriented farmers and agro-enterprises;
- Provide basic infrastructure to improve market access and reduce business costs;
- Create value addition opportunities for small farmers and women;
- Encourage women for more involvement in agro-products trading;
- Help farmers respond to changing markets and consumer requirements;
- Design & implement initiatives that improve entrepreneurial capacities of smallholder farmers and small agro-enterprises to participate in value chains for high-value products, including branded and certified products; and
- Identify & use innovative mechanisms to link public funding with private sector resources.

3.2.7 Actions Required for Sustained Growth

1. Establishment of a Nodal Agency for flourishing agro-processing and promoting support on export promotion
2. Improvement of infrastructure facilities
3. More coordination between GO and NGOs
4. Strengthen R & D activities. Emphasis on need based human resource development
5. Increase local production of inputs, equipment and machineries etc.
6. More investment & channelize soft loan.

3.2.8 Potentials Agro-processed products for business

Considering the market potentials, predicting the probable risks, investment size, technological availability, profit potentials and environmental issues, the following products has been suggested as potential products for gro-processing development in Bangladesh.

1. Spices (turmeric, cumin, chilli, coriander, ginger, onion etc.) / mixed spices (Meat curry masala, fish curry masala), and powder etc. ;
2. Snacks (chanachur, fried rice, fried pulses, banana chips, puffed rice, biscuits & bakery, potato crackers ;
3. Pickles (mango, garlic, olive, mixed pickles);
4. Chuteny (mango, tamarind, olive, ber), Jam and Jelly etc.;
5. Vegetables & fruits (fresh, canned & dry), and
6. Dry products from jackfruit, mango, banana and pineapples etc.

Agro-processing is expected to play a vital role in Bangladesh and have potentials in generating more employment opportunities, reducing postharvest losses through processing and preservation into shelf-stable products contributing to GDP as well as earning foreign currency.

3.2.9 Supporting Intuitions

Different types of organizations both public and private are directly and indirectly providing services in promoting agro-processing sector in Bangladesh. Name of some organizations are- Bangladesh Bank, BSCIC, State owned and Private Commercial Banks, Financial Institutions/MFI, BRDB, BMDB, BI, EPB, WTO Cell of MoC, BFTI, Directorate of Women Affairs, DAE, BARI, BCSIR, BAU, BSTI, Office of the Joint Stock Companies and Firms, City Corporation /Municipality/ Union Parishad, Trade Bodies & other Trade Associations, SME Foundation, BAPA, BFVAPEA, Hortex Foundation, MIDAS, several NGOs and development partners.

3.2.10 Government Initiative and Regulatory Framework

Agro processing industries and agribusinesses have been growing at a fast pace in Bangladesh in the recent years. Considering the necessity of the food situation, Government of Bangladesh is continually striving to provide the required infrastructural support to the industry. The sector has been given high priority by the government due to its significant potential for bringing value addition to agricultural output, and enhancing small farmer incomes, empowering women and rural employment. The government of Bangladesh has given highest priority to agriculture and its allied sectors with low-interest credit. Between 2013 and 2017, banks' loan disbursement exceeded the target; and the crop sub-sector received about one-half of total agricultural credit, followed by livestock and other agriculture activities (The Financial Express, 2019).

According to Board of Investment the Government has announced some financial incentives for investment in agro-processing sector for both local and foreign parties and these are lower tariff, export subsidy, cash incentives, tax holiday, tax exemption, concessionary duty on import including no import duty on 100per cent export-oriented companies and income tax

exemption of foreign technicians for three years. The government's relaxed regulations for this sector are aimed at attracting capital and hiking up production to the desired levels.

Given the criticality of the food situation in country, Government of Bangladesh is continually striving to provide the required infrastructural support to the industry. Agro processing industries and agribusinesses have been growing at a fast pace in Bangladesh in the recent years. The sector has been given high priority by the government due to their significant potential for bringing value addition to agricultural output, and enhancing small farmer incomes, empowering women and rural employment.

Even today, the agro-processing are given substantial importance in the 8th Five Year Plan, 2020-2025 and in the Agriculture Policy, 2018 and Industrial Policy, 2016 due to various national priorities including enhancing value-addition to agricultural output, rural employment and incomes, food availability, and alleviating hunger and poverty. The sector, however, faces numerous difficulties including sourcing of quality raw materials, rural market imperfections, supply-chain inefficiencies, financial constraints, and product marketing challenges. Private sector is being encouraged by offering various fiscal and tax incentives and other scopes for promotion of the segment.

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A. Government Policy Initiatives for Women Entrepreneurs

Financial Inclusion has been prioritized in Bangladesh Bank's policy to include small entrepreneurs and a large number of women in financial activities. To ensure this, Bangladesh Bank has undertaken a number of policy initiatives for women entrepreneur. These are as follows:

- To encourage women entrepreneur for taking SME initiatives, financing facilities is being provided at low cost (bank rate + 4%) where Banks/NBFIs get refinance at bank rate.
- Minimum 15% of all refinance windows has been allotted for women entrepreneur.
- Regulatory provision for collateral free loan for women entrepreneur against personal guarantee up to BDT 25 lac has been made.
- For greater inclusion of the marginal and home-based women entrepreneur, loan limit has been set up to BDT 10,000/- and group-based lending of up to BDT 50,000 is permitted.

- The lower limit of SME credit for cottage, micro and small industries has been reduced to BDT 10,000, BDT 20,000 and BDT 50,000 respectively.
- To extend credit facilities to new women entrepreneur, circular has been issued for all branches of Banks/Non-Bank Financial Institutions to find out at least three women interested in having enterprise or becoming women entrepreneur within the catchment area for imparting training in the field of their interest for capacity building and above all extend credit facilities to minimum one of those training receivers.
- Instruction has been given to Banks/Non-bank Financial Institutions for prioritizing women entrepreneurs in extending credit facilities and to take capacity building initiatives for their existing and prospective women clients.
- To ensure prompt services for Women Entrepreneurs, Banks/Non-Bank Financial Institutions are advised to set up separate "Women Entrepreneur Dedicated Desk" in each branch of Banks and NBFIs. The desk is advised to provide support to prospective women about the preparation of loan able business proposal, marketing strategies etc.
- To strengthen monitoring activities of women entrepreneur's development initiatives, Banks/Non-Bank Financial Institutions are advised to set up Women entrepreneur Development Unit (WEDU) in all of their Head Office.
- Recently Bangladesh Bank has introduced Simplified Loan Application Form in Bengali for SME Entrepreneurs including Women Entrepreneur. This initiative will reduce difficulties in meeting documentation requirements.
- Bangladesh Bank has issued a Circular to provide 03 months grace period for 1 year term loan, 03-06 months grace period for medium & long term loan in favour of Cottage, Micro & Small (CMSME) Entrepreneurs.
  (https://www.bb.org.bd/en/index.php).

Refinance Schemes of Bangladesh Bank

Bangladesh Bank has announced refinance schemes for assisting agro-processing industries in the country and these are as follows:

a) Small Enterprise Refinance Scheme
b) Refinance Scheme for Setting up Agro Based Product Processing Industries in Rural Areas
c) Refinance Scheme for New Entrepreneurs in Cottage, Micro and Small Enterprise Sector
d) Refinance Scheme for Shariah Based financing in 'Agro-Based Industry', Small Entrepreneurs' (Including Women Entrepreneur) and New Entrepreneurs' in Cottage, Micro & Small Enterprise Sector.

Regarding Policy of Credit Guarantee Scheme for Cottage, Micro and Small Enterprises (CMSE), on 9th May, 2021, Bangladesh Bank has revised the Manual of Credit Guarantee Scheme where Women-owned Cottage, Micro and Small Enterprises (CMSE) will get priority to obtain CGS facility to ensure collateral free loan/investment for Women-owned Cottage, Micro and Small Enterprises (CMSE), henceforth the PFIs have to earmark at least 5% (Five per cent) of their Portfolio Guarantee Limit (PGL).

Recently in June,2021, Bangladesh Bank has announced CMSME Stimulus Package as additional Refinance fund for COVID-19 affected Cottage, Micro, Small and Medium Enterprises (CMSME) sector under "COVID-19 Emergency and Crisis Response Facility Project (CECRFP, L0415-A)" funded by Asian Infrastructure Investment Bank (AIIB).

- **Formation of Women Entrepreneur Development Unit (WEDU)**

Women entrepreneur Development Unit (WEDU) is formed at all branches of Bangladesh Bank including SME & Special Programmes Department of Bangladesh Bank. This Unit renders business friendly services to women entrepreneurs', receives complaints and resolves those, carries out promotional activities for the development of women entrepreneurs' and also monitors and evaluates the women entrepreneur's development initiatives of Banks/Non-Bank Financial Institutions.

To encourage women entrepreneurs in taking initiatives or becoming women entrepreneur, WEDU operates Small Enterprises Refinance Scheme to provide low-cost fund. This unit is also entrusted with the responsibilities of promoting women entrepreneurship and supporting women entrepreneurs.

- **Women Entrepreneur Development Unit (WEDU) of Banks/Non-Bank Financial Institutions**

Pursuant to SMESPD Circular No. 01 dated 08/02/2015, Banks/Non-Bank Financial Institutions are advised to set up Women entrepreneur Development Unit (WEDU) at all their Regional Office (if any) with Head Office to strengthen monitoring activities of women entrepreneur's development. By this time Banks/Non-Bank Financial Institutions have set up WEDU at all Regional Office (if any) with Head Office and established Women entrepreneurs' Dedicated Desk/Help Desk at all their branches which ensures prompt services for Women Entrepreneurs. (SME Web Portal (bb.org.bd).

B. Incentives to export oriented and export linkage industries

Encouraging export-oriented industries is one of the major objectives of the Industrial Policy of the government in place, and as such the government ensures all support and co-operation to the exporter as per the export policy (Remix, 2018). Some of the facilities and incentives offered are as follows:

- Concessionary duty as per SRO is allowed on the import of capital machinery and spare parts for setting up export-oriented industries or BMRE of existing industries. For 100 per cent export-oriented industries no import duty is payable.
- Facilities such as special bonded warehouse against back-to-back letters of credit or notional import duty and non-payment of Value Added Tax (VAT) facilities are available as per SRO of the government.
- System for duty drawback is being simplified and concise. The exporter will be able to get back the duty draw-back directly from the concerned commercial bank.
- Bank loans, of up to 90per cent if the values against irrevocable and confirmed letters of credit/sales agreement are available.
- With the intention of encouraging backward linkages, export-oriented industries including export-oriented readymade garment industries using indigenous raw materials instead of

imported materials are given additional facilities and benefits at prescribed rates. Similar incentives are extended to the suppliers of raw materials to export-oriented industries.

- Export-oriented industries are allocated foreign exchange for publicity campaigns and for opening offices abroad.
- Entire export earnings from handicrafts and cottage industries are exempted from income tax. In case of other industries, proportional income tax rebates on export earnings is given between 30per cent and 100per cent. Industries which export 100per cent of their products are given tax exemption up to 100per cent.
- Facilities for importing raw materials are given for manufacturing exportable commodities under banned/restricted list.
- Import of specified quantities of duty-free samples for manufacturing exportable products is allowed. The quantity and value of samples is determined jointly by the concerned sponsoring agency and the NBR.
- Local products supplied to local projects against foreign exchange under international tender are treated as indirect exports and the producer is entitled to avail of all export facilities.
- Export oriented industries among others fresh fruits and vegetables, cut and artificial flowers and orchid, vegetable processing and engineering consultancy services identified by the government as thrust sectors are provided special facilities in the form of cash incentives, venture capital and other facilities.
- Export oriented industries are exempted from paying local taxes (such as municipal taxes).
- Tax exemption on dividend income of non-resident shareholders during tax exemption period of an industry set up in an export processing zone and also after the expiry of tax exemption period if the dividend is re-invested in the same project.
- Exemption of tax on income from industrial undertakings set up in an export processing zone for ten years from the date of commercial production.
- Tax exemption on capital gains from the transfer of shares of public limited companies listed with a stock exchange.
- This export sub-sector is subsidized and Government of Bangladesh is provided cash incentive support to the exporters @ 20per cent free on board (FOB) for promoting export of some selected fresh and processed agro-products.

C. Investment Incentives of the Board of Investment

Table 3.4: Investment Incentives

Type of incentive	Facilities
Tax Holiday and Tax Exemption	- to 10 years of Tax Holiday and reduced tax depending on area Dhaka and Chittagong divisions, excluding Dhaka, Mymensingh, Narayanganj, Gazipur, Chittagong, Rangamati, Bandarban and Khagrachari districts, for a period of five years Rajshahi, Khulna, Sylhet, Barisal and Rangpur divisions (excluding City Corporation area) and Rangamati, Bandarban and Khagrachari districts, for a period of ten years. - 100per cent tax exemption on income and capital gain for certain projects under Public Private Partnership (PPP) for 10 years. - 100per cent tax exemption from software development, Nationwide Telecommunication Transmission Network or Information Technology Enabled Services.50per cent of income derived from export is exempted from tax Tax exemption on royalties, technical knowhow and technical assistance fees and facilities for their repatriation tax exemption on interest paid on foreign loan.
Accelerated Depreciation	- Accelerated depreciation for machinery and plants
Exemption on Import Duties	- Exemption of customs duties on capital machineries Exemption of import duties on raw material used for producing export goods
Tariff Refund	- Tariff (if paid) refund on import of raw materials for export
Double Taxation Prevention	- Benefits for countries with double taxation avoidance treaty.
Bonded warehousing Facilities	- For export-oriented industries - For large import for local selling in certain items
Ownership	- 00 Per cent ownership is allowed
Repatriation of invested capital and dividend	- Full and or retained earnings, those will be treated as new investment. repatriation of capital invested from foreign sources will be allowed. Similarly, profits and dividend accruing to foreign investment may be transferred in full. If foreign investors reinvest their dividends
Others	- No restrictions on issuance of work permits to project related foreign nationals and employees - Facilities for repatriation of invested capital, profits and dividends - Provision of transfer of shares held by foreign shareholders to local investors

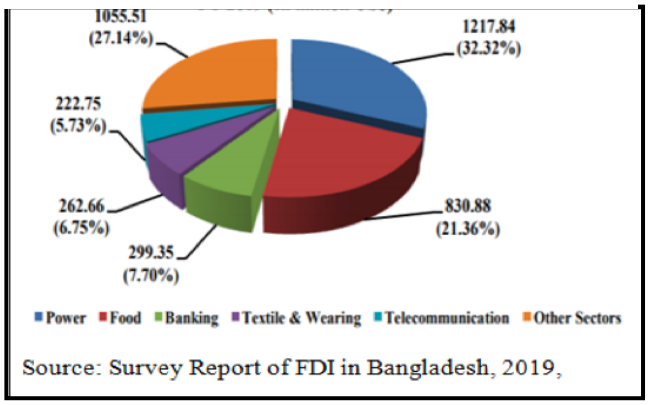
Type of incentive	Facilities
	- Reinvestment of remittable dividends would be treated as new investment - Remittance of royalty, technical know-how and technical assistance fees - The Foreign Private Investment (Promotion & Protection) Act. 1980 ensures legal protection to foreign investment in Bangladesh against nationalization and expropriation - Equal treatment of both local and foreign investment. - Bilateral and multilateral investment agreements ensure protection of investment - 100per cent FDI, Joint Ventures, Partnerships, PPPs, Non-equity mode (Technology transfer, licensing Franchising, contracting etc.), and Foreign Lending are allowed - 100per cent FDI or Joint Venture FDIs are allowed to participate in the primary and secondary stock markets. - Foreign Investors are allowed to have access to local banks for working capital requirements. - Intellectual Property right is protected by Law.

Among others, the facilities of Tax Holiday and Reduced Taxation are also entitled for agro-based industries.

FDI Inflows (Net) by Major Sectors

The sectors that attracted maximum FDI (Net Inflows) for the fiscal year 2018-19 include Power (US$ 1217.84 million), Food (US$ 830.88 million), Banking (US$ 299.35 million), Textiles & Wearing (US$ 262.66 million) and Telecommunication (US$ 222.75 million) which were 31.32per cent, 21.36per cent, 7.70per cent, 6.75per cent and 5.73per cent respectively towards the contribution of total FDI inflows.

Figure 3.6: FDI Inflows (Net) by Major Sectors during FY 2019 (in Million US$)



Source: Survey Report of FDI in Bangladesh, 2019,

Government Incentives to Encourage Investments: The Government of Bangladesh (GoB) has created liberal investment and business operation policies regarding taxation, import duties, work documentation and capital repatriation among others, in a manner that encourages greater foreign investment in the secondary and tertiary sector of the country.

The Bangladesh government provides five to seven years of tax exemption to international investors planning on operating in certain sectors. Investments in some priority sectors like power, enjoy tax exemption for up to 15 years. Additionally, Bangladesh has a double taxation avoidance agreement with 18+ major trading partners. Bilateral signatories of

Double Tax Avoidance (DTA) agreements include Belgium, Canada, China, Denmark, France, Germany, India, Italy, Japan, Poland, Thailand, Netherlands and the UK. Expatriate employees from specific sectors also receive an income tax exemption for up to 3 years (Incentives, Investment facilities, Bangladesh Bank, Adopted from Light Castles (2019).

D. Incentives for Export led Thrust Sectors

The government's industrialization policy focuses heavily on thrust sectors that are primarily export oriented such as agro-based industries and manufacturers that specialize in ICT, artificial flower-making, electronics, frozen food, jute goods, and jewellery. Leather, oil, gas, textiles, construction and tourism are also included in the list.

Some specific policies for promoting export-led sectors include the followings:

1. Concessionary duty as per Special Revenue Order (SRO) is allowed on import of capital machinery and spare parts while setting up export-oriented factories or for expanding or refurbishing existing manufacturing plants. (Ref. 7. Custom SROS, National Board of Revenue (NBR),)
2. A simplified duty drawback system such that exporters can directly receive rebates from concerned commercial banks.
3. Warehouse facilities for 100% export-oriented companies with back-to-back letter of credits. VAT exemption facilities are also available as part of SRO.
4. Export earnings from handicraft and cottage industries are exempted from income taxes. For other sectors, proportional income tax rebates in the range of 30-100% are provided on export earnings.
5. Goods and services supplied to local projects under international tenders are treated as indirect exports and suppliers are entitled to receiving necessary export incentives and tax rebates.
6. Manufacturers of indigenous fabrics (such as woven, knit, hosiery, grey, printed, dyed, garment check, handloom, silk and specialized fabrics) supplying to 100% export-oriented apparel factories are entitled to a cash subsidy equivalent to 25% of the value of their fabrics, provided the apparel manufacturers are currently not enjoying and other preferential benefits like duty drawbacks or bonded warehouse facilities.

▪ **Taxation and incentives in Agro-processing** (Varies depending on type of company and product).

- 12.5% cash incentives to export of frozen shrimp and fish and 20% cash incentives to export of agro processed products is given. The government has also provision for establishing mega food parks, special credit schemes and tax holidays and cash incentives (20%). tax holidays upon fulfilment of certain conditions;

- For industrial undertaking and physical infrastructure facility establishment the following are eligible for tax holidays upon fulfilment of certain conditions: eligible for tax holiday- Processing of locally produced fruits and vegetables.

- **Tax rebate for manufacturing companies:**

The following tax rebate facilities for the manufacturing industries set up in places other than city corporation areas are as follows:

Table 3.5: Tax rebate for manufacturing companies

Industries	Proposed tax rebate	Period of proposed tax rebate
Tax rebate for the manufacturing industries commencing commercial operation between July 1, 2014 and June 30, 2019 located outside any City Corporation area.	20%	Up to 10 years next from the date of commencing commercial operation.
Tax rebate for the manufacturing industries already started commercial production located outside any city corporation area.	10%	Up to 30 June, 2019

E. Industry set up within Dhaka, Chittagong and other Division (except Bandarban, Rangamati and Khagrachari hill districts): First two years (100%), next stwo years (50%), next one year (25%). First three years (100%), next three years (50%), next one year (25%). Source: Source: National Board of Revenue. Trade policy in Bangladesh is operated under the jurisdiction of Export Policy Act 2018-21. The government has a host of policy tools like tariffs and anti-dumping[22] measure for protecting local players. As part of Government's vision for crossing USD 60 billion (BDT 5 trillion) export within 2021, policymakers have earmarked 15 sectors as 'Highest priority sectors', while 19 have been categorized as 'Special Development Sectors', in which the government has focused on facilitating raw material imports. Some sector specific benefits include project loan at reduced interest rate, income tax rebate, subsidies for utility services, export credit, duty drawback and duty free import of equipment among others. The export policy Act 2018-2021 puts leather into special focus in an attempt to reduce dependency on garment, which represents 84.2% of total Bangladeshi export. As a plausible solution, the government plans to extend the benefits in the garments industry to the leather industry as well. Programmes will be implemented to upgrade the leather industry to green standards. In order to reduce lead time, central bonded warehouse will also be set up for storing the raw materials of the leather industry (Katalyst, 2016).

Other key take always from the Export Policy Act 2018-2021 are as follows:

- The local value addition has been cut down from 40% to 30% in the export-oriented industries
- Technology development and up gradation fund and green fund will be introduced by central bank in order to provide loans for modernization and up gradation of export-oriented industries
- The export development fund (EDF) of Bangladesh Bank will ease loans and other banking facilities to export oriented industries.

Preferential trade benefits

Bangladesh enjoys several trade benefits, which provide significant cost advantages while competing in international markets. However, the country is predominantly benefitting from exporting to the EU.

European Union

Bangladesh benefits from EU's Generalized Scheme of Preferences (GSP), Ref: 1. Generalised Scheme of Preferences (GSP), European Commission, accessed on 26.05.2019, namely the Everything But Arms (EBA) arrangement, which grants duty and quota-free access for all items, except arms and ammunition.

Under the framework of the EU-Bangladesh joint co-operation Agreement, ratified in 2001, engagements between the two regions can include a variety of activities from trade and economic development to good governance and environmental regulation.

USA

The United States of America (USA) is the single largest export destination for Bangladesh and in FY 2017-18, the latter exported goods worth USD 5.98 billion (~BDT 500 billion). Bangladesh used to enjoy the Generalized System of Preferences (GSP) in the US market till 2013. In response to US's cancellation of GSP, Bangladesh is currently negotiating a new trade agreement with the US, under the Trade Facilitation Agreement (TFA) arrangement.

The agreement, signed on November 2013, provides a platform for discussing trade and investment-related issues and other areas of common interest.

Asia-Pacific Trade Agreement (APTA) is a preferential regional trade agreement that aims to promote economic development of its member countries through preferential trade agreements. APTA was formerly known as the Bangkok Agreement. Initially, APTA focused more on initial negotiation of tariff concessions on merchandise trade but currently its core focus is negotiating investment, services trade and trade facilitation. Seven participating States - Bangladesh, China, India, Lao PDR, Mongolia, Republic of Korea, and Sri Lanka are the parties to the APTA.

SAFTA

The South Asian Free Trade Area (SAFTA) is a free trade agreement of South Asian Association for Regional Cooperation (SAARC). It came into force in 2006. The members of this agreement are Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. The purpose of the agreement is to promote the mutual trade and enhance economic cooperation by ensuring free flow of goods and services among member countries.

Functions of SAFTA:

- To establish a free trade area in South Asia through the elimination of tariffs
- To form and implement the rules of origin to ensure that the product is manufactured by the country which is desirous to export
- To allow member countries to prepare a list of products which are to be restricted to import for the protection of national interest

- To form compensation scheme for the losses of revenue to the least developed member countries due to the arrangement of free trade area, and
- To provide technical support to the least developed member countries to promote export competitiveness.

In a recent Business confidence Index survey (2018) of 107 companies by Light Castle, it was found that the overall business confidence of business leaders has increased from the previous year. The business confidence rose to +43 from +39 of previous year and business leaders have cited five key factors that contributed to the rise in confidence. These are: increased investment in power generation, green revolution & mechanization in the agriculture sector, higher disposable income and consumer spending, growing health awareness, and the government's increased focus on ICT. Industry experts opine the following set of actions will help improve the current drawbacks – along with investor confidence:

- Diversifying export basket and reducing dependence on RMG; facilitating the ease of starting and conducting business; improving infrastructure and logistics; full repatriation of investments and dividend; and reinvestment of profit considered as new investment.
- Enhancing the skill of human resources,
- Streamlining the financial sector and scaling up the use of alternative capital avenues

Institutional bottlenecks and doing business ranking

According to Light Castle, a deeper analysis of the country's investment climate reveals some fault-lines, which are proving a dampener for investor optimism. The country's low rankings in the annual investment climate assessment reports reveal some stark challenges potentially damaging for the country's medium term growth prospects.

Light Castle (2019-20) reported that, the World Bank's publication on 'Doing Business in Bangladesh' the country ranked 168 out of 190 countries in terms of operating businesses in Bangladesh. The ranking went eight steps up from the previous ranking in 2018-19. According to a recent World Bank report, Bangladesh carried out three business reforms since the last publication and would need to accelerate the reform pace to further improve its regional and global competitiveness.

A major challenge impeding improvement in business climate include perennial red tapes and bureaucracy, which are stunting prospects of obtaining company documents, permits and licenses in a timely manner. Other bottlenecks include difficulty in accessing credit, lack of protection for minority investors and infrastructure deficiencies. According to Global Competitiveness Index published by World Economic Forum (WEF), Bangladesh ranked 103 out of 140 countries. World Economic Forum's Executive Opinion Survey-2017 ranked corruption (15.7 out of 16), inadequate infrastructure (14.4 out of 16) and inefficient government bureaucracy (11.7 out of 16) as the major challenges for operating in Bangladesh. These challenges are inherent to the most least developed countries and are gradually being superseded by the urgency of higher foreign investment in Bangladesh. Since the business confidence in the economic climate has improved post-election, the government

is taking remedial measures to deter bureaucracy and corruption and facilitate investment processes. BIDA's plan to implement a one-step-online solution, the OSS site, is one such step taken in the process.

According to Centre for Policy Development (CPD), strengthening of public sector institutions is of paramount importance, which can be achieved through more efficient, transparent and accountable administration. Investment climate can be improved by dealing with bureaucratic inertia, developing infrastructure, digitizing government services, training workforce, strengthening institutional capacity and devising effective policies (Light Castle, 2019).

For a country with a growing working age population and large unemployment rates, it is imperative to create employment opportunities for workers in the secondary sector. Although the primary goal would be to foster companies pursuing export markets, growing per capita income would eventually lead to a domestic market driven growth. Incoming investors must therefore keep tabs of the growing domestic market, parallel to serving the export market.

CHAPTER – 04
VALUE CHAIN ANALYSIS OF KEY FRUITS AND VEGETABLES

4.1 Introduction

A Value chain is a network of facilities and distribution options. The chain of activities gives the product more value than the sum of added values of all activities. The ultimate goal is to maximize value creation and minimizing cost for increasing customer satisfaction and managing cost more effective. Value Chain analysis is a systematic approach to examining the development of competitive advantage. It has also been called supply chain and the service chain. An operational strategy if implemented properly will provide a new dimension to competing: quickly introducing new customized high-quality products and delivering them with unprecedented lead times, swift decisions, and manufacturing products with high velocity.

Importance of Value Chain

Any product without any value addition when sold in market in the raw form will fetch relatively low price. Further there would not be much of product differentiation. At each stage of supply chain, there would be additional cost without any additional value. However, in value chain, at each stage, of the stakeholder's involvement there would be additional value to the product in the form of packaging, processing, quality branding, grading, etc. Therefore, awareness and skill development of the farmers will help them in identifying the market opportunities and tap the available potential resulting in enhanced profits.

The value chain analysis offers a greater understanding of the market players, their roles and interrelationship, and the point of value addition where inefficiencies of specific commodity value chains lie. An independent analysis of value will enable the Government of Bangladesh and the private sector to identify possible measures required to minimize impediments and improve the environment for private investment, thus increasing the competitiveness and growth potential of the private sector.

Value Chain (VC) Mappings

Value chain mapping is a central element of value chain analysis. It is used to show the flow of transactions from sourcing of raw materials and inputs, to production, processing, marketing and final sale. The maps can also illustrate costs, value addition at each stage, secondary services important to each stage, critical constraints, and the relative clout of players along a value chain.

Understanding the value chain of commodities is important in order to plan and execute programme interventions allowing one to contribute to overall economic development of the country. It is useful to understand the relationship between producers, processors, transporters and traders. Farmers are the main producers whether it is rice, maize, wheat, fruit, vegetable, ginger, fishes or dairy products and often production operation is traditional in nature with little or no commercial orientation.

With increasing global market venues, farmers are now facing cumulative challenges to respond to market reactions with several players in the value chain as compared to direct marketing, decades ago. Today markets have become more diverse, fragmented, with niche products, and as a result farmers are finding a need to orient to market dynamics.

Selection of Key Commodities

In order to identify major fruits and vegetables products for detailed value chain analysis, the study team initially selected commodities based on five major parameters, area of production, area under cultivation, potential for processing, export value and marketable surplus available in the country. The issue was discussed in the Inception Workshop, where and after threadbare discussions the key products were selected. The first step towards the identification of potential fruits and vegetables products was to determine the key parameters and indicators on the basis of which key products were shortlisted. The key parameters and indicators identified for selection of key commodities are listed in Table 4.1.

Table 4.1: Parameters and Indicators for Selection of Key Commodities

Screening Parameters	Indicative Indicators
Production of the key commodities	- Percentage contribution to country fruits and vegetables production respectively. - Growth Rate of production (CAGR).
Area under cultivation	- Estimated land under cultivation (in ha)
Potential for processing	- Availability of raw materials and opportunities for processing - Domestic and export market demand - Scope of women involvement and scope of business.
Export Value	- Percentage contribution to total export value - Growth Rate of export value (CAGR)
Marketable Surplus	- Domestic consumption - Marketable surplus available in the country - Exportable surplus available in the country.

On the basis of the scores above we came out with seven most potential fruits and vegetables for the present study which are listed below;

- Fresh produce: Mango, Lemon, Potato, Tomato and Chilli;
- Processed and dehydrated products (Mango, Pineapple, Jackfruit, Potato, Tomato and Chilli).

This section of the report presents the findings of the value chain analysis for seven key selected tradable fresh, processed and dehydrated products value chains – fresh (mango, potato and chilli), processed (jam/jelly and juices) and dehydrated products of jack fruit, pineapple and mango. Information on the products, markets, value-chains, supporting functions and rules are presented, followed by proposed upgrading strategies for each value chain.

4.2 Findings of Field Survey

The study team, with the help of the enumerators and field supervisors conducted household survey, FGD, KIIs and case studies on agro-commodity producers, agro-commodity market actors, agro-processors exporters and public officials in the sample areas. A brief description of the findings of the value chain analysis is presented in the following sections.

4.2.1 Fresh Commodity Producing Farmers

A total of randomly selected 434 (137 male and 297 female) fruits & vegetable farmers have been interviewed under this survey. Collected data were analysed using SPSS and R software. This section gives visual representation of the analysis of the survey with short interpretation of the findings that including demographic and socio-economic characteristic of the respondent households, such as gender, education and occupation, production practices, harvesting, postharvest management and marketing of fresh agro-food commodities.

Table 4.2: Gender of the Respondent

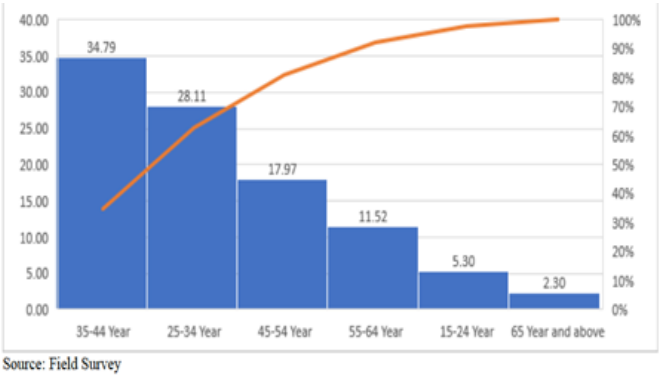
Gender	No. of Respondent	Percent
Male	137	31.6
Female	297	68.4
Total	434	100.0

Source: Field survey

i) Gender of the Respondents: Table 4.2 shows the gender distribution of the respondents. It is observed that out of the total 434 respondents, 297 (68.4percent) are female and 137 (31.6 per cent) are male.

ii) Age Distribution of the Respondents:

Figure 4.1: Age distribution of the Respondents



Source: Field Survey

The demographic features of the respondents are shown in table 3.6. It was found from the survey that maximum (34.8percent) were at 35-44 age group, followed by 28 per cent of 25–34 year age group and the lowest number of respondents (2.30percent) were at the age 65 and more. It was found from the survey that maximum (34.8 per cent) fresh commodity producing farmers (34.8 per cent) were at 35-44 age group, followed by 28percent of 25–34 year age group and the lowest number of respondents (2.30percent) were at the age 65 and more.

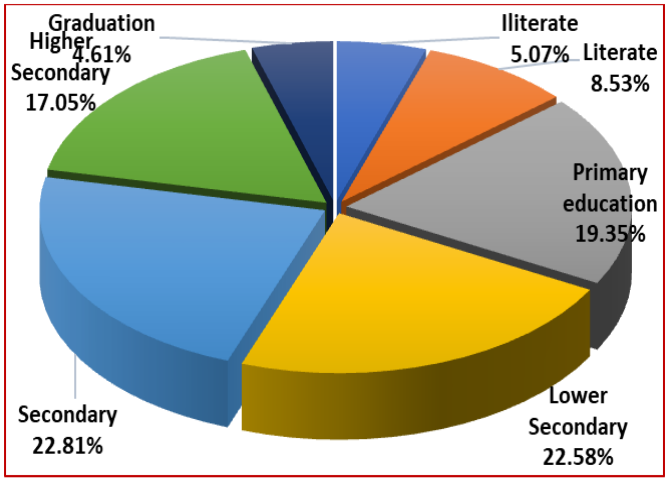
It is evident from Figure 4.1, that information was collected from a wide spectrum of population varying from the age below 18 years to above 60 years. The findings indicate that maximum agro-commodity producers who contribute in the supply of export potential agro-food commodities are of active age group (i.e., 25 to 44 years). These farmers need to be further patronizing to promote export of agro-food commodities.

iii) Educational Qualifications of the Respondents

Figure 4.2 depicts the educational qualification of the respondents. From the survey results, it is evident from the survey that about highest percentage (22.3 per cent) of farmers interviewed have secondary level education followed by 22 per cent below secondary level, when only 05percent farmers are illiterate and 19 per cent have minimum education. It is important to mention here that about 41 per cent of the total fresh commodity producing farmers has sufficient education (secondary to higher secondary) capable of practicing modern technologies of production and postharvest handling to compete in the international markets. The survey also signifies that more female farmers are coming forward in the production of agro-food commodities and will significantly impact on women employment in agriculture sector.

iv) Farming of Fruits and Vegetables

Figure 4.2: Educational Qualifications of the Respondents



Source: Field survey

Good Agriculture Practice (GAP) is the talk of the day in crop sector. The principal compliance of the export market for fresh produces is the GAP in production and post-harvest management. Accordingly, the survey attempted to find information about production practices of the fruits and vegetable farmers in the sample areas and found that about 34 percent farmers follow good agriculture practices for growing fruits and vegetables, when about 66 per cent farmers are not aware and even not interested at practicing GAP in crop production. In response to query whether they follow IPM practices in the production process, the participating farmers disclosed that about 43 percent of them follow IPM and rest 57 per cent do not practice IPM techniques in crop pest management (Table 4.3).

Table 4.3: Crop Production Practices

Response type	No of Respondents	Per cent
Are you following the GAP method in crop production?		
Yes	148	34.1
No	286	65.9
Total	434	100.0
Do you follow IPM practices?		
Yes	186	42.9
No	248	57.1
Total	434	100.0

Source: Field survey

v) Use of Pesticides in the Fields

a) Frequency of Pesticide Use

Table 4.4 depicts that 4.8 per cent of the respondents using pesticides daily. About 40percent respondents using weekly, 34.1percent fortnightly, 20.3percent monthly and only 9.0percent on quarterly basis. Current practices of application of pesticides are not made judiciously and massive awareness creation is needed to save the produce from harmful effects of pesticides and also environmental degradations.

Table 4.4: Frequency of Pesticide use in the Crop Fields

Response Type	No of Respondents	Percent
Daily	21	4.8
Weekly	173	39.9
Fortnightly	148	34.1
Monthly	88	20.3
Quarterly	4	9.0
Total	434	100.0

Source: Field study

b) Source of Pesticides information

From investigation of information sources of pesticides, 35 per cent reported radio/television/ leaflet/ advertise/newspapers/ internet as primary source of information 36 per cent from other farmers followed by 28 per cent pesticide dealers. The pesticide label is one of the most important sources of pesticide information. From the question of the farmers' knowledge source of pesticide, it is observed that 14 per cent farmers from reading labels (Table 4.5).

Table 4.5: Sources of Pesticides Information used in the Field

Source of Information	No. of Respondent	Per cent
Source of farmer about pesticides information and methods of use		
Radio/Television/Newspaper/ Leaflets/Advertisement/Internet	139	32
Neighbouring farmers	78	18
Pesticide Dealers	87	20
Reading instruction on the label of container/bottle	61	14
From extension agents	43	10
Company representative	26	6
Total	434	100
Following of Pesticide instructions		
Yes	254	58.5
No	180	41.5
Total	434	100.0

Source: Field Survey

Conducted field investigation also disclosed that only 36 per cent of the farmers received training on proper use and disposal of pesticides and about 64 per cent remained out of the training for handling seriously poisonous chemicals for use and dispose up.

Table 4.6: Information of Training on Pesticide Applications

Received training on proper use and disposal of pesticides?		
Yes	155	35.7
No	279	64.3
Total	**434**	**100**
Training organizing institution		
Department of Agricultural Extension	132	81.99
NGO	28	17.39
Others	11	6.83

Source: Field Survey

The situation is quite panicking in respect to food safety and consumers' health. More than 80 per cent farmers received training from the Department of Agricultural Extension (DAE) and 17 per cent received training from NGOs and rest of them got training from other institutes (Table 4.6).

vi) Farmers' knowledge on use of personal protective equipment (PPE)

Since independence and over the years, pesticides use in crop pest control has become dominant practice in Bangladesh agriculture. But protection of farmers' health, environment and to improve sustainability of chemical pest control quantitative understanding of farmers' behaviour in pesticide use is critical. However, study on the levels of knowledge and awareness of farmers and practices of pesticide use are often limited. Although the behaviour is influenced by a highly complex set of factors which are by no means well understood or consistent for different situations. Behaviour is partly shaped by attitudes toward the environment, which in turn are influenced by knowledge and information (Lichternberg and Zimmerman, 1999). Farmers use pesticides to control pests of their crop fields with less efforts and it increases yields per unit area. But protective measures during and after pesticide application are considered effective means of reducing the risks to farmers measures during and after pesticide application are considered effective means of reducing the risks to farmers (Yaung et al., 2014).

Table 4.7: Precautions During and After Spraying Pesticides

Precaution Measures	No. of Respondents	Per cent
Use of Protective Equipment (PPE)		
Use of a piece of cloth (Gamcha) as PPE	399	92
Use of Face Mask, Shoes, Gloves & Body covering	35	8
Total	**434**	**100**
Post Application Measures		
Wash hands with soap	178	41
Change dresses	113	26
Take bath	130	30
No action	13	3
Total	**434**	**100**

Source: Field survey

During the interviews, farmers reported that about 92 per cent farmers use a cloth piece locally known as 'Gamcha' as personal protective equipment (PPE) which they do not understand followed by only 08 per cent body covering/hand gloves, masks and shoes, etc. After pesticide application 41 per cent farmers clean hands with soap, 26 per cent immediately change dresses, followed by 30 per cent take bath. About 03 per cent farmers reported that they do not take any action (Table 4.7)).

b) Methods of crop harvesting- In response to the query about which procedure farmers usually follow to harvest their crops, the farmers interviewed expressed their preference of using tools for harvesting fruits and vegetables. The study findings indicate that the uses of knife and/or scissors are the most popular amongst the farming community.

Table 4.8 below shows that about 96.4 percent farmers use knife or scissors for harvesting followed by 67.3 percent by hand. second It is not clear from the interviewing whether the farmers disinfect their tools or sanitize hands before harvesting, which critically important from safety point of view (Table 4.8).

Table 4.8: Methods of Crop Harvesting

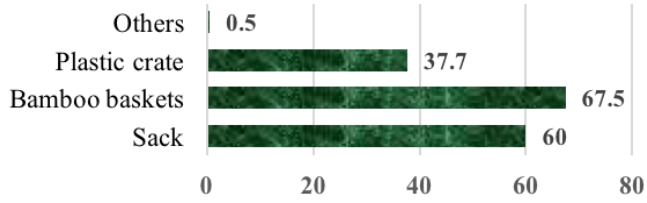
Response Type [1]	No of Respondents	Per cent
By hand	292	67.3
Knife or scissors	419	96.4
Pole	0	0
Using dropping	7	1.6
Others	0	0

Source: Field survey

c) Containers used to Collect Harvested Products

The survey has disclosed that about 60 percent of the farmers prefer gunny bags/sacks for collecting harvest from the field and also for packaging purposes for marketing and most popular container for harvesting is bamboo baskets which is used by 67percent famers. Furthermore, around 37 per cent producers use plastic crate as carrier for perishable produces (Figure 4.3).

Figure 4.3: Containers use to collect harvested products (%)



ix) Postharvest Management

a) **Retention of produces in the field after harvest:** The sample survey investigated the postharvest handling practices of the farmers producing high value fruits and vegetables and the findings shown in the table 4.9.

Table 4.9: Keeping Harvested Crop on the ground

Response	No. of the Respondents	Per cent
Yes	156	35.9
No	278	64.1
Total	434	100.0
Source: Field survey		

[1]. Multiple Response are considered

The survey results depict that majority of the farmers (64percent) do not keep their produces in the field after harvest, while about 36 per cent admits that they keep their produces for some times in the crop fields during and after harvest.

b) Sorting and grading of produce before marketing

Table 4.10: Sorting and Grading of Produce Before Marketing

Response Type	No. of Respondents	Per cent
Yes	175	40.3
No	259	59.7
Total	**434**	**100.0**

Source: Field study

The study attempts to identify whether the farmers sort and grade their produces before sending those to market for selling and the result shows that around 60 per cent of the farmers do not practice sorting and grading when their produces before selling and about 40 per cent farmers grade and sort fruits and vegetables before selling either directly to the local traders or to the assemble market (Table 4.10).

c) Fruit ripening and postharvest management practices

The study uncovered that only 2.5 per cent farmers use chemicals for ripening fruits and fruit vegetables (Table 4.11) and majority (98percent) of the farmers do not use any ripening agent (chemical) for ripening purpose.

Table 4.11: Using Chemicals For Ripening The Fruits

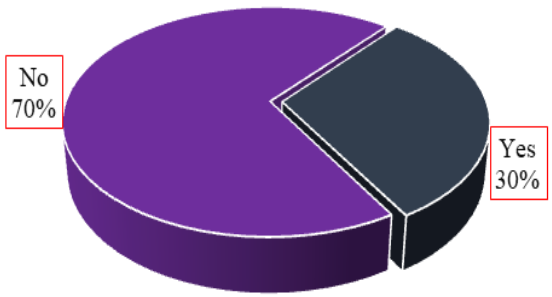
Response type	No. of Respondents	Per cent
Yes	11	2.5
No	423	97.5
Total	**434**	**100.0**

Source: Field Survey

d) Washing the crop before for marketing

The survey has investigated whether the farmers wash the crop before bringing it to market which is depicted in the figure 4.4. The study has exposed that around 30 of the farmers wash the crops before they bring it to the market. On the other hand, the majority (70) of them don't wash the crops.

Figure 4.4: Washing Rate of Harvested Produce before Marketing

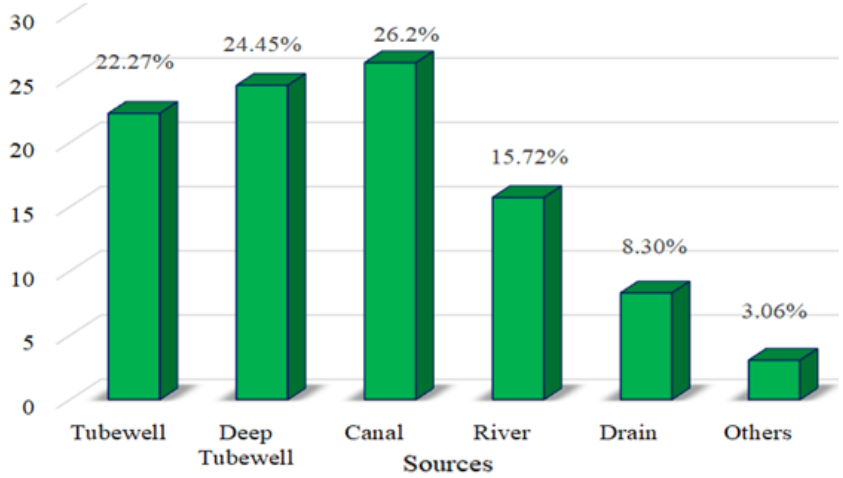


Source: Field Survey

e) Source of water for washing the Crop

The survey outputs about the sources of water for washing the crop are displayed in Figure 4.5. 37.23 per cent of the farmers prefer Tube Well water for washing the crops. Deep Tube Well is preferred by 41 per cent of the respondents. The most favourite water source for washing harvested crops as opined by the respondents is the canal which accounts for 44 per cent Moreover, 26 per cent and 14 per cent of the farmers prefer river and irrigation channels respectively as a water source for washing the crop. Nonetheless, 5.11 per cent of the farmers choose other sources which aren't mentioned above.

Figure 4.5: Sources of Water for Washing of Crop



Source: Field survey

x) Farmers' skill development

a) Farmer's training on crop production and pest management

The study findings about skill development training received on crop production are shown in the tables 3.16 and. The survey has explored that approximately 40 of the fresh farmers have received any training on crop production. On the other hand, around 60 of them haven't received any training from any organization. Both formal and informal training of farmers following principles of adult education are essential to develop efficiency in using poisonous chemicals mostly as pesticides on food crops. But unfortunately, due some stubborn decision of the authority demanding that training is useless year-round training programs of DAE has been limited to only on project interventions. This suicidal decision has been reflected in the efficiency level of farmers in handling pesticides and pest management through the use of pesticides. The survey conducted during the field study reveals that only 36 per cent of the farmers received training on proper use and disposal of pesticides, when about 64 per cent farmers got training at any form (Table 4.12).

Table 4.12: Farmer's Training on Pesticide Uses and Disposing

Have you received training on proper use and disposal of pesticides?		
Yes	155	35.7
No	279	64.3
Total	**434**	**100.0**
If yes, who arranged the training?		
DAE	132	81.99
NGO	28	17.39
Others	11	6.83

Source: Field Study

The data disclosed a disgusting situation of the field in respect of food safety and environmental degradation.

b) Training providing organizations

In Bangladesh farmer's training are providing by the Department of Agricultural Extension (DAE), Bangladesh Agricultural Corporation (BADC), NGOs and in some case private companies dealing with production inputs. The survey conducted divulged that DAE is the most favourite organization providing training to the farmers at filed level and about 83 per cent farmers received training from DAE, 24 per cent received training from development project and 12 per cent from NGOs. None of the respondents preferred other organizations/institutes (Table 4.13).

Table 4.13: Training Providing Organizations

Response Type	Frequency	Per cent
Department of Agricultural Extension (DAE)	156	35.94
Development Projects	106	24.42
Non-Government Organizations (NGOs)	150	34.56
Others	22	5.08
Total	434	100
Source: Field Survey		

xi) Membership in farmer's/producer's group

The survey has explored farmer's involvement in groups and benefit they incurred in group activities. The study result indicates that only 23.8 per cent of the farmers have membership in groups, when, majority farmers i.e. 76.2 per cent are not member any type. It also revealed that out of the 103 who have membership in groups, 83 per cent are benefitted from the groups (Table 4.14).

Table 4.14: Membership in Producers Group

Membership in Group	Frequency	Per cent
Are you a member of a farmer / producer group?		
Yes	103	23.8
No	331	76.2
Total	**434**	**100.0**
Are you benefitted from joining in the group (s)?		
Yes	83	81
No	20	19
Total	**103**	**100**

Source: Field survey

xii) Credit Availability for Fresh Agro-commodities Production

a) Sources of Credit

Table 4.15 shows that around 10.14 per cent farmers got credit from the formal banking system, but majority of the farmers (57.60 per cent) preferred credit from NGO sources. The survey also unveiled that the local micro-credit organizations met only 3.23 per cent and local cooperative societies provided 3.92 per cent of the credit requirements.

Table 4.15: Source of Credit

Credit Loan	No. of Respondents	Per cent
Bank	44	10.14
NGO	250	57.60
Local Microcredit Society	14	3.23
Cooperative Society	17	3.92
Local money lander	109	25.12
Total	**434**	**100**

Source: Field survey

Key informant interviews disclosed that the women entrepreneurs are in a less favorable position, compared to their men counterpart in case of accessing for commercial credit from formal financial service providers, more profitable markets, rather the traditional local markets, technology and information to establish and grow their businesses. Further, incentives for small enterprises for growth and development through gender blind private sector development & fiscal policies, legislation, training and education facilities are scarce.

According to the survey report of Bangladesh Bank (2014), the women entrepreneurs faced various obstacles in doing business. These barriers are mainly classified into six broad categories. The study showed that most of the women entrepreneurs faced loan related obstacles followed by marketing, social, environmental, family, and business-related constraints. Where loan related barriers include insufficient credit, high interest rate, delay for loan processing, extra charges in addition to interest rate, banks claim for additional document, inadequate supply of seasonal credit, shorter grace period, requirement of collateral, short term loan with larger instalment, women dedicated desk headed by male official, etc.

b) Credit Requirement of farmers

The survey findings revealed that in the survey areas around 29 per cent of the farmers got production loan from various sources and about 70.5 per cent farmers do not depend on credit from any sources (Table 4.16).

Table 4.16: Information about Credit Sources

Credit required for producing fruits and vegetables	No. of Respondents	Per cent
Yes	128	29.5
No	306	70.5
Total	**434**	**100.0**

Source: Field survey

4.2.2 Marketing of fruits and vegetables

4.2.2.1 Marketable produces

It appeared from the survey that about 40.3 per cent of the producers sell their total production, when same percentage of producers sell 50 per cent and about 10 per cent of their produces in the market. The findings indicate that a significant portion of high value agro-food commodities are marketed in the local market (Table 4.17).

Table 4.17: Marketable Production

Production	No. of Respondent	Per cent
Total Production	175	40.3
Half of the Production	175	40.3
One third of the Production	45	10.4
One Fourth of the Production	39	9.0
Total	434	100.0

Source: Field survey

4.2.2.2 Market Outlets of fruits and vegetables

The survey result depicts that the views of the respondents on product selling information such as the location of the product sold. It is revealed that 99per cent of the producers supply their product in the local market. On the other hand, more than 10percent of the producers supply their product in the national market. Hence, it is easily to mark that most of the fresh

producers are attached with the between local market and national Market. It may be mentioned that 11percent of them are connected with the regional Market. Very few of them are connected to the foreign market. It figures out only 1.6 per cent as shown in the below table 4.18. Mahboob and Islam (2014), in their study concluded that Bangladesh cannot sustain long-run economic progress without having a strong agricultural sector accompanied by a dynamic agribusiness sub-sector.

v) Access to market information

Market information is an important fact facilitating function in the agricultural marketing system. It facilitates marketing decisions, regulates the competitive market process and simplified marketing mechanisms. Reliable market information is needed by the farmers in planning production and marketing timely as well as by other market participants in arriving at optimal trading decisions. In Bangladesh 75 per cent of agricultural producers are small and marginal. Marketing information should ideally be available to all. The field survey revealed that about 76 per cent farmers get information from other associated farmers for marketing their products, when more than 50 per cent get information from local agents. It is unfortunate that the public agency the Department of Agriculture Marketing (DAM) can provide service to only 09 percent farmers (Table 4.18).

Table 4.18: Sources of Market Information

Response Type[2]	No. of Respondent	Per cent
DAM	40	9.22
Associate Farmers	332	76.5
Local Agent or Market	218	50.23
Radio	1	0.23
Online	6	1.38
Mobile App	8	1.84
Local Business Association	27	6.22
Chamber	13	3
Other	10	2.3

Source: Field survey

vi) Transportation of produce from farm to market

Table 4.19, depicts the mode of transportation of product to market as obtained from the survey by the respondents themselves. Table indicates that most of the transportation is done by Van (80 per cent), followed by Rickshaw (38per cent) and on foot (36 per cent). Excepting these, transportations are also done by Bus, Freezing Van, Train, Boat and other means.

Table 4.20 shows that 84.79 per cent of respondent's sale their products in local markets which is followed by

Table 4.19: Transporting System from Farm to Market

Response Type[2]	Frequency	Per cent
On Foot	157	36.18
Rickshaw	169	38.94
Van	350	80.65
Pickup	53	12.21
Truck	16	3.69
Cover Van	21	4.84
Other	25	5.76

Source: Field survey

Table 4.20: Marketing of Agro-food Commodities

Response Type	No. of Respondent	Per cent
Local Market	368	84.79
City/Town Market	47	10.84
Regional Market	12	2.76
Foreign Market	7	1.61
Total	434	100.0

Source: Field survey

city/town markets (10.84 per cent) and 2.76 per cent in regional markets. It was found that only 1.61 per cent of products are sold in the foreign markets in the survey areas.

The field survey recorded that about 44 per cent of the producers sold their produce to local agent and about 54 per cent direct to the market. The results revealed that only an insignificant number of the producers have the access to the producers and manufacturers (Table 4.21).

Table 4.21: Agro-commodities Selling Agent

Selling Agent/Point	No. of Respondent	Per cent
Local Agent	191	44.01
Direct Market	233	53.69
Exporter	4	0.92
Manufacturer	1	0.23
Others	5	1.15
Total	434	100

Source: Field survey

It is evident from the findings that due to several reasons the agro-food commodity producers have limited scope to avail the market channel beyond local market or local agents. The producers have little or no capacity to export fresh produces to the global markets or supply to the manufacturers avoiding intermediaries. Government support to organize marketing groups with the producers, especially youths (male and female) can improve the situation and provide employment to the rural youths and give producers price benefits.

Table 4.22: Summary of Observations/Comments

Segment of VC	Observations/comments
Inputs	• Producers complained about low quality of seeds/sapling, fertilizers and pesticides purchased from local dealers & facing crop & financial losses.
Production	• Applying fertilizers in under/over recommended dozes. Excessive application of fertilizers & pesticides degrading soil fertility & polluting the environments and increasing economic losses.
	• Do not wear any protective measures /clothes during spraying of pesticides & agro-chemicals due to proper knowledge and negligence of farmers on their personal hygiene.
	• Non-observance of pre-harvest interval (PHI) is a critical problem. Most of them do not read the label of the container & maintain waiting period; exposed to risks.
Postharvest handlings	• Post-harvest operations are made under unhygienic environment & often littered with dirt, dust and rotting organic wastes; handled on dirty surfaces, sometimes a dirty mat separates the produce from the floor which is also dirty. • Dirt, debris, organic wastes, and spill-over from previous loads remaining on the loading spaces of the transport vehicle are not adequately cleaned. • Fresh produce, such as tomato, mango are often directly loaded on trucks and vans.

Segment of VC	Observations/comments
	• Packaged in traditional containers are not properly covered and haphazardly arranged on transport vehicles causing physical damage and deterioration of quality of the produce. • Postharvest loss is in the order of 25-30%, which is very high. • Farm level sorting or grading based on standards is not practiced. • Damage caused to fresh produce by bruises or iron hooks during loading and subsequent spoilage due to microbial activities is accepted as routine. • Often produce is directly loaded on the floor of the transport vehicle • Commonly used packaging materials (gunny bags, reused cartoon, and straw baskets) do not provide adequate protection to stored product during movement. • Bad practices are often followed in packaging produce in traditional storage containers, such as overfilling the gunny bags and straw baskets with produce and then providing little cover with straw and banana leaves.
Transportation	• Haphazard loading of packaged produce leading to heavy post-harvest loss due to bruising, abrasion, cracking and other physical damage • Unloading in the market place of produce from the transport vehicle directly on floor and soil surfaces separated by plastic sheets and gunny mats, often dirty and perforated, providing little/no protection to the produce from coming in contact with soil contaminants • The vendors often sit on the pile of fresh produce displayed for sale. . Facilities for practising good personal hygiene, cleanliness and safe handling of produce in most urban and rural markets are either absent or rudimentary.

4.2.3 Market Actors

The field investigators interviewed 198 market actors including traders, wholesalers and retailers from 19 sampled districts as designed in the study. The findings of the survey are presented in the following paragraphs.

i) Demographic characteristics of the market actors/traders

From the survey result, as presented in the table 4.22, below it is clear that out of 198 respondents, 58 per cent were male and 42 per cent were female (Table 4.23).

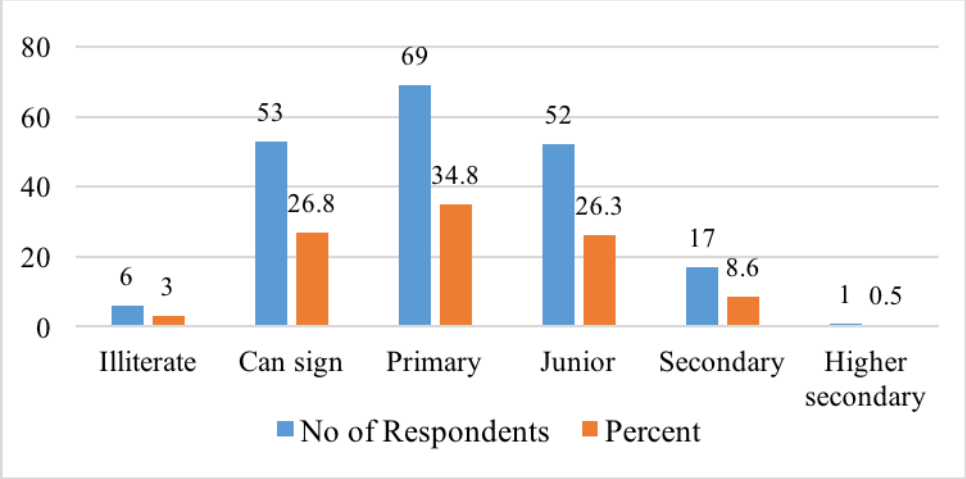
Table 4.23: Gender Distribution of the Traders

Gender	No of Respondents	Percent
Male	115	58.1
Female	83	41.9
Total	198	100.0

Source: Field survey

It has been observed from the survey results that around 3 per cent and 27 per cent of the traders respectively were illiterate and could sign only. Majority (35 per cent) of them passed the primary level and 26 per cent got junior level education. On the other hand, just 7 per cent of them passed S.S.C. and only 0.5 per cent completed higher secondary level, while none of the retailers completed graduation and post-graduation as shown in the figure 4.6.

Figure 4.6: Educational Qualification of Traders



Source: Field survey

ii) Business Information

In respect of the types of products usually are marketed, the survey reveals (Table 4.24) that the retailer sell majority of the products (83.3 per cent) as fresh produce and only 7.1 per cent as processed goods. On the other hand, only 02 per cent of them offer dry products and rest of them (7.6 per cent) provides other services to the consumers.

Table 4.24: Types of Marketed Products

Type of Products	Frequency	Per cent
Fresh	165	83.3
Processed	14	7.1
Dried products	4	2.0
Others	15	7.6
Total	198	100.0
Source: Field survey		

It is clear from the survey result that 18.2 per cent of the respondents were benefitted from product expansion and better harvesting. The proportion of loan facility, conservation facility,

Table 4.25: Benefitted from being associated with Agro-product Trading

Area of Benefit	Frequency	Per cent
Product expansion	36	18.2
Loan facility	8	4.0
Conservation facilities	18	9.1
Better Harvesting	36	18.2
Technology management	16	8.1
More advanced equipment	4	2.0
Others	89	40.4
Total	198	100.0

Source: Field survey

management technology, and availability of more advanced equipment remained from 02 per cent to 9.1 per cent. On the other hand, the highest proportions (40.4 per cent) are benefitted from the other sources (Table 4.25).

iii) Problems in Marketing

More than 60 types of vegetables and about 70 types of fruits are grown in Bangladesh. Being produced by commercial and smallholders, fruits and vegetables marketing is influenced by a number of factors attributing to production, product quality, and market characteristics. According to Kohl and Uhl (1985) these attributes are:

Seasonality: Expect a few cases fruits and vegetables have seasonal production Vegetables have seasonal production directly influencing their marketing. These crops have limited period of harvest and more or less year-round demand. This seasonality also worsened by lack of facilities to store. Promotion of year-round production by modern technologies and increased storage facilities at field level can ease the problem to a great extent.

Perishability: As highly perishable fruits and vegetables quickly start losing quality immediately after harvesting and continue throughout the supply channel until are consumed for this fact elaborated and extensive marketing channels, facilities and equipment are vital

Price /Quantity Risks: Due to perishable and biological nature of production process, there is difficulty of scheduling the supply of fruits and vegetables to market as per demand. These crops are subjected to high price and quality risks with changing consumer's demands and production conditions. Unusual production or harvesting weather or a major crop disease can influence badly the marketing system. Marketing system requires stable supply and price and win-win auspicious marketing arrangements, like contract farming, corporate farming, can ensure the expected stability.

Produce Bulkiness: Since water is the major components of fruits and vegetables, it makes them bulky and low value per unit and is expensive to transport in fresh form every time. It exposed producers to lose substantial quantity as remain unsold in the farm.

The field survey divulged the following constraints in marketing:

- Low price, syndicates of intermediate agents, non-availability of transport at reasonable price at proper time, excessive traffic jams, higher import of some essential commodities from neighbouring countries are the obstacles facing the producers in marketing their products, and
- Insufficient safe area (free from rain and scorching sunshine) for farmers to sit and sell their commodities, syndicating of wholesalers deprived them from getting fair price of crops.

The survey revealed that 12 per cent of the respondents' opined agro-food commodity should have appropriate price, about 09 per cent respondent indicated that transport problems deterring marketing of agro-food commodities.

iv) Means of Communication with Exporter:

The survey investigates how the producers communicate with the traders/exporters. The findings revealed that about 36 per cent of the producers communicate with exporters through local traders, 34 per cent through neighbouring farmers and 16 per cent communicate through local business associations (Table 4.26).

Table 4.26: Producer's Means of Communication with the Exporters

Means	No. of Respondent	Per cent
Through other family members	41	9.45
Through neighbouring farmers	146	33.64
Directly communicate with exporters	11	2.53
Through local traders	156	35.94
Through local business association	71	16.36
Through business chamber	7	1.61
Others	2	0.46
Total	**434**	**100.00**

Source: Field survey

Table 4.27 shows that only 3.5 per cent of products are sold by the traders directly to the processors and rest of the products are sold by other channels.

Table 4.27: Traders Selling of Produce to Processors

Selling Point	Frequency	Per cent
Processors	15	3.5
Others	419	96.5
Total	434	100

Source: Field Survey

The problems of marketing of agro-food commodities have been provided in the Table 4.28. The survey findings reveal that about 17 per cent producers consider lack of transport is the vital problem in marketing fruits and vegetables, and about 12 per cent blamed low price and syndication are affecting profitability of fruits and vegetables farming.

Table 4.28: Problems in Marketing of Fruits and Vegetables

Problems in Produce Marketing	No. of Respondents	Per cent
Low Market Price	24	5.5
Lack of Transport	72	16.74
Traffic Jam	24	5.5
Higher Import, Lowered the Price	9	1.98
Do not get Reasonable Market Price	28	6.39
Product to be Sold at Appropriate Price	50	11.5
Lack of Cold Storage Facilities	19	4.28
Inadequate Sitting Place in the Market	26	5.99
Wholesalers form Syndicates in the Market	52	12.29
Absence of Market Shed	22	5.02
Very High Transportation Cost	16	3.75
High Bank Interest	2	0.5
High Material Cost	5	1.1
Lack of Water Supply in the Marker	37	8.42
Extra Payment in Road Communication	18	4.14
If the color is not good, the price is low.	30	6.9
Total	434	100

Source: Field Survey

4.2.4 Agro-Processors

The field investigation team interviewed total 393 processors from the survey area. During investigation the survey team collected data regarding demographic characteristics, their educational qualification, business environment, categories of processing industries, types of processed products, qualifications and working experience of management staff and workers and marketing systems of finished products, etc. Findings of the field exploration briefly described in the following sub-sections along with supporting data presented in tables/graphs/curves, etc., in the following sections.

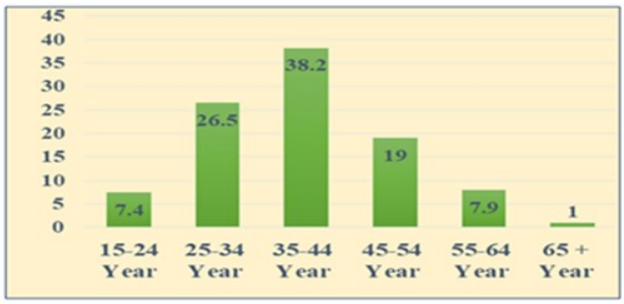
4.2.4.1 Demographic characteristics of agro-commodity processors

Out of the total 393 processors interviewed, 42 per cent were male and 58 per cent female. However, no hermaphrodite was found among the respondents (Table 4.29).

Table 4.29: Gender Distribution of the Agro-Processors

Gender	No. of Respondent	%
Male	166	42.2
Female	227	57.8
Hermaphrodite	0	0
Total	393	100
Source: Field Survey		

Figure 4.7: Age distribution of Processors



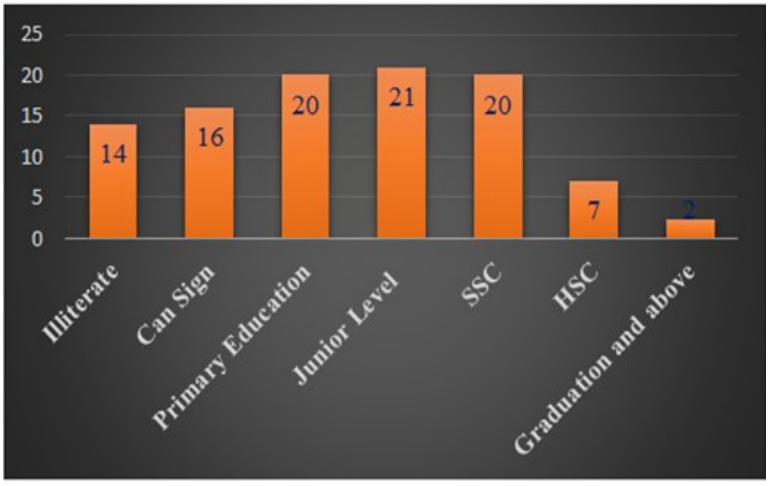
Source: Study survey

Majority of the respondents (38 per cent) belongs to the most active age group (35-44 years), followed by 27 per cent of 25-34 years age group and about 19 per cent 45-54 years age group. About 07 per cent processors were at 15-24 years old when about 08 per cent were 55-64 years old and 01 per cent were 65 plus years old (Figure 4.7).

4.2.4.2 Education qualification of the argo-processors

Sample survey tried to investigate the education level of the agro-processors in the sample area. The figure 4.30 based on the data indicates that amongst the agro-product processors about 14 per cent are illiterate, 16 per cent can only sign their name, when about 20 per cent and 21 per cent have respectably primary and junior secondary level education (Fig.4.8).

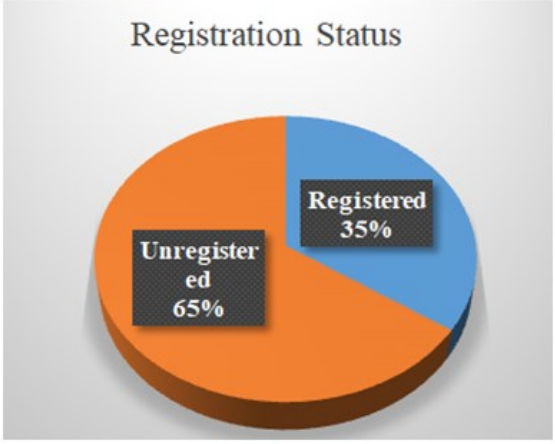
Figure 4.8: Educational Qualification of Processors



Source: Study Survey

About 20 per cent are HSC level and about 07 per cent are HSC pass and only 02 per cent are graduates or post graduate degrees. It has been observed that a significant portion of the processors have either no education or only school level education and the educational qualifications negatively affecting the technology adoption, quality control and safety of the processed products and trading in the global competitive market.

Figure 4.9: Registration Status of Enterprises



4.2.4.3 Registration Status of the Enterprise/Industries

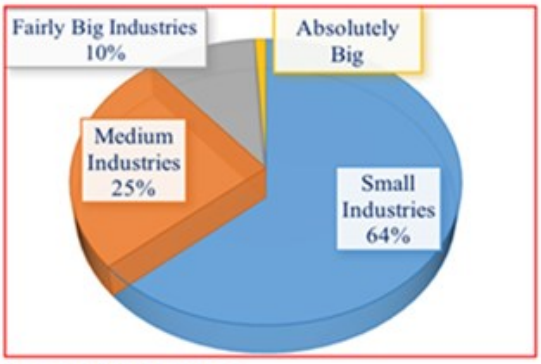
The survey unearthed that only about 35 per cent industries and enterprises dealing with agro-processing are registered and majority of those (about 65 per cent) are still unregistered (figure 4.9).

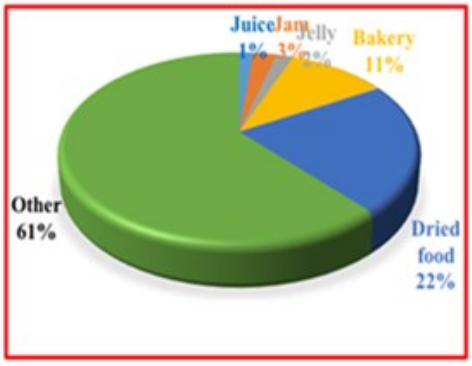
4.2.4.4 Types of Processing Industries and Processed Products

In assessing the types of industries and enterprises the study team found that about 64 per cent are small followed by medium industries which are 25 per cent and big industries are only 10 per cent (figure 4.10).

The following figure 4.11 shows that the share of processed products groups in Bangladesh are more or less producing three categories of products. Out of the total processed agro-food products, about 22 per cent are dried food, followed by baked products 11 per cent, jelly 02 per cent and jam 03 per cent.

Figure 4.10: Types of Processing Industries **Figure 4.11: Share of Processed Products**





Source: Study survey

4.2.4.5 Skilled workers in processing industries

The study team investigated the presence of experienced food technicians in the food processing industries in the sampled area and found (Table 4.30) that on average only 03 per cent processing units have experienced food technicians and 97 per cent industries are

running without food technicians. The survey unearthed the most miserable side of the said industries which affects their competitiveness in the export market.

It is known from the industrial point of view, 'more the educated staff, and better the quality output'.

Table 4.30: Food Technicians in Agro-food Industries		
Status	No of Respondents	%
Food technicians deployed	13	3.3
No food technicians deployed	380	96.7
Total	393	100.0

Source: Field survey

4.2.4.6 Packaging of product

Packaging plays pivotal role in the business. The better packaging ensures better preservation of the product so that it can be served over a longer period. Figure 4.13 exhibits that 25 per cent of the processors use cartoon Box, 30 per cent use the plastic karate and 29 per cent use bags. On the other hand, Baskets and Netted Bags are utilized by 09 per cent and 07 per cent of the processors respectively. However, the majority 48 per cent of the processors, package their products with other materials. It is apparent that, Cartoon Boxes, Plastic Karate and Bags are the most popular form of packaging materials among the processors in Bangladesh.

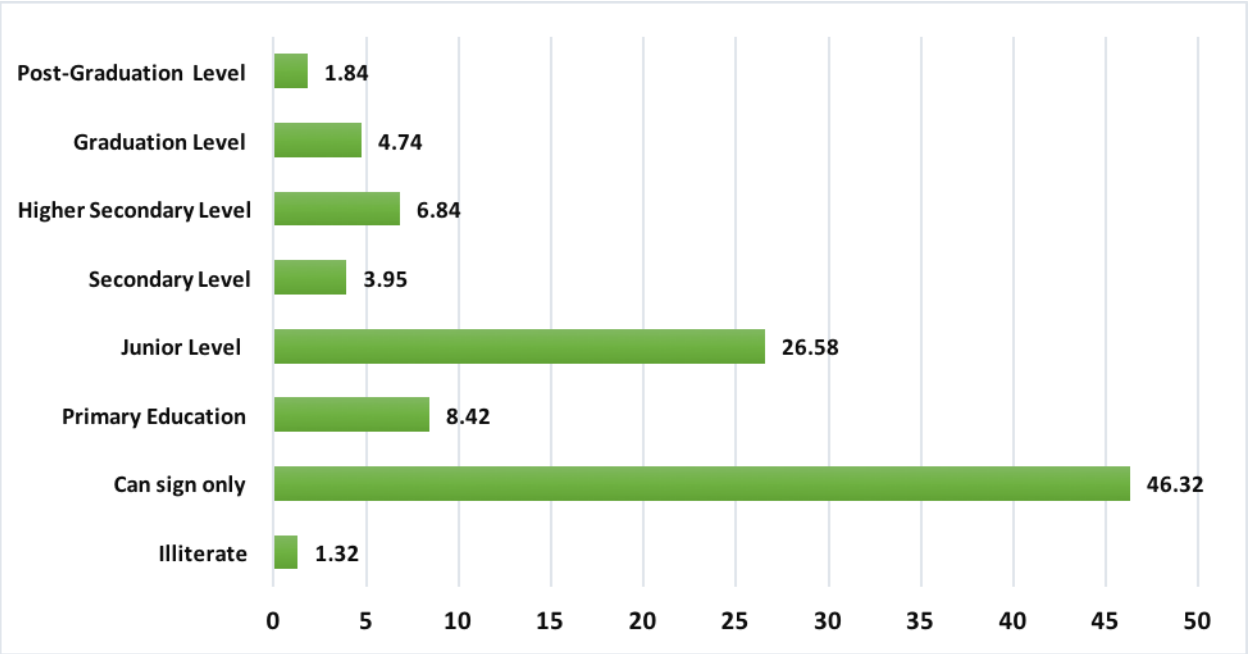
Table 4.31: Packaging of Processed Products

Packaging	Frequency [2]	Per cent
Cartoon Box	99	25.2
Plastic Crates	119	30.3
Bag	114	29.0
Basket	34	8.7
Netted Bag	27	6.9
Palletized	64	16.3
Others	189	48.1

Source: Field survey

Figure 4.12 developed on the basis of the collected field data exhibit a horrific scenario of the agro-food processing industries in Bangladesh. It is evident from the figure that majority of workers (48 per cent) are illiterate where 46 per cent can only sign their name while only 08 per cent are educated up to primary level, 27 per cent junior level, 04 per cent have secondary level education and 07 per cent completed higher secondary level.

Figure 4.12: Educational Qualification of Workers

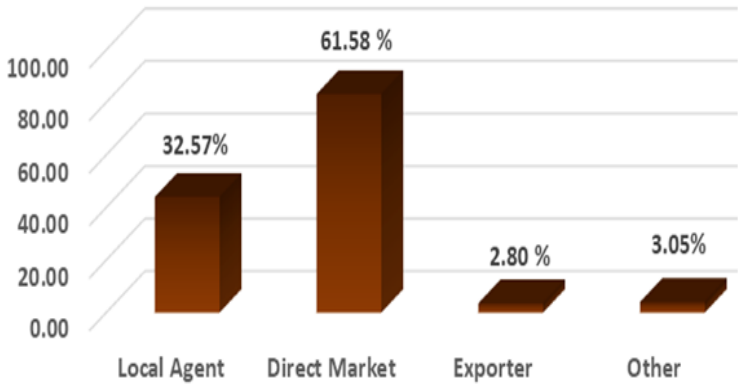


Source: Field Survey

4.2.4.7 Means of product marketing

Product marketing is one of the vital strategies for agro-processors to serve their business purpose. Figure 4.13 indicate that over 44 per cent of the prefer agents, while 83 per cent of them directly. On the other hand, 04 per cent of the processors prefer export marketing and around 4 per cent follow other means of marketing system. From the survey findings it is obvious that direct marketing is the most popular form of marketing system.

Figure 4.13: Means of Processed Products Marketing



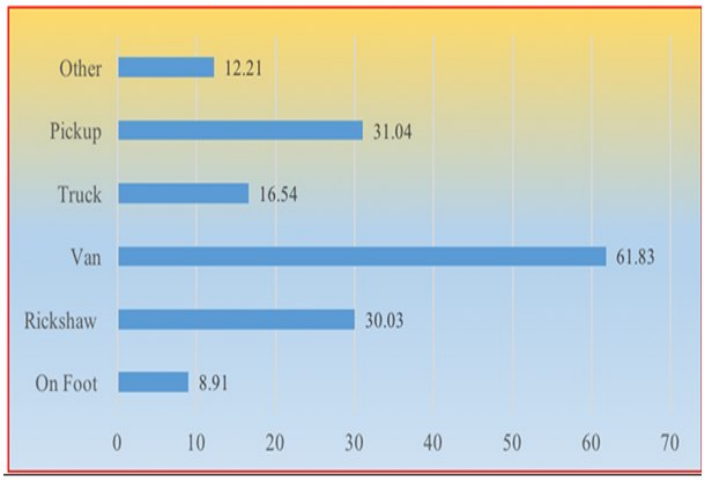
Source: Field survey

4.2.4.8 Transports used for distribution

The survey result represents the means of transportation for the product distribution by the processors, as shown in the figure 4.14. The data analysis reveals that about 09 per cent of the processors distribute processed products on foot, while about 30 per cent use Rickshaw for carrying products to the market. The most preferable system of transportation is Rickshaw Van which is used by about 62 per cent processors.

The survey result represents the means of transportation for the product distribution by the processors, as shown in the figure 4.14. The data analysis reveals that about 09 percent of the processors distribute processed products on foot, while about 30 percent use Rickshaw for carrying products to the market. The most preferable system of transportation is Rickshaw Van which is used by about 62 per cent processors.

Figure 4.14: Use of Transports for the Distribution of Processed Products



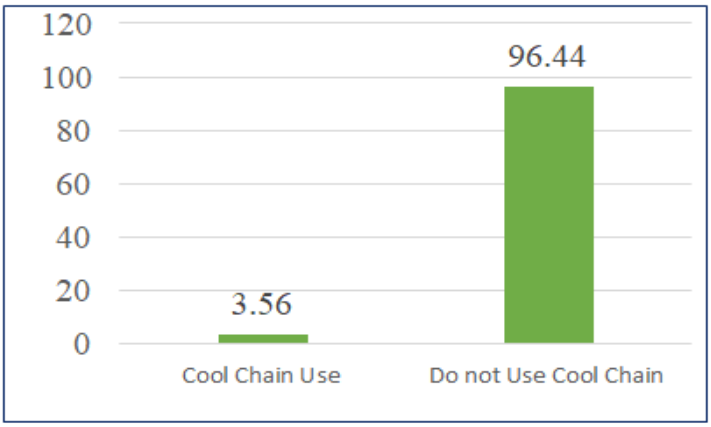
Source: Study survey

On the other hand, about 17 per cent and 31 per cent use respectably Truck and Pick-up Van, while 12 percent prefer other forms of transportation.

4.2.4.9 Use of cold chain during transportation

From Figure 4.15, it is vibrant that out of 393 respondents, 3.56% of them use the cool chain system to transport goods whereas the vast majority (96.44%) of them don't utilize the system. Information about where the producers sell products reveals that 8.91% of the respondents prefer the large organization to sell their products and 28.75% of them prefer small organization respectively.

Figure 4.15: Use of Cold Chain during Transportation



Moreover, 61.07% of the respondents prefer wholesaler and a significant proportion (82.70%) of them love retailers to hand over the products. on the other hand, only 5.85% and 3.82% of the respondents directly sell to the consumer and others respectively (Table 4.32).

Table 4.32: Information about where the producer Sell products

Organization	No. of Respondents[2]	Percent
Large organization	41	10.43
Small organization	113	28.75
Wholesaler	240	61.07
Retailer	325	82.70
Direct to the consumers	23	5.85
Others	15	3.82

[2] Multiple answers considered

It is observed that out of 393 respondents, only 6.6% of them export the products whereas the vast majority (93.4%) of them don't export their products shown in the table 4.33.

Table 4.33: Involvement in Export of Products

Status of involvement	Frequency	Percent
Yes	26	6.6
No	367	93.4
Total	393	100.0

4.2.4.10 Publicity of the product

Table 4.34: Means of Publicity of the Product

Means of Publicity	No. of Respondents	Percent
DAM	35	8.9
Associate Enterprise	206	52.4
Local Agent or Market	263	66.9
Radio	1	0.3
Online	33	8.4
Mobile App Local Agent or Market	16	4.1
Others	67	17.0

It displays findings of types of publicity of the product that the processors use presented in the table 4.34. It is found that 8.9% of the respondents prefer the Dam for the publicity of the products, while 52.4% of them prefer Associate Farmer. Moreover, a significant proportion (82.70%) of them loves to advertise their products by Local Agent or Market. on the other hand; only 0.3%, 8.4% and 4.1% of the respondents prefer radio, online and mobile apps respectively. However, 17% of the respondents prefer other forms of existing advertising policy. Overall, local agents are a most popular form of advertising system whereas radio and mobile apps or internet system is still struggling to reach the processors.

4.2.4.11 Knowledge on quality standards and certification

Table 4.35, shows the knowledge about quality standards and certification. The vast majority, i.e. 96 per cent of the agro-processors have no idea, while only 04 per cent have knowledge about of GMP, HACCP or ISO standards. On the other hand, in response to the query whether they have any idea about WTO, SPS and TBT, 93 per cent expressed they have no idea of them whereas only 6.9% of them are aware of these organizations.

So it is clear that an awfully higher proportion of processors in Bangladesh have no or insufficient idea of Quality and Certification maintenance organizations.

Table 4.35: Knowledge on Quality Standards and Certification

Information about GMP, HACCP or ISO standards		
Response	No. of Respondents	Per cent
Yes	17	4.3
No	376	95.7
Total	393	100.0
Idea about WTO, SPS and TBT		
Yes	27	6.9
No	366	93.1
Total	393	100.0

4.2.4.12 Initiatives undertaken to increase product quality and services

From table 4.36, it is apparent that about 12 per cent of the processors have taken the steps, while the vast majority (88 per cent) of them have not taken any initiatives to improve the quality of products and services (Table 4.37). The table 4.37 illustrates from where the processors collect necessary parts and equipment.

Table 4.36: Initiatives Undertaken to Increase Product Quality & Services

Taken Initiatives	No. of respondents	%
Yes	46	11.7
No	347	88.3
Total	393	100.0

In response to the query about 84 per cent said they purchase from the local markets, 43 per cent collect from district towns and about 03 per cent import from abroad. The survey indicates that the small processing industries procure machinery and equipment from local source and big industries import from abroad. In response to whether their current equipment is hindering their progress, it was found that only 08 per cent disclosed that their current equipment hindering progress and need to be changed or upgrade, about 92 per cent do not think so. Furthermore, in response to statement 'present skills of staff working in processing hindering the improvement", about 06 per cent agreed, while the vast majority (94 per cent) of them disagreed with the query.

Table 4.37: Sources of equipment and machinery parts

Response	No. of Respondents	Per cent
Local market	328	83.5
District town	167	42.5
Divisional town	68	17.3
Importing	10	2.5
Other	3	0.8

Source: Field survey

Table 4.38: Information about Technology/Machinery/Skills and Service Providers

Items	Frequency	Percent
Is the current equipment hindering progress?		
Current equipment hindering improvement	31	7.9
Current equipment not hindering improvement	362	92.1
Total	393	100.0
Present skills of staff hindering the improvement		
Skills of staff hindering the improvement	22	5.6
skills of staff not hindering the improvement	371	94.4
Total	393	100.0
Availability of laboratory facilities in the organisation		
Laboratory facilities available	3	0.8
Laboratory facilities not available	390	99.2
Total	393	100.0
Whether the organization is certified by a quality regulatory body		
Organisation is certified	45	11.5
Organisation is not certified	348	88.5
Total	393	100.0

Moreover, when asked whether the processor's organization have laboratories about 99 per cent replied that they have no such facilities, and the rest (0.8 per cent) have laboratory facilities. Turning to the response whether their organization has been certified by a quality regulatory body, it was found that only 12 per cent of them are certified, while a significant proportion (89 per cent) are still out of certification. Moving to the response of whether they procure raw materials through contract farming, it was found that just 01 per cent of them do it whereas almost all (99%) procure raw materials through contract farming shown in the table 4.38.

4.2.4.13 Sources of raw materials

It is observed in the table 4.39 represents the sources of the raw materials for processing. The study discovered that 89 per cent of the raw materials are collected from the local market, 39 percent from the district town and 07% of materials from big markets at divisional towns. Only 02 per cent materials are being collected from abroad. Apart from these, only 03 per cent 2.8% of the materials are collected from other sources. Moving to the response of whether they procure raw materials through contract farming, it is apparent that just 01 per cent of the processors have contract farming arrangements for procuring raw materials, and 99 per cent procure raw materials from the market through different commission agents (Table 4.40).

Table 4.39: Sources of Raw Materials

Response	No. of Respondents[1]	Per cent
Local market	350	89.1
From district town	155	39.4
From divisional city	54	13.7
Imported from abroad	6	1.5
Others	11	2.8

Source: Field survey

Table 4.40: Procurement of Raw Materials through Contract Farming

Response	No. of Respondents	Per cent
Procure raw materials through Contract Farming	4	1.0
Do not procure raw materials through Contract Farming	389	99.0
Total	393	100.0

4.2.4.14 Financing for business

Table 4.41 illustrates the findings of sources of finance for the business. The study discovered that the vast majority (86 per cent) of the respondents manages their funding by themselves. Moreover, 09 per cent and 03 per cent of the processors find money from the bank and relatives respectively. Apart from these, only 03 per cent of the respondent's financial support comes from other sources.

Table 4.41: Sources of Financing for Business

Sources of Financing	No of Respondent	Per cent
Own management	337	86
Bank	35	9
Relatives	10	2
Others	11	3
Total	393	100

4.2.4.15 Policy and Strategy Discussions

The survey result displays which are the government policies that help improve business. It was found that 44 per cent considered registration is the key business policy and 43 per cent of them replied that inspection helps progress the business. Moreover, 61 per cent and 68 per cent of the respondents replied that subsidy and incentive respectively could be helpful in improving the business. However, 07 per cent gave emphasis on other government policies for improving the business as shown in the table 4.42.

Table 4.42: Which Government Policies Help Improve Business?

Sl. No	No. of Respondents	Per cent
Registration	174	44.3
Inspection	169	43.0
Subsidy	240	61.1
Incentive	269	68.4
Others	28	7.1

Source: Field survey

4.2.4.16 Obstacles faced by women entrepreneurs

In this survey, women entrepreneurs faced different types of obstacles in doing business. These barriers are mainly classified into six broad categories (Figure 4.17). The study showed that most of the women entrepreneurs faced loan related obstacles (66.3%), followed by marketing (19.4%), social (4.3%), environmental (3.2) , family (2.2%), and business(4.6) related constraints Where loan related barriers include insufficient credit, high interest rate, delay for loan processing, extra charges in addition to interest rate, banks claim for additional document, inadequate supply of seasonal credit, shorter grace of period, requirement of collateral, short term loan with larger instalment, women dedicated desk headed by male official, etc.

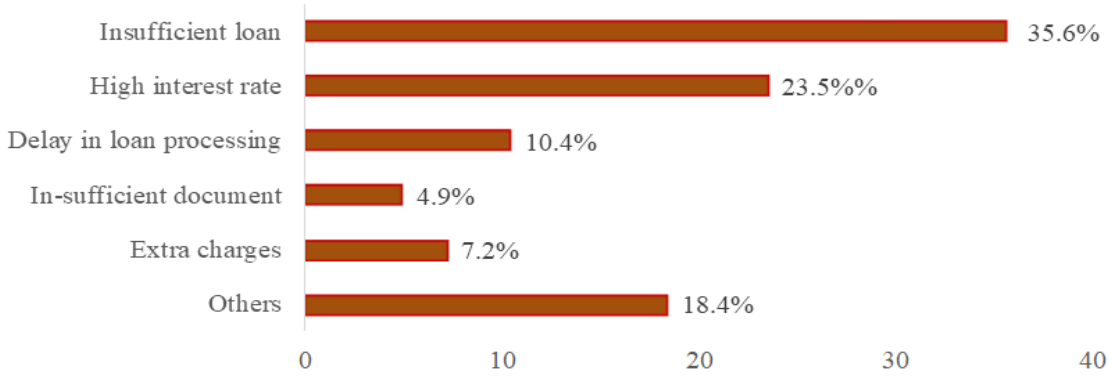
Obstacles related to marketing include competition with large firms, unstable market, delay in payment, rise in input cost, small market, labor crisis and maintaining the quality of the product in comparison with importable goods. Business- related obstacles include lack of training before starting a business, inadequate supply of fund in a recession period and lack of financial literacy, etc. Family related barriers include poor support from family members, loan diversion from business to family affairs (treatment, higher education, foreign employment, etc.) and for getting permission/guarantee from husband for starting a business. Social obstacles include political unrest, negative attitude towards women, infrastructure problem and inadequate administrative support to overcome the troubles comes from the miscreants.

- ***Obstacles for receiving loan***

As far as the nature of constraints are concerned, 35.6 per cent mentioned about insufficient amount of loans against their demand followed by the higher rate of interest on loans (23.5 per cent), delay in loan processing (10.4 per cent), extra charges out of interest rate (7.2 per cent), insufficient documents (4.9 per cent) and other problems (18.4 per cent). Other problems include lack of refinancing facility in all branches, lack of grace period,

inadequate collateral problems and short-term loan with higher instalment, getting permission from husband, etc.

Figure 4.16: Obstacles Faced by the Entrepreneurs in Receiving Loan



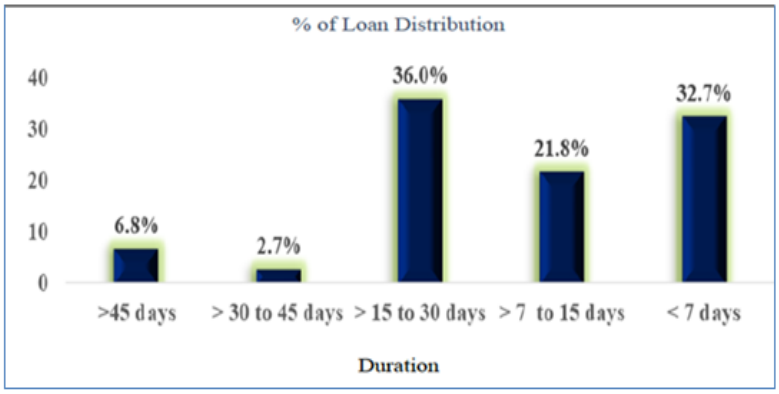
Source: Field survey

- ***Time Log for disbursement of loan***

In view of time delay for disbursement of loan, it was observed that 32.7 per cent of the total (393) women entrepreneurs had loan within one week followed by 21.8 per cent within two weeks while 36.0 per cent received loan after one month of submitting loan application (Figure 4.17) and rest of the entrepreneurs had loans more than one month.

The major problems for the delay in disbursement of loans after submitting loan application were to complete terms of condition for loan processing that includes mortgages and CIB report, etc. Other problems include a centralized system for loan approval, client's information verification and evaluation of assets, etc.

Figure 4.17: Time log for distribution of loan

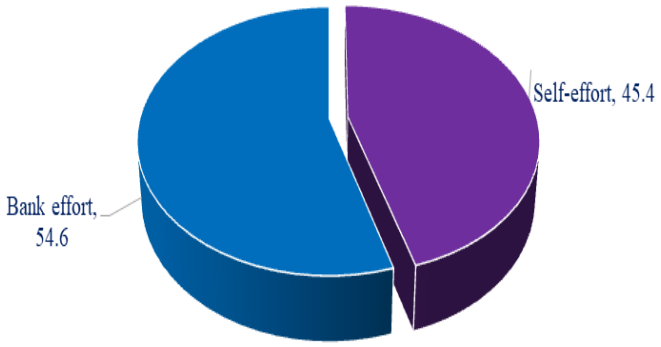


Source: Field survey

- ***Access to Finance of the Women Entrepreneurs***

The majority of women entrepreneurs (45.4 %) said that they came to the bank to avail loan with own initiatives whereas 54.6 per cent of women entrepreneurs were identified by the banks officials (Figure 4.18).

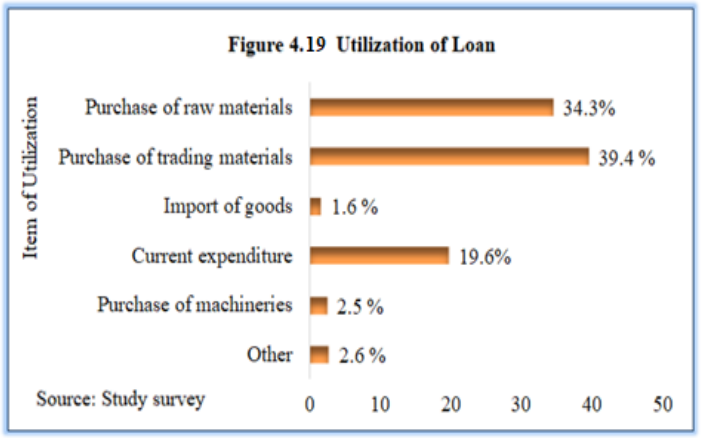
Figure 4.18: Initiative for Loan to the Women Entrepreneurs



Source: Field Survey

- ***Sector-wise Utilization of Loan***

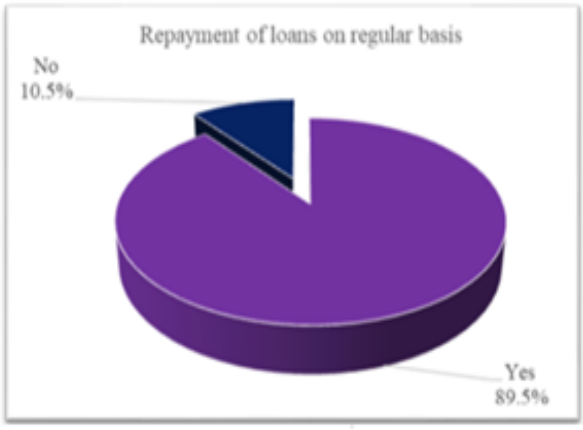
Study results show that the majority of women entrepreneurs (39.4 %) utilized loan money to purchase business materials followed by 34.3 per cent to purchase of raw materials while 19.6 % of the total loans used for current expenditure (Figure 4.19).



- ***Repayment of loan***

Repayment of Loan considering the cases of loan repayment of the entrepreneurs, it was observed that the majority (89.5 percent) of the entrepreneurs out of 393 has paid their loan on a regular basis (Figure 4.20). Only 10.5% women entrepreneurs do not repay the loan regularly. The irregularities of repayment of loans were found due to non-profit from their business, business caused by family shock, climate changes, etc.

Figure 4.20: Loan Repayment Behaviour



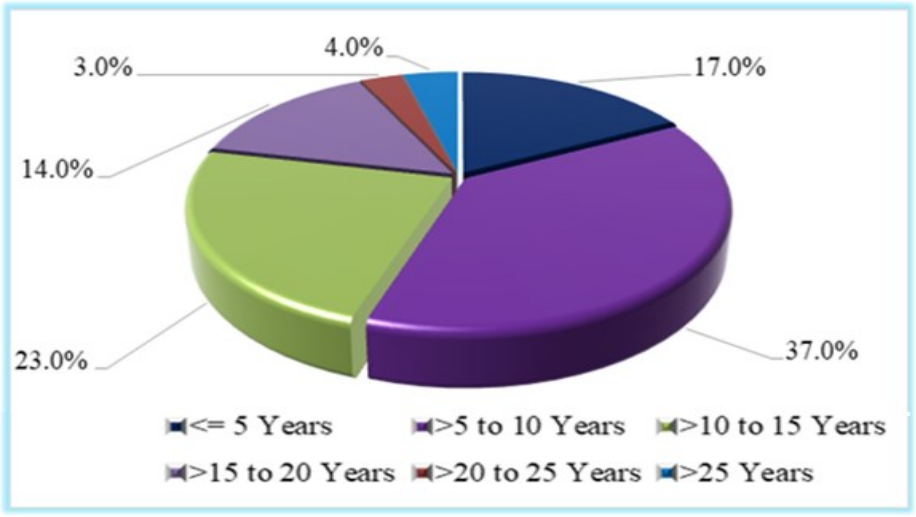
Source: Field Survey

4.2.4.17 Duration of establishment of enterprise

The number of entrepreneurs who set up their enterprises on their own land was 54.3 percent of the total enterprises (Figure 4.21). From the figure it is evident that most of the enterprises

(54 percent) were up to10 years old of which 17 percent enterprises were up to five years and 37 percent were above 5 to 10 years old.

Figure 4.21: Duration of Establishment of Enterprise

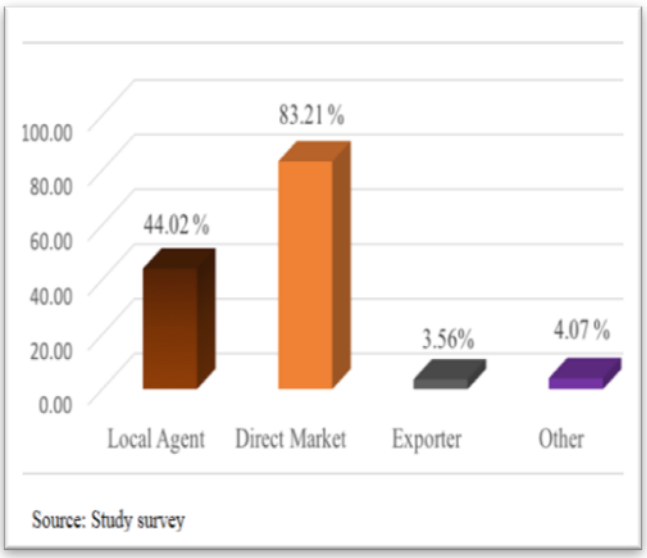


Source: Field Survey

4.2.4.18 Marketing of products

Product marketing is one of the vital strategies for Agro-processors to serve their business purpose. The survey findings as presented in the figure 4.22, portrait that maximum processors sell their products through local agents and or market directly (44.02 % through local agents and 83.21% directly). On the other hand, 3.56% of the processors prefer exporter marketing and around 4.07 % followed by other means of marketing strategies. Overall, it is obvious that direct marketing is the most popular form of marketing strategy.

Figure 4.22: Marketing of Processed Products

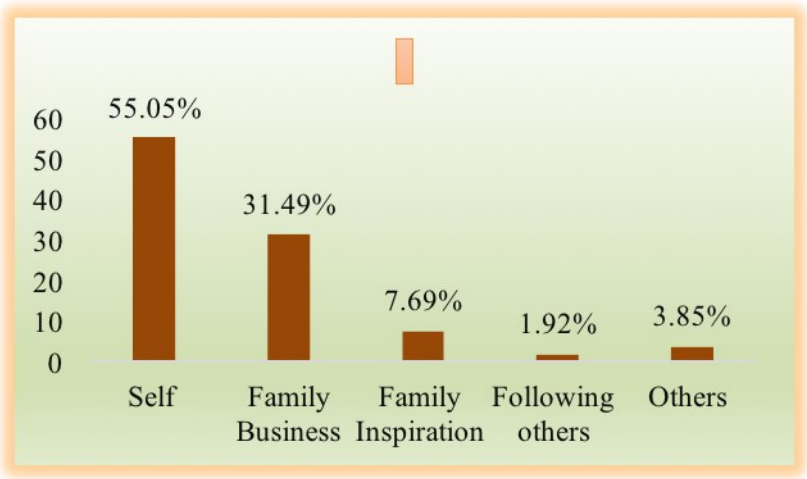


4.2.4.19 Motivation for starting business

A few numbers of women are involved in business in Bangladesh. However, the current scenario is changing over time. Currently, some women came in the income generating activities through changing their social attitude.

It has been observed that 55.05 per cent of women out of 416 started their business being self-motivated to become financially independent followed by 31.49 per cent motivated by family business (Figure 4.23)

Figure 4.23: Motivational Status of Starting Business

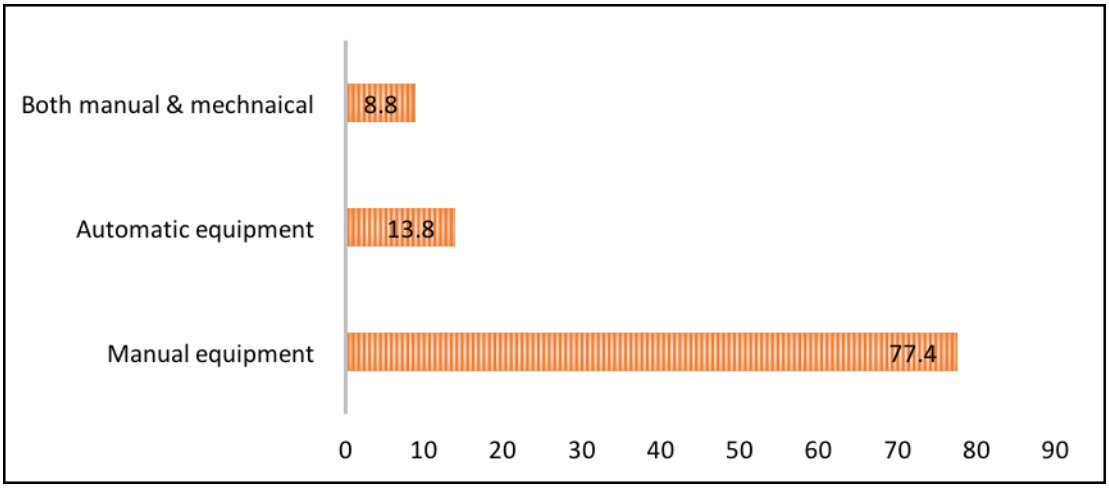


Source: Field survey

4.2.4.20 Equipment use in processing industries

The majority (77.4 per cent) of the total enterprises used manual equipment for their production whereas 13.8 per centused solely mechanical equipment and the rest of the enterprises (8.8 percent) used both manual and mechanical equipment (figure 4.24).

Figure 4.24: Equipment use in Processing

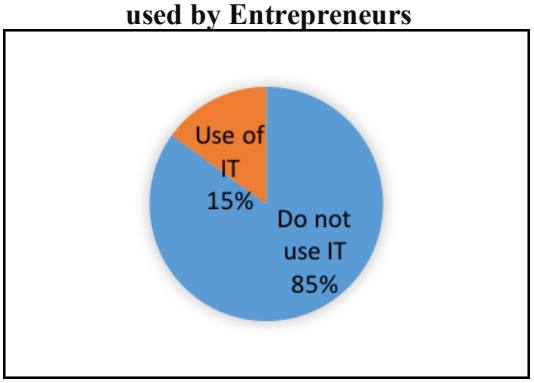


Source: Field survey

In response to the query, whether the entrepreneurs use information technology (IT), about 85 per cent of the processors informed that they do not use IT and only 15 per cent of the total entrepreneurs were found to use IT (Figure 4.25).

4.2.4.21 Sector and size-wise classification of the enterprises: Sector wise classification of the enterprises showed that 39 per cent of the total enterprises belonged to a trading area where agriculture, industry and service sectors accounted for 23 per cent, 21 per cent, and 17 per cent respectively. The majority (44.9 per cent) of the total industrial enterprises (87) fell in the micro category followed by cottages and small industries.

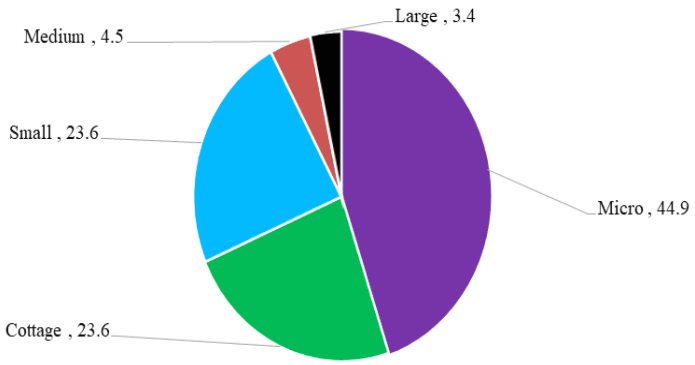
Figure 4.25: Information Technologies used by Entrepreneurs



Source: Field survey

Medium and large size entrepreneurs were 4.5 per cent and 3.4 per cent of total industrial enterprises respectively (Figure 4.26).

Figure 4.26: Size wise Classification of Enterprises

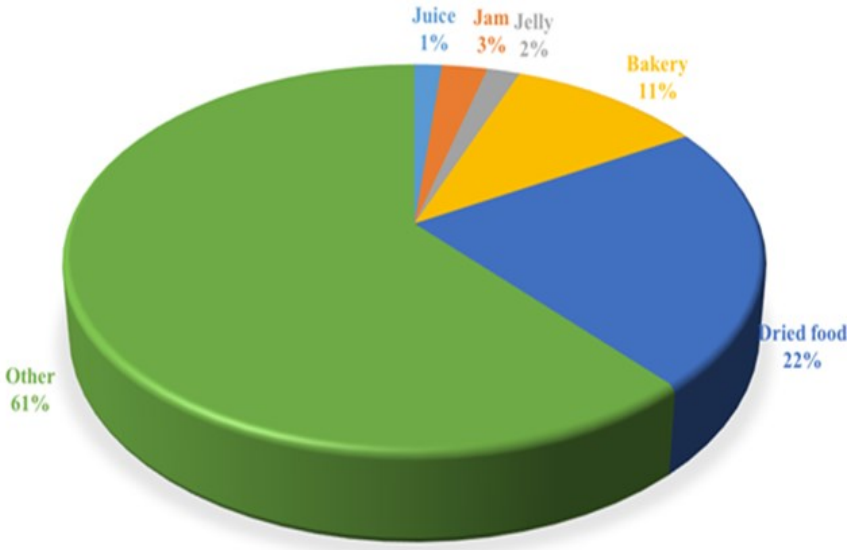


Source: Field survey

4.2.4.22 Types of processed agro-products produced in Bangladesh

Field survey divulged that a good number of processed products are produced in Bangladesh. The figure 4.28 indicates that maximum products (61 per cent) are miscellaneous type followed by dried food 22 per cent and baking products 11 per cent. Quality finished products having higher demands in the urban areas and in the international markets are produced quite insignificant quantities, i.e. Jam 03 per cent, Jelly 02 per cent and Juice 01 per cent of the total finished products.

Figure 4.27: Types of Agro-Processed Products in Bangladesh



Source: Field survey

4.2.4.23 Infrastructural facility

From Table 4.43 which represents the key infrastructures hindering the profitability and growth of the business, it is transparent that 42.2% and 29.3% of the processors opine that road or transport and environment hinder the profitability and growth of business whereas just 7.1% hints at telephone service. Moreover, 21.6%, 24.2% and 23.7% of them believe that gas, electricity supply and crime or corruption respectively plays a role to obstacle the profitability and growth of the business. While 51.4% of them think preservation, problems hinder the growth of the business, 12.0% of them identifies other problems that weren't mentioned above.

Table 4.43: Key Infrastructures Hindering the Profitability and Growth of Business

Response	No. of Respondents	Per cent
Road/ Transport	166	42.2
Environment	115	29.3
Telephone Service	28	7.1
Gas	85	21.6
Electricity Supply	95	24.2
Crime / Corruption	93	23.7
Preservation	202	51.4
Other	47	12.0

4.2.4.24 Membership in business associations/trade bodies

Table 4.44 demonstrates whether the processors have any national or local businesses forum come forward to help their business. The study has found that just 1.5% of them received the assistance whereas none of the national or local businesses come forward to help 98.5% of them. On the other hand, 85.8% of them believe that they would benefit from providing business support services, whereas the rest of them don't think so.

4.3 Value Chain Analysis of Mango

Mango covers an area of 495,711 ha and produces 122,368 metric tons ranking third in fruit production behind bananas and jackfruit in Bangladesh in 2019-2020 (BBS, 2020). The mango yield in Bangladesh is 6.13 MT per hectare, which is lower than the world average

Table 4.44: Membership in Business Associations

Response	No. of Respondent	Per cent
Have any national or local businesses associations come forward to help your business?		
Yes	6	1.5
No	387	98.5
Total	393	100.0
Would you benefit from services of business associations?		
Yes	337	85.8
No	56	14.2
Total	393	100.0

Source: Field survey

(7.51MT per hectare). The area and production of mango in study areas are presented in Table 4.45.

Table 4.45: Area, Production and Yields by Major Regions, 2019 – 2020

Division	Area Under Garden (Acre)		Production of Inside Garden (M.T)		Production of Outside Garden (M.T)		Total Production (M.T)	
	2018-19	2019-20	2018-19	2019-20	2018-19	2019-20	2018-19	2019-20
Barishal	36390	30664	1754	1394	24039	23223	25793	24617
Chattogram	49254	23911	21967	22343	76483	76616	98450	98959
Dhaka	10665	11839	54179	22825	45432	90784	99611	113609
Khulna	21344	19400	47740	48164	79377	72265	127117	120429
Mymensingh	27098	27108	1576	2871	59696	60291	61272	63162
Rajshahi	99640	105335	365105	372202	263034	244564	628139	616766
Rangpur	17854	16568	48211	43715	98763	105544	146974	149259
Sylhet	219	523	2966	3133	29126	32434	32092	35567
Total	235393	235348	543498	516647	675950	705721	1219448	1222368

Source: BBS (2020)

The approximate flowering period of mango in Bangladesh is during February, and harvesting period is during Mid-April to Mid-June. The important varieties are, Fazlee, Langra, Himsagar, Gopalbogh, Ashwina, Khirshapati, and local.

4.3.1 Supply chain of Mango

There are several actors involved in the production and marketing of mango. Supply chains represent the participants involved in the flow of product from farm to market (including traders, processors and exporters). At present various channels are operating in various scales and degrees in the markets (Figure 4.28).

Channel-1: Growers directly sell to pre-harvest contractors in advance who in turn sell to exporter or wholesaler/retailer

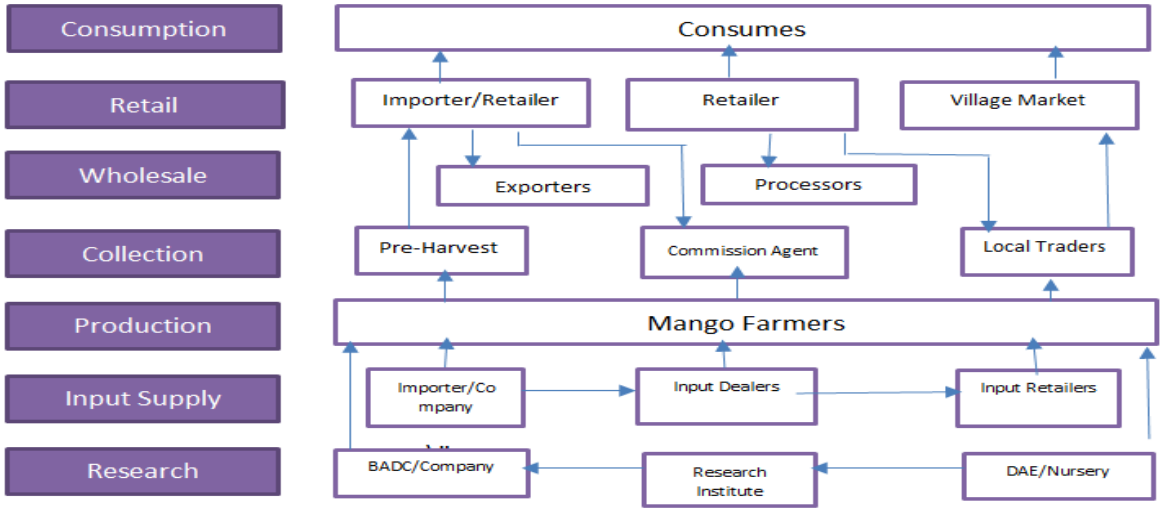
Channel-2: Commission agents collect from growers and sell to wholesalers who supply to /processor or retailers

Channel-3: Commission agents collect from growers and supply directly to the processor who sell to Exporters/retailers

Channel-4: Growers to local traders who sell to village markets

Channel-5: Growers to local traders who supply to wholesalers who sell to processor / retailers.

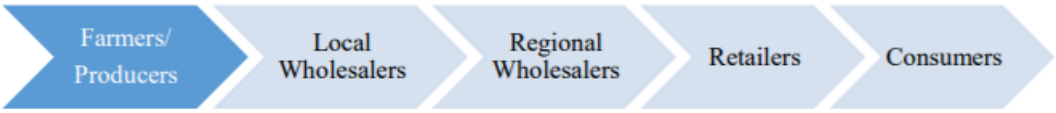
Figure 4.28: Distribution Channel of Mango



Source: Field survey

Traditionally, mangoes are transported from farmers to consumers through a local wholesaler, regional wholesaler, and retailer, as illustrated in the figure 4.29.

Figure 4.29: Supply Chain of Fruits



Farmers or middlemen who procure mangoes from farmers bring produce in bamboo baskets or plastic crates to the wholesale markets. Sorting and packaging are manually done by laborers. Mangoes are wrapped with newspapers, one by one, and are placed in plastic crates. The plastic crates that contain mangoes are piled up on a truck for transportation. Temperatures on the truck are not controlled so the qualities of mangoes sometimes deteriorate under the hot and humid conditions. In recent past years, a new type of mango supply chain has emerged in conjunction with traditional mango distribution channels that involve many stakeholders, new types of mango supply chain comprises contract farming being introduced by large food processing companies and the direct purchasing by supermarket chains, have been established.

Figure 4.30: Mango Supply Chain in Bangladesh

Mango pulp processing companies usually procure mangoes through suppliers instead of directly from farmers. Processed mango pulp is either sold to juice processing companies or processed at juice processing plants owned by the same company or group.

4.3.2 The Period of Marketing

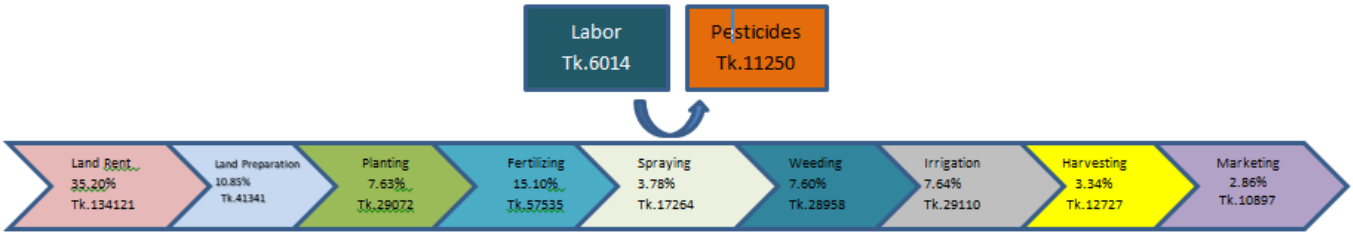
The mango market operates mainly during four months (May- August), with the peak being in June and July, and much lesser quantity in August and May. It is reported that more than 70percent of the growers sell their crops in advance at blossoming or fruit-setting stage. Thus, the marketing of mango commences more or less from the blooming stage, if not earlier, and the ownership of fruits, even on the tree, changes hands at that time from producers to traders. The sale of commercially valuable mangoes often takes place three times:

a) At first, from grower to 2nd party at pea/marble stage
b) Secondly, from 2nd party to 3rd party at mature stage on the tree, and
c) Thirdly, from 3rd party to wholesaler at Dhaka or elsewhere.

4.3.3 Marketing Costs, Margins and Growers Share of Mango

The farmer's share of the consumer's price was 32.20 per cent. However, a large number of owners of mango gardens are absentees who live in cities and towns away from the garden, and prefer to leave the care of their gardens to the advanced buyers, selling the expected produce even at prices well below those that could be obtained by holding onto the production until harvest time.

Figure 4.31: Value Chain Analysis of Mango



A. Farmers and intermediaries share in consumer's price

- Farmers share = 30.50%
- Local assembly trader's share = 10.15%
- Wholesaler'/Retailer's share = 22.25%

B. Marketing costs (transportation, handling, packaging, market charges, fees and tolls, wastage and other costs)

Marketing costs/120 mangoes;

Farmer's = 2.20% of consumer's price
Local assembly trader's = 28.0% of consumer's price
Wholesaler's = 14.5% of consumer's price
Retailer's = 10.0% of consumer's price

Cost of production/ha: Tk.381, 025/- (Tk.22.15/kg)
Total yield/ha :17.20 tons
Selling price/Kg : Tk.35.00
Total selling price/ha: Tk.602,000
Farmers' net profit/ha: Tk.220, 975
Approximate number of mangoes/ha: 54,000

The retailers do not use any fixed prices, and most sales involve bargaining with their customers. The grower's share in the consumer price of mango stands at 30.50percent. The marketing costs stand 2.20 per cent, 28.06 per cent, 14.5 per cent and 10.0 per cent at farmers, local assembly traders, wholesaler and retailer levels respectively.

4.3.4 Causes of Low Productivity and Suggested Remedies

The respondents understanding on the causes of low productivity in mango production are outlined below;

- Old age of many trees, with correspondingly low productivity
- A lack of management and care of trees, the general attitude being that mangoes do not need to be taken care of or fertilized as with field crops
- Absence of adequate plant protection measures for control of insect, pests and diseases
- Poor post-harvest management practices, including inadequate transportation and improper packaging
- Inadequate value addition and processing industries
- Lack of storage facilities at different stages of marketing, viz, assembling, wholesale and retail levels etc.
- Absence of hot water treatment practices
- Absence of Vapour Heat Treatment (VHT) facilities.

4.4 Value Chain Analysis of Pineapple

Pineapple is an economically important crop grown in different parts of Bangladesh. . The fruit is consumed as both fresh and processed forms. A large number of value-added products like, jam, jelly mixed jam, etc. can be produced from it, which will provide remunerative prices to the farming community and will also generate employment for rural people. The area and production of pineapples were 37,000 acres and 218,000 MT during the 2019-2020 (BBS, 2020). Table 4.46 shows the area and production of pineapples in study areas.

Table 4.46: Pineapple Area, Production and Yields by Major Regions, 2019-2020

Division	2017-2018		2018-2019		2019-2020	
	Area (Acre)	*Production (MT)*	*Area (Acre)*	*Production (MT)*	*Area (Acre)*	*Production (MT)*
Barishal	339	603	315	542	316	453
Chattogram	9991	51544	10040	52009	9929	52442
Dhaka	19778	129375	21341	138488	21837	138869
Khulna	241	731	228	675	230	607
Mymensingh	2641	16072	2673	15837	2665	15878
Rajshahi	54	179	60	120	56	108
Rangpur	164	504	158	470	159	465
Sylhet	2029	9393	1985	9298	1990	9226
Total	35237	208401	36800	217439	37182	218048

Source: Field survey

The approximate flowering period of pineapple is during February to March and harvesting period is during May-September. The important varieties grown are; Honey Queen grows largely at Cumilla, Chattagram, Chattagram Hill Tracts, Giant Kew, Kalanga and Calendar etc. The flowering period of pineapple is during February to March and harvesting period is during May-September. The major producing districts are Tangail, Dhaka, Rangamati, Chittagong and Mymensingh.

4.4.1 Supply Chain of Pineapple

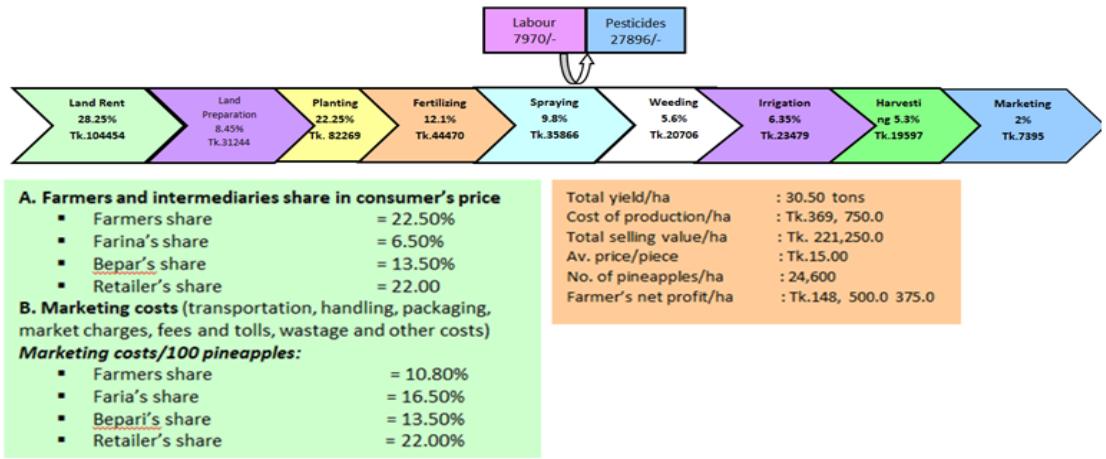
There are several actors involved in the production and marketing of pineapples. The supply chain of pineapple is similar to mango and presented in Figure 4.32. At present various channels are operating in various scales and degrees in the markets:

Channel-1: Growers directly sell to pre-harvest contractors in advance who in turn sell to exporter or Wholesaler/retailer
Channel-2: Commission agents collect from growers and sell to wholesalers who supply to processors or retailers
Channel-3: Commission agents collect from growers and supply directly to the processor who sell to retailers.
Channel-4: Growers to local traders who sell to village markets
Channel-5: Growers to local traders who supply to wholesalers who sell to /processor or retailers.

4.4.2 Marketing Costs, Margins and Growers Share of Pineapples

Value chain analysis shows that, the grower's share in the consumer price of pineapple stands at 22.50percent .The margins of the farias, beparis and retailers stand at 6.50percent, 13.5percent and 22.0percent respectively.

Figure 4.32: Value Chain Analysis of Pineapple



The margins of the intermediaries (faria/bepari, commission agent-cum wholesaler and retailers, transportation, handling, packing, market charges, fees, and tolls and the wastage in

the process of marketing pineapple) are presented in Figure 4.32. The marketing costs stand 10.8percent, 16.5percent and 13.3percent respectively.
The FGD participants has identified following problems in production and marketing of pineapples.

- High cost of suckers
- Scattered production
- Short period of availability
- High costs of transportation
- High per centage of wastage
- Lack of proper storage and preservation facilities
- Absence of proper sorting and grading and any post-harvest treatments, and
- Inadequate processing facilities.

4.4.3 Major Constraints in Marketing System

- Weak forward and backward linkages
- Supply of quality pineapple is for a short period due to poor storage and transportation facilities
- Infrastructure for grading and standardization not available
- Pricing mechanism is not favourable for farmers, and
- Lack of cooperative approach of marketing for improving bargaining power.

In Bangladesh, ripen pineapple consumed by the people. But internationally there have a demand of canned pineapple. By preserving the pineapple in a metal can with syrup it can be preserved for a year. Besides the cultivating season consumer can get the pineapple all the time.

There are many countries who are exporting the pineapple using the can and syrup and there have demand of this processed pineapple almost all the important international market. Philippine and Thailand is the main exporter of canned pineapple. Every year Philippine is producing a large amount of canned pineapple from its pineapple cultivation. European Union and American market is the main importer of canned pineapple. With the surplus quantity of pineapple production Bangladesh also can enter those markets.

4.5 Value Chain Analysis of Lemon

Citrus fruit production increased from 23,513 MT in 1970 to 165,327MT in 2019 (BBS, 2020). In Bangladesh area and production of lemons were 156,000 acres and 59,000 MT during 2019-2020 (BBS, 2020).

It is one of the most important fruits in international trade as fresh fruit and processed product. The trend of area and production of lemons by major areas from 2017 to 2019-2020 are presented in Table 4.47.

Table 4.47: Lemon Area and Production by Major Regions, 2019-2020

Division	Area Under Garden (acre)		Production of Inside Garden (MT)		Production of Outside Garden (MT)		Total Production (MT)	
	2018-19	2019-20	2018-19	2019-20	2018-19	2019-20	2018-19	2019-20
Barishal	3785	4022	59	60	928	116	2799	2452
Chattogram	145684	141822	8748	4986	168982	9645	16263	14631
Dhaka	2788	2846	10944	6142	2374	5690	14180	11832
Khulna	1641	2055	4039	3082	2742	3246	5092	6328
Mymensingh	942	1303	1816	2174	2755	2371	8205	4545
Rajshahi	956	1349	3569	2102	2319	3593	6556	5695
Rangpur	1981	1839	423	613	2440	773	2715	1386
Sylhet	1065	1203	3747	3083	7608	8300	11376	11383
Total	158842	156439	33345	22242	190148	33734	67186	58252

Source: Field survey

The main lime and lemons growing areas of Bangladesh are Chittagong, Khagrachari, Rangamati, Bandarban, Noakhali, Sylhet, Moulvibazar, Habigonj, Dhaka, Gazipur, Mymensingh, Kushtia, Dinajpur, Rajshahi and Rangpur. Lime and lemons are exporting from Bangladesh to Europe. The countries of European Union, gulf region such as Kuwait, Saudi Arabia, UAE and Qatar are potential markets for Jara lemon in Bangladesh. Due to attack on canker disease European Union banned lemon import from Bangladesh in 2008.

4.5.1 Supply Chain of Lemons

The supply chain of lemon is similar to pineapple in Figure 3.1. At present various channels are operating in various scales and degrees in the markets:

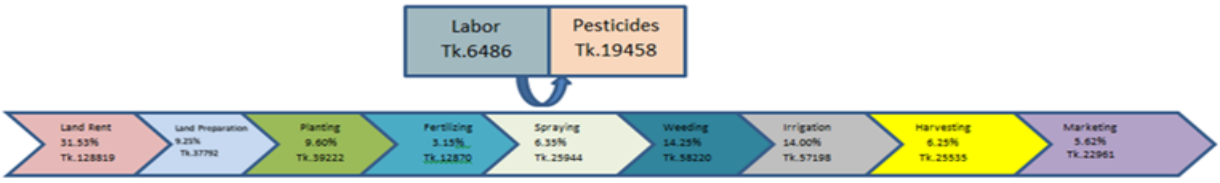
Channel-1: Growers directly sell to pre-harvest contractors in advance who in turn sell to exporter or Wholesaler/retailer
Channel-2: Commission agents collect from growers and sell to wholesalers who supply to processors or retailers
Channel-3: Commission agents collect from growers and supply directly to the processor who sell to retailers.
Channel-4: Growers to local traders who sell to village markets
Channel-5: Growers to local traders who supply to wholesalers who sell to /processor or retailers.

4.5.2 Marketing Costs, Margins and Growers Share of Lemons

Value chain analysis of lemons shows that, the grower's share in the consumer price of lemons stands at 22.50per cent .The margins of the farias, beparis and retailers stand at 8.50per cent, 11.5per cent and 18.40per cent respectively.

The margins of the intermediaries (faria/bepari, commission agent-cum wholesaler and retailers, transportation, handling, packing, market charges, fees, and tolls and the wastage in the process of marketing lemons are presented in Figure 4.33

Figure 4.33: Value Chain Analysis of Lemon



A. Farmers and intermediaries share in consumer's price

- Farmers share = 27.50%
- Farina's share = 8.50%
- Bepar's share = 112.50%
- Retailer's share = 18.40

B. Marketing costs (transportation, handling, packaging, market charges, fees and tolls, wastage and other costs)

Marketing costs/100 lemons:

- Farmers share = 14.80%
- Faria's share = 10.50%
- Bepari's share = 11.50%
- Retailer's share = 24.00%

Cost of production/ha: Tk.408,560.00
Total yield/ha :21.50 tons
Selling price/Kg : Tk.30.00
Total selling price/ha : Tk.6,45,000.00
Farmers' net profit/ha : Tk.2.36,440.00

The marketing costs stand 14.80 per cent, 10.50per cent, 11.50per cent and 24.0 per cent for farmers, farias, bepari's, and retailers respectively. Farmers used grafted saplings, planting time from June to August with average plant to plant distance of 3 meters. The farmers in the study areas encountered various constraints during production of lemon. All these constraints were ranked according to the frequencies of responses. It was found that 64percent farmers have poor knowledge about improved production technology for growing lemon.

Due to lack of modern technical knowledge farmers were using traditional method of cultivation and getting low yield. On average 72 per cent farmers reported that non availability of quality seedlings/saplings at farm level. Acute problem in insect/pest infestation like cancer, Gummosis, Butterfly were found different garden. About 56 per cent farmers opined that non availability of good quality insecticides and fertilizers their production hampered. About 83 per cent growers claimed that lack of cash money as the major problem for initial establishment of lemon garden. About 47 per cent farmers claimed lack of supervision at field level by research and extension personnel farmers opined that they cannot produce export quality lemon. Hundred per cent farmers mentioned that because of few numbers of export buyers they did not get fair price.

4.5.3 Constraints of Lemon Production

The identified constraints in lemon farming are:

- Non availability of quality saplings
- Limited number of buyers
- Pest and diseases infestation
- Difficulties to maintain produce quality
- Lack of modern technical knowledge.

4.5.4 Suggested Measures to Overcome the Constraints

- Develop improved varieties and quality saplings
- Strengthen research to develop location wise technologies
- Transfer modern production and pest management technologies
- Provide training to disseminate available technologies
- Establish producer –exporters' linkages.

4.6 Value Chain Analysis of Jackfruit

Jackfruit (*Artocarpus, heterophyllus*) is the national fruit of Bangladesh. The jackfruit ranks-third in area and second in production among the fruits in Bangladesh. Bangladesh produce Jackfruit covers an area of 41,000 acres and produces 1002,000 MT in 2019-2020 (BBS, 2020).

Table 4.48: Jackfruit Area, Production by Major Regions, 2019-2020

Division	Area Under Garden (Acre)		Production of Inside Garden (MT)		Production of Outside Garden (MT)		Total Production (MT)	
	2018-19	2019-20	2018-19	2019-20	2018-19	2019-20	2018-19	2019-20
Barishal	0	3419	0	0	41133	39101	41133	39101
Chattogram	12210	11611	77146	87126	52652	53055	129798	140181
Dhaka	12510	11614	244556	164665	58945	52077	303501	216742
Khulna	3864	2487	79089	87156	36273	54213	115362	141169
Mymensingh	641	653	103506	82344	21745	83472	125251	165816
Rajshahi	3489	3486	19320	21673	108038	92337	127358	114010
Rangpur	5740	4825	118279	102264	31185	37007	149464	139271
Sylhet	2560	2801	30548	27415	15462	17851	46010	45266
Total	41014	40896	672444	572643	365433	429113	1037877	1001556

Source: BBS, 2020

The approximate flowering period of jackfruits in Bangladesh is during February, and harvesting period is during Mid-April to Mid-June. Usually, a typical Jackfruit tree can bear an average of 150 pieces of fruit each year, although some of jackfruit tree species are known to produce as many as 250 to 500 pieces.

The area and production of jackfruits in study areas are presented in Table 4.48. Data within Bangladesh related to jackfruit processing are meagre and there are no firm successfully engaged in commercial processing of jackfruits in the country. Some processing technologies are developed by BARI but these are commercially used in the processing industry.

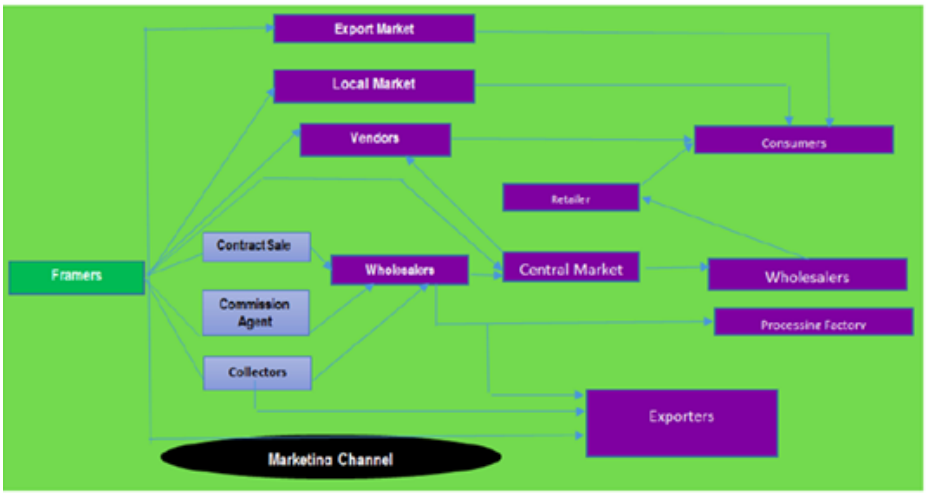
4.5.3 Supply Chain of Jackfruits

There are several actors involved in the production and marketing of jackfruits. The supply chain of pineapple is similar to pineapples and mango and presented in Figure 4.34. At present various channels are operating in various scales and degrees in the markets.

The study identified six supply chains for jackfruit as indicated below:

Channel-1: Grower–Customer (local) supply Chain
Channel-2: Grower–local trader–District market–Customer (local)
Channel-3: Grower – local trader – Retailer – Customer (local).

Figure 4.34 Supply Chain of Jackfruits



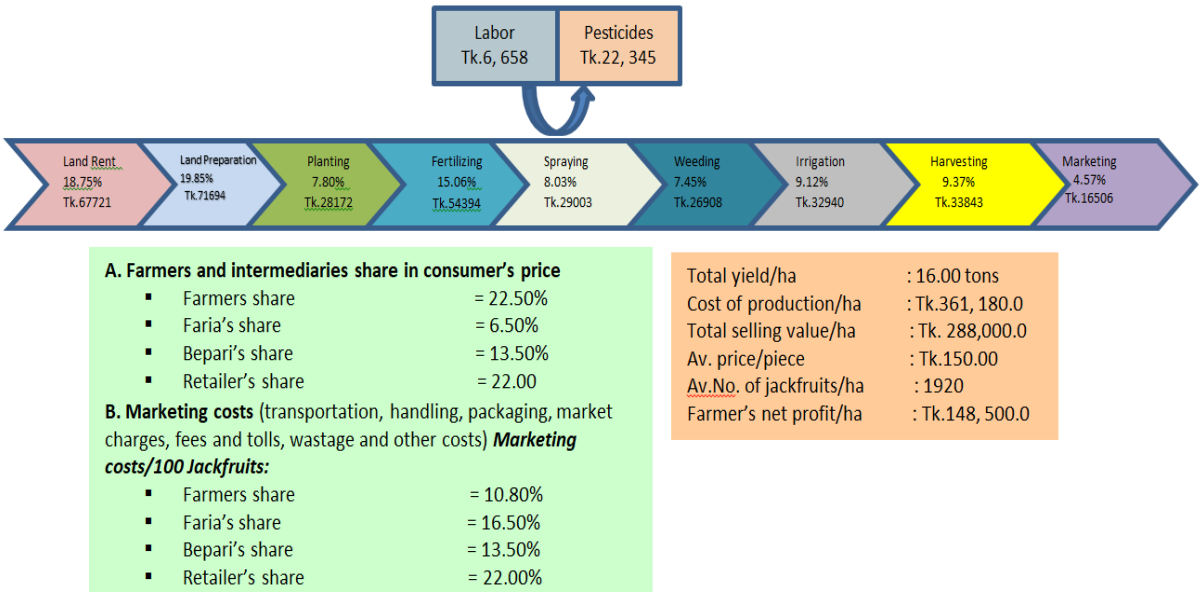
Source: Study survey

Channel-4: Grower–Wholesaler (local) – District Level Trader–Retailer–Customer (Other district):
Channel-5: Grower–local trader-local trader (other district) – Retailer (Other district) – Customer (other district)
Channel-6: Grower-Wholesaler (local)-District market-Customer (local).

4.6.2 Marketing Costs, Margins and Growers Share of Jackfruits

Value chain analysis of jackfruits shows that, the grower's share in the consumer price of jackfruits stands at 22.50percent .The margins of the farias, beparis and retailers stand at 6.50percent, 13.50percent and 22.0percent respectively. The margins of the intermediaries (faria/bepari, commission agent-cum wholesaler and retailers, transportation, handling, packing, market charges, fees, and tolls and the wastage in the process of marketing lemons are presented in Figure 4.35. The marketing costs stand 10.8percent, 16.5percent, 13.50 percent and 22.00 percent for farmers, farias, bepari's, and retailers respectively.

Figure 4.35: Value Chain Analysis of Jackfruit



Supply, marketing and distribution of Jackfruit remain majorly unorganized owing to its issues right from the time of harvesting until it reaches the market for consumption. No scientific standards are followed for determination of maturity and mostly judged maturity based on experience and attainment of size as a result sometimes the fruits became inferior quality thus resulting in lower prices. A traditional method of harvesting by climbing on the tree is followed. This could lead to accidental falling of fruits, resulting in bruising and cracking of fruits. Mechanical injury allows entry of pathogen thereby leading rotting during operations. Assemble the fruits on the ground–in shade or even without shade. Informal sorting and grading is done.

According to the farmer's perception on the specific marketing problems are lack of market information, unorganized marketing, high transportation cost and lack of storage facilities were the top four marketing problems in Bangladesh.

4.6.3 Constraints in Production and Marketing

The FGD participants has identified following constraints in production and marketing of jackfruits:

- High cost of grated saplings
- Scattered production
- Short season crop
- High costs of transportations due to bulkiness
- High percent of wastage
- Absence of proper sorting and grading and
- Inadequate processing facilities.

4.6.4 Suggested Measures to Overcome the Constraints

To address the problems faced in production and marketing respondents were asked to provide suggestions to solving these issues. Almost all farmers (100percent) suggested providing good cultivation knowledge, pest and disease management. About 60 per cent of the farmers suggested facilitation in forming producer organization/cooperatives and 30 percent suggested easy access to credit with low interest rates because some growers were taking loans from neighbours at high interest rates (as high as 20 per cent) and 10 per cent suggested timely availability of inputs. Likewise, all (100 per cent) farmers suggested the need for training on production practices and post-harvest management. Furthermore, respondents were also asked to provide suggestions in solving marketing problems. Here 90 per cent of farmers suggested providing marketing information to farmers. About 50percent of farmers suggested facilitation of marketing as a group would be a better option, 50 per cent farmers suggested the need for providing processing knowledge through any concerned governmental or non-governmental organizations.

4.7 Value Chain Analysis of Tomato

Tomato (*Lycopersicon esculenta* L) is an economically important crop grown in different parts of the country. The area and production of tomato were 70,000 acres and 415,000 MT 190,210 tons respectively during the year 2019-2020 (BBS, 2020).

The major producing districts are Rajshahi, Dinajpur, Cumilla, Chittagong, Dhaka, Faridpur and Barisal. The area and production of tomatoes in study areas are presented in table 4.50. Tomatoes are traditionally planted from mid-August to late November, and are harvested from December to mid-January.

Table 4.49: Tomato Area and Production by Major Region, 2019-2020

Division	2017-2018		2018-2019		2019-2020	
	Area (Acre)	Production (MT)	Area (Acre)	Production (MT)	Area (Acre)	Production (MT)
Barishal	2864	8380	2914	7221	2942	6975
Chattogram	14986	60208	15192	62515	15541	73754
Dhaka	10789	52544	10260	49250	9933	59321
Khulna	7599	33195	7670	32640	7747	33285
Mymensingh	5331	37403	5331	37403	6150	32761
Rajshahi	13718	90094	14242	94205	14528	92897
Rangpur	9084	75163	9124	76195	9051	86555
Sylhet	5138	28051	4964	28224	4668	29946
Total	69509	385038	69697	387653	70560	415494

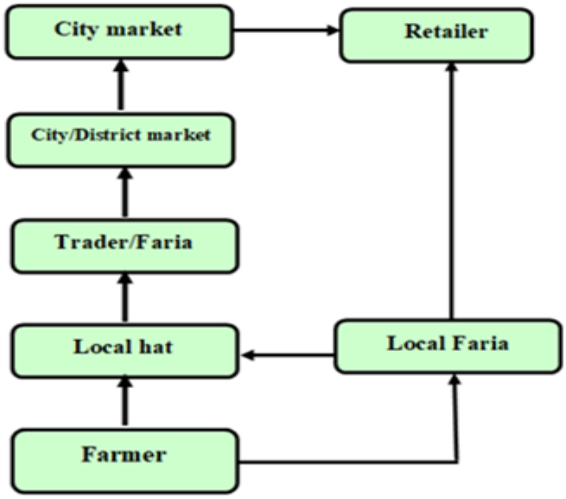
Source: BBS, 2020

4.7.1 Supply Chain of Tomato

There are several actors involved in the production and marketing of tomato. At present various channels are operating in different scales and degrees in the markets. In general the supply chain of tomato can involve any of the following channels (Figure 4.36):

Channel-1: Grower–Customer (local) supply Chain
Channel-2: Grower–local trader–District market–Customer (local)
Channel-3: Grower – local trader – Retailer – Customer (local)
Channel-4: Grower–Wholesaler (local) – District Level Trader–Retailer–Customer (Other district):
Channel-5: Grower–local trader-local trader (other district) – Retailer (Other district) – Customer (other district).

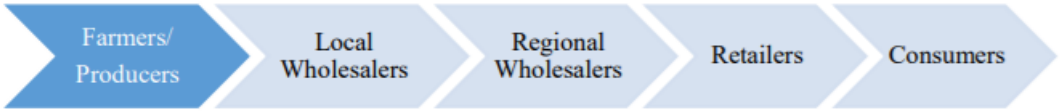
Figure 4.36: Tomato Supply Chain



However, due development of suitable varieties as well as cultivation techniques (protected cultivation), tomato now can be harvested in the summer also. New varieties are developed by private seed companies or government institutes, such as BARI. Though the cultivation of summer tomatoes requires some cultivation techniques, profitability is high. Therefore, farmers started cultivating summer tomatoes.
According to BARI, improved variety can produce 50 MT per hectare if farmers can cultivate tomatoes properly. It is pointed out that major issues regarding summer tomato cultivation are pest management, timely seed supply, expensive input costs, and the lack of finance provided to farmers.

Tomatoes are transported from farmers to consumers sequentially through a local wholesaler, a regional wholesaler, and a retailer, as illustrated in the figure 4.37, below;

Figure 4.37: Tomato Distribution Channel



New type of Tomato Distribution Channel- Similar to the mango distribution channel, large food processing companies have started using contract farming in the tomato market. A food processing company that uses tomato contract farming said that they do so because they want to procure a specific variety and size of tomatoes, and that the rate of receiving damaged tomatoes is high when procured through the traditional tomato distribution channel.

The new type of tomato distribution channel is illustrated in the figure 4.38 below.

Figure 4.38: New Type of Tomato Distribution Channel

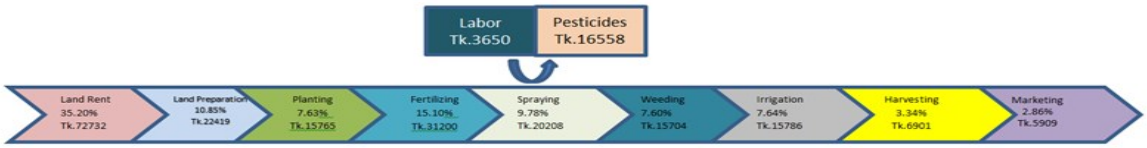
Fresh tomatoes are exported, but the import volume is larger than the export volume, as shown in the table below. Tomatoes are imported from neighbouring countries, such as India, during the non-harvest seasons in Bangladesh.

4.7.2 Marketing Costs, Margins and Growers Share of Tomato

Value chain analysis of tomato shows that, the grower's share in the consumer price stands at 17.50percent .The margins of the farias, beparis and retailers stand at 5.50percent, 12.5percent and 18.00percent respectively. The margins of the intermediaries (faria/bepari, commission agent-cum wholesaler and retailers, transportation, handling, packing, market charges, fees, and tolls and the wastage in the process of marketing lemons are presented in Figure 4.39.

The marketing costs stand 8.50 per cent, 7.25 per cent, 11.50 per cent and 16.40 per cent for farmers, farias, bepari's, and retailers respectively. Value chain analysis shows that farmers do not use recommended dose of fertilizers and pesticides. Moreover, intercultural operations are not done properly.

Figure 4.39: Value Chain of Tomato



A. Farmers and intermediaries share in consumer's price

- Farmers share = 17.50%
- Faria's share = 5.50%
- Bepari's share = 12.50%
- Retailer's share = 18.00

B. Marketing costs (transportation, handling, packaging, market charges, fees and tolls, wastage and other costs)

Marketing costs/kg:

- Farmers share = 8.50%
- Faria's share = 7.25%
- Bepari's share = 11.50%
- Retailer's share = 16.40%

Cost of production/ha: Tk.2,06,625/- (Tk.7.25/kg)
Total yield/ha :28.50 tons
Selling price/Kg : Tk.10.45
Total selling price/ha: Tk.2,97,825.00
Farmers' net profit/ha: Tk.91,200.00

Post-harvest management like sorting, grading is not followed adequately. Although, the infestations of fruit flies and virus infestations are high, most of the farmers are not accustomed to use IPM technologies and manage the virus diseases that are causing devastating losses to production. Very recently farmers are practicing use of bio pesticides including pheromone traps due to making awareness by the DAE and NGOs.

4.7.3 Constraints of Tomato Production

- Farmers are not aware about modern production and post-harvest management of crops.
- Using pesticides indiscriminately
- IPM technologies are not practicing by most of the farmers
- No collection/and processing shed where farmers can assemble their produce, sort, grade and sale to the traders/wholesalers
- Farmers are exploited by traders and not getting fair price
- Not aware about the harmful effect of abuse of pesticides and other crop protection chemicals
- Lack of awareness on the group marketing benefits., and
- Lack of credit facility with appropriate terms and condition.

4.7.4 Suggested Measures to Overcome the Constraints

- Organize training for dissemination of appropriate technologies
- Develop market linkage through group marketing approach
- Impart training on IPM & ICM practices including post-harvest management of crops
- Establish commodity collection centre
- Organize effective producers originations and farmer marketing group
- Disseminate IPM technologies
- Physical improvement through establishment of Commodity Collection Centre (CCC)
- Provide credit facilities with easy terms and conditions.

4.8 Value Chain Analysis of Potato

Potato (*Solanum tuberosum*) is one of the most important crops in Bangladesh. The production volume of potatoes was 862,000 MT in 1971 which increased to 9.606 million MT during 2119-2020 in an area of 1140,000 acres (BBS, 2020). Bangladesh became the seventh largest potato producing country, after China (99.21 million MT), India (48.61 million MT), Russia (29.59 million MT), Ukraine (22.21 million MT), U.S.A. (20.02 million MT), and Germany (11.72 million MT).

For potato cultivation in Bangladesh, the use of high-yield varieties is common—about 90percent of potato production is from high-yield varieties. The names of popular varieties are Cardinal, Granola, Mondial, Ailsa, Cleopetra, Binella, Dheera, Multa etc. The yield range of varieties were 1944 to 46.67 MT/ha. The high yielding varieties covers 84.7 percent of areas while local varieties cover only 15.3percent of lands (JICA Study.2019).

Potatoes are cultivated once a year in Bangladesh. Seed potatoes are sown from the middle of September to November, and are harvested from January to March. Potatoes are cultivated nationwide, but production volumes are large in Northeast areas, such as the Rajshahi Division and Rangpur Division, in addition to the Munshiganj District, Dhaka Division (1.18 million MT).

The Area, Production and Yields by Division of potato during 2018-19 to 2019-2020 is presented in table 4.50.

Table 4.50: Potato Area, Production and Yields by Division, 2019-2020

Division	2018-2019			2019-2020		
	Area		Production	Area		Production
	Acres	Hectares	MT	Acres	Hectares	MT
Barishal	22299	9024	173604	21815	8828	176628
Chattogram	64192	25977	446631	74364	30095	502311
Dhaka	131564	53241	1481375	138963	56238	1528799
Khulna	34981	14156	277738	33772	13668	280253
Mymensingh	36841	14909	221344	39423	15954	239600
Rajshahi	399333	161601	3558966	393803.7	159370	3397354
Rangpur	426166	172460	3417855	423206	171269	3400028
Sylhet	15398	6231	77569	14567	5895	80651
Total	1157402	468375	9655082	1139914	461317	9605624

Source: Field survey

4.8.1 Supply Chain of Potato

In general, the potato supply chain is fragmented. Many intermediaries (local traders, Bepari/ Faria, local commission agents, wholesalers/ aratdars, and urban and rural retailers) are involved in the supply chain. **w**holesalers/ commission agents, cold storage owners, retailers, transporters**,** processors**,** **e**xporters and consumers. The supply chain map shows various channels currently operating in different scales and degrees in the market. A common supply chain of potato is shown in Figure- 4.40.

Channel-1: The assembly traders procure from producers and sell to wholesaler/ commission agents, and wholesalers are found to sell these to the retailers.

Channel - 2: The assembly traders/wholesalers procure potato & store in cold storage and sells to retailers.

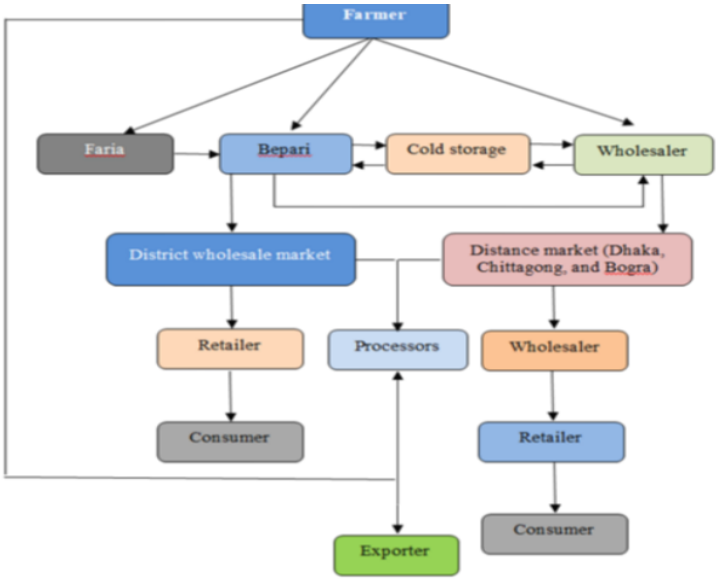
Channel-3: The producer keeps the produce in cold storage and sells to traders/wholesalers, and wholesalers sell to retailers.

Channel- 4: The exporters procure from producer and export to foreign market through sea-shipment.

Channel–5: The processor receives the potato for processing and then export through sea transport.

Unlike other vegetables, the potato is stored in cold storage facilities after harvest, and is sold until the

Figure 4.40: Supply Chain of Potatoes



next harvest season. It is said that 90percent of the total cold storage capacity (about 5.5 million MT) in Bangladesh is used for storing potatoes (JICA Study, 2019). It means that about half of the harvested potatoes are stored in cold storage facilities. Cold storage facilities for potatoes are located in potato producing areas. Most of the cold stores located are in Dhaka, Rangpur, Bogura and Cumilla regions, the principal centres of potato production.

Cold store owners also buy potatoes for earning profit and capacity utilization of storage facilities. They procure potatoes from traders, wholesalers/commission agents and from large producers. Cold store owners usually begin storing (and or buying) potatoes when the main harvest period is in the peak and the price is low. They try hold-off releasing potatoes on to the market until the price has risen sufficiently to earn maximum profit.

4.8.2 Supply Chain of Stored Potato

Study results show that for cold stored potato marketing, *Bepari* and *Paiker* bought potatoes from cold storage (farmer/Stockiest). The share of purchasing potato by *Bepari* (73.2percent) was higher than the *Paiker* (24.4percent). *Paiker* also bought some potatoes (1.8percent) from *Bepari*. *Aratdar* bought all of his potatoes of *Bepari*) from *Bepari* and sold 42.1percent to the *Paiker* and 29.3percent to the retailer. *Paiker* sold maximum amount (68.1percent) of potato to retailer and a very small quantity to directly to consumer (0.2percent). Retailer sold his whole quantity of (100.0percent) but 99.8percent of the channel of potatoes to the consumers. The average losses at traders' level for traditional and cold stored potatoes were 12.45 and 8.65percent, respectively.

According to the respondents, average post-harvest losses in the household level were 5.15percent. This loss comprised rotten loss and processing loss. Total losses of traditional stored potatoes including consumers' loss were found to be 26.65percent where for cold stored potatoes it was 22.40percent. Total losses excluding consumer losses for traditional stored and cold stored potatoes were found to be 25.20 and 18.60percent, respectively.

4.8.3 Marketing Costs, Margins and Growers Share of Potato

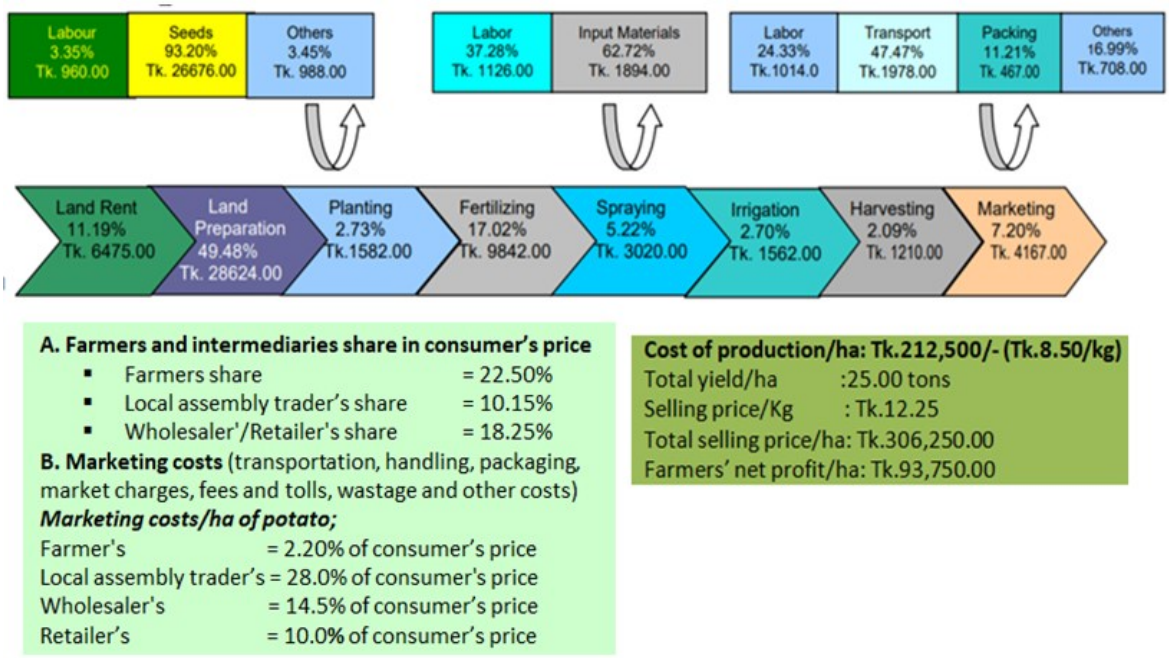
Value chain analysis of potato shows farmers receives that, the grower's share in the consumer price of potato stands at 22.50percent .The margins of the farias, beparis and retailers stand at 10.16percent, 18.25percent and 18.00percent respectively.

The marketing costs stand 2.20percent, 28.9 percent, 14.50percent and 10.0 per cent for farmers, farias, bepari's, and retailers respectively. The margins of the intermediaries (faria/bepari, commission agent-cum wholesaler and retailers, transportation, handling, packing, market charges, fees, and tolls and the wastage in the process of marketing lemons are presented in Figure 3.4. The marketing costs stand 2.20 per cent, 28.9 per cent, 14.50 per cent and 10.0 per cent for farmers, farias, bepari's, and retailers respectively.

The margins of the intermediaries (faria/bepari, commission agent-cum wholesaler and retailers, transportation, handling, packing, market charges, fees, and tolls and the wastage in the process of marketing lemons are presented in Figure 4.41.

The marketing costs stand 2.20 per cent, 28.9 per cent, 14.50 per cent and 10.0 per cent for farmers, farias, bepari's, and retailers respectively. The margins of the intermediaries (faria/bepari, commission agent-cum wholesaler and retailers, transportation, handling, packing, market charges, fees, and tolls and the wastage in the process of marketing lemons are presented in Figure 4.42. The marketing costs stand 2.20percent, 28.9 per cent, 14.50percent and 10.0 per cent for farmers, farias, bepari's, and retailers respectively.

Figure 4.41: Marketing Costs, Margins and Growers Share of Potato



The price of potato is lower during January to May. From June it starts to increase gradually with time and becomes low price in the month of December. Such wide price fluctuations are mainly due to the seasonal character of production and supply. The seasonal fluctuation may, however, be reduced by using early and late varieties, arranging regular supply to the urban areas and setting up of short-period cold storage facilities.

The transportation system plays an important role in the marketing of potato. Due to the absence of adequate and quick transport facilities the cost of marketing increases. Careless handling or delay in transit causes serious damages and cold storage potatoes start coming to markets from July and remain available in the market till December. Potatoes are kept in cold stores throughout the country. Farmers also store potatoes on their premises on katcha floors (C.I.S. roof on bamboo poles with bamboo sidewalls). The growers also store potatoes in parts of their dwelling houses. The home-stored potatoes are sold between February and June. Cold Storage owners provide space and get fees. February- mid May is the best storage time. There are 320 cold storages in the country and the competition is unhealthy and capacity of storage is about 2.0 million tons of which 1.3 million tons is for potatoes and 0.5 million tons are for seed potatoes and the rest is for other crops. BADC stores only 10,000 tons of potato seed. Storage charges are about Tk.1.5 /kg. Table potato and seed potatoes are stored in the same chambers at temperatures around 8°C, which is not recommended for seed potato

because the later needs temperature around 4°C. Higher temperature results in quality deterioration of seed potatoes and adversely affects potato production.

Constraints of Potato Production

- Lack of high yielding varieties
- High costs of inputs and adulteration of inputs
- Inadequate production technology
- No integrated pest management (IPM) and disease control
- Insects pests and disease
- Inadequate post-harvest handling and transportation
- Inadequate research and extension, and
- Weak marketing.

Suggested measures to overcome the constraints

- Supply of disease free and quality seeds in adequate quantities to the producers
- Strengthen production of virus free potato seeds and promote multiplication
- Support should be provided to organize producers group to act in a cooperative manner for production and marketing of potato
- Strengthen extension services for transfer of modern production and postharvest technologies
- Promote efficient marketing through developing contract farming
- Impart training on production technologies, post-harvest handling practices, quality assurance, grading, packing and other value added activities and marketing, and
- Facilitate formation of producers' and small traders groups for efficient marketing.

4.9 Value Chain Analysis of Chilli

The area and production of chilli were 239, 00 acres and 158,00 MT respectively during the year 2019-2020. The major producing districts of summer chilli are Pabna, Rangpur, Rangamati and Kustia, while the winter chilli are Barisal, Comilla, Noakhali, Faridpur and Jamalpur (Table 4.51).

Table 4.51: Area, Production of Green Chilli by Divisions 2019-2020

Division	2017-2018		2018-2019		2019-2020	
	Area (Acre)	Production (MT)	Area (Acre)	Production (MT)	Area (Acre)	Production (MT)
Barishal	42265	16920	43250	15022	40018	15238
Chattogram	45261	20531	41254	19535	38994	18665
Dhaka	47102	31909	44842	34997	46331	31661
Khulna	18947	17594	18420	20519	20561	13947
Mymensingh	25673	11955	25772	12067	25319	3583
Rajshahi	33438	20898	32532	25949	33710	18765
Rangpur	34552	19704	30652	19715	32052	21313
Sylhet	2510	1666	2481	1669	2458	1651
Total	**249748**	**141177**	**239203**	**149473**	**239443**	**124823**

Source: Study survey

4.9.1 Supply Chain Analysis of Chilli

The supply chain shows five types of channels that are currently operating in various scales and degrees in the market.

Channel-I: The producers directly sell products to the retail market/consumers and in some cases producers sell to traders who, in turn sell to retail markets.

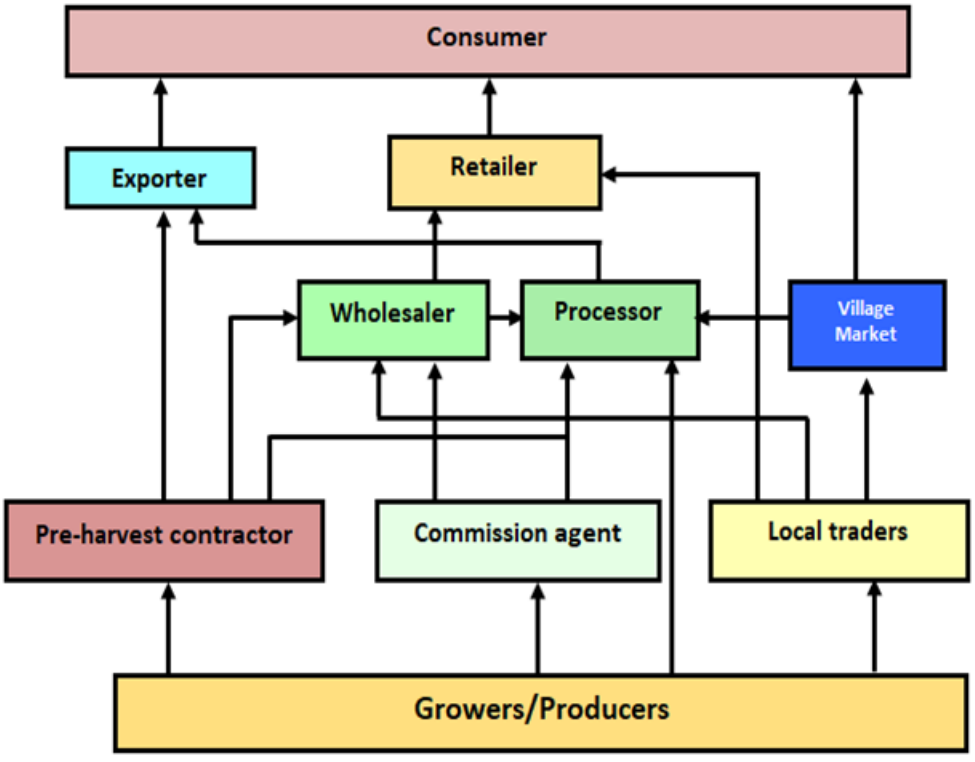
Channel-II: The producers sell products to traders who, in turn sell to wholesale markets and wholesalers sell through urban retailers

Channel-III: The exporter collects produce from producers through their agents and brings to their warehouses and finally sends to the airport for export for consumption by overseas ethnic populations.

Channel-IV: Growers to local traders who supply to wholesalers/agents to processors.

A common supply chain of green chilli is shown in Figure-4.42. In general, the green chilli marketing supply chain is fragmented. Many intermediaries (local traders Bepari/ Faria, local commission agents, wholesalers/ aratdars, urban and rural retailers) are involved in the supply chain.

Figure 4.42: Supply Chain of Chilli



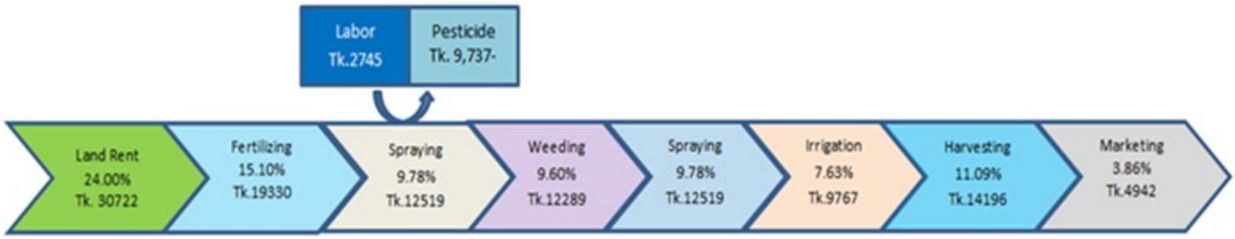
Source: Study survey

4.9.3 Marketing Costs, Margins and Growers Share of Chilli

Value chain analysis of chilli shows farmers receives that, the grower's share in the consumer price of potato stands at 18.50 percent .The margins of the local assembly traders and wholesalers/retailers share stand at 7.15percent and 6.50 per cent respectively (4.43).

The margins of the intermediaries (*faria/bepari*, commission agent-cum wholesaler and retailers, transportation, handling, packing, market charges, fees, and tolls and the wastage in the process of marketing lemons are presented in Figure 3.4. The marketing costs stand 2.20percent, 28.9 per cent, 14.50 per cent and 10.0 per cent for farmers, farias, bepari's, and retailers respectively.

Figure 4.43: Value chain analysis of chilli



A. Farmers and intermediaries share in consumer's price

- Farmers share =18.30 %
- Farina's share = 71.15 %
- Bepar's share = 6.25 %
- Retailer's share = 10.15 %

B. Marketing costs (transportation, handling, packaging, market charges, fees and tolls, wastage and other costs)

Marketing costs/ha:

- Farmers share = 20.50%
- Faria's share = 12.50%
- Bepari's share = 13.50%
- Retailer's share = 12.00%

Cost of production/ha: Tk.128,010/(Tk.17.00/kg)
Total yield/ha :7.50 tons
Selling price/Kg : Tk.32.00
Total selling price/ha: Tk.240,960.00
Farmers' net profit/ha: Tk.112.950.00

The price of chilli is lower during October to April and from May it starts to increase gradually with time and reach the maximum during August and September. Such wide price fluctuations are mainly due to the seasonal character of production and supply. The seasonal fluctuation may, however, be reduced by introducing early and late varieties for arranging regular supply to the urban areas. The transportation system plays an important role in the marketing of green chills. Due to the absence of adequate and quick transport facilities the cost of marketing increases. Careless handling or delay in transit causes serious damages and loss, which also increases the marketing cost of the produce.

Constraints of Chilli Production

- High costs of inputs and adulteration of inputs etc.
- Lack of high yielding varieties
- Non-availability of thermo and photo-insensitive varieties suited to off- season/year round production

- High costs of inputs and adulteration of inputs etc.
- Inadequate production technology packages for the year round supply of chilli.
- Disease and pest problems
- Inadequate post-harvest handling
- Research and extension activities of this crop are not up to the mark.

Suggested measure to overcome the constraints

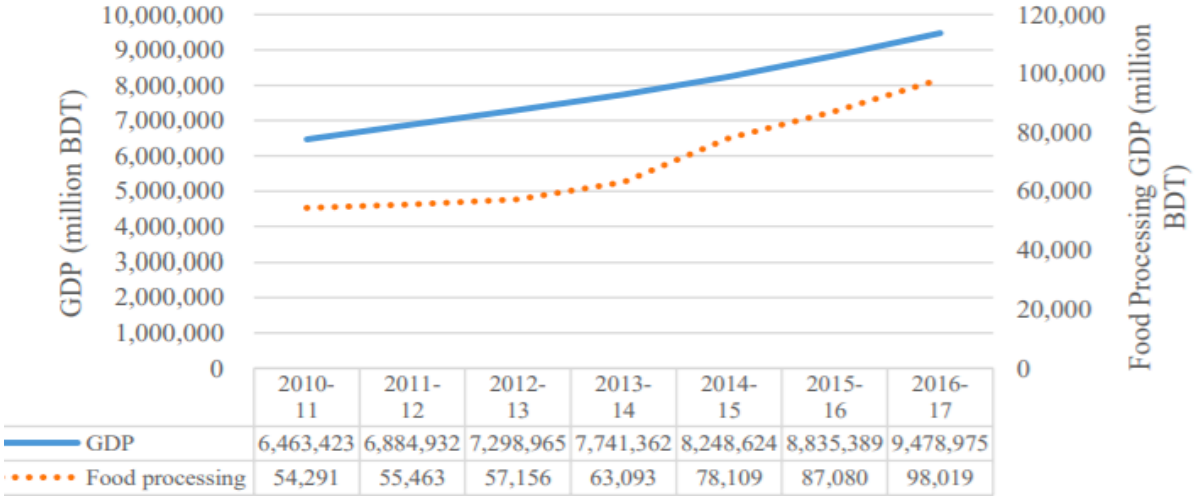
- Increase periodic surveillance to monitor input qualities
- Develop high yielding varieties and improved production technologies
- Increase extension services to disseminate improved technologies of production and post-harvest management
- Create awareness on the benefit of using bio-pesticides to minimize uses of chemical fertilizers
- Increase processing of chillies.
- Research and extension activities of this crop are not up to the mark.

4.10 Agro-processing Value Chain Analysis

4.10.1 Growth of Domestic Consumer Market and Food Processing Industry

In Bangladesh, processed food (packaged food) domestic market as well as its GDP has been growing fast in accordance with recent economic growth. Domestic consumer market, in particular, is expected to play as a driving force for economic development of Bangladesh as it has achieved 11.1percent growth per annum in the last five years and is also forecasted to grow at 7.2percent per annum in next five years (Figure 4.44).

Figure 4.44: Transition of Real GDP and Food Processing GDP (million BDT)



	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
GDP	6,463,423	6,884,932	7,298,965	7,741,362	8,248,624	8,835,389	9,478,975
Food processing	54,291	55,463	57,156	63,093	78,109	87,080	98,019

Source: BBS, 2019. Statistical Yearbook of Bangladesh, 2018

4.10.2 Value Added and Processing Ratio

In comparison with value added ratio of food processing industry of Bangladesh and those of South Eastern Asian countries, it can be said that not only the value-added ratio but also food processing industry's share to GDP is much lower than the latter. In this regard, increasing added value in food processing industry is critical in Bangladesh. One of the major issues of food value chain in Bangladesh is low processing ratio for agricultural products. The following table shows the processing rate for major crops in Bangladesh. Katalyst (2016) reported that processing rate of mango, tomato, potato and chilli are only 6.0percent, 5.0percent, and 2.0 per cent of the total production in Bangladesh. A comparison of processing ratio of potato, tomato and mango of Bangladesh with Japan, USA and the Philippines are presented in table 4.52.

Table 4.52: Comparison of Processing Ratio for Main Agricultural Products

Type of Crop	Bangladesh	Japan	USA	Philippines
Potato	2.0 per cent	55.6 per cent	65.5per cent	-
Tomato	5.0 per cent	3.5 per cent	91,2per cent	-
Mango	6.0 per cent	-	-	25per cent

Source: Katalyst, 2016.

Table 4.53 shows comparison of added value and share to GDP in Bangladesh with some Asian countries where highest processing rate is found in the Philippines (15.30per cent) in 2018 and lowest in Bangladesh (2.70 per cent). As far as processing ratio is concerned, very limited information is available for international comparison. The table below compares Bangladesh's processing rate for potato, tomato and mango with that of Japan, US and the Philippines. Regarding potato, its rate is significantly lower than that of Japan and US. Similarly, with respect to tomato, the Bangladesh's rate is much lower than that of US. Furthermore, regarding mango, its figure is also considerably lower than that of the Philippines.

Table 4.53: Comparison of Added Value and Share to GDP in Asian Countries

Country	Added value (%) (2013)	Share to GDP % (2018)
Bangladesh	13.0	2.70
Thailand	20.10	15.30
Philippines	34.0	9.70
Indonesia	29.6	6.30
Vietnam	22.80	15.0
India	9.90	7.60

Source: JICA study team based on World Economic Indicator and Statistical Bureau of each country.

4.10.2 Mango Processing

The major processed products of mango are mango juice, mango drink, bar, pickle and pulp. Whereas mango juice, bar and pickle are final consumer products, the mango pulp is used to make mango juice or drink. The main difference between mango juice and drink is the percentage of pulp in the final product with juice having the higher concentration. There are some canned mango being produced in Bangladesh, however the quantity is very low. From the study report of Katalyst (2019), it is estimated that only 6percent of the total mango production is used for processing. 84percent (50,000 MT) of the processed mango is used to make Mango Juice and the rest 16percent (10,000 MT) is used in Pickle & Bar,

The major mango processers are Pran Foods Ltd and Akij Food and Beverage Ltd. produce different mango products in Bangladesh. Pran mango products are juice, drinks, bar, pickle and Chuteny. Akij produces omango juice, pickle and bar. Major mango juice brands in Bangladesh are PRAN (PRAN Group), Danish/Garden Fresh (Partex Star Group), Shezan (Sajeeb Group), and Frutika (Akij Group). PepsiCo introduced the Tropicana brand to Bangladesh with their local bottling partner, named Transcom Beverages Ltd in 2019.

PRAN (PRAN Group) | Partex Star Group (Danish/Garden Fresh) | Sajeeb Group (Shezan) | Akij Group (Frutika)

Source: Company's Webpages

The rest of the domestic market demand is occupied by imported drinks such as Tropicana, Masafi, Fontana, Shezan etc. These are imported by importers such as Mawla Traders, RS traders.

Market Size: Data on national market of mango processed products is not readily available in the country. According to Agricultural Value Chain (AVC) Project of USAID, 2013, the national market of mango processed products stood at USD 15.6 million with the market of mango pulp at USD 15.1 million. Pran reported that they have procured 30,000 MT of ripe mango for making juice and 7,000 MT of green mango to make mango pickle and Chuteny from farmers. Akij reported that they procured 3,500 MT of ripe mango for making juice and 300 MT for mango bar, 700 MT of green mango for pickle and green mango juice. It is estimated from key informant interview that Pran dominates the mango processed market with 65percent share with Akij having around 20 percent of market share (Katalyst Report, 2016).

Mango Pulp and Juices: Mangoes are generally processed near the mango-producing area, and mango pulp is processed to mango juice near the consumption area. Some mango juice processing companies have their own mango pulp processing plant, while others purchase

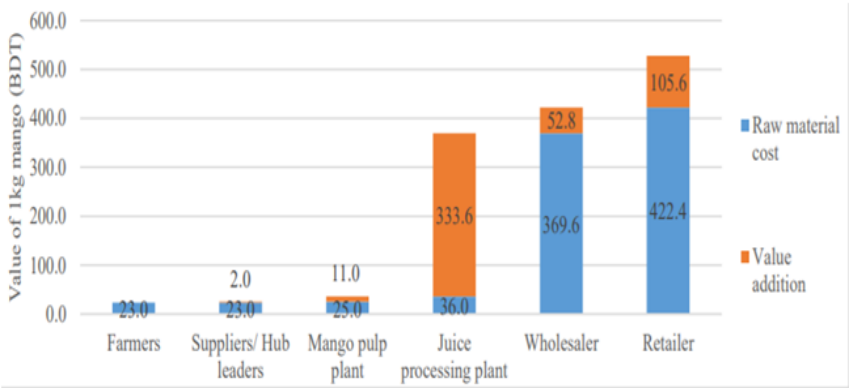
mango pulp from other companies to produce mango juice. The majority of mango pulp processing plants procure mangoes through suppliers/agents. However, PRAN established a procurement network by assigning hub leaders to procure mangoes directly from farmers. Procurement volumes from each hub leader are determined in advance so that the mango pulp processing plant does not procure more than a certain volume of mangoes a day (JICA study, 2019).

The study revealed that, the most modern processing plant has not yet reached the same level of the processing plants in developed countries such as Japan. Aseptic processing in mango pulp processing plants was not yet fully operational in Bangladesh, so the mango pulp is still stored in cold storage facilities. It is said that about 30percent of mango pulp is still imported in Bangladesh. If aseptic mango pulp can be produced in Bangladesh, storage and transportation can be easier, thereby allowing the substitution to domestic production from importing mango pulp.

The varieties of Guti and Ashwini are sold at relatively cheap prices in Bangladesh because Guti has various types of characteristics and Ashini is not too sweet. Therefore, mango pulp processing companies purchase Guti and Ashini at low cost for processing. Currently, mango juice is diluted with water and includes artificial flavoring in Bangladesh; it is not 100percent fresh juice. Neighbouring countries, such as India and Pakistan, produce single variety mango processing products, such as the Alfonso variety or Chousa variety. Bangladesh's mango pulp seems to be less competitive because of the unspecified quality and lack of differentiation compared with other countries' products (JICA, 2019).

Procurement prices of raw mango are determined based on the market price. Mango pulp processing plants request suppliers or hub leaders to transport mangoes in plastic crates. Mango juice is pasteurized and filled in Tetra packs (paper box) or plastic bottles after the mango pulp is mixed with water and artificial flavouring. Juice processing plants are increasingly also assembling the plastic bottles required for packaging the drinks by using blowing machines to inflate the raw material of the plastic bottles. The mango juice in Tetra packs as well as plastic bottles can be stored at ambient temperatures. The changes in the value of 1kg mango to mango juice are summarized in the figure below for the Ashwini and Guti varieties, as of July 2019. As depicted in the figure below, the value of mangoes can be increased by producing mango juice.

Figure 4.45: Changes in Value (BDT) of Mango from Raw to Finished Products (Juice)



Source: Survey of JICA; BBS, 2019. Tear Book Agricultural Statistics 2018

According to BAPA, the juice market in Bangladesh is expected to grow further. Several food processing companies started mango juice production in Bangladesh. The size of the mango processed food market is estimated to be USD 15.6 million53 with a CAGR of 8.2percent. Industry stakeholders stated that 30percent of mango pulp is still imported into Bangladesh.

Therefore, the establishment of advanced processing lines, such as aseptic lines, can help to substitute domestically produced mango pulp for imported mango pulps in order to reduce the storage costs of pulps and improve food safety.

4.10.3 Tomato Processing

As per study report of Katalyst (2016), only 5percent of the total tomato production is utilized in processing for producing juice and ketchup only. The major processed product of tomato is tomato sauce and ketchup/sauce. A small amount of tomato is also used as the base for chili sauce. Almost 100percent (4,500 MT) of the tomato is utilized in making tomato sauce/ketchup.

There are two largest processors are PRAN Foods Ltd. and Ahmed Food Products (Pvt.) Ltd. Who are processing tomatoes in large scale. Tomato is used as an ingredient for a variety of tomato sauce and ketchup, including Tomato Ketchup, Hot Tomato Sauce, Premium Tomato Sauce and also as a base ingredient for Red Chili Sauce. Ahmed Food Products, which is one of the oldest operators in food manufacturing industry in Bangladesh, use tomato in making Tomato Ketchup, Tomato Sauce and Hot Tomato Sauce. Other local manufacturers include Square (Ruchi), Sajeeb and BD. Imported brands including Best's, Life, Heinz among others are also widely available in the market. These products are brought into the market by importers such as Mawla Traders, Juliet Traders, etc.

Market Size: It is estimated that total market value of fresh and processed tomatoes is approximately 156 million USD in Bangladesh out of these processed tomatoes constitute approximately 5 per cent. With total production of 360,000 tons in 2014, the volume of processed tomato in Bangladesh would approximately amount to 18,000 tons. If we take into account the market value of tomatoes estimated by AVC Project of USAID, the processed tomato can be valuated at USD 8 million. Pran utilizes around 3,500 tons of tomato annually, while Ahmed makes use of 800 tons. The estimated market shares of Pran, gathered from key informant interviews, are around 40percent, and that of Ahmed is around 20percent of the overall tomato based processed food market (Katalyst, 2016).

4.10.4 Chili Processing

Chilies are dried and transported as whole spices or powdered spices. The major processing process of spice includes cleaning, grinding, processing, and packaging. In India, where spice production volumes are relatively large, some companies extract turmeric oleoresin from the chili for added value. However, such extraction is not yet done in Bangladesh. Square Food and Beverages Ltd. (Square Group),

PRAN Foods Ltd. (PRAN Group), Ahmed Food Products Ltd. (Ahmed), and ACI Foods Ltd. (ACI Group) produce packed spices, for which Square Groups has the top share. Farmers or middlemen dry, clean, and remove foreign matters. Processing plants clean spices and remove foreign matters again, then grind, pack and ship the packed spices.

According to industry stakeholders, in Bangladesh, packed spices have about a 30 per cent share of the spice market, while the spices that are sold by weight have about a 70percent share of the spice market. About 12 per cent of chili and 100 per cent of turmeric are processed into dried spices, and about 93percent of them are processed at traditional facilities.

Table 4.54: Ratio of processed volume to production volume (Chilli)

Crop	Ratio of processed volume to production volume	Processed products
Chilli	12.0 per cent	Chilli powder 95.0 per cent
		Additives for sauces & snacks) 5.0 per cent

Source; Katalyst, 2016

In Bangladesh, only 12percent of the total production of chili is utilized in processing (Table 4.54). Chili is used in manufacturing powder spices, sauce and as chili powder, to be used as additive in other food products. While green chili is used in some amounts to make sauce and mixed spices, majority of the dry chili powder, sauce/ketchup and the additive form is made from red chili. Currently 95percent (13,000 MT) of the chili is used to make chilli powder and the rest 5percent (500 MT) is used as additives in Sauce and other snacks. Major processors of chili include PRAN Foods Ltd, Square Food and Beverages Ltd., Ahmed Food Products (Pvt.) Ltd. and ACI. PRAN uses chili to produce green chili sauce, red chili sauce, Thai chili sauce, hot tomato sauce, chili powder, mixed spices, chili and other varieties of pickles and *Chutenys*, uses chili powder as additive in snacks and food items including *chanachur*, potato crackers, fried nuts, fried peas, fried lentils etc.

Square is the market leader in powder spices category in Bangladesh. Square produces *Radhuni* brand of chili powder, *Ruchi* red chili sauce, along with using chili in various other kinds of spices/mixed spices, snacks such as fried pulses, *chanachur, jhuribajha* and pickles and Chuteny. ACI's main chili-based product is pure brand of chili powder, along with some usage in *chanachur* and mixed spices.

Ahmed Food Products, one of the pioneers of the food manufacturing in Bangladesh, use chili to produce chili sauce, green chili sauce, sweet chili sauce, hot tomato sauce, chili pickle and mixed pickle. Danish, Fresh, Dekko and BD are some of the other local brands available locally. It can be seen that there are many competitors in the local market for chili powder and this has led to market saturation. Agro processors reported that the increased competition has significantly lowered the profit margin at the local market and they are trying to explore export destinations. In the spices market, presence of foreign brands does not pose a significant threat to the local products, with brands such as *Shaan, Haiko*, National occupying the mixed and specialized spices shelf space. The sauce/ketchup market sees the presence of foreign brands like Best's, *Maggi* and Life, among others.

Market Size: In the national market, Square leads the packed chili powder segment, followed by Pran, ACI and BD. In the chili sauce segment, the market is dominated by Pran, followed by Ahmed and Square. In its various operations, Pran makes use of around 3,500 tons of chili annually, while Ahmed uses about 1,000 tons. From our primary investigation, we can estimate the market distribution to be- Square: 45percent, Pran: 27 per cent, BD: 12 per cent, Ahmed: 10per cent, ACI: 4-5 per cent and the rest distributed among others.

In Bangladesh, the majority of spices are still processed at traditional facilities. Although spices, such as chilli, have a risk of mould venom, such as aflatoxin, traditional facilities do not have the appropriate testing equipment. Large food processing companies have laboratories, but they rely on outside organizations, such as BSTI, or private external organizations for advanced analysis. However, BSTI takes a relatively long time to analyse samples. Since private external inspection organizations cannot analyse all items in Bangladesh, some samples are sent overseas for analysis, meaning that time and funding are required. Furthermore, it is assumed that traditional spice processing facilities do not have enough measures, such as metal detectors, for removing foreign matters. Considering food safety, modern processing facilities need to be established to replace traditional processing facilities. In addition to laboratories owned by food processing companies, strengthening such testing laboratories owned by BSTI or private inspection organizations is also needed.

As described above, the demand for spice processed products is expected to increase in both the export and domestic markets. Therefore, the expansion and upgrade of processing equipment and facilities are required to achieve import substitution and export promotion. Providing loans for the equipment or facilities that produce or develop seeds, refrigeration and freezing facilities, and refrigeration, freezing, and insulated vans can solve the aforementioned issues.

4.10.5 Potato Processing

The production of potato is gradually increasing in Bangladesh, but excess production sometimes creates market gluts resulting loss of the farmers. In this case, processing of more potatoes can be viable option for utilization of the excess production. Although BARI has developed more than 40 high yielding varieties of potato mostly of which are used in table purpose.

Some potato varieties are developed by BARI those are suitable for processing and local agro processors are now gradually adopting these varieties for processing through contract farming arrangements. Processing varieties, which are more suited for making chips, starch, flakes because of high dry matter content (19-22 per cent) include Diamond, Courage, and Lady Rosetta among others. In Bangladesh, the ratio of potato processing volume is only 12percent of the total production (Katalyst, 2016). But in a study conducted by JICA in 2014 reported that only 2.0 per cent of the current potato production is used for processing and currently 60percent (110,000 MT) of the processed potato are utilized in making Chips and Crackers, 24 percent (42,000 MT) is utilized in flakes industry and the rest 16percent (25,000 MT) is used in Starch industry.

The reasons of the low processing ratios of potatoes and tomatoes are:

a) Productions of processing varieties are limited because contract farming is difficult to practice;
b) Ketchup and snacks are imported because the production of intermediate products, such as tomato pulp and potato flakes and starch are limited; and
c) The production capacities of processed products are limited.

In potato processing factories, potatoes are used mainly for producing snacks which include potato chips and ready-to-eat frozen singara etc. Potato is also used to produce potato flakes and potato starch, which has uses in the food processing industry, along with textile and pharmaceuticals.

Major Processors: The potato processors can be segmented depending on the kinds of products they manufacture. For potato chips, major producers include Bombay Sweets, Pran, Quasem Food Products who make real potato chips, and potato chips made from starch. Major producers of starch and potato flakes include Patwary Potato Flakes, Flamingo Agro Tech, Bikrampur Potato Flakes and Rahman Chemicals. Other products such as shingara are made by Golden Harvest, Lamisa, Kazi and some other local companies. Popular imported potato chips include Lays, Pringles, Kurkure. Importers of these items like Mawla Traders, Juliet Traders (Katalyst, 2016). The change in the value of 1kg potato in the potato chips value chain is illustrated in the figure below. It can be observed that value addition at the processing stage is relatively large.

Market Size: According to BBS (2020), Bangladesh produced a total of 9.606 million MTs of potatoes in a year and if 2.0 per cent of the total production is used in processing, then it stands to 192,100 MTs (JICA, 2019). As per Katalyst report, the market share for potato chips was observed to be distributed as Bombay Sweets 51percent, Pran 21per cent, Quasem Foods 13 per cent and the rest distributed among other companies. For making flakes, majority of the market share is held by Patwary Potato flakes, which has the capacity to produce 7,200 MTs of potato flakes per annum. In starch production, the market is dominated by Rahman, who cater to 40percent of the demand. In the frozen singara segment, the market is evenly distributed between local brands such as Lamisa, Kazi and Golden Harvest, along with substantial presence from non-brand frozen singaras made by local manufacturers (JICA, 2019).

4.10.6 Jackfruit Processing

Value-added products from Jackfruit : Dried jackfruit flakes, preserved jackfruit bulbs/ dehydrated jackfruit bulbs/ ready-to-serve jackfruit beverages (Jackfruit Squash),Jackfruit Nectar, Jackfruit Wine)/Jackfruit Vinegar/ Canned jackfruit products (Candied jackfruit, Jackfruit bar & ice cream, Jackfruit Pickles, Jackfruit Jelly and Jackfruits sweets etc. are produced in different countries. Bangladesh is lagging behind to produce diversified processed products from jackfruit.

The industry insiders reported that, some new products are coming for export markets and these are as follows:

1. Vacuum fried Jackfruit chips
2. Jackfruit pulp
3. Dried jackfruit slices
4. Jackfruit flour etc.

It is reported that, some companies under the Bangladesh Agro-based Product Producers and Merchants Association (BAPPMA) are trying to produce jackfruit made osmotic dehydrated food and jackfruit seed powder to export in some EU countries. The fruit pulp is sweet and tasty and used as dessert or preserved in syrup. The fruits and seeds are also processed in a variety of ways for food and other products. Jackfruit value added products include chips, pickles, ice-cream, jelly, sweets, beverages like squash, nectar, wine and preserved flake and chips etc.

It is learnt that, nowadays, boiled and processed jackfruits and soya foods are becoming popular as alternatives to red meat in the US, Canada and EU, he added. The EU, Thailand, Indonesia and Vietnam have captured most of the meat-substitute market worth US$ 4.17 billion in 2017(The Financial Express, November, 14, 2018**).** The Chinese market is now dominated by Thai and Vietnamese jackfruits. Experts opined that scope exists to export such processed jackfruits products in China.

4.10.7 Supply Chain of Processed Key Products

The major components of the value chain are raw material procurement, processing and marketing. From the field investigation conducted by Katalyst in 2016, it has been reported that there are three major channels for procurement which are detailed below.

Channel-1**:** (Farmer-Faria-Arotdar/Wholesalers-Agent-Processor)

In this channel, the processors employ agents who supply the required crop to the processors. These agents procure the crop from arotdars who in turn buy the crops from the farias who again buy the crops form the farmers. Majority of the large processors such as Pran, Akij and Ahmed use this channel for procuring majority of the raw materials. : Majority of the large processors use this channel.

Channel- 2: (Farmer-Faria-Arotdar/Wholesalers-Processor)

The processors procure directly from the *arotdar*s without employing or engaging any agent for the purpose. These *arotdhars* may be in Dhaka or at regional markets. These *Arotdars* usually buy from *farias* or farmers and sell to the processors. Often these *arotdars* do not have any formal contract with the processors rather they are ordinary wholesalers. This channel is mainly used by the smaller agro processors who can easily collect their commodities in desired quantity (usually much smaller than the large processors) from these sources.

Channel -3: (Farmer-Processors)

In this channel, the processor procures the ingredients directly from farmers. The processors employ contract farming under which the processors supply different inputs to the farmers and have a buy back agreement with the farmers. The processors specify the quality that is to be maintained by the farmers and buy back the produce at a pre-determined rate. Usually, this contract farming is employed when the processors want crops with specific quality such industrial variety potatoes with a specific dry matter content or crops which are not usually produced by the farmers.

Major Issues and Measures on Agro-processing Value Chain

A. Production

Table 4.55: Issues and Measures for Improvement of Production

Crop	Issues	Its countermeasures
Fruits	• Not using good quality seeds/saplings of high yielding varieties. • The yields are low because fertilizers are not properly applied based on recommendations of Fertilizer Guide, and • The usage of compost is limited.	• Encourage to use good quality seeds/saplings of high yielding varieties. • Ensure the use of fertilizer application based on recommendations made in the Fertilizer guide developed by BARC. • Encourage to use more compost in the soil.
Vegetables	• Productions have increased, but yields are lower than in other countries. • Quality seeds are supplied by private companies, but low-quality seeds produced by farmers are still being used. • Contract farming is still limited so that farmers do not produce enough processing varieties. • Lack of suitable processing varieties of potato.	• Provision of loans to seed companies for the continuous variety development and seed supply • Approach for the promotion of contract farming and the introduction of processing varieties • Provision of loans for the expansion of organic fertilizer and bio-pesticide production, and • Popularize BARI developed processing potato varieties.
Spices	• Quality seeds are supplied by private companies as well as public agencies but low-quality seeds produced by farmers are still being used.	• Provision of loans to seed companies for the continuous variety development and seed supply. • Encourage farmers to produce and use quality seeds.

B. Distribution

The Issues and Measures for the distribution of major processed products are summarized in the table 4.56 below.

Table 4.56: Distribution of Major Processed Agro-Products

Crop	Issues	Its countermeasures
Fruits	• Post-harvest losses are large because of the lack of cold storage facilities. • Growers do not follow the proper maturity index and ripening of fruits are not uniform due to absence of ripening chambers. • Infestation of harmful pest/pathogens limiting export trade of mango and citrus crops. • VHT facilities are not established so that necessary treatments for exporting mango cannot be done properly. • Packaging and transportation is not improved.	• Provision of loans for multi-purpose cold storage facilities, and refrigerated, freezing, and insulated vehicles • Investment in establishing multipurpose cold storage facilities and use of standard, and • Establishment of ripening chambers and VHT facilities for mango by the public sector.
Vegetables	• Cold storage facilities for fruits and vegetables are limited. • Post-harvest losses are large because proper boxes, such as plastic crates, are not used. • Rough transportation and absence of cool chain and storage facilities.	• Provision of loans for multi-purpose cold storage facilities, and refrigerated, freezing and insulated vehicles etc.
Spices	• Cold storage facilities for spices (including onions) are limited.	• Provision of loans for multi-purpose cold storage facilities, and refrigerated, freezing and insulated vehicles etc.

Based on the above, the key issues for distribution can be summarized below:

- Since cold storage facilities for fruits, vegetables, and spices are limited, post-harvest losses are relatively large;
- Refrigerated, freezing and insulated vehicles as well as plastic crates are not used, so the risk of post-harvest loss during transportation is large;
- Ripening chambers and VHT facilities have not been established; and
- The distribution network of rice bran for rice bran oil has not been established.

Based on the above table, businesses that need financing and capacity development are summarized below.

Equipment and facilities with financing need:

- Cold storage facilities for fruits, vegetables, and spices;
- Refrigerated, freezing and insulated vans; and
- Plastic crates for fruits and vegetables transportation.

Capacity development needs:

- The promotion of multipurpose cold storage facilities;
- The promotion of plastic crates for transportation; and
- Ripening chambers and VTH facility for mango are expected to be provided by the public sector.

C. Processing and Retail

The issues and their countermeasures for the processing and retail business of major processed products are summarized in the table 4.57.

Table 4.57: Issues and Measures for Processing and Retail

	Issues	Measures
Fruits	- Although fruit production, including mango production, is large, aseptic lines are not yet well-established, so the quality of mango pulp is degraded, and the storage cost of mango pulp is high. Mango pulp is still imported. - General knowledge on food safety is lacking, and the appropriate equipment and inspection equipment have not been introduced. - Types and volumes of processed products, other than juice and pickles, are limited, and processed products, such as jam, and products preserved by sugar are imported.	- Provision of loans for fruits processing facilities (especially aseptic lines and equipment for food safety); - Establishment of aseptic lines, and the diversification of processed products (other than juice) - Creation of mass awareness on the improvement of food safety
Vegetables	- Vegetable productions are large and have large room in which to be processed. Demand for vegetable processed products is expected to grow. However, intermediate products are still imported, and the production capacity of processed products is still limited. - Cheap, but low-quality, equipment for weighing and packaging is used in food processing plants, resulting in high rejection rates.	- Provision of loans for vegetables processing facilities (especially quality weighing and packing machines, and equipment and facilities that can improve food safety). - Creation of mass awareness on the improvement of processing technologies for vegetable processed products

	Issues	Measures
	- Few factories introduced nitrogen filling and nitrogen generation equipment to control deterioration, so the shelf life of products is shorter than if nitrogen were used. - General knowledge on food safety is lacking, and appropriate equipment and inspection equipment have not been introduced.	- Creation of mass awareness on the improvement of food safety.
Spices	- Domestic spices production is large, and has large room in which to process. Demand for processed spices is expected to expand. - For food safety, appropriate equipment and inspection equipment, such as metal detectors, have not been well-introduced.	- Provision of loans for spice processing facilities, and equipment and facilities which contribute for food safety - Provision of loans for equipment at laboratories to test hazardous substances.

Based on the above information, the key issues for the processing and retail business can be summarized below:

- Since the demands of processed products are expected to increase, the expansions of processing facilities are needed;
- The quality of intermediate products, such as mango pulp, is low due to lack of aseptic and similar processing lines. Because of this, such intermediate products are imported in spite of the relatively large domestic production of raw materials;
- The variety of crop suitable for processing is limited;
- Due to poor performance of weighing and packaging machines, the proportion of defects of final products is relatively high; and
- Food processing companies do not have sufficient knowledge of food safety management, and have not acquainted with the quality assurance systems.

D. Enabling Environment

The Bangladesh has undertaken several strategies to improve the business environment through enhanced regulatory frameworks, promotion of innovation and technology, increased access to finance, strengthened and expanded related support services and integration of SMEs into global value chains. Recently, the Government of Bangladesh has developed draft 'Agro Food Processing Promotion Policy, 2020' outlining the government's plans to diversify Bangladesh's processing industry beyond the garment and footwear sector and identifying value-added agricultural products as a potentially important export. This policy encourages FDIs and domestic investment and strengthens the capacity of both foreign and domestic SMEs in order to boost their production of goods, both for export and for import substitutions (Katalyst, 2016).

E. Governance in the Value Chain

Processers/exporters have a very central role in the chain. They are keys in growing the sector. If producers' organization functions effectively and engaged in contract farming, they will be the key influencers and drivers of the sector. The processers/exporters are of course guided by the policy, and efforts from within the supply chain to support farmers are largely driven by the various ministries and agencies in the enabling environment. Even so, processers/exporters are the real movers and shakers of the sector, which is why any intervention would need to give them primary attention.

F. Discussions on the Study Findings

Field study report suggests that various factors affecting the quality and safety of fresh fruits and vegetables during production, post-harvest handling and marketing. A wide range of biological and chemical agents or microbial hazards and environmental contaminants causes food borne diseases with varying degrees of severity.

The increase in the prevalence of foodborne diseases in recent days is alarmingly and causing harms to the human health and the environment. There are many ways in which the fresh fruits and vegetables quality and safety are negatively affected in the supply chain, ranging from the soil used to cultivate the crop handlings by the consumers and retailers at the time of sale. At the production level, soil contains excess heavy metals, while water used for irrigation and for washing harvested produce is frequently polluted. Use of untreated manure by the farmers spread pathogens while imbalance use of chemical fertilizers without testing the soil poses serious threat on soil degradation and water pollution too. There are frequent evidences of indiscriminate and over uses of pesticides that leaves opportunities for their residual effects on human health, ecology and environment. In most cases the growers do not follow pre-harvest interval (PHI). The farmers are not using appropriate doses and following correct frequency of applications, norms and methods of spraying. Farmer's knowledge of IPM is not widespread and pesticides tend to be applied following a calendar-based rather than a needs-based approach. Uses of bio-pesticides or pheromone traps are in infant stage.

Problems relating to produce quality and safety do not, however, stop at the farm. Harvesting & traditional and underdeveloped post-harvest handling practices provide major impact on both quality & safety. Marketing infrastructure is inadequate and unhygienic and produce is frequently exposed to ambient conditions and stored, trimmed and sold while placed on bare earth where chance exists for microbial contamination. The practices of squeezing of too much produces into a container or vehicle putting negative effects on quality and safety of fruits and vegetables. Dirty packaging materials and dirty vehicles introduces physical and microbial contamination.

Washing during marketing or the watering of leafy and other vegetables using dirty water are frequently contaminating the produce. Poor storage practices deteriorating the produce quality and reduce its shelf life. Chemicals used for ripening often not recommended for that purpose are affecting the safety of produce. Farmers rarely undertake actions to improve quality and safety as well as to protect the environment pollution. Factors explaining these

are market oriented, socioeconomic, and awareness-related. Traders are constrained by poor market infrastructure, poor storage facilities, and inability to control the quality of transport and handling, and a lack of knowledge of post-harvest techniques.

Deficiencies in On-farm Practices of Fresh Produce Production

The following deficiencies in relation to compliances of SPS measures were observed in farming of fruits and vegetables:

- In general, the farmers are not aware about the importance of using of quality inputs (seeds, fertilizers and agro-chemicals etc.)
- The farmers, market actors including exporters and stakeholders of value chains are very much ignorance about the SPS regulations and TBT measures
- In-sufficient quality control of agro-chemicals including pesticides and fertilizers
- Testing laboratories are not modern and accredited by international authorities
- Weak inspection and auditing of farms by the authorized agencies
- Lack of integrated modern packing houses for exportable crops
- Absence of established maturity index for fresh produce
- Poor infrastructures and logistics support
- Rough handling; untimely harvesting; lack of appropriate and/or poorly designed harvesting tools, equipment and harvest container
- Inadequate field sorting, grading and packing protocols for commodities that lend well to field picking
- Lack of and costly pre-cooling facilities
- Lack of qualified and certified staff in SPS and TBT standards in PPW and PQW of DAE
- Shortage of user-friendly basic documents relating to SPS and TBT measures/on-farm food safety and quality assurance
- Exporters are reluctant to increase their knowledge on SPS standards and to comply SPS measures
- No quality standards are established for fresh high value crops and certification system in place
- Weak communications with international institutions
- Lack of coordination among DAE officials, academic, and research institutes in the process at national level.

Suggested Mitigation Measures

- Farmers should be aware on the importance of using quality inputs (seeds, fertilizers and agro-chemicals etc.)
- Training should be provided to the farmers, market actors, exporters and other stakeholders on safe use of agro-chemicals, post-harvest management and SPS regulations and TBT measures
- Secure quality control of agro-chemicals including pesticides and PGR
- Strengthen the testing laboratories and arrange accreditation by international authorities

- Develop appropriate inspection and auditing systems of farms and packing houses for local and exportable crops
- Establish maturity index for fresh produce
- Supply appropriate harvesting tools, equipment and harvest containers
- Establish packing house/rural assembling centres for field sorting, grading, packing and precooling facilities
- Develop qualified and certified staff in SPS and TBT standards in PPW and PQW of DAE
- Develop user friendly basic documents relating to SPS and TBT measures/on-farm food safety and quality assurance
- Increase knowledge of the exporters on contract farming, SPS and TBT standards and to comply importing countries requirements
- Establish quality standards for major fruits and vegetables
- Strengthen phytosanitary certification system and introduce GAP certification system
- Increase communications with international institutions/organizations
- Strengthen strong linkages among DAE officials, academic, and research institutes in the process at national level.

4.11 Key gaps identified in the Value Chains

Table 4.58: Key Gaps Identified in the Key-products Value Chains

Areas	Key Gaps
Production Gaps	- Limited availability of quality seeds/ healthy saplings, high yielding varieties - Inadequate knowledge on modern production technologies - Limited accessibility to financial services - Lack of technical knowledge in pest and disease management - Low quality of produce.
Post-harvest Gaps	- High post-harvest losses - Lack of cold chain infrastructure - Lack of pack houses and collection centres - Low practices for grading and sorting of produce - No quality standard in place for fresh produce - Improper packaging
Processing Gaps	- Limited technological developments - Lack of availability of raw materials - Limited knowledge on export market requirements - High export price fluctuations in processed products - High costs of labour, packaging material, electricity etc.
Export Gaps	- Scattered production places for export production - Seasonal production of commodities - Low produce quality and lack of standard packaging - Absence of GAP certification with traceability system - Lack of integrated modern packing house - Storage, cargo and airfreight problems.

Areas	Key Gaps
Knowledge Gaps	- Limited sources of information for farmers and market players - Lack of knowledge on food safety issues/standards of the stakeholders - Lack of market information - Scarcity of business-related information.
Gender Gaps	• Women participation is limited in production and more in value addition • Limited participation of women in agro-product trading • Lack of capital and limited access to technologies and resources • Limited entrepreneurship among women
Capacity building Gaps	• Lack of adequate knowledge on business information and management • Limited interventions for capacity development of farmers & entrepreneurs • Limited awareness about techniques and post-harvest management • Lack of knowledge on export markets • Limited knowledge on regulations and food quality standards.

Table 4.59: Proposed Value Options for the Agro-Processed Sector

Value Option	Implementation Procedure	Time Frame
i) Secure production inputs and services locally and develop a high level of integration among supply chain actors		
• Enhance farming techniques and improve physical infrastructure to increase productivity and reduce postharvest losses.	• Register farmers for growing quality produce under supervision of local extension department • Motivate producers for effective group formation • Establish collection points and storage centres with the required facilities • Provide financial support and technical assistance to improve farm mechanization.	Medium term
• Increase the local fruits and vegetables production to benefit from the market for agro-processed products.	• Enhance farming techniques and improved physical infrastructure • Encourage SMEs in developing enterprises to produce quality processed products based on market demand.	Medium -to long term
- Build stronger linkages across the value chain, to structure the sector and alleviate difficulties in production.	• Establish clusters for selected strategic commodities within targeted agro-ecological zones • Encourage farmers to engage in contract farming • Support the national wholesale market initiative.	Medium term

Value Option	Implementation Procedure	Time Frame
- Develop technologies of minimally processed food products (fresh-cut, ready to eat and ready to cook), and other processed products.	• Provide basic training to farmers on agro-processing • Sensitization of farmers on the benefits of such activities to retain value.	Short to Medium term
ii) Adjust the production of raw materials and develop new, higher value-added product lines		
- Expand the range of fruits and vegetables grown which can be dehydrated, frozen or processed into innovative convenience food.	- Conduct an agronomic assessment across the country to identify the potential of different varieties of fruits and vegetables - Conduct trials to identify new varieties of fruits and vegetables suitable for processing and for which there is significant international demand.	Short term
- Produce quality raw materials in line with international best practices for value addition.	• Foster the adoption of Bangladesh GAP • Streamline the use of agrochemicals by following appropriate doses and frequencies of applications.	Short term
- Encourage SMEs to engage in import substitution activities for processed products including minimal processing and transformation.	• Identify specific varieties for the purposes of processing • Develop protocols, norms and standards for minimally processed and preserved products and fruit juices • Provide guidance, support and technical know-how.	Short term
- Capitalize on the wide variety of exotic primary commodities available by encouraging farmers to engage in processing activities for value addition	• Initiate a project to set up an incubator to offer entrepreneurs the opportunity to venture into processing • Offer financial support and banking facilities at attractive terms and conditions • Develop the capacity of the sector for agro-processing.	Short term
- Upscale, innovate and improve the packaging and marketing of established products to tap new markets.	• Further develop R&D activities in the sector • Conduct training on processing techniques • Provide support schemes for the purchase of processing equipment and machinery	Medium term

Value Option	Implementation Procedure	Time Frame
iii) Adopt internationally recognized quality standards		
- Facilitate the compliance of the sector with GMP, GMP and HACCP standards.	• Develop and strengthen schemes available to operators willing to obtain HACCP certification	Short term
- Encourage the implementation of Bangladesh GAP' in harmonizing GLOBALG.A.P.	- Support the development of Bangladesh GAP certification system - Train stakeholders of all levels - Evaluation and certification of GAP by accredited organizations	Medium term
iv) Expand output and capacity of the sector		
- Expand the production of safe fruits and vegetables which can be dehydrated, frozen or processed into innovative convenience food.	• Conduct a country wide assessment to identify the constraints and potentials of growing high yielding varieties of fruits and vegetables following best practices. • Conduct trials to identify new varieties of fruits and vegetables suitable for processing that has significant international demand, and • Make a compendium by adding all developed/available technologies of agro-processing and transfer those to the users.	Short term
- Expand the value chain and develop the crop-zoning and supply raw materials under supervised production systems.	• Support the development of crop zoning • Replace the current market to market approach by adopting production to market approach. • A comprehensive assessment may be done to examine the status and constraints impeding the expansion of contract farming and suggest required interventions.	Medium term
- Expand output and export capacity through the setting up of agro-processing industries in economic zones.	• Establish agro-processing industries in different economic zones. • Undertake effective measures to attract FDI • Establish integrated packing house with accredited lab facilities and cold chain facilities through PPP • Increase logistics through air and sea ports facilitation, increase storage and cargo facilities.	Medium to Long term

CHAPTER-05
Export Markets of Agro-Products

5.1 Export of Fresh Fruits and Vegetables

5.1.1 Export of Fresh Produce

Export of fresh produce (fruits, vegetables and potatoes) was US$18 million in 1995-96 which increased to 46.41 million US$ in 2004-05 and significantly raised to 209.38 million US$ in 2013-14. After that the export value of fresh produce started to decrease gradually year by year and dropped to only 80.22 million US$ in the year 2017-18 and thereafter started to increase the value of export 164.49 million US$ in the year 2019-20 (Table 5.1).

Table 5.1: Export trend of fruits, vegetables and potatoes in Bangladesh

Year	Quantity of Export (MT)	Export Value (in million US$)	Export Growth on Value (%)
2010-11	48428	109.41	-
2011-12	59573	134.59	(+) 23.01
2012-13	80660	182.23	(+) 35.39
2013-14	92679	209.38	(+) 14.89
2014-15	62730	141.72	(-) 32.31
2015-16	59656	124.57	(-) 12.10
2016-17	44975	83.72	(-) 32.79
2017-18	42825	80.22	(-) 4.18
2018-19	61491	100.07	(+) 24.74
2019-20	65210	164.49	(+) 64.67

Source: EPB and Hortex Foundation, 2021.

Fruits, vegetables and potatoes export trends have been found fluctuating across the years. Table 3.1 shows, the bullish growth trend was halted in 2013-14 (92679 MT) and in fact, slipped down in the following year 2014-15 (141.72 MT) and gradually came down to 80.22 MT in the year 2017-18 and again started to increase export quantity and raised to 164.49 MT in the year 2019-20.

Figure 5.1: Export trend of vegetables in Bangladesh

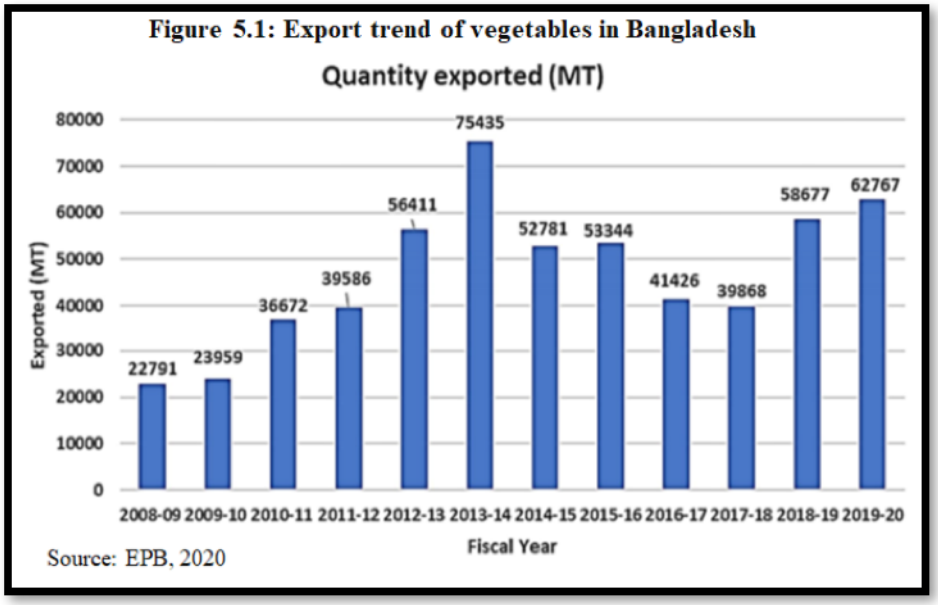
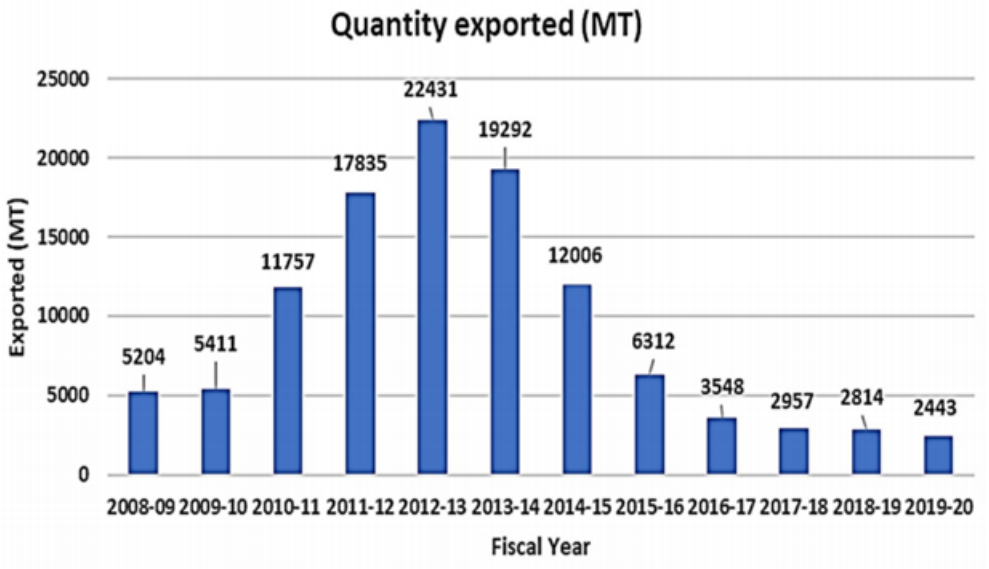


Figure 5.1 shows that in 2008-09, the quantity of vegetable export was 22791 MT which was increased to 75435 MT in 2013-14 and after

that it started to decrease gradually and slowed down to 39868 MT only in the year 2017-18 and again started to increase from the next year with export quantity of 58677 MT which raised to 62767 MT in 2019-2020. In case of export of fruits, similar erratic trend is observed (Figure 5.2).

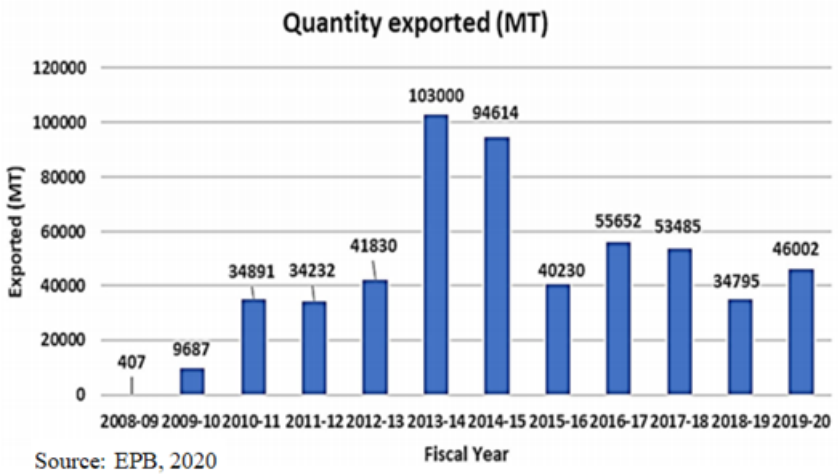
Figure 5.2: Export trend of fruits in Bangladesh



Source: EPB, 2020

Similar to fruits and vegetables, the export trends of potato are also fluctuating. In 2008-09, 407 MT potatoes were exported from Bangladesh and since then it started to increase gradually and had gone peak in 2013-14 (103000MT). After that it again started to decline gradually and fall down to 34794 MT of potato export in 2018-19 but in the following year it started to increase with export of 46002 MT export potatoes.

Figure 5.3: Export trend of potatoes in Bangladesh



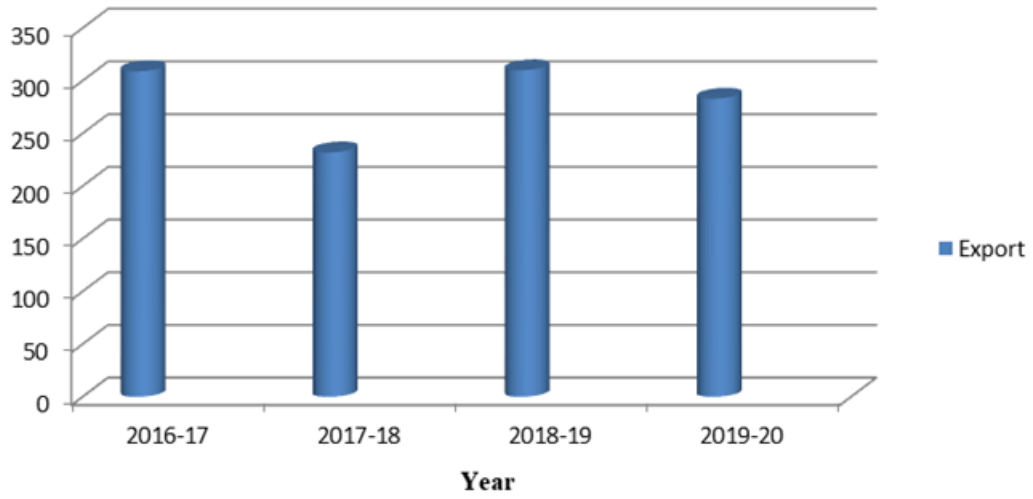
Source: EPB, 2020

As evident from the data presented in this section, exports of fresh produce have demonstrated fluctuations across the years. According to the insiders of export business, these erratic trends of export of fresh produce were due to non-compliances of requirements of imported countries. The main reason for the fluctuation was the ban/embargo on some products due to Bangladesh's non-compliance with quality standards. BFTI (2016) in a study reported that importing countries, particularly the EU put embargo to export betel leaf, lemons/citrus and cucurbits (pointed gourds, teasel gourd) to the EU markets. Russia, the major uplifting country

of potatoes-imposed ban to import potatoes from Bangladesh due to presence of brown rot disease caused by *Rastonia solanacearum* a bacterial rot agent.

Figure 5.4 shows that during 2016-17 only 309 MT mangoes were exported. During the year 2019-20 export of mango was decreased to 283 metric tons only.

Figure 5.4. Export Quantity of Fresh Mango (MT) during 2016-2020



Source: Plant Quarantine Wing, DAE, 2021

5.1.2 Market Destinations of Fresh Produce Exports

About 100 types of fresh fruits and vegetables are being exported from Bangladesh to about 40 countries. During 2018-19 total of 97,686,632 US$ worth of fruits and vegetable has been exported. Market destinations for vegetables and fruits widely vary across product bases. Each vegetables and fruits product has a different market concentration. Bangladeshi fresh produces are exported to over 40 international markets.

Table 5.2: Top 10 Countries of Fresh Produce Export 2018-2019

Country	Value in US$	Percent Share
Malaysia	16,644,433	17.04
Saudi Arabia	15,824,659	16.20
Qatar	14,784,124	15.13
UAE	12,576,828	12.87
UK	10,613,699	10.87
Kuwait	10,086,017	10.32
Singapore	4,153,118	4.25
Bahrain	3,197,982	3.27
Italy	2,191,082	2.24
Oman	2,125,449	2.18

Source: EPB, 2020

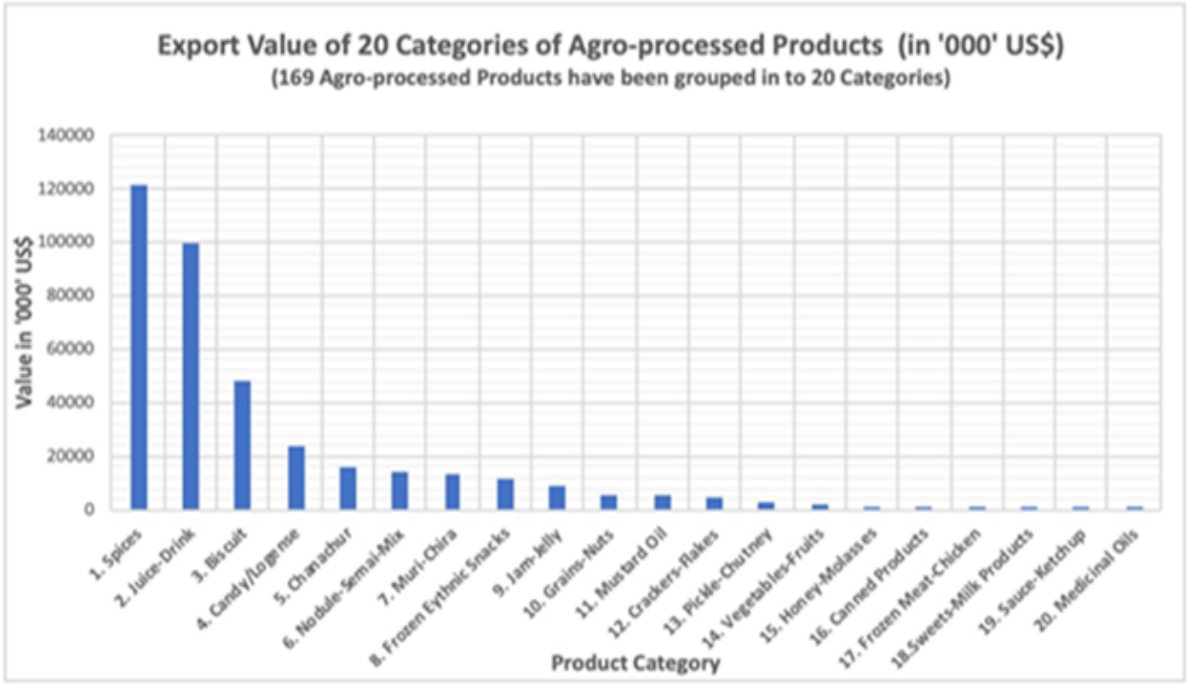
The top ten market destinations where fruits and vegetables of Bangladesh were exported are presented in Table 5.2. It has been observed that highest export was in Malaysia (1,664 million US$), followed by Saudi Arabia (1,582 million US$), Qatar (1,478 million US$), United Arab Emirates (1,258 million US$), United Kingdom (1,061 million US$), Kuwait (1,008 million US$), Singapore (4.153 million US$) and lowest in Oman (3.19 million US$) in an analytical report on export of fruits and vegetables

highlighted that future promising markets for Bangladeshi vegetables and fruits could be Japan, Canada, Indonesia, Sri Lanka, United States, Bahrain, and Australia (BARI,2021).

5.2 Export of Processed Agro-Products

In Bangladesh about 100 types of agro processed products are gathered in export basket and major exported products are Juice, Drinks, Puffed Rice, Snacks, Spices, Chanachur, Biscuits, Mustard Oil, Pickle, Frozen Vegetable, Semai, Potato Crackers, Nuts, Jam-jelly, Candy, Meat, Mango Bar, Molasses and Flattened Rice. The Major destinations of agro-processed products are EU Countries, Middle East, South East, Africa and USA. 81per cent of Bangladesh agro processed product goes to Asian market which value is 70.13 million US$ followed by Europe 8per cent (6.79 million US$). Figure 5.4 depicts that in the year 2017-18, the spices products earned highest in value (120 million US$) in export of processed items followed by juice/drinks with value of about 100 million US$.

Figure 5.5. Export of Agro-processed Products in FY 2017-2019



Source: Source: BAPA, 2019

Table 5.3 shows that export value of primary commodities increased from 1154.08 Mn US$ to 40535.04 million US$ during the period from 2014-15 to 2018-19. Export of vegetables declined from 103.24 to 99.68 million US$ and drastically the export value of fruits reduced from 38.48 to 0.33 million US$, while export value of spices increased from 23.24 to 41.31 million US$ during the same period

Table 5.3: Export of Agro-products from Bangladesh (million US$)

Products	Year of Export				
	2014-15	2015-16	2016-17	2017-18	2018-19
All Products	31208.9	34257.2	34846.8	36898.2	40535.04
Primary Commodities	1154.08	1131.83	1079.62	1182.13	1409.37
Frozen Food & Live Fish	568.03	535.77	526.45	508.43	500.4
Agricultural Products	586.05	596.06	553.17	673.7	908.96
Tea	2.63	1.83	4.47	2.77	2.82
Vegetables	103.24	104.34	81.03	77.99	99.68
Fruits	38.48	20.23	2.69	2.24	0.33
Spices	23.24	29.06	34.95	42.92	41.31
Cut Flowers	11.36	4.73	0.08	0.09	5.38
Tobacco	68.45	54.98	46.62	56.39	63.33
Dry Food	94.25	96.04	109.61	201.37	227.09
Others	244.4	284.85	273.72	289.94	469.02

Source: BBS, 2020

The highest growth of export value was observed in case of dry food items from 244.4 to 227.09 million US$. The Business Standard (2019) in a report citing the data of EPB stated that Bangladesh has seen a boom in the export of dry food in 2018-19 fiscal. The expatriate Bangladeshis are the main consumers of the dry food products. Their increasing demand for this type of product is likely to increase its export volume.

Figure 5.6: Share of Agro-products in Export Earning

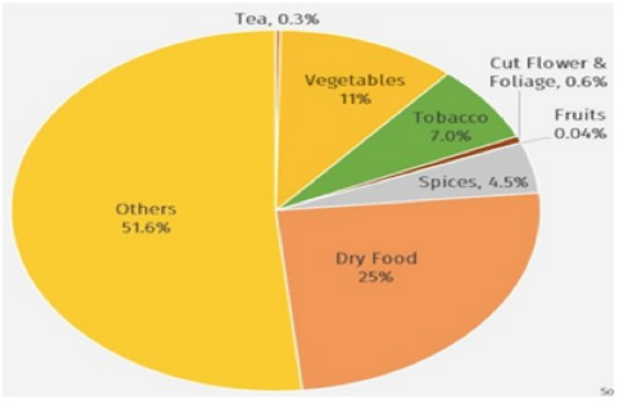


Figure 5.6 shows that in the 2020, export earnings from dry food items were 25.0 per cent which was followed by 11 per cent% from vegetables while the share in export earnings from spices was 4.5% only. The dry food includes biscuits, *chanachur*, potato crackers, flour, milk powder, pickle, *chuteny*, mango bar, jam jelly, aromatic rice, fine rice, peanuts, zira cut supari, candy, puffed rice, flattened rice, *isubgul*, noodles, vermicelli, snacks, dried dal and peas, molasses, diabetic *firni* mix, sweets, blackberry, potato flakes, sugar cane, puff corn, sesame- bar, and canned pineapple, according to BAPA. Very negligible export earnings 0.6% and 0.04% were harnessed from cut flower & foliage, and fruits respectively.

Table 5.4 shows an increasing export trends of processed potato products (Potato crackers/chips, potato flakes and potato pellets) were observed in the country.

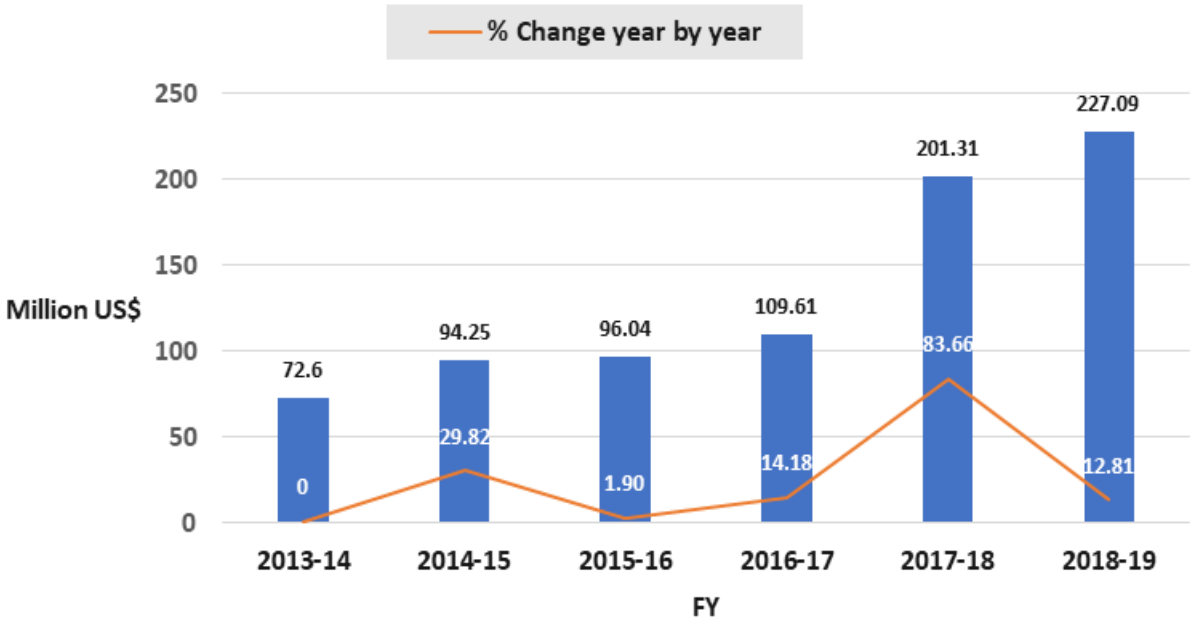
Table 5.4: Export of potato based processed products during 2015-2017

Year	Potato based processed products		
	Potato crackers/chips	Potato flakes	Potato pellet
2015-16	2.414518 million US$	2.106335 million US$	-
	917.851 MT	1782.015 MT	-
2016-17	2.68 million US$	0.72 million US$	1.05 million US$
	899.94 MT	613.27 MT	952.70 MT

Source: BAPA, data analysed by Hortex Foundation 2020

It has been found that the export earning of dry food products increased significantly during the period from 2014 to 2019. Figure 5.7 shows that in 2013-14 export earnings from dry food products was only 72.6 million US$ and within six years (2018-19) it raised to 227.09 6 million US$. The trend of increasing dry food export bears the potentials to increase export of dry food products from Bangladesh.

Figure 5.7: Export earnings from dry products (million US$)



Source: BAPA, 2020

Export Market Destinations of Processed Products

Current statistics and growth rates indicate that the value of the agro-processing export market will cross $1 billion by FY 2019-20 where nation's apex trade body of agro-processors (BAPA) is also ambitious to achieve the target. Current statistics and growth rates indicate that the value of the agro-processing export market will cross $1 billion by FY 2019-20 where nation's apex trade body of agro-processors (BAPA) is also ambitious to achieve the target.

Sheel (2014) citing the reference of BAPA stated the enterprises associated with BAPA are producing and marketing Juice & Drinks, Mineral water, Flavoured Water, Mango bar, Tea, Fried snacks, Powder drink, Candy, Bubble gum, Jam/Jelly, Chuteny/Pickles, Cup Jelly, Sauce/Ketchup, Ice pop drinks, Fresh milk, Flay milk, Powder milk, Ghee, Rice, Mustard oil, Mixed spices, Kashundi, Kheer mix, Haleem mix, Pickle, Snacks, Lassa Semai, Flaked rice, Spices powder-Chili, Turmeric, Coriander, Cumin, Curry powder, Soybean oil, Vegetables oil, Aromatic rice, Puffed rice, Vermicelli, Carbonated Beverage etc. Table 5.5 presents the list of major agro-processed products of Bangladesh.

Table 5.5: List of Major Agro-processed Products of Bangladesh

Sub-sector	HS code chapter	Food products
Crop based	11 and 12	Rooti, biscuits, noodles, pasta, porota,papor, snakes prepared from crops, singara, samucha, semai, dal puri, pitha,muri, chira,. Fragment rice, dal fry,chanachur, motor suti fry, halim mixed etc.
Vegetable products	07	Frozen and canned vegetables
Fruit products	20	Jam, jelly, pickles, mango bar, fruit juices, sauce, ketchup etc.
Potato products	20	Chips, crackers, flex, starch and French fry etc.
Mushroom products	07	Fresh and powder mush room.
Spice products	09	Powders (Ginger, turmeric, chilli, carriander, cumin,onion, garlic and bay-leaf etc.
Pulse and oil seeds	07,15	Dhal of different types, fried pea, mung, dhal, mustard , til, tishi, sunflower etc.
Sugar products	17	Syrup from date molasses, sugar, gur, candy, vinegar etc.
Honey	04	Processed honey.
Ayurveda products	21 and 22	Food supplements and vitamins.

Source: EPB, 2016 (Status of agro-food products in Bangladesh: Problems, prospects and roadmap for action).

The manufacturers produce fruit and vegetable items mainly from mango, pineapple, orange, and some other exotic fruit commodities. In some cases, the products are prepared using only flavours and emulsions instead of original fruits. On the other hand, although there are bright prospects of processing of other indigenous fruits and vegetables into various types of products, these commodities often remain unutilized. The quality of processed products produced by majority of fruit processing industries is not improved in comparison to the foreign products. As a result, foreign products predominate in the local market.

Bangladesh's processing industry is highly fragmented and is dominated by the unorganized sector. A number of players in this industry are small. About 42 per cent of the output comes from the unorganized sector, 25 per cent from the organized sector and the rest from small scale players.

Though the unorganized segment varies across categories but approximately 75 per cent of the market is still in this segment. The organized sector is relatively bigger in the secondary processing segment than the primary processing segment. Industry insiders have identified that the availability of raw materials, cheap labor and government supports were the key growth fuel behind the success.

In the FY 2017-18, the major exported products were juice, drinks, puffed rice, snacks, spices, *chanachur*, biscuit, pickle, frozen vegetables, vermicelli, potato flakes/starch, jam-jelly, candy, mustard oil and flattened rice (Financial Express, 2018). Table 5.6 presents the list of top agro-processing industries of Bangladesh.

Table 5.6: List of Major Agro-Processing Industries in Bangladesh

Company	Popular Brand/Products
Pran	Special toast, All time cookies, dry cake biscuit, sweet toast, jam, jelly, pickles, juice, beverages, starch etc.
Bombay Sweets	Chips, *Chanachur*, Beverages, Spices and Frozen foods.
Square Food and Beverage Ltd.	Radhuni, Ruchi, Chashi etc.
Ahmed Food Products ltd.	Ahmed: Jelly, Sugar Free Jelly, Jam, Sauce, Pickles, Ready Mix, Spices, Paste, Snacks, Beverage & Bakery items
Olympic	Nutty, energy, tip, milk marie,queen marie, malai cream, orange, nutty real peanut, dry cake biscuit etc.
Gold mark	Orange cream, milk cookies, coconut cookies, low sugar biscuit, chocklate etc.
Ifad	Tea time, Kaju delight, butter delight, jeera biscuit etc.
Kishwan	Toast, chocolate cookies, horlics, biscuit, ovaltin etc.
Bangas	Mango slice, pineapple, grand choice, choco cream etc.
Danish	Toast, dry cake biscuit, Danish lexus, O La La potato etc.
Nabisco	Glucose, milk cream, elachi biscuit etc.
Al-Amin	Orbit, cosmos, deena and pineapple etc.
Cocola	Sweet toast and chocolate biscuit etc.
Haque	Digestive, Mr. cookie, ding dong, milk chocolate
Bengal	Orange cake, big bite etc.

Source: Khan, 2021 and the study survey, 2021.

Referring to the Agricultural Value Chain Study of 2011 by USAID/Bangladesh, the estimated market size of agro-processing was $2.2 billion while the growth rate from FY 2004-05 to FY 2010-11 was 7.7 per cent (Katalyst, 2016). However, after 2011, no aggregated national market size estimation study was commissioned for agro-processing industry explicitly. Through qualitative investigations on export trends and insights from industry insiders, it has been observed that the market has seen a sharp inclination in both demand and supply-side after 2014.

Recent trends in global food processing industry shows that the market for canned fruits, fruit juices, soups and dehydrated fruits grew at an annualized rate of 6 per cent to reach around $179.1 billion in 2013 (BOI,2020). The fruit canning industry was valued to be USD 11.16 billion in 2012. It is expected to reach USD 15.90 billion by 2019, growing at a CAGR of 5.2per cent from 2013 to 2019 (www.boi.gov.bd).

The most immediate impact of this change has affected the sector because people are spending more on ready-to-cook and ready-to-eat items. At the same time, rapid urbanization has also created a vacuum for long shelf-life/retort pouch-based products in the domestic market (Future Start-up, 2019). Being a labour-abundant country, Bangladesh has always been considered as a potential growth spot for agro-processing industry (FAO, 2017).

BAPA (Bangladesh Agro Processors' Association) claimed that the agro-processing industry has been enjoying remarkable progress during the past couple of years in both endogenous and exogenous market (The Independent, 2018). Referring back to Agricultural Value Chain Study of 2011 by USAID/Bangladesh, the estimated market size of agro-processing was $2.2 billion while the growth rate from FY 2004-05 to FY 2010-11 was 7.7 per cent (Katalyst, 2016).

However, after 2011, no aggregated national market size estimation study was commissioned for agro-processing industry explicitly. Through qualitative investigations on export trends and insights from industry insiders, it has been observed that the market has seen a sharp inclination in both demand and supply-side after 2014 (USAID, 2019). Again the market for both fresh and processed product took a significant surge during the last five years. The domestic market size of food processing sector is 3.54 billion USD with an employment of 0.3 million and export of 635 million USD. The study reported that the anticipated food processing market size in 2023 shall be 8.23 billion USD (USAID, 2019).

At present such products are exported to 144 countries, however, the market is highly concentrated in a few specific places where either a large Bangladeshi migrant base is present (the Middle East and UK) or food pattern is similar due to cultural similarities (India). Some enterprises came out with their own brand of products and exporting to upstream markets with very limited products. Majority of Bangladesh processed products are exported in lower to middle income countries. The country could not succeed to enter with its processed products to high end markets where quality standards are stringent. Our products are not competitive in both quality standards and prices. For market promotion of fresh and processed agro-products, the government of Bangladesh has declared 20per cent cash incentives on selected 64 products.

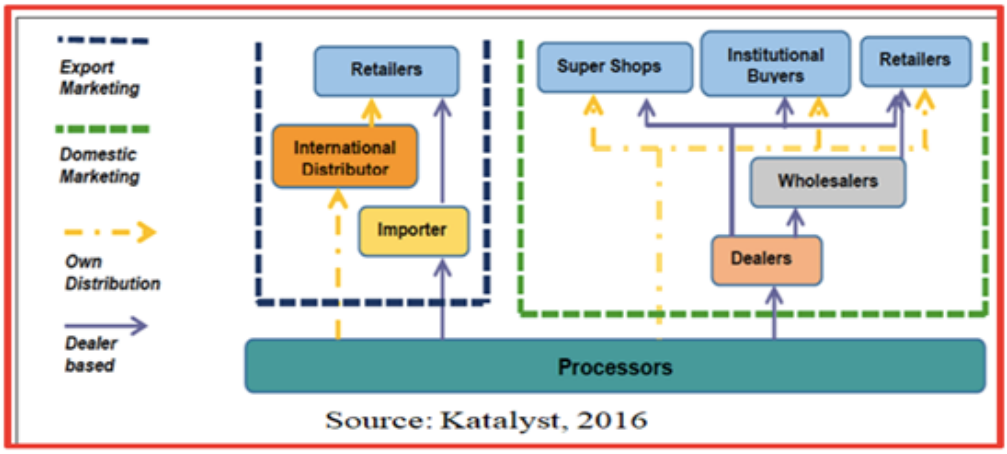
There are currently 479 members in Bangladesh Agro-Processing Association (BAPA) of which 241 are exporters and 235 manufacturers of agro-processing products. Collectively, members of the association export around $500 mn annually to 144 countries. Besides local manufacturers, large companies such as Pran, Akij, Square, Ahmed, ACI, BD Foods, and Bombay Sweets are also operating in the industry. Foreign players have also shown considerable interests in entering the market through FDIs. Among these exporters, the

market leader (PRAN Group- one of the large conglomerates expanding factory across South Asia) alone has captured $333 million from the international market in FY 2016-17 which was approximately 66 per cent of national agro-processing export earnings.

Export Market Channel

For exporting processed agro-products, the processors usually utilize a very simple channel where the processors directly exporting to importer. The importer then distributes the products through their distribution channel which include wholesalers and retailers. Some of the large scale processors such as PRAN have their own international distribution system through which they market their products in the global market. Majority of the smaller processors do not have such distribution system and simply export their products through importers.

Figure 5.8 : Marketing System of Primary Processed Product



Source: Katalyst, 2016

Export Market Destinations of Processed Products

In terms of export value, the major destination of Bangladesh agro-processed product is Kingdom of Saudi Arabia (KSA) which amount is 20.2 million US$ seconded by United Arab Emirate (UAE) 20.1 million US$ and third position held by India 14.08million US$. In terms of export in weight the major destination of Bangladesh agro-processed product is India which amount is 24372.88 metric ton followed by United Arab Emirate (UAE) 16785.00 metric ton and Kingdom of Saudi Arabia (KSA) 10078.93 million tons and Kingdom of Saudi Arabia (KSA) 10078.93 million tons (EPB,2020).

At present agro-products are exported to 144 countries, however, the market is highly concentrated in a few specific places where either a large Bangladeshi migrant base is present (the Middle East and UK) or food pattern is similar due to cultural similarities (India). Some enterprises came out with their own brand of products and exporting to upstream markets with very limited products. The country could not succeed to enter with its processed products due to less competitiveness in respect of both quality and standards that calls for immediate actions to tap the potentials of export promotion.

5.3 Profitability Analysis of Fruits and Vegetables Exporters

Recently BARI has conducted a study to identify export barriers of horticultural crops and made profitability analysis. According to their findings, the average purchase price of fruit and vegetables for Middle East and South East Asian countries was 65000Tk./MT, while for UK and EU 75000 Tk./MT. Grading, shorting, washing, raping, packaging, etc. cost varied among Middle East, EU and South East Asian countries and that was 8000, 10000 and 8000Tk./MT, respectively.

Packaging and other material cost also varied among Middle East, UK and EU, and South East Asian countries. GSP certificate charges were required for exporting fruit and vegetables in UK or other European Countries. Air freights charges contribute the major share of export cost and varied among Middle East, UK and EU, and South East Asian countries and that was 90000, 170000 and 53200Tk. /MT, respectively. It is evident that average profit from fruit and vegetable export was 35.55, 42.65 and 40.62 BDT per kg from Middle East, UK and EU, and South East Asian countries, respectively (Table 5.8).

Exporting of fruits and vegetables in South East Asian countries was more profitable than that of Middle East or UK and EU countries. The BCR was found higher (1.28) from export of South East Asian countries, followed by Middle East countries (1.20), while that was lowest in UK and EU Countries (1.07).

Table 5.7: Profitability Analysis of Fruits and Vegetables Exporters

Items of cost (Tk./MT)	Middle East Countries		UK and EU Countries		South East Asian Countries	
	Tk./MT	Per cent	Tk./MT	per cent	Tk./MT	per cent
Purchase price	65000	35.82	75000	27.19	65000	45.02
Grading, shorting, washing, raping, packaging, etc. cost	8000	4.41	10000	3.63	8000	5.54
Packaging and other materials cost	750	0.41	1000	0.36	650	0.45
Transport cost	1500	0.83	2000	0.73	1500	1.04
Loading and unloading cost	1800	0.99	1800	0.65	1800	1.25
Air freights charges	90000	49.60	170000	61.63	53200	36.85
Airway bill charges (documentation)	250	0.14	250	0.09	250	0.17
Terminal and handling	2500	1.38	2500	0.91	2500	1.73
Export platform charges	500	0.28	500	0.18	500	0.35
Generalized system of preference (GSP) certificate charges**	0	0.00	1000	0.36	0	0.00
Phyto sanitary and quarantine certificate	350	0.19	350	0.13	350	0.24

Items of cost (Tk./MT)	Middle East Countries		UK and EU Countries		South East Asian Countries	
	Tk./MT	Per cent	Tk./MT	per cent	Tk./MT	per cent
Bank services	200	0.11	200	0.07	200	0.14
Metropolitan chamber offices charges	450	0.25	450	0.16	450	0.31
Clearing and forwarding charges	1700	0.94	1700	0.62	1700	1.18
Exporters office expenses	2200	1.21	2200	0.80	2200	1.52
Salary and wages	1500	0.83	2000	0.73	1500	1.04
Office rent	2000	1.10	2100	0.76	1800	1.25
Tele, fax, email, photocopy etc.	750	0.41	800	0.29	780	0.54
Entertainment	500	0.28	500	0.18	500	0.35
Commission agent	1000	0.55	1000	0.36	1000	0.69
Miscellaneous	500	0.28	500	0.18	500	0.35
Total Cost	**181450**	100.00	**275850**	100.00	**144380**	100.00
Selling price in abroad	197000		298500		165000	
Cash incentive	20000		20000		20000	
Total Profit	**217000**		**318500**		**185000**	
Net Profit	35550		42650		40620	
Profit (Tk.)/Taka	35.55		42.65		40.62	
Benefit-Cost Ratio	1.20		1.07		1.28	

Source: BARI, 2021

Export Price of Fruits, Vegetables and Potato

Hortex Foundation has estimated export prices of fruits, vegetables and potato exported from Bangladesh to various markets in the UK and Middle East countries. Table 5.9 shows that C&F price of fruits/Kg was 2.90 to 3.10 £/Kg in UK markets while it varies from 2.00 to 2.20 $/Kg in Middle East countries (Table 5.8).

Table 5.8: Export Price of Fruits (2020)

Country/Major markets	C&F Price/Kg during March 2020	Airfreight (Tk/Kg) during March 2020
UK	2.90 to 3.10 £/Kg (Average unit price of fruits)	Tk. 160 -170/Kg through Emirates Airlines (Kolkata to UK Tk. 120/Kg)
Middle East	2.00 to 2.20 $/Kg (Average unit price of fruits)	Tk. 90/Kg through Foreign Airline
Exporter gross profit	Tk.34/Kg	
Add cash incentive support provided by Govt.@ 20% FOB	Tk. 20/Kg	
Export income	Tk. 54/Kg	

Source: Hortex Foundation, 2021.

Air freight cost was from Dhaka to UK in Emirates Airlines was BDT. 160-170/Kg but from Kolkata to UK the freight costs/Kg was only BDT 120 which is 40-50 BDT less than the freight costs from Dhaka. This indicates that Bangladesh exporters are paying much air freight costs from their Indian competitors. Similar findings are observed in case of vegetables (Table 5.9).

Table 5.9: Export Price of Vegetables (2020)

Country/Major markets	C&F Price/Kg during March 2020	Airfreight (Tk/Kg) during March 2020
UK	2.20 to 2.30 £/Kg (Average unit price of vegetables)	Tk. 160 -170/Kg through Emirates Airlines (Kolkata to UK Tk. 120/Kg)
Middle East	1.60 to 1.70 $/Kg (Average unit price of vegetables)	Tk. 90/Kg through Foreign Airlines
Exporter gross profit	Tk.34/Kg	
Add cash incentive support provided by Govt.@ 20% FOB	Tk. 20/Kg	
Export income	Tk. 54/Kg	

Source: Hortex Foundation, 2021.

Table 5.11 shows that C&F price and sea freight per container in exporting potatoes varied on the port of destinations.

Table 5.10: Export Price of Potato (2020)

Country/Major markets	C&F Price/MT Mar/20	Sea freight per container (27 MT)	C&F Price/MT May/20
Malaysia	280 $/MT	700 $	350 $/MT
Singapore	280 $/MT	700 $	350 $/MT
Sri Lanka	300 $/MT	1200 $	370 $/MT
UAE	325 $/MT	1700 $	$ 400 $/MT
Saudi Arabia	325 $/MT	1700 $	400 $/MT
Brunei Darussalam	325 $/MT	1700 $	400 $/MT
Gross profit/ per container	Tk. 6500		
Cash incentive support by Govt.	@20% FOB		
Export income/per container	BDT 65000		

Source: Hortex Foundation, 2021.

5.4 Current Export Supply Chain of Fruits and Vegetables

- Exporters buy fresh horticultural produce either from wholesale markets or from suppliers in producing region.
- No contract farming is with Fresh Produce Export Supply Chain
- Produce transported by bus top/unrefrigerated van with less care
- Qualities of produce are not maintained and source of contamination/presence of quarantine pests remains untraced.

- Packaging is not developed.
- Lack of appropriate knowledge of stakeholders in contract farming
- Producers are not organized
- Exporters are not ready to go with contract farming
- In-adequate institutional approaches for contract farming, and
- Absence of adequate policies and strategies.

Constraints of Export Supply Chain Management

- Lack of appropriate varieties and weak management practices
- Incorrect fertilization, use of agro-chemicals & insect pest management
- Inadequate knowledge on export production & PH Management
- Weak linkage between farmers and exporters
- Lack of supervised production and established contract Farming
- Procure produce through middlemen / farmers
- Transportation in bus top or loaded truck (unrefrigerated)
- Poor post-harvest handlings, transportations
- Absence of cool chain management and storage facilities, and
- No GAP and traceability system in place.

5.5 Major Constraints Facing the Producers and Exporters:

Challenges and constraints faced by both farmers and exporters have been assessed on the basis of formal informal discussions and in-depth interviews. Farmers are facing problems with in sufficient storage facility, high amount of discard, poor pricing, lack of proper government supports, insecurity and uncertainty, syndicate of traders', improper government support, fund crises, insufficient transport facility, respectively. Exporters are facing problem with insufficient cargo space, improper government support, high freight charge, lack of good varieties and technologies, high interest rate, respectively. These prevailing problems are adversely affecting the exports of agro-products of Bangladesh.

5.6 Central Packing House of Plant Quarantine Wing at Dhaka - A Success Story

Due to increasing demand in the countries of European Union in order to promote export of agro-commodities by reducing the rate of non-compliance, in the year 2014, the government of Bangladesh has established a "Central Packing House" at Shampur, Dhaka.

The Packing House started functioning in 2017. Now using the facilities of this packing house more than 100 agro-commodities are exporting by the exporters to 10 European countries. Both quantity and reputation of the export is increasing day by day. Before starting the centre, Bangladesh used to get 120-170 Non-compliance Notifications every year. After the establishment of the centre the country getting on average 10 Non-compliances Notice per year. From 2017-18, the Plant Quarantine Centre has started to issue 100per cent computerized PCs.

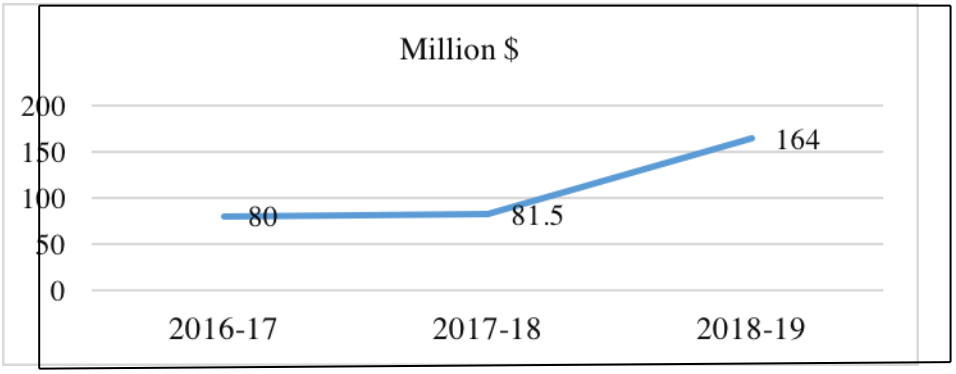
Table 5.11: Fresh Fruits & Vegetables Export via Central Packing House of Plant Quarantine Wing

FY	Export of Fruits and Vegetables (MT)						Revenue Earned (BDT)	Interception
	Vegetables	Jackfruit	Mango	Lemon	Cashew Nut	Others		
2016-17	0	68	54.50	45.56	0	0	9,530	03
2017-18	0	682	88.23	45.56	56	30	17,75,765	07
2018-19	1372	835	99.00	880	62	423	26,93,739	10
2019-20	1535	1050	112	850	75	620	17,82,120	12
2020-21	449.37	783.238	86.67	156.41	20	138.26	11,26,800	02

Source: PQW, DAE, 2021

This data indicates the success of reducing interceptions due to practicing of improved packaging house activities.

Figure 5.9: Remittance Earned from Exporting Fresh Fruits and Vegetables (2016-2020) through the support from Central Packing House



Source: Personal communication with Central Packing House Authority.

5.6.1 Infrastructure

The infrastructure either developed or under construction in the Central Pack House are- i) Landing Space-2 (1637.44 Sft.), ii) Pre-cooling Chamber- 4 (723.84 Sft.), iii) Cooling Chamber- 4 (817.18 Sft.), iv) Deep Cooling Chamber-4 (405.72 Sft.), v) Sorting and Grading Room- 4 (776 Sft.), vi) Washing Room- 2 (272.67 Sft.),vii) Drying Room-2 (420.48 Sft.), viii) Cargo Lift – 1 (2000 kg Capacity), ix)Training/Conference Room-1,x) Office Room -15, xi) Underground Car Parjing- 1 (Area for parking 50 Cavard Van), xii) High Voltage Power Station-1 (400 KW Capacity), xiii) Generator -1 for (300 KBA Capacity), and xiv) Accredited Laboratory (under construction) Achievement of Plant Quarantine Centre.

Table 5.12: List of Exportable Fruits and Vegetables, Areas of Production and Export Markets

Commodity	Production Area	EU Export Market
Mango	Chapai Nawabgonj, Rakshahi, Satkhira	USA, Italy, France, Greece, Germany, Sweden, Finland, Switzerland, Austria, Netherland etc.
Jackfruit	Chattagram, Chattagram Hill Tracts, Narsingdi, Gazipur, Mymensingh, Tangail	
Lemon (Zara variety)	Narsingdi	
Toikar, Monkey jack (Dewa), Broad bean Naga Chilli, Golden Apple	Sylhet, Moulavibazar,, Habigonj	
Brinjal, Snake gourd, Ribbed gourd, Sponge gourd, Hyacinth bean, Bean seeds, Bitter gourd, Teasle gourd etc.	Narsingdi, Tangail, Bhola, Barishal	
Burmese grape	Narsingdi	
Pointed gourd	Joypurhat, Jessore	
Rajat Pata	Narayangonj	
Chilli	Manikgonj,Bogra, Kishorgonj	
Jujubi, Pumelo, Palmyra Palm, Hogplum, Indian olive, Wood apple, Guava, Jujubi, Emblica, Sapoda, Bottle gourd, White gourd, Aroid, Stolon, aroid leaf, Bana flower bunch, Green banana, Papaya, Pumpkin, Moringa, Corriander Leaves, Leek, Green chilli, Radish, Okra, Amaranths, Raw turmeric, Cabbage, Chakai	Cumilla, Narsingdi, Tangail, Mymensingh,Kishorgonj,Dhaka, Narayangonj,, Bhola, Noakhali, Sylhet, Barisal	

Source: Central Packing House, PQW, 2021.

5.6.2 Upgrading the facilities of Central Packing House

Despite huge demand of Bangladeshi fresh agro-commodities in the international market, due to some limitations, Bangladesh failed to achieve expected target. Among these non-adoptions of modern technologies of production, inadequate transportation facilities, low quality packaging and insufficient quality storage facilities. Some of the constraints that limiting the export of fresh produce from Bangladesh are:

- Due to absence of Vapour Heat Treatment facilities mango export is banned to several countries including Japan;
- Insufficient space for grading and packing;
- Lack of separate Landing Space and Outlet loading unloading of agro-commodities;
- Lack of sorting, grading machines and improved washing plant;

- Lack of belt system for transporting the export commodities in the airport;
- Lack of phyto-sanitary testing facilities, tests are performed by magnifying glass and eye observation;
- Lack of skilled manpower and absence of pest risk list of maximum crops/commodities exporters are not in a position of meeting the demand of end countries;
- At the time of running cooling chamber the entire packing house vibrates;
- Washing and drawing rooms are located inside the central packing house it creates difficulties in maintaining cleanliness of the house and quality of commodities;
- The Central Packing House is located in an industrial polluted area;
- Due to lack of skilled manpower, established laboratory cannot turned into operation and maintain equipment and machineries.

5.6.3 Suggested measures for improving facilities of Central Packing House:

During the interview made by the study team with the officials of the Central Packing House Authority, they have suggested following measures to upgrade the facilities of the packing house:

i) Washing and drawing room should be established outer side of the packing house;
ii) For promotion mango export it is necessary to establish hot water treatment plant;
iii) For phytosanitary testing of export commodities modern machineries and equipment should be made available;
iv) Skill development of the officers and employees necessary through training at home and abroad on export promotion;
v) Staffing in the Laboratory established in the Central Packing House is urgent to operation it and maintain the costly equipment and machineries;
vi) It is necessary to explore new market opportunities in the EU countries by the Ministry of Foreign Affairs and Ministry of Commerce;
vii) Ensuring transportation of agro-commodities from the Central Pack House to the Air Port by refer vans;
viii) Creating physical facilities at the international airport for cooling of agro-commodities.
ix) It is necessary to formulate policy and guidelines for the operation of the packing house;
x) Fixing air freight rate adjusting with the rates of competing and neighbouring countries;
xi) Skill development of officials and technicians of the packing house to operate it efficiently.

5.7. Strengthening of Hortex Foundation is a Prime Need

Horticulture Export Development Foundation in short 'Hortex Foundation' was established in 1993 at the patronage of the Ministry of Agriculture, Government of the People's Republic of Bangladesh as a non-profit organization. It is registered as a Company Limited by Guarantee and licensed under Section 26 of the Companies Act, 1913. It is governed by a Governing Body (GB) of seven Directors (two from the public and other five from the private sector).

The Secretary, Ministry of Agriculture, Government of Bangladesh is the Chairman of the GB, while Managing Director is the Chief Executive Officer of the Foundation.

Despite its several successes in the past in supporting exporters, now the organization is facing acute problems of fund to deliver its mandated services. Currently, the Foundation is running with the profits generating from Seed Money of 100 million BDT only provided by the Government of Bangladesh.

It is reported by the insider of the Foundation that, earlier they could receive about 10 million BDT profit yearly from the investment through which the Foundation had to incur all expenditures that presently came down to about BDT 6.5 million per year only due to reduction of bank interest which is very insufficient to run the Foundation. Besides, the organogram of the Foundation has a provision of 48 positions in different categories of which less than 15 are working now and among them only two are officers (Managing Director and AGM, Marketing) and rests are supporting officers and staffs including administration and finance. It could be mentioned here that in Bangladesh, there are some other Foundations (PKSF, SDF, KGF and SME Foundation etc.) and those are incurring expenditures with Endowment Fund of several millions BDT provided by the respective Ministries/Development Partners. Such arrangement could be made for the Hortex Foundation to run its functions of export promotion of agro-commodities smoothly in a sustainable manner.

The study team could learn that, during NATP Phase -1, a study was made by hiring consultant for strengthening the Hortex Foundation. Unfortunately, till to date, the implementation of any measures from the study report is not visualized. Leaders of Bangladesh Fruits and Vegetables and Allied Products Associations (BFVPEA) and Bangladesh Agro-processors Association (BAPA) expressed their dis-satisfaction about the poor performance of the Foundation as they are not receiving proper supports from the organization. The concerned authority can review the study report and take necessary initiatives to implement the study findings. From the present study it is found that poor institutional support is one of the major constraints in export promotion of agro-products in Bangladesh.

The study team has reviewed the organizational export promotion services including its aims, objectives and activities of 'Agricultural and Processed Food Products Export Development Authority' (APEDA) established by the Government of India under the Agricultural and Processed Food Products Export Development Authority Act passed by the Parliament in December, 1985. (https://apeda.gov.in). The primary objective of APEDA is to undertake the development and promotion of export of fourteen agro-commodities. The specific objectives of APEDA are the followings:

- Development of industries relating to the Scheduled products for export by way of providing financial assistance or otherwise for undertaking surveys and feasibility studies, participation in the equity capital through joint ventures and other reliefs and subsidy schemes;

- Registration of persons as exporters of the Scheduled products on payment of such fees as may be prescribed;
- Fixing of standards and specifications for the Scheduled products for the purposes of export;
- Carrying out of inspection of meat and meat products in any slaughterhouse, processing, plant, storage premises, conveyances or other places where such products are kept or handled for the purpose of ensuring the quality of such products;
- Improving of packaging of the Scheduled products;
- Improving of the marketing of the Scheduled products outside India;
- Promotion of export-oriented production and development of the Scheduled products;
- Collection of statistics from the owners of factories or establishments engaged in the production, processing, packaging, marketing or export of the Scheduled products or from such other persons as may be prescribed on any matter relating to the Scheduled products; and the publication of the statistics so collected, or of any portions thereof or extracts there from;
- Training in various aspects of the industries connected with the Scheduled products; and
- Such other matters as may be prescribed.

APEDA provides financial assistance for export promotion of agro-commodities in India under various schemes listed below:

a) Development of Export Infrastructure:

Development of an adequate infrastructure is critical for the growth of agro industries and export of agricultural products. The scheme covers fresh produce and processed food products. The emphasis is primarily on setting up of post-harvest handling facilities so as to reduce losses caused due to spoilage and to ensure quality production of agro products. This Scheme component seeks to provide financial assistance to the exporters for setting up of infrastructure such as pack house facilities with packing/grading lines, precooling units with cold storages and refrigerated transportation etc., cable system for handling of crops like banana, pre-shipment treatment facilities such as irradiation, Vapour Heat Treatment (VHT), Hot Water Dip Treatment (HWDT) for compliance to Phyto-Sanitary requirements of importing countries, processing facilities, etc. It also intends to support equipment and technologies of various types of screening sensors to detect external / internal quality of the produce as well. Assistance is also available for the infrastructure for processing facilities (process food sector) for addressing missing gaps which may include equipment's like x-ray, Screening, filth / metal detector, sensors, vibrators or any new equipment or technology for food safety and quality requirements.

Pattern of assistance: Provide up to 40% of the total cost subject to a ceiling of Rs. 100 lakhs for each of the activities and per cent of cost sharing varies on the types of activities.

b) Product Quality Development:

Compliance with Food Safety requirements of different countries is a continuous process which is paramount in international trade. Majority of the importing countries are demanding adherence to stringent Maximum Residue Levels (MRLs) prescribed by these countries.

Some of the developed importing countries have set up MRLs at very low level for which high precision equipment's are essentially required to be installed by the food testing labs and trade. Installation of quality management systems, laboratory testing equipment, held devices for capturing farm level peripheral coordinates for traceability systems and testing of samples etc. helps in achieving such prescribed standards for the purpose of export.

Pattern of assistance: Provide up to 40% of the total cost subject to a ceiling of Rs. 4 lakh per beneficiary and per cent of cost sharing varies on the types of activities.

c) Market Development:

For evolving structured marketing strategies for export of food products, market intelligence for taking informed decisions, international exposure, skill development, capacity building and high quality packaging are some of the important aspects. These are implemented through Market Development component which involves participation in International trade fairs, exchange of trade delegations and organizing buyer seller meets etc. Good packaging is extremely important both in terms of quality of the product as well as its image. It is thus necessary to develop packaging standards for new products and upgrade the existing standards through IIP. This scheme component has helped in achieving market access in new markets and also to sustain our presence in the existing markets.

Pattern of assistance: Provide 40% of the total cost subject to a ceiling of Rs. 10 lakhs per study and per cent of cost sharing varies on the types of activities.

Establishment of such type of organization could be an option to restructure the Hortex Foundation and or upgrade the delivery of services of Hortex Foundation by strengthening its manpower and other facilities to render more effective services for export promotion of fresh and processed agro-products (Adapted from APEDA website www.apeda.gov.in).

5.8 Major Challenges Impeding the Export of Bangladeshi Agro-products

Challenges

- Absence of dedicated nodal agency to provide required support and service
- Weak R & D services with a special focus on exporting agro-products
- Non-existence of crop zoning for producing exportable crops
- Absence of supervised production/ contract farming
- Absence of implementation of GAP,GMP and HACCP and certification systems
- High interceptions/non-compliances due to non-compliances of international standards

- Infestation of quarantine pests
- Absence of cool chain facilities
- Poor produce quality and packaging
- Poor airport and cargo facilities and high freight and
- Weak linkages between producers and exporters
- Poor knowledge on produce quality standards and market information
- Severe competition in global export markets
- Shortage of capital.

Opportunities

- High market demand/Market is expanding
- Taste of products are good and price competitive
- Favourable climate & soil to grow diversified crops
- Intelligent & hard-working farmers
- Scope exists for improving safety & quality

Export of fresh fruits and vegetables and processed foodstuffs such as dried food items, juices/drinks and frozen fruits and vegetables is increasing significantly and earning valuable foreign exchequer. However, so far in Bangladesh legislations, it is rather difficult to tap the potentials unless the government and the private sectors do not work closely to face the current challenges undertaking a comprehensive strategy. In this case, an important issue is to address the SPS and TBT measures of WTO. The questions related to traceability particularly of fruits or vegetables have remained by and large unanswered, though some laws about fish and shrimp cultivation are currently in place and functioning well Thus the exporters and related stakeholders are practically of their own to decide how they would deal with importers.

In the meantime, the EU and some other major fruit and vegetable importing countries, have introduced several non-tariff trade rules including traceability. Of these the most stringent effect came from EU Regulation (EC) No178/2002, traceability rules which was enforced from January 2005. It is therefore, extremely important for Bangladesh to urgently undertake all preparations for developing and establishing a credible traceability system for the fruit and vegetables export industry.

It may be noted that, a study to 'Identify the Required Preparatory Steps for Developing Traceability System in the Fruits and Vegetables Sector in Bangladesh' was conducted during the period from May, 2007 to February, 2008 by an expert team comprising of five consultants (2 international and 3 local) under the financial assistance of the European Commission (EC) Bangladesh Trade Support Program (BTSP), Ministry of Commerce (Sonneveld.et.al, 2008). The objectives of the study were:

a) Identify the preparatory steps necessary to design an appropriate fruit and vegetables products traceability system for stakeholders complying with EU traceability requirements;

b) Recommend suitable code of conduct for compliance by various groups of stakeholders; and
c) Provide a time bound action plan for the introduction of Traceability System approved by various stakeholders in the public and private sector.

The study recommended Code of Conduct (CoC) for compliances by the stakeholders and also proposed an Action Plan for prerequisites to put a Traceability System in place in the fruits and vegetables sector in Bangladesh. The present study team strongly proposes to review the report lying with the Ministry of Commerce and take necessary measures by the relevant authorities based on the recommendations and the action plan suggested in the EC-BTSP study report.

5.9 Quality Control, Regulations and Standards

Consumers all over the world are more conscious about quality of products. At the international level, Codex Alimentations Commission has specified limits for Sanitary and Phytosanitary (SPS) measures, which are being taken as non-tariff agreements, especially the SPS Agreement of WTO that deal with food safety. Market accesses of Bangladesh's products are disturbed due to the issues like SPS measures, stringent quality control requirements and even technical barriers like environment related measures.

By whatever name we call it, these measures tantamount to non-tariff barriers and stand on the way of further expansion of export trade of Bangladeshi agro-commodities particularly fruits and vegetables (Graffam and Ahmed, 2007). At present, Bangladesh cannot export fresh produce in the upstream export markets due to the exporter's inability to meet the plant health and food safety requirements. Bangladesh is yet to comply with the basic requirement of GAP, GMP, HACCP and traceability as per international market demand (Ahmed, 2010).

Overall, the enforcement of food safety laws and regulations are considered weak in Bangladesh due to: i) Numerous acts, laws, and regulations of various food product categories leading to overlaps and complexity in application and enforcement; and ii) Overlap and lack of coordination among the many ministries and agencies in charge of different aspect of the food quality and standardization control system, with fifteen ministries involved in food safety and quality control and ten ministries involved in food inspection and enforcement (Food and Agricultural Import Regulations and Standards Report, USDA, 2019).

The global market has been always concerned about the quality of food products. Countries in an advanced economy follow certain standards to maintain the quality of both fresh and processed agro-products. To operate in such a market, Bangladesh has to ensure the quality according to the required standards of the importing country. One of the most pressing concerns for the agro-processors is perhaps the food safety issue. Due to the absence of adequate quality testing facilities in national boundary, Bangladeshi processed food items required third country scanning which put up to 65.5 times of extra cost burden on exporters (The Daily Star, 2017).

Ahmed (2014) stated that due to various reasons, Bangladesh has so far failed to take good advantage of the export market. In the country, there is no fixed standard quality for the vegetables exported from Bangladesh because the main consumers are primarily Bangladeshi's. The major obstacle however, appear to follow the Code of Good Agricultural Practice (GAP) and to comply the safety requirements of the agri-produces.

One of the most important and at the same time most difficult tasks in this regard is to strictly follow the EU Pesticide Regulations. It should not be forgotten that EU markets alone are uplifting good quantities of agro-products and the market is no longer ready to compromise with the quality of fresh produce import. Similar restrictions are already in place in the USA and Japan. Another important export market destination of Bangladesh is in the Middle East countries. Recently the Kingdom of Saudi Arabia has announced that, Food Hygiene Requirements of Saudi Arabia should be complied from 1st July, 2021. Accordingly, the Saudi Food and Drug Authority (SFDA) has informed all country representatives to the Kingdom to export food products along with conformity certificate (https://www.intertek.com/government/product-conformity/food-exports-saudi-arabia/) and most likely similar imposition may come in near future from other countries of the Middle East.

Bangladesh has no composite food industry and whatever products are manufactured their qualities are not up to the mark. There is absence of an unified certified agency in the country (EPB, 2016). But the countries like Sri Lanka, Saudi Arabia, Thailand and Singapore have created their own agency similar to USA Food and Drug Authority (FDA).

The compliance status of SPS and TBT measures in the country is not satisfactory for which frequent interceptions of consignments are reported from the EU due to presence of harmful organisms and fraudulence in phytosanitary certificates. Regulations in relation to Pesticide Ordinance are not yet formulated in Bangladesh. There exist no regulatory directives for pesticides sales to growers and no guidelines on proper handlings and use of pesticides, withholding period and detection of MRL levels and no mechanism in place for traceability, adoption of GAP and GHP.

Bangladesh currently is at infancy in respect of development and implementation of standards for primary production. The majorities of the farmers have no idea of Good Agricultural Practices (GAP) and keep no farm records. Many seminars and discussions have also been made highlighting the urgency of GAP applications and traceability system in place for export commodities since last two decades. Experts suggest that, these piece meal attempts are not sufficient and realistic to introduce GAP, GMP and HACCP in the country. It needs a holistic and integrated approach where the role of public sector is pivotal and collaboration of private sector is required. The government of Bangladesh, for instance, does not have full-fledged accredited labs for full range of tests as well as products. There are few public and accredited private laboratories, but their accreditation is only for limited tests of certain parameters and cannot fulfil the requirements of processors/exporters.

The laboratory of Plant Protection Wing (PPW) of DAE only verifies the concentration of the ingredient for registration, but does not conduct any analysis of MRLs. Pesticides regulatory and monitoring mechanisms are very weak and alleged that very poor-quality pesticides are marketed. Food inspection and monitoring system of quarantine pests are very weak and lacks appropriate guidelines and Standard Operating Procedures (SOP). Both the PPW and PQW laboratories are badly suffering from shortage of trained manpower and adequate laboratory facilities.

The Government of Bangladesh has enacted the Plant Quarantine Act, 2011 where provision has been kept to establish a "National Plant Quarantine Authority" and the Director, Plant Protection Wing (PQW), Department of Agricultural Extension, shall be deemed to be the National Plant Quarantine Authority and shall exercise all the powers of the Authority under this Act until an independent National Plant Quarantine Authority is established. All the officers and employees of the PQW shall act as the officers and employees of the Authority until a separate organization established.

The study team found that after 10 years of the enactment of the said Act, the National Plant Quarantine Authority is not yet established as an Independent Plant Quarantine Authority which needs immediate priority actions by the Ministry of Agriculture to improve delivery of effective services for promotion of export of both fresh and processed agro-products.

A broad-based capacity building of stakeholders is, therefore, the most urgent need of the country. Side by side, technical support for value chain infrastructure development is essentially required to improve the food safety in agro-products value chains. The means of capacity building could be awareness and recognition at the level of users, implementers and policy-makers, physical infrastructure, human resources/ training. Establishment of an accredited laboratory and integrated Packing house are also essentially required.

Bangladesh Standards and Testing Institute (BSTI), the only National Standards body of Bangladesh was established in 1985 by an ordinance (Ordinance XXXVII of 1985) with the merger of Bangladesh Standards Institution (BDSI) and the Central Testing Laboratories (CTL). BSTI is entrusted with the responsibility of formulation of national standards, laboratory testing and product certification (both mandatory and voluntary). Management System Certification (MSC) and metrology service, which are the vital organs of National Quality Infrastructure (NQI). Earlier testing laboratories of BSTI namely-chemical, food, microbiological, cement and textile lab got accreditation on 161 parameters of 27 products from National Accreditation Board for Testing and Calibration Laboratories (NABL), India which has already been expired in 2017.

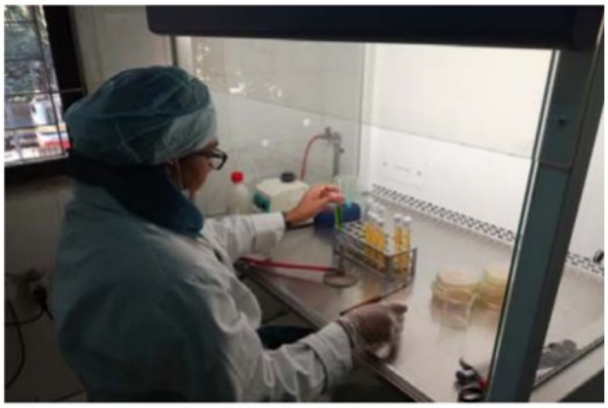
Henceforth chemical, food, microbiological, cement and textile testing laboratories of BSTI got accreditation on 411 methods of 305 parameters of 35 products from Bangladesh Accreditation Board (BAB) on 31, December 2017. BSTI Chemical Laboratory provides services of Chemical Testing Wing to ensure the quality of Food, Agricultural products, Organic and Inorganic Industrial products produced locally/imported by testing with modern

equipment as per National and International Standards through its two divisions namely, Food and Bacteriology Division and Chemical Division.

Food and Bacteriology Division - The Food & Bacteriology Divisions perform the tests through the following laboratories: Cereal and Bakery Products Laboratories Tests Biscuits, Chanachur, Noodles, Instant Noodles, White Bread, Lachsa Shemai, Cake, Muri etc. Processed Fruits Products and Fruit Drinks Laboratories tests Fruit Juice, Fruits Drinks, Jam, Jelly, Marmalade, Pickles, Sauce, Tomato ketchup, Tomato paste, Chuteny, Fruit squash, Fruit syrup, Fruit cordial, Edible jell etc.

Accreditation status of Food & Bacteriology Division Food and Bacteriological Divisions acquired Accreditation as per ISO/IEC 17025:2005 by National Accreditation Board for Testing and Calibration Laboratories (NABL), India since 18 March, 2011. At present 271 parameters of 28 Food products are accredited from Bangladesh Accreditation Board (BAB). Accredited Laboratories are: Atomic Absorption Spectrophotometer (AAS) I. Cereal and bakery lab. II. Processed fruit products and fruit drinks lab. III. Water and beverages lab. IV. Oils and Fats Lab. V. Microbiological lab. VI. Instrumental Lab., with AAS and HPLC (Annual Report, BSTI, 2019-2020).

Processed Fruits Products and Fruit Drinks Laboratories



Microbiological Laboratories

After the enactment of 'Food Safety Act-2013', the government of Bangladesh has established Bangladesh Food Safety Authority (BFSA) which is in effect since February 2015 with a view to ensuring safe food for the people of the country. The Government has been declared 2nd February in each year as the 'National Food Safety Day' and this day is being observed as National Food Safety Day since 2018. The government has also undertaken several steps through BFSA who is responsible for the overall monitoring of safe food following farm to fork approach, production, processing, storage and marketing of food and food stuff.

Under the FAO, SAARC GAP initiatives, 'Bangladesh GAP scheme' and relevant documents for GAP implementation have been developed where Bangladesh Agricultural Research Council (BARC) is the Bangladesh GAP Scheme Owner (SO), Department of Agricultural Extension (DAE) is the Certifying Body (CB) and Bangladesh Accreditation Board (BAB) of the Ministry of Industry is the Accreditation Body (AB).

The Government and some private sector food processing and supermarket retail businesses are attempting to develop and implement GAP standards with varying degrees of success. In December, 2020 the Ministry of Agriculture, Government of Bangladesh has approved Bangladesh GAP policy and accordingly relevant public agencies have started to work for implementation of Bangladesh GAP with a primary goal to ensure quality of food products from Farm to Form and promote export more agro-products (fresh and processed) to the EU and other up-stream higher end markets.

Reviewing the available literatures and analysing the findings of the present study suggest to improve the quality standards of fresh and processed products and for export promotion, the following steps may be undertaken:

- Production of good-quality produce following Good Agricultural Practice (GAP)
- Maintaining the quality based on Total Quality Management (TQM) principles
- Harmonization with CAC standards and compliance with the HACCP system
- Increased participation in international standards formulations; risk-based approach for safe and clean food; sound national food control and regulatory systems based on international principles and guidelines to assure health and safety of both domestic and overseas consumers
- Develop an equivalence agreement with major trading partners
- Capacity building through strengthening the regulatory framework, up-grading testing facilities including the establishment of pesticide residue analysis laboratory to meet requirements of international standards
- Development of HACCP modules for implementation at national level as well as for exports
- Establishing databases on requirements of importing countries
- Strengthening of present Quarantine Authority with adequate number of skilled manpower and its activities is to be established on the appropriate principles;
- The plant health Inspection and Quarantine Rules of Bangladesh are to be modernized to comply with the FAO Convention and application of SPS measures.

5.10 The Way Forward for Tapping the Opportunities

- Select crop wise export zone, identify farmers and organize a group/association
- Develop & introduce a Pilot Project for establishing contractual arrangements to grow exportable fresh produce
- Register farmers and exporters with local DAE office (Upazila Agriculture Officer)
- Make an agreement between farmers and the exporters with the facilitation of DAE local officials
- Train the farmers & exporters, make them aware on CF and convince them about their roles and benefits
- Grow the crop to cater the requirements made by the exporters/technical advice conformity certificate. DAE officials will inspect the fields 3/4 times in different production stages

- Local UAO will issue a certificate stating that the produce is grown in the field that are free from harmful quarantine pests
- Plant Quarantine Wing of DAE will issue e-PC based on physical inspections.
- Develop national policy for Contract Farming *(legal issues, pricing mechanisms, dispute settlement, arbitration etc.)*
- Conduct workshops and exposure visits for better interface among farmers and entrepreneurs and popularization of contract farming concept
- Sensitization of Bankers through tailor-made trainings
- Financial institutes can play a significant role, if farming has to run like a business, a farmer requires input, credit and market.
- Access to credit is not only a big incentive for small-holders in joining CF schemes but it also helps them to enter the market, and
- Take initiatives for expansion of scope of contract farming for high value crops through corporate initiatives.

5.11 Proposed Implementation Framework of 'Bangladesh GAP'

5.11.1 Introduction

Recently the Ministry of Agriculture has approved 'Bangladesh GAP' scheme. Accordingly, under the GAP scheme and identified the public agencies to implement the scheme are as follows:

a). Scheme owner – The government has authorized 'Bangladesh Agricultural Research Council' (BARC) as the Scheme Owner (SO) who is responsible for implementing the GAP scheme in the country.

b). Certification body (CB) – Under the Bangladesh GAP scheme, Department of Agricultural Extension (DAE) is authorized as the Certifying Body (CB) for evaluating the producer against specified requirements of the GAP standard and the GAP scheme. The CB needs to comply with the requirements given in ISO 17065 and get accredited by an AB according to the standard. In the absence of an AB, the scheme owner may also approve a CB. The organizational structure for the operation of the CB-DAE is presented in Figure 1. This structure shall facilitate in meeting the requirements of ISO/IEC 17065 (General requirements for bodies certifying products, process and services). In order to ensure impartially and freedom from conflicts of interest, the functioning of DAE as a Certifying Body (CB) both is subjected to the supervision of an Impartiality committee comprising of representatives from various types of stockholders.

Logo of Bangladesh GAP

c). Accreditation body (AB) - Under the Bangladesh GAP scheme, Bangladesh Accreditation Board (BAB), Ministry of Industries is authorized as the Accreditation Body (AB) who will act as an independent body to testify to the competence of conformity assessment bodies (BABs) used in the scheme. The AB itself needs to comply with ISO

17011. It will function under the aegis of the International Accreditation Forum (IAF). Peer evaluation will be done by IAF and the AB will sign mutual recognition arrangements known as Multilateral Recognition Arrangements (MLAs) for accreditation activities according to ISO 17065 in the case of GAP.

Implementation of the scheme shall be through a multi-stakeholder committee – a steering committee at the apex level with the secretariat being held by the scheme owner. This may be supported by a technical committee and a certification committee. The three committees has already been constituted. Now, process of implementation in field level is to be started.

5.11.2 Major Challenges in Implementing National GAP Standard & Certification System

There exist some major challenges for effective implementation of national GAP standard at growers and government level, and some of those are as follows;

At Grower's Level - a). Insufficient awareness about safety, environmental and social impacts of agricultural practices; b). Lack of knowledge and low education; c). Poor understanding of GAP requirements; d). Poor farm record keeping; e). Low motivation and incentives to implement GAP; f). Unhygienic practices in production and food processing; g). Absence of effective direct linkages with markets; h). Small number of large export companies; i). Minimum participation of small growers in Producer's Associations; j). In-appropriate use of pesticides, and shortage of skilled labours etc.

At Government Agency levels- Poor understanding of the role of national GAP standard; Insufficient dialogue with stakeholders; Insufficient outreach; Lack of coordination in among the institutions on both public and private sectors.

Therefore, developing and implementing a Bangladesh GAP Standard need to consider the following key issues

1. Formulating and implementing policies, such as those relating to improving food quality and safety in order to meet customers, requirements and increase the competitiveness of agricultural products exported from Bangladesh;
2. Development of Agricultural Standards Act;
3. Designing the national GAP system in way that meets domestics and international buyers requirements;
4. Providing a framework and guidelines for the development and implementation of Bangladesh GAP scheme;
5. Clarifying the role and responsibilities of each government agency and private sector;
6. Fostering dialogue with all stakeholders;
7. Strengthening testing laboratory facilities;
8. Setting up a monitoring system and formulating a follow-up plan;
9. Capacity building of human resources; and
10. Providing GAP training and advisory services for both individual growers and grower groups.

Laboratories **–** These are used for carrying out the testing activities for the GAP certification scheme for requirements of the producer, the CB or any interested party. The testing would relate to testing for pesticide residues, microbiology, heavy metals content, soil quality, water quality, etc. The laboratory needs to be ***accredited to ISO 17025*** for those specific parameters. Public agency can establish the said laboratory or PPP model can be considered as an option.

Food Safety Module, Produce Quality Module,, Worker Health, Safety and Welfare Module and Environmental Management Modules are prepared by the GAP scheme owner. Bangladesh GAP Policy' 2020 was approved by the Ministry of Agriculture on 21st, December, 2020. Based on policy directions, GAP scheme standards, Guidelines are developed and also approved the logo.

Proposed Bangladesh GAP Implementation Roadmap

Conceptual Framework of the Bangladesh GAP Roadmap 2021

The highlights of this roadmap are based on four main pillars /components as shown in the above chart:

Pillars of Bangladesh GAP Implementation

- **Main focus of each component**

Production- On the supply side, focus should be given to the following areas:

a) Provide extension advisory services to address the GAP standards by DAE ;
b) Ensure farm practices of farmers/producers according to modules, and
c) Ensure productivity and regular supply of GAP certified produces to markets.

In terms of extension, DAE will ensure that farmers/producers are aware of benefits from improving their practices according to GAP standard.

- Extension work will begin with registering potential and interested farmers in pilot areas and then gradually expand numbers of farmer groups as well as areas of GAP practice.
- Responsible PQW officials and staff members should be well trained to plan and to carry out their tasks effectively.

In terms of farmer practices, extension team should ensure that;

- All relevant forms according to GAP standard requirements will be introduced to farmers and regularly monitored.
- Addition to the GAP Standard, Integrated Pest Management (IPM) will be introduced to replace heavy chemical applications to ensure safer health of farmers, consumers, and the environment.
- The certified produces should be supplied to markets on a regular basis. / Farmers' income should be proportional to market value of the produces.

- **Certification**
  - Certification" covers three areas:
  - Ensure certification system of Bangladesh is in place and functional,
  - Ensure quality assurance is functional, and
  - Bangladesh GAP is harmonized with Global GAP.
  - The GAP certification system should be implemented effectively by cooperation from all concerned parties including producers, consumers, suppliers etc.
  - Traceability system should be functional to ensure confident and trust of the consumers to the certified produces
  - Improve market filter for GAP certified produces in collaboration with Department of Agricultural Marketing.

Marketing- Demand-driven marketing approaches should pay attention to three areas: Awareness of the consumers

- Distribution channels and accessibility to GAP certified produces, and
- Substantial farmers' income.

Consumers are aware of the benefits and necessity to select and consume GAP certified produces

- GAP certified produces become priority choice of consumers
- Market share and value of GAP certified produces should be gradually increased over time.

Distribution channels for GAP certified produces are established at local and national level

- Buyers could clearly distinct certified produces from others, and
- At the market place, GAP certified produces remain similar prices to normal produces but safer and healthier for consumers.

Income opportunities for farmers/producers increased when practicing farming according to GAP standard.

- Value-chain of GAP certified produces will be managed to ensure most of product prices at the market will reach famers to maintain incentives of their GAP practices
- Farmers can expect regular and fair income from GAP practices.

Management Supports

Four areas of enabling supports to ensure GAP standard are expected to be organized and expanded effectively:

a) Certified laboratory for GAP standard
b) Cool-chain management to ensure shelf-life of certified produces for export
c) Multi-stakeholder platform to steer the GAP movement in Bangladesh, and, and
d) Funding from various sources to support the movements.

Laboratory

- A certified laboratory is crucial to support implementation of the GAP standard.
- The capacity of existing laboratories should be upgraded or specific laboratories to be established and accredited.
- Qualified laboratory staffs will be recruited and trained to meet requirements.

Cool-chain management

- Cool-chain management facilities and practices will be established and expanded along supply chain of GP certified produces
- Multi-stakeholders' platform / Forum and exchange platform among actors and stakeholders of GAP certification system will be established and continuously expanded to drive and steer GAP standard movements.

Funding

- Potential and interested donors will be mapped
- Matching between donors and national/local agencies, which need support.

Future Activities

- Continue conduct training of trainers on GAP and auditor
- Continue conduct train to farmers on GAP for food safety and produce quality
- Conduct training workshop to consumers and sellers on GAP requirement
- Start mass campaign to create publish awareness on GAP to stakeholder by TV and other media
- Organize re-fresher TOT and auditors training workshop
- Continue develop guidelines of GAP for each specific crop
- Develop product/product group specific guidelines and importantly, risk mitigation plans for food safety hazards arising from supply chain failures
- Continue to publish printed materials on GAP for farmers
- Organize teams to follow up GAP trainings which were provided to farm workers and growers, and
- Set up GAP farm certification system.

Proposed road map for implementation of Bangladesh GAP has been presented in Table 5.13.

Table 5.13: Proposed Roadmap for Implementation of Bangladesh GAP

Year	Component 1: Extension of GAP	Component 2: GAP Certification	Component 3: Marketing GAP certified Produces	Component 4: Management Supports
2025	• Evaluate and extract lessons learned from extension process and results. • Roll-out to 50 villages.	• Consolidate GAP certification system	• Establish pilot GAP shops in each region/city • Ensure stable supply of GAP certified produces.	• Laboratory operates commercially • Multi-stakeholders' platform functional

2024	• Roll-out to 30 villages	• Conduct research base on QR code and farm record sheets • Harmonize Bangladesh GAP on fruit and vegetable with regional/ Global GAP.	•Ensure government policy •Networking of POs •Establish Collecting and Packaging Centre	• Independent laboratories are accredited
2023	• Roll-out to 25 villages • Establish demo farms	• Train inspectors • Implement QR coding system	• Organize National Campaign • Integrate GAP Guidelines to formal education system • Organize GAP Trade Fair • Promote Bangladesh GAP logo	• Ensure laboratories are certified • Consolidate lessons on cool-chain management.
2022	• Pilot GAP in 15 villages (in 10 districts in 4 divisions) • Train farmers • Ensure quality inputs.	• Set up technology for traceability • Develop QR code system • Develop database • Harmonize Bangladesh GAP.	• Ensure availability of quality and safe produces (formal & informal markets) • Carry out campaign at various levels.	• Improve capacity of laboratories • Publish GAP online info in Bengali/English • Organize regional stakeholders workshops • Arrange fund from Government/Development partner.
2021	• Set direction on GAP implementation • Prioritize crops • Develop working tools • Farmer registration.	• Select authorized officials and train staffs of relevant agencies • Develop procedures and forms for GAP certifications • Train inspectors	• Launch public communication on GAP and food safety • Train personnel from different sectors • Establish market linkages.	• Inventory of existing laboratories • Set up new laboratories • Establish public-private collaboration • Study potential of cool-chain management • Mapping of sources of fund from GOB and donors to develop a project under the Ministry of Agriculture.

1. Establish Bangladesh GAP Scheme Secretariat/Cell in BARC/DAE premise with required dedicated staff under the supervision of MOA;
2. Develop a Pilot Project to Implement Bangladesh GAP through funding support from Krishi Gobeshona Foundation (KGF) or other public sources. For long term establishment the Ministry of Agriculture may approach to development partners to support for establishing GAP with traceability system in place.

In the past, FAO supported a project on 'Building trade capacity of small-scale shrimp and prawn farmers in Bangladesh – Investing in the Bottom of the Pyramid Approach' during 2012 t0 2014 (MTF/BGD/046/STF (STDF/PG/321). Similarly, UNIDO and DOF jointly implemented a project 'BEST-BFQ' and established traceability system successfully in aquaculture value chain in Bangladesh.

The Ministry of Agriculture, People's Republic of Bangladesh can explore such types of project support from EU, FAO, UNIDO and JICA or other development partners for implementing 'Bangladesh GAP' and Traceability system in Bangladesh.

5. 12 Trade Barriers of Agro-products

5.12.1: Trade Barriers in Fresh and Processed Agro-products

NTM barriers are impeding export of Bangladesh products -The recent successes in exports are the improvement in product quality, packaging and the competitive prices of Bangladeshi goods. ITC (2017) reported that exporters of Bangladesh are highly affected by non-tariff measures. The survey results highlighted that 91per cent of exporters in Bangladesh are affected by burdensome NTMs and other obstacles to trade which one of the highest rates observed from the ITC surveys conducted in 35 developing countries and the European Union (EU). In general, the exporters are more affected (91per cent) than importers. Shares of affected exporters in both the agri-food products sector (96per cent) and manufactured goods sector (90per cent) are very high. Most exporters difficulties are related to EU regulations (77per cent) while 23per cent reported NTMs are related to Bangladeshi regulations on exports.

Ahmed (2007) reported that the majority of regulatory requirements for accessing EU markets deal with food safety and phytosanitary issues and thus come under SPS measures. However, exporters of selected commodities are required to meet quality specifications defined under the market grade standards regulation (EC/2200/1996) with proof of compliance with the standards coming in the form of a certificate of conformity (EC/1148/2001).

The majority of the obstacles facing by exporters are with procedural obstacles (POs) in Bangladesh. Exporters reported that 86per cent of these occurred at various Bangladeshi agencies, while 14per cent occurred in partner countries. As per report, more than 54per cent of Bangladesh's export go to the EU and while these countries account for 40per cent of the reported NTM problems. In contrast, while exports to SAARC countries are relatively small (2per cent of total exports), over 10per cent of the reported NTMs are applied by these countries mostly by India. Likewise, 15per cent of the reported NTMs are related to regulations of the USA and 17per cent related to regulations of other Asian countries.

Actually, the demands for such foods are increasing for reasonable price and good quality, but, non-tariff barriers are the great challenge for Bangladesh with neighbouring countries such as India and Nepal.

The government has to move for bilateral talks to remove this through negotiation and agreements, they recommended. Since Bangladesh does not have the testing lab facilities for getting recognition to enter into the global markets, it is another big challenge to meet the international standard requirement, they observed (The Financial Express, 2020).

Conformity Assessment is a major issue for exporters- Product testing and quality certification-conformity assessment regulations in destination markets make up over half of the NTM cases. Difficulties in compliance with these requirements are mostly due to administrative delays, informal payments and associated high fees. Difficulties with technical requirements of partner countries make up 9per cent of the NTM cases (ITC, 2017). Technical requirements on the production process are the most commonly reported NTM by companies from the manufacturing sector.

Around 1/4th of the reported NTMs are related to rules of origin Regulations on rules of origin require to meet a given minimum level of local content and to obtain related documents or a certificate of origin. Exporters of manufacturing commodities experienced more of these issues than exporters of agricultural commodities.

A certificate of conformity (COC) is a mandatory document is necessary for customs clearance of exports to many countries around the globe. The certificate of COC shows that the products ready to export comply the relevant technical regulations and national, regional or international standards of the country of import protecting the health, safety and environment of citizens from substandard imported products and giving them assurance they need in their local market.

Exporting of some selected agro-products from Bangladesh to EU countries requires COC. Very recently the Government of Saudi Arabia has also announced that it requires COC to export agro-products.

5.12.2 Compliance Status of SPS and TBT Measures in in Bangladesh

- **SPS Barriers in the EU Countries and their Impact**

The EU has higher food safety standards than not only those set by international organizations such as CAC, Besides, there are instances where the EU has frequently revised the MRL for chemicals for various products, which make the imports to the EU more prone to rejections. An Indian study (ICRIER, 2019) highlighted that the certain chemicals, pesticides, etc., used in farms can lead to SPS barriers and, therefore, they can only be controlled to some extent at the postharvest and pre-export stage and the product can also get contaminated in the supply chain due to poor storage conditions or incorrect processing technologies, among others. The study also discussed how these barriers have adversely affected the Indian exporters and farmers. It ranges from loss of revenue and reduction in shelf-life of products, to destroying the products/consignment at the EU port of entry.

Generally, the EU standards apply equally to the EU food business operators (FBOs) as well as to all exporters to the EU. In this context, it is important to note that public awareness and concerns about food safety are rising across the world.

There has been an increase in the use of risk analysis techniques and a number of developing countries are taking measures to implement more stringent food safety standards for both exports and domestic consumption. In the recent past, one of the concerns of the Indian exporters was that they are losing their market share to exports from countries such as Kenya, Uganda and Brazil and Chile, who are able to meet the EU standards. Therefore, SPS issues have to be addressed in the context of a highly globalized and competitive trade environment.

- **Current Compliance Status in Bangladesh**

The study team has examined the current compliance status by reviewing available literatures, discussing with stakeholders during FGDs and KIIs and observed that the compliance status of SPS and TBT measures in high value crops is not satisfactory which can be understood from the occurrence of frequent interceptions of consignments due to presence of Harmful Organisms (HO) and fraudulence in phytosanitary certifications. The harmful organisms are citrus canker (*Xanthomonas axonopodis*), thrips, fruit flies, white flies and citrus black spot and brown rot of potatoes.

In May 2012, the US Department of Agriculture (USDA) conducted a study on 'Assessing SPS Capacity Building in Bangladesh' and reported that the SPS systems in Bangladesh are extremely weak and made the following observations:

- The system of oversight is redundant and complicated;
- Laws and regulations governing SPS systems are often not implemented;
- Field and technical officers do not have the skills and/or experience, or are not required by their jobs, to investigate possible hazards;
- Physical infrastructure is not adequate to analyze hazards;
- Risk evaluators do not have the technical knowledge to make scientifically based, sound assessments; and
- Regulatory authorities have very little capacity to manage responses.

The report highlighted that, the Bangladeshi officials emphasized the necessity to build the capacity of the laboratory network. Few labs are well equipped or well maintained. Most of them lack a maintenance budget and resources, equipment and trained personnel. There is a lack of coordination in procedures and methods of testing, few mechanisms for sharing of knowledge or information, and no means to track results electronically. Given the enormity of need in Bangladeshi SPS systems, USDA recommended a systematic, holistic approach that will strengthen what does exist and develop new enabling aspects throughout the systems from farmer education to technician training to departmental capacity building to enabling policies and regulations (USDA, 2012).

The EC has commissioned three audits in the year 2010, 2013 and 2016 to observe the official control mechanisms followed in Bangladesh and discussed with officials of Plant Quarantine Wing and relevant stakeholders including Bangladesh Fruits, Vegetables and Allied Products Exporters Association (BFVAPEA) and visited export production fields and exporters packing house facilities and activities and found some ill practices.

The audit team has suggested for some actions to improve the SPS compliance status of the country. The team put major focus on introducing contract farming system in selected areas under close supervision and periodical inspections of DAE officials and the representative of BFVAPEA. From Table 5.14, it is evident that notifications of interceptions were made due to presence of harmful organisms and missing of Phytosanitary Certificates.

Table 5.14: Notification of interceptions during the period of 2011- 2014

No. of intercepted consignments	2011	2012	2013	2014	Total
Plants, plant products with harmful organism	26	110	97	37	270
Of those consignments with phytosanitary certificate (PC)	19	90	54	26	193
Interceptions for other reasons (e.g., missing or inappropriate PC)	89	43	47	32	211

Source: Pant Quarantine Wing, 2016 (Retrieved from Ahmed, 2018).

The EC has considered some Bangladeshi fresh high value crops as the critical due to presence of harmful organisms and frequent interceptions made during last few years. Another offence was reported by European Commission (EC) team regarding fraudulent Phytosanitary Certificates (PCs). A good number of interceptions were noticed due to the fraudulent certificate or consignments with no PCs. It is reported that, EU member states notified a total of 459 interceptions during the period from 01 January 2014 to 26 October, 2016, of these 299 were due to the presence of HOs and 160 for other reasons and mainly due to non-compliances (Ahmed,2018). A summary of notifications of interceptions by EU member states during the period from 2011 to 2014 and 2014 to 2016, List of major harmful organisms intercepted with the critical commodities are presented in Table 5.15.

Table 5.15: Commodities Intercepted due to Presence of Harmful Organisms

Critical commodities	Harmful organisms
Gourds (*Momordica sp*.)	Thrips species, non –European fruit flies (*Tephritidae*).
Gourds (*Trichosanthes sp*.)	Non-European fruits flies(*Tephritidae*)
Eggplants (*Solanum melongena*)	(Solanum melongena) Thrips species
Citrus (*Citrus sp*)	Citrus (*Citrus sp*) Citrus canker (*Xanthomonas axonopodis pv.citri*), citrus black spot (*Phyllosticta citricarpa*).
Amaranthus (*Amaranthus sp.)*	Thrips species (*Bemisia tabaci)*

Source: EC Audit Report, 2016

Table 5.16 shows the quantity of export of fruits and vegetables and number of interceptions are shown below

Table 5.16: Exports of fresh produce and notification of interceptions by EU (2015-2020)

Year	Vegetables (MT)	Fruits (MT)	No. of interceptions
2015-16	53344	6312	147
2016-17	41426	3548	119
2017-18	39868	2957	51
2018-19	58677	2814	100
2019-20	62767	2443	44
Source: EC Audit Report, 2016 & *PQW of DAE, 2021.*			

The European Union (EU) has warned Bangladesh that it might impose a ban on vegetable and fruit imports from the country for non-compliance with the union's phytosanitary requirements. A high official of the EU's Health and Consumers Directorate General in a recent letter written to Bangladesh Ambassador in Belgium has set a deadline on September 30, 2014 for Dhaka to demonstrate major improvement in ensuring harmful organism-free exports of fruits and vegetables to the EU countries or face a ban.

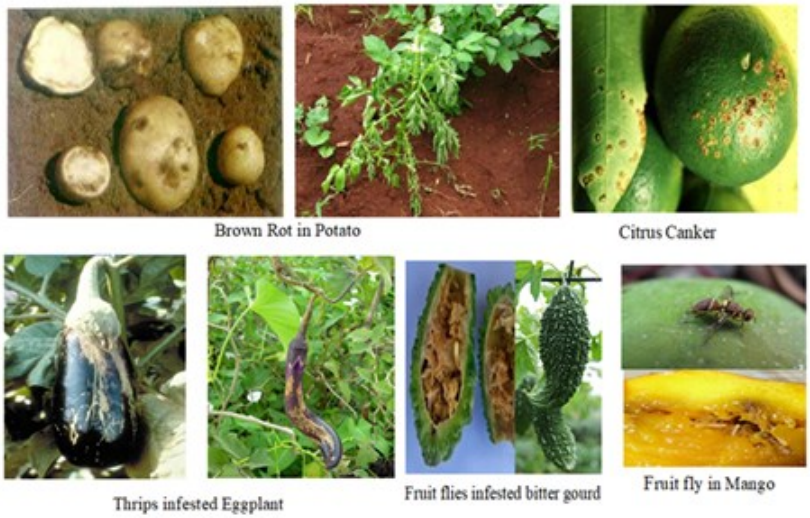
Bangladesh is a significant exporter of Betel leaves (*Piper beetle*) commonly known as Paan leaves). In 2012, the value of such exports was US$ 56 million; the main markets are the UK, Italy and Saudi Arabia. Betel leaves are not regulated by Directive 2000/29/EC. There have been a significant number of alerts for the presence of *Salmonella* and *E. coli* 0157:H7 on such leaves since 2010. In 2011-2012, there were 77 such notifications. According to the EPB, *Salmonella* was found in 44 out of 60 consignments tested by the UK in 2011. The NPPO stated that no Betel leaves had been exported from Bangladesh to the EU since November 2012 and very recently in 2021, the market has been opened for export of betel leaves.

Figure 5.10 shows the photos of some harmful insects/ organisms the presence of that causes the interceptions. The EC audit team reported that since 2013, the relevant authority has taken some actions to improve the effectiveness of production and certification systems for exports to the EU. The DAE has made good linkages with producers and BFVAPEA on the corrective actions to be taken by establishing contract farming and implementation of GAP for control of harmful organisms. However, the report stated that the action taken is not yet adequate and it has not contributed significantly to addressing the major weakness observed in the plant health control and certification system.

According EC audit report (2013), neither the Plant Quarantine Wing nor the BFVAPEA has given due importance to the dissatisfaction expressed by the EU over the export of fresh produce carrying harmful organisms (The Financial Express, 4th August, 2014).

In August 2015, the NPPO imposed a self-ban on the export of seven "critical" commodities to the EU and these are: *Momordica, Trichosanthes, Luffa, Ocimum, Corchorus, Amarnthus* andCitrus (with the exception of *C. pennivesiculata* or Jara Lebu). The ban was lifted for six commodities in March 2016 following the adoption of an internal action plan which included improved features of PCs, recruitments of technical staff, completion of central packing house construction, introduction of contract farming and GAP to primary export producers. To reduce these malpractices of fraudulent certificate or consignment without certificates in an inter-ministerial meeting in Dhaka took serious decision and decided to cancel the export registration of the exporters by the respective authority. Accordingly, certificate of three exporters has been cancelled by the Ministry of Commerce.

Figure 5.10: Harmful insects of critical commodities



Source: Ahmed, M.S.2017.

Another observation made in EU audit report is on the trainings organized in DAE for the quarantine inspection staff does not cover the major issues of concern for export controls. There is no Standard Operating Procedures (SOP) in place for carrying out pre-export inspection and the current system in place does not allow effective traceability of consignment of fruits and vegetables for exports. In addition, the facilities and the equipment of PQW as well as plant quarantine station in Hazrat Shahjalal International Airport (HSIA), Dhaka is not sufficient for performing adequate pre-export inspections. The audit team concluded that the system of export controls for fruits and vegetables which are regularly intercepted in EU is not reliable.

The EU Audit team reported that, no adequate action has been undertaken to review the effectiveness of the export procedures and the authority concerned does not have sufficient supervision and control of the situation. Since the previous audits conducted in 2010 and 2013, the fresh produce which are regularly intercepted in the EU due to presence of harmful organisms, remains largely unchanged (Figure 5.10).

Later on, due to pressure of NPPO, the BFVAPEA has started implementing GAP schemes and introduced some sorts of traceability system for some selected crops in specific areas as an official requirement to export in EU. So, far a very few farmers participating in GAP traceability systems and that needs to be more scientific and systematic based on international standard.

In Bangladesh, the issue relating to export-import in preference of exporting plant or plants products become complex day by day because of no or unclear ideas on this subject from the producers to importers and relating personnel. Many one thinks SPS measure is trade restriction but in reality it is trade favourable as it belongs to the WTO-SPS agreement because, the countries those are satisfying SPS measure means satisfying the import requirements of importing countries are increasing export quantities day by day. As example we can see, Vietnam, Philippines, Thailand, Malaysia, India, Kenya etc. are producing plant and plants products to export by satisfying the condition of importing countries. It may be noted that, after prohibition of Indian mango to EU market in 2014 as presence of fruit fly, India took immediate action to produce fruit fly mango incorporating quarantine department following discussion with EU of India and there was no problem to export their mango to EU in 2015.

Beyond this, India has developed irradiation facility to get American market and applied for market access in Australia and New Zealand to extent market. It has mentioned that, without satisfying SPS requirements no country have entry of plant and plants products and it is necessary to satisfy SPS requirements along GAP certificate for getting entry of products to the super market of any country. There is no probability of comply SPS requirements if do export products after buying from local market and hence interception applied and importing country banned that product in a time.

In 2011, UK identified presence of *Salmonella* bacteria in betel leaves exported from Bangladesh though this is not a disease of betel leaf and notified Bangladesh again and again. Exporting of betel leaves was continued without PC as plant quarantine stopped to giving PC and in 2103, EU banned Bangladesh to export betel leaves for 1 year and as Bangladesh did not able to take any active measure, the banned period extended up to June 2016 in June 2015.

Because of the same reason, in anytime our main exportable vegetables may ban for getting interception repeatedly. But the number of interceptions can reduce if proper monitoring or surveillance is maintained from the production stages of exportable products and as results, increasing of export in huge might assured. Phytosanitary requirements of different countries for Bangladeshi exportable products are listed in table 5.17.

Table 5.17: Phytosanitary requirements of different countries for Bangladeshi exportable products

SL no.	Name of plant and plants products	Name of importing countries	Phytosanitary requirements of importing countries	Requirements of access to supermarket of exporting countries
01.	a. Teasle gourd, bitter gourd, Long bean	UK, Italy, German, French, Denmark,	Must have PC mentioning free from Fruit fly (mainly: *Bactocera*	Fresh products with PC, improved package and

SL no.	Name of plant and plants products	Name of importing countries	Phytosanitary requirements of importing countries	Requirements of access to supermarket of exporting countries
		Sweden etc.	*dorsalis*) and Thrips (mainly: *Palmi spp*).	GAP certification.
	b. Gourds (Snake gourd, Bottle gourd, Sponge gourd, Ridge gourd, Wax gourd).	As it is	Must have PC mentioning free from Fruit fly and Thrips.	As it is
	c. Brinjal	As it is	Must have PC mentioning free from Thrips.	As it is
	d. Leafy Vegetables (Amaranth, Red Amaranth, Jute leaves, Tulshi leaves, Mint leaves, Indian Spinach).	As it is	Must have PC mentioning free from White fly, Thrips, Leaf minor and *Spodoptera* spp.,etc.	As it is
	e. Other vegetables.	As it is	Must have PC mentioning free from pests.	As it is
02.	All types of vegetables and fruits.	Middle East	Fresh products with PC and improved package.	As it is
03.	Citrus fruits (Jaralebu, Satkora, Jamir, Adalebu, Alchi lebu).	UK, Italy, German, French, Denmark, Sweden etc.	PC mentioning that citrus has collected from pest free area and washed sodium orthophenyl and must cancer and citrus black spot free.	As it is
04.	a. Mango	As it is	Must have PC mentioning free from Fruit fly (especially *Bactrocera dorsalis*)	As it is and MRL test report.

SL no.	Name of plant and plants products	Name of importing countries	Phytosanitary requirements of importing countries	Requirements of access to supermarket of exporting countries
			and Pulp weevil, Stone weevil and hot water or vapor heat treated.	
	As it is	Japan, Korea	Prohibited to entry Japan has informed the way to overcome prohibition.	
	b. Other fruits (Litchi, Jack fruit, Lotkon)	UK, Italy, German, French, Denmark, Sweden etc.	PC mentioning pests free and with improved packaging.	
05.	Potato	Middle East, Malaysia, Russia, Sri Lanka, Singapore, Vietnam etc.	For Russia, potato must be free from Brown rot, Cyst nematode and Potato tuber moth and pre-inform first. PC mentioning pest free, fresh and improved package for other countries.	It is prohibited to export EU and other countries have their import requirements.

Source: PQW, DAE, 2021

In the past, Indian exporters also faced similar problems of rejections of mangoes, grapes and eggplants in the EU and other markets for SPS issues such as fruit flies or thrips infestations and resolved these issues by implementing measures (such as hot water treatment for the mangoes being exported to the EU or gamma radiation treatment for the mangoes being exported to the US) that are acceptable to the importing countries. For some products, there are issues with the maximum residue limits (MRLs), which can act as SPS barriers for Indian exporters and farmers.

In a survey report of India (ICRIER, 2019) stated that implementing traceability to the farm is the most successful way of addressing the SPS barriers on a long term basis. Setting up systems to allow for traceability (as a part of domestic reforms) and requests for scientific justifications for new or adjusted SPS measures of India's trading partners (through trade agreements) have helped India to raise certain SPS issues in the WTO's Committee on SPS measures.

Suggestions for Improving Compliance of SPS and TBT Standards

- Establishing Plant Quarantine Authority by separating from DAE as an Independent organization under the Ministry of Agriculture
- Establishing awareness programs for explaining the importance of compliance with sanitary regulations on fresh produce exports to the EU and other potential markets
- Creating a qualified and certified staff in SPS and Technical Barriers to Trade (TBT) for training, inspection, and implementation (i.e. training of trainers)
- Accelerating the process of adapting the SPS regulations into the sanitary system in production areas with proper inspection/monitoring by trained and skilled field officers of DAE - Training producers, importers, exporters, etc. in the technical aspects of the SPS and TBT.
- Involving of official, academic, and research institutions in the process of developing crop quality standards
- Establishing better communication channels with the international institutions dealing with SPS and TBT.
- Providing financial support in the form of loans, etc. for producers who are willing to establish the international systems in their facilities
- Issuing publications, guidelines and newsletters dealing with the most recent updates on SPS and TBT, and
- Assessing the current strength and weakness of Plant Protection Wing and Plant Quarantine Wing and status of laboratories in existing establishments in the country and strengthen facilities.

- ***Capacity Building of Human Resources***

Both the Plant Protection and the Quarantine officers and staff are not adequately trained from home and abroad and their knowledge are insufficient and hence lack of technical skills and practical experiences.

The current training structure is not systematic and effective. The laboratory technical persons of plant protection wing and the quarantine inspectors and laboratory officials are performing activities through inadequate guidelines and work instructions that do not provide full guidance for the identification of harmful organisms during inspection. Absence of any Standard Operating Procedures (SOP) for carrying out pre-export inspections limits the delivery of appropriate services.

Strong support is needed for capacity building at macro level Extension agents including plant protection and plant quarantine officials of DAE through arranging foreign as well as local training particularly in testing of pesticide residues, inspection and monitoring of quarantine pests and auditing of farms in harmonization with international standards etc.

- ***Extension officials should be trained in:***

- GAP, GMP and HACCP basic principles - Integrated Pest Management (IPM) and Integrated Crop Management (ICM);
- European Union/United States/Japan food regulations and market requirements;

- SPS/TBT agreements of WTO;
- Packaging and post-harvest technologies;
- Traceability procedures;
- Testing of agro-chemicals including MRLs and microbiology, pathology and entomology;
- General quarantine rules in line with Section 3.3 of ISPM 7 and Section 1.4 of ISPM 23; and
- Standard Operating Procedures for carrying out pre-export inspections in line with Section 4.2 of ISPM 7 ISPM, and
- GAP auditing/farm inspection and monitoring.

Farmers should be trained in:

a) Fertilizers and Pesticide management;
b) GAP, Traceability and record-keeping;
c) Farm business management skills;
d) Environmentally and socially sound practices;
e) Basic food hygiene and sanitation;, and
f) Post-harvest management etc.

- ***Laboratory Infrastructure***

To ensure consumer's access to safe and suitable food it is necessary to enable a network of well-equipped food testing laboratories run by a trained and skilled staff in a transparent manner. An effective laboratory network tests and validates the safety of food from production through harvest and processing. Such a network protects domestic crops from foreign pest and disease, helps monitor for and keep microbiological and chemical contaminates and residues out of food and water supplies, and contributes to assessments of environmental impacts of, for example, pesticides.. Additionally, the laboratory network certifies exported food meets international standards.

A survey of food testing laboratories (Alam,2012), reported that 80% of labs out of 25 surveyed have an acceptable infrastructure such as the building, electricity, gas and water supply system. However, these labs face problem with power supply, back-up electricity, emergency safety shower, emergency eye wash, and emergency exits. Approximately only 20% of these labs maintain quality according to the national and international standards. The labs lack accreditation, proficiency testing (PT), and Inter Laboratory Comparison (ILC). The waste disposal system is poor and most of the labs desire for a central waste disposal treatment plant to properly treat or dispose waste and save the environment.

Ahmed, M.S. (2018), in his study report stated that National Plant Quarantine Authority has not yet been created and no rules and regulations have been promulgated under the Plant Quarantine Act, 2011. MRLs or other chemical attributes of the imported items are not tested, documents compilation are weak, sampling techniques of plants and plant products are not science based, residues monitoring plan is almost absent and inspection and monitoring services both in farm and packing house operations are not scientific, regular and weak.

Product testing and quality certification system is not yet established in the country at per international standard. The traditional exporters are not yet able to enter into the mainstream export markets in abroad *(exception of Hortex Foundation & FAO supported first time mango export to the ASDA Chain Shop (Walmart,) in UK in 2015)* rather till exporting to ethnic markets due to lack of contract farming, adoption of international quality & marketing standards, traceability, accredited lab testing facilities, infrastructure facilities, logistic support of warehousing, cold chain maintenance and lack of aggressive marketing strategy promoting export of agro-products.

- ***Building an Effective Laboratory Network with Accreditation***

The study team has reviewed USDA study report (USDA, 2012; Consultancy report on' Strengthening the sanitary and phytosanitary services in Bangladesh through building capacity in Plant Protection Wing of the Department of Agricultural Extension (Cooper, J and M.S.Ahmed, (2006); Feasibility Study Report on Food Standards and Safety in Bangladesh (Ahmed, 2018) and from the present study has outlined the following issues to build an effective laboratory network:

- Select four/five key laboratories and conduct a comprehensive assessment for upgrading and providing necessary equipment. For example plant protection and plant quarantine wing's labs are for registering and analysing pesticides, bio-pesticides and PGRs; BARI lab in Gazipur for pesticides analysis, NFSL in the Institute of Public Health; BCSIR, labs of Atomic Energy Commission and the labs at ICDDR-B in Dhaka.
- Implement a laboratory technician certification program that builds the capacity of laboratory technicians to employ Good Laboratory Practices (GLPs) and perform analytical diagnostics (including but not limited to microbiological and pesticide residue detection in food, water, and soil; animal disease evaluation; and plant pest identification). Exporters want to make sure that their products comply with trade standards – but there is no lab that can do this. The export companies rely on shipping their samples to foreign labs that can take two months to return results. This obviously doesn't make sense for exporters of perishable products such as fresh produce.
- Collaborate with the Bangladesh Accreditation Board for accreditation
- Identify or establish and enable a research laboratory that can conduct pesticide residue analysis on horticultural crops; the most likely place for such a lab is the BARI. There is very limited capacity to perform pesticide research that could be used to support the registration and application of new, safer pesticide chemistries.
- Build the capacity of plant health officials to accurately characterize pest risk, for example: the ability to conduct PRAs, pest surveillance, and prepare pest lists. International obligations dictate a transparent science-based PRA process as outlined in the International Standards for Phytosanitary Measures (ISPM) No. 2. This system evaluates scientific evidence to determine whether an organism is a pest.
- Assist in establishing post-entry quarantine centres. As a net importer of plants and plant products, Bangladesh requires a mechanism to conduct post-entry quarantine assessment

of preparative material. In accordance with ISPM No. 34 Bangladesh needs to adopt guidelines for the design and operation of post-entry quarantine (PEQ) stations for holding imported consignments of plants, mainly plants for planting, in confinement in order to verify whether or not they are infested with quarantine pests.

- Assist in establishing Areas of Low Pest Prevalence/Pest Free Areas. Recognition of pest free areas (PFAs) and areas of low pest prevalence (ALPPs) is a technical and administrative process to achieve acceptance of the phytosanitary status of a delimited area. This is outlined in ISPM No. 29 and serves as a powerful tool for addressing pest pressure and establishing the ability to export commodities (e.g. citrus to the EU).
- Help build the capacity of the Quarantine office, laboratory, training centre etc. From the USDA/FDA assessment, USDA officials have noted a significant lack of human capacity endemic throughout the Plant Quarantine Wing. The entire infrastructure of the Wing requires upgrade and investment, particularly in human resource capital.
- In addition to human capital investments, in order to effectively perform pest identification, the Division requires exposure to and the establishment of a "digitized" record keeping system. Such a database is used for interception records of plant pests, an electronic phytosanitary certification system, and to determine regulatory actions.

Increase Inter Departmental Functioning and Coordination- conduct an in-depth assessment of current roles and responsibilities of entities governing sanitary/phytosanitary functions in Bangladesh and develop a framework with clearly define each agency's roles and establish responsibilities within each agency and for cross consultation between these agencies/ministries to ensure better communication and coordination of their work.

Findings of the study recommends to undertake required steps by the authorized agencies for accreditation of the laboratories in accordance with ISO/IEC 17065 for product, process and service certification programs to ensure that the market place can gain confidence for their activities, with ISO/IEC17025 for general requirements for the competence of testing and calibration of laboratories and finally with ISO/IEC17020 for conformity assessment requirements for the operation of various types of bodies performing inspection. This arrangement is very urgent for the health of local populations as well for export promotion of agro-products. If the laboratories are not accredited by competent agencies, market access of Bangladeshi products is bound to face the restrictions imposed by the importing countries.

- **Meeting the Demand for Food Standards and Food Safety Certification**

EU and other developed countries super market chains are increasingly demanding that their suppliers be certified against a private food safety standard, such as GLOBAALG.A.P, BRC and IFS. Likewise, in the Asian market, some minimum certification on food safety is required by the local super market chains and asks for extra quality requirements to purchase the producers products. Both in Asia and international market, farmers will be increasingly required to be certified against a food safety standard. GAP is relevant to farmers as they cover the agricultural production process inputs to the farm gate.

Usually it represents GLOBAGAP, a voluntary standard required by many super market chains in Europe, and the national and regional GAP standards currently operating in ASEAN countries. Another standard is for GMP that mainly applies to firms that makes post-harvest operations /process products to produce food items. GAP codes, standards and regulations are the guidelines developed in recent years by the food industry, producer's organizations, governments and NGOs aiming to codify agricultural practices at farm level for a raise of commodities. Local certification schemes have been proliferated by industrialized countries that include GLOBALGAP, BRC, IFS, SQF (Safe Quality Food Standard) and comply with Codex Standards. These standards have been established by different types of organizations, groups of buyers, group of producers and individual certification bodies. But their objectives and scope may vary, some deal with good practices, some with quality management systems that integrate HACCP and others with entire food safety management systems. Likewise, some apply to farm producers, some to manufactures and other to all food operators.

The objectives of standardization are to set up a producer or a product specification, to which every stakeholder adheres, in order to ease logistical producers, facilitate trade and possibly improve quality if the requirements of the standard involve an improvement compared to common practices. All over the world the demand for development of food standard and food safety certification is growing fast. The super market chains and the consumers are demanding quality produce and suppliers have to get their products inspected and certified against a government private food safety standard. The major voluntary standard for food safety and sustainable production is the GAP which is relevant to farmers as it covers the agricultural production process from inputs to the farm gate.

In exporting fresh horticultural produces from Bangladesh, the most important task is the compliance of the SPS and TBT standards and to strictly follow the Codex/EU Directives. Unless this is done meticulously, horticultural crops export is sure to suffer more than any time before.

To minimize the number of interceptions in EU countries due to non-compliances of SPS issues, the government of Bangladesh should take significant steps towards the development and implementation of quality standard and certification system. In the government scheme, provision exists for certification at the individual farmer level as well as at the level of a group of a farmer. To increase the export volume by reducing the rate of interceptions, the country should develop national GAP standard in harmonization of GLOBAL GAP which will facilitate trade in upstream overseas market and also ensure supply of safe produce to the local consumers. To face the emerging challenges of non-compliance of sanitary regulations and increase the volume of export the country demands immediate development and implementation of GAP standard and Certification system for fruits and vegetables. Any delay in doing so, the country may lose its potential to increase export volume of agro-products.

- **Suggested Measures to Address the SPS Barriers**

The SPS barriers can be addressed in several ways such as by ensuring conformity to the importing country standards, implementing certain processes to meet the importing country requirements, undertaking corrective measures, implementing good agriculture practices, raising the issue in the WTO and discussing the issue bilaterally with the importing country, among others. These are discussed in details below:

a) Implement Good Agriculture Practices (GAP):

Most developing countries address the SPS issues faced in developed country markets by implementing GAP and reducing the use of chemicals and pesticides. The study found that there are some chemicals that are globally banned are still available and used in Bangladesh. Moreover, farmers are reluctant to read the instructions of pesticides uses and do not follow the doses and frequency of applications and some pesticides are not good in quality (less quantity of ingredients) in the country. If farmers use the banned pesticides or the pesticides are not recommended by EU in any crop, they will not be able to exports to countries such as the US, the EU and Japan.

A number of key-informants/government officials pointed out that Bangladesh should move to safe agriculture and GAP implementation. First, chemicals and fertilizers that are banned in other countries should not be used in Bangladesh. Second, the curriculum in agricultural universities should be updated and students should be imparted with lessons on modern and good agriculture practices that can be applied at the ground level. These have to percolate down to the farm level. Agricultural universities can have farm-level programmes to enable the practical application of knowledge. Third, on-farm food safety assurance system should be maintained at the farm level to ensure to produce safety and such efforts have to begin at the farm level.

Farmers interviewed, irrespective of their farm size, revealed that they would like to move away from the use of chemicals and towards GAP. All government departments may work together to design a comprehensive policy on safe agriculture for assuring production and marketing of safe produce/products in domestic and foreign market.

b) Implement Product Traceability:

The implementation of product traceability is the most successful measure in resolving the SPS issues. The Indian case studies of mangoes, fresh grapes, peanuts and eggplant reflect how product traceability can help to overcome the SPS barriers. A number of exporters and processors during diagnostic study have shown their interest to have a product traceability system in Bangladesh for some specific products, which is presently not in place.

There are some issues in implementing product traceability, which may continue to exist. In Bangladesh with multiple small and medium sized farmers and, therefore, raw materials are procured from multiple farms and from wholesale markets, which make it difficult to ensure product traceability.

Contract farming is not in place which makes it difficult to have direct links between exporters, processors and farmers, and ensure product traceability. Recently a trend is observed to source produce from contract farming or by direct procurement from designated farmers who produce crops as per requirements of exporters, super shops and processors. Institutional interventions from relevant public agencies can make it more successful.

c) Initiate Proactive Measures:

The study team believes that proactive measures will enable Bangladesh to counter rejections/bans. For example, while mangoes from Pakistan faced significantly more interceptions than Indian mangoes for fruit flies during the same time period, Indian mangoes faced the ban and Pakistani mangoes were not banned. This is because when the EC sent a warning letter to Pakistan, it immediately stopped exporting mangoes and made hot water treatment mandatory. Similar action was taken by India for okra which helped the country to counter a ban.

d). Data Generation and Data Availability:

To raise an SPS issue with any trading partners, there is need for data and scientific justification. In Bangladesh, the data of exports is not maintained in systematic manner. Data available with BBS, DAE and EPB makes confusion to the users in most cases. EPB is mandated to generate and maintain exports data, but crop/product (fresh and processed) wise data are not maintaining adequately. It is necessary to collect crop/product wise export data accurately in a regular basis and make them available in website. A dedicated organization should be in place to create a database consisting of exports from Bangladesh, number of farmers and acreage of crops under export products, export volumes and earnings etc., which can be made available on the public domain through the website. Hortex Foundation or the DAM can perform this in collaboration with DAE and EPB to collect information on how much land is used for cultivation for export, export contribution of each region (Division/District), export infrastructure in each region and export related all information etc., will be particularly beneficial for policymakers and the exporters.

e). Border clearance procedures in Bangladesh are major hindrance.

- ITC reported that border clearance formalities, charges, taxes and other para-tariff measures, quantity control measures and financial measures make up other burdensome NTMs for the exporters.
- Export clearance procedures are a big problem for exporters due to long waiting time, inefficient procedures and informal payments.
- Difficulties with customs clearance are the most common issue exporters' face with NTMs applied by Bangladesh.
- The exporters report that Bangladeshi customs inspectors take much longer time, often assign an incorrect Harmonized System (HS) code to export-products, and ask for informal payments.
- These factors have undermined the export competitiveness of Bangladeshi exporters.
- Exporters also report difficulties with export licensing or permit to export.

- A variety of commodities require licenses and permits prior to export, which are issued by various institutions. Exporters applying for licenses and permits require a large list of documentations and procedures. This process is time-consuming and leads to informal payments.

5.13 Women's Participation in Agro-processing

5.13.1 Major Challenges

Although a significant growth has been occurred in in agro-processed product export in Bangladesh, the women participation is remaining very low. The study team has tried to find out the emerging constraints that impeding the participation of women in export trade with agro-products along with opportunities. Findings of the study are presented below:

- Agro-processing is a growing sector in Bangladesh
- Export shares of Bangladesh's agricultural products are small and growth trends are uneven across products
- The main challenges in this sector are not gender specific, but rather affect both men and women engaged in the sector
- Dissemination of information on new technologies and products as well as efforts to promote women's entrepreneurship are enabling women's involvement in the sector
- Increasing women's engagement in the production of processed products will necessitate training, support to market access (including use of ICT), and proving adequate processing facilities, and so on.
- Dried and Baked goods are a growing industry in Bangladesh where women can play a significant role
- Quality control and other standards introduced to comply with importing country's requirements can be costly and burdensome for small businesses. Therefore, the government should engage with representatives of small business, including women-owned businesses, in the future development of national standards and certification systems.

***Export shares of Bangladesh's agricultural products are small and growth trends are uneven across products*-** Bangladesh has seen a shift in the composition of its agriculture sector with a gradual decline in the share of crop agriculture and an increase in the share of non-crop agriculture. Farmers are growing larger volumes of vegetables that they sell domestically and internationally. Bangladesh earned USD 208.16 million in 2016-17 from agricultural product exports to 82 countries (BBS). This section highlights four agricultural products in Bangladesh – potatoes, maize, mango and cut flowers – that are either exported or have export potential, and in which women's involvement as producers and entrepreneurs can be scaled up.

***The main challenges in this sector are not gender specific, but rather affect both men and women engaged in the sector*-** One vital challenge in exporting Bangladeshi agro-products is meeting international phytosanitary standards in production and processing. The transportation of goods remains quite difficult, with limited air transportation facilities.

Information about export markets in the region is also limited and these markets remain largely closed to potential exporters. Finally, Bangladesh lacks central and regional post-harvest and packaging centres for high-value fruits and vegetables as exist in Thailand, India, and Pakistan. Current facilities for washing, grading, storing, weighing, quality testing, and packaging are inadequate for meeting international standards for export.

Dissemination of information on new technologies and products as well as efforts to promote women's entrepreneurship is enabling women's involvement in the sector- Such efforts need to be strengthened. Women and men are increasingly familiar with new seeds, technologies, processes, and improved cropping patterns. Awareness is being raised through NGOs, the Department of Agricultural Extension (DAE), TV programs (such as the famous "Mati o Manush"), agents of seed, and fertilizer companies. These initiatives should not only be continued, but also improved so that training and services to target women agricultural producers/entrepreneurs increased.

There are a number of problems in mango and potatoes export market, including low export earnings and price volatility- However, there remain huge opportunities as well to increase women's involvement in agro-processing sector. While there is low export demand for Bangladeshi potato varieties, potato products such as potato flakes and starch have high export value. Increasing women's engagement in the production of processed potato products will necessitate training, support to market access (including use of ICT), and proving adequate processing facilities, and so on. Similar approach could be made for mango also. The Cottage Industry Survey 2011 estimates that about 38 per cent of the women engaged in mango value addition and processing.

The majority of workers in the agro-processing sector are women- The agro-processing sector employs about 20 per cent of Bangladesh's labor force and accounts for about 22 per cent of the country's manufacturing production (Bangladesh Bureau of Statistics 2016b). Most agro-processing workers are reportedly women, and the SME Women Enterprise Directory 2015 reports that about 10.3 per cent of Bangladesh's women's enterprises in 2015 were in the sector. Major agro-processing companies like PRAN and Square also have large agro-processing facilities in which women are the majority of workers. Production data of agro-processed items are not easily available since food production companies do not compile or share their information.

Dried and Baked goods are a growing industry in Bangladesh- With the export value of dried and baked products having increased sharply from USD 0.61 in 2013 million to USD 2.90 million in 2016 there exists scope to increase women involvement. Women account for about 16 per cent of total employment in baked product manufacturing in Bangladesh, constituting 15 per cent of production workers and 35 per cent of temporary workers (BBS, 2013b). The Cottage Industry Survey 2011 finds that 7 per cent of cottage industries manufacturing baked goods are owned by women (BBS, 2013a).

Bangladeshi exports of products to the region have fluctuated while the domestic market is reportedly expanding- The value of regional exports of farinaceous products such as pasta

(regardless of whether it is cooked, stuffed, or otherwise prepared) and couscous spiked from USD 0.01 in 2013-14 to USD 0.24 million in 2014-15, before dropping drastically again to USD 0.02 million in 2015-16 (EPB n.d.). About 14 per cent of Bangladesh's total employment in farinaceous product manufacturing is comprised of women, as they are making up about 18 per cent of production workers and 8.5 per cent of temporary workers. Furthermore, about 21 per cent of Bangladeshi cottage industries that manufacture farinaceous products are owned by women.

Inadequate support for its growth and expanding women's opportunity- Although, the government of Bangladesh recognizes agro-processing sector as a thrust sector and has considerable export potential, there is currently inadequate support for its growth and expanding women's engagement opportunities. There are, for instance, concerns regarding the maintenance of technology and non-tariff measures in exports – such as quality standards and certification – that need to be addressed. Quality control and other standards introduced to comply with importing country's requirements can be costly and burdensome for small businesses. Therefore, the government should engage with representatives of small business, including women-owned businesses, in the future development of national standards and certification systems.

Women can be further engaged in the agro-processing sector and enabled to produce and process export products for the region- Many women in agro-food processing sector, especially in the cities, are not in executive positions, rather in the lower tier of the production value chain as workers. Given women's current involvement in the sector along with the considerable market for Bangladeshi processed agro-products in India, there is immense scope for further increase of women's participation in the sector. This includes expanding women's presence and roles in the grain milling industry, in export of baked goods, and in domestic trade of farinaceous products. There is a need for better understanding on how to engage women in higher tiers of the agro-processing supply chain.

5.13. 2 Suggested Measures to Empower Women in Agro-trade

Despite women's changing roles in the economic domain, increasing and improving their engagement in export trade as business owners and workers will require greater support for women's entrepreneurship and skills development. Various programs and donors have adopted a market-led approach in Bangladesh in recent years to strengthen inclusion and outreach to vulnerable groups, including women. Yet, Bangladeshi women remain less integrated in markets compared to men and oftentimes trade on less advantageous terms.
A number of trade-related policy, asset, and capacity building measures as well as ones not directly related to trade are critically important for both women and men and the Bangladeshi economy as a whole to address existing barriers and reap the full benefits of trade expansion.

The broader and sector-specific challenges need to be tackled in order to promote inclusive regional trade and employment opportunities that benefit for both men and women in Bangladesh. At the same time, it is critical to recognize and build on existing opportunities.

Emerging from the analysis of key challenges and opportunities as well as from the qualitative work and interviews undertaken, a set of recommendations to strengthen women's participation in and their benefits from expanded regional trade is presented below. Given the range of stakeholders engaged in trade and with women entrepreneurs and workers, the recommendations are not patterned to a particular stakeholder, but rather present ways of addressing critical issues and closing pressing gender gaps (ITC, 2017).

Closing the Gender Gap in Agro-trade

Reviewing the ITC report and based on the findings of the present study by consultations with the relevant stakeholders, the study team has identified the following measures to close the current gender gap:

- Develop more inclusive trade strategy for Bangladesh with specific issues and needs of women entrepreneurs/traders through the following measures.
- Integrating gender focus issues in more specific ways in country's trade policies
- Aware the women entrepreneurs and traders about government policies and procedures
- Close the asset and infrastructure gaps by developing strategies
- Expand technological access to increase female producers' and entrepreneurs' participation in export trading
- Develop infrastructure in border areas to create conducive and safe work environments for women's cross-border trade.
- Ensure adequate participation of women entrepreneurs, especially those with micro and small enterprises by the Working Group for Women Traders and Entrepreneurs.
- Women chambers should make more initiatives in trade negotiations and on the WTO committee to reflect the realities of women in trade by including gender-sensitive activities.

i) Integrating gender focus in trade policies

A more inclusive trade strategy should be developed in Bangladesh focussing specific issues and needs of women entrepreneurs/traders mainstreamed into the design, implementation, and assessment of trade policy.

- Collect gender-disaggregated trade data through value chain analysis, poverty and social impact assessments, diagnostic trade integration studies, sector analysis, and export development analysis.
- Agencies and consultative groups engaged in shaping trade policies such as the Inter-Ministerial National Trade and Transport Facilitation Committee's (NTTFC) Working Group for Women Traders and Entrepreneurs should ensure adequate participation of women entrepreneurs, especially those with micro and small enterprises.
- Increase women's voice in technical and policy consultations to enable equitable benefits to women and men from trade while protecting them from adverse effects of trade expansion. In particular, involve women from business associations, chambers of

commerce and industries in trade negotiations and on the WTO committee to reflect the realities of women in trade by including gender-sensitive activities.

ii) Learning opportunities should be provided to women entrepreneurs and traders on government policies and procedures to address their limited access to information resulting knowledge gap.

- Develop courses curriculum targeting women entrepreneurs at institutions like the EPB, to raise awareness about trade policies and procedures.
- Establish working groups for women entrepreneurs and traders orienting participants on government procedures, facilities, and financing opportunities.

iii) Closing asset and infrastructure gaps

- Parallel efforts should be undertaken at the policy, institutional, and programmatic levels to improve women entrepreneurs' access to finance.
- Mainstream gender into the National Financial Inclusion Strategy and other relevant policy documents.
- With women's chambers and associations, revise national policies and Bangladesh Bank initiatives to provide special financing for women entrepreneurs and ensure proper implementation.
- Develop financial incentives for women exporters in collaboration with Bangladesh Bank.
- Train MFIs and rural banks on gender-sensitive financial inclusion and help establish gender-sensitive financial products or credit lines.
- Provide financial literacy training to associations of women entrepreneurs to raise awareness of women's rights to bank loans and services and improve their ability to present their case to banks, meet documentation requirements, understand bank terms and conditions, and handle bank loans.
- Promote fairs where banks learn about key production items in their region, present their financial products, and advise women on how to access loans.

iv) Technological access should be expanded to increase women producers' and entrepreneurs' participation in export trading

- Connect women producers and traders with mobile technology and online outlets for providing market information, breaking into new markets without relying on male-dominated networks, and directly selling their products to a wider customer base.
- Provide women entrepreneurs with new technology support through a cluster approach to help with marketing, exports, and negotiations as done by the Self-Employed Women's Association.
- Build the IT skills of women, including in graphic design, data entry, and processing. Foster them with digital marketing.
- Develop internship programs linking female students to IT companies.

v) Infrastructure investments should be made in border areas to create conducive and safe work environments for women's cross-border trade.

- Provide business infrastructure for small women traders in border areas like market stalls, storage space, and refrigerating rooms, depending on what value chains are most important in the area.
- Ensure adequate security for women at cross-border facilities through improved lighting, safe and hygienic condition of women's restrooms, private inspection rooms, and women's only waiting areas and help desks and CCTV cameras.

vi) Trade related processes should be improved to better enable women's trade.

- Establish simple, single window system for cross-border trade with a special desk/portal allowing women traders to submit required documents online to reduce time, travel costs, and corruption.
- Develop information campaigns on service standards as well as trade regulations and procedures targeting women entrepreneurs and traders.
- Conduct gender-sensitization training of customs and border security officials.
- Recruit and increase visibility of women staff in border agencies and service counters, for instance requiring that 10 per cent of Clearing and Forwarding Agent licenses be granted to women.
- Formulate Operational Guidelines to raise awareness among customs broker and forwarding agents of what is expected of them to make border activities and areas safe for women,
- Appointing female staff to welcome women to work and trade there; requiring that female officers be assigned at border posts; and, clarifying that physical (i.e. body) checks carried out on women crossing the border always be carried out by female customs officials or substitute female officials.
- Encourage private agencies working in border areas to follow government policies and laws regarding gender equality, discrimination, sexual harassment, and violence against women.
- Establish safe and confidential mechanisms to report wrongdoing at the border.

vii) Improve women's capacity and livelihoods

Women should be provided opportunities to enhance their technical skills in key export-oriented sectors and their knowledge of sector-specific industry standards and certification requirements:

- Conduct a review of existing government, NGO, and private sector training programs and materials as well as consultations held with women trade associations and chambers of commerce to assess outreach, content, and financial support.
- Design standard operating procedures for business incubator programs training female workers in export-oriented manufacturing sectors to ensure that they do not fall behind as production shifts to more high-skilled and capital-intensive forms.
- Target women entrepreneurs and traders with training on sector-specific industry standards and certification requirements to support their entry and movement up trade value chains.

viii*) Business development training should also be provided to women entrepreneurs to strengthen their position in trade.*

- Conduct a training needs assessment for the Women Entrepreneur Association of Bangladesh (WEAB), Chambers of Commerce, and SME Foundation to better target capacity building for aspiring women entrepreneurs, women-led SMEs, and exporters.
- Build women entrepreneurs' and exporters' skills on leadership, communication, marketing, bargaining and negotiations, time management, business proposal development, rules and regulations for setting up enterprises, women's rights in access to public training establishments, and obtaining support from business chambers.
- Encourage women's chambers and associations to mentor women-owned firms with potential to engage in regional export and provide them with one-on-one management training, marketing support, access to some form of financing, affordable space, and shared offices.
- Establish Business Incubation Centres for women entrepreneurs at the district level and in border areas to facilitate linkages with processors and distributors to: provide support in preparing loan applications; facilitate linkages with larger processors and distributors; and, provide access to ICT, business development training courses, and trade-related information (e.g. export requirements, health and safety documentary requirements), and
- Mobilize districts, women's chambers of commerce, and entrepreneurs' associations to facilitate women exporters' participation in special economic zones (SEZs).

ix) To maximize the economic returns of women producers and traders, efforts should be made to more effectively link them to existing information networks and value chains.

- Establish links between women producers, retailers and private sector firms to facilitate access to technical and market information, and marketing products and export.
- Disseminate trade information, including from the Government of Bangladesh's Digital Bangladesh flagship a2i Project, to women through local government bodies.
- Change chambers of commerce and tre associations' membership norms and rules of inclusion to facilitate women's entry to help promote products and services, strengthen voice in trade policy, and access training, finance, and information on trade regulations.
- Assist sectoral trade associations (Women chambers) in undertaking research on present and potential involvement of women in their sectors; document best practices to represent, advocate for, and provide support to women producers and exporters; share across women's chambers and associations.
- Support female entrepreneurs' participation in trade fairs and exhibitions, regional networking opportunities, and exposure visits.

5.13.3 Key Gender Gaps and Recommended Actions for Promotion of Women's Trade

While women's involvement in traditional sectors such as dairy and agro-processing should be supported, their growth in other promising sectors should also be promoted. Table 5.18 summarizes the gaps and recommended actions that emerge from the current study.

Table 5.18: Key Gender Gaps and Recommended Actions in Agro-Processing Sector for Promotion of Women's Trade

Key Gender Gaps	Recommended Actions
A. Agricultural products Lack of women's involvement in higher levels of agricultural products value chains.	- Increase women's involvement in processing to create high-value products such as potato flakes and starch.
	- Expand women's engagement in diversified fruits and vegetables product manufacturing and trade.
	- Provide training for women on fruits and vegetable farming, post-harvest management including, storage, and marketing.
	- Build awareness on SPS and TBT measures for women-owned businesses and female workers.
B. Agro-processing Women are mainly involved in lower tiers of production value chains	- Systematically collect gender-disaggregated data on employment in agro-processing.
	- Conduct gender-sensitive analysis of sector value chains, design interventions to support women's economic participation.
	- Engage with representatives of women-owned businesses on future development of national standards and certification systems.
	- Conduct research, analysis on how to engage women in higher tiers of agro-processing value chains.
	- Expand women's presence, roles in fruits and vegetables processing, export of dry foods and domestic trade of farinaceous products.

Chapter 06:
Value Chain Upgrading Strategies and Interventions

6.1 Developing Strategies and Interventions

Analysis of actors, present status, constraints and opportunities along the value chain provided guidelines to design intervention strategies. The strategies are designed into product upgrading, process upgrading, function upgrading, market upgrading and governance. Interventions with an objective to promote competitiveness of the value chains based on the strategies, specific interventions are suggested for value chain promotion. The following strategies and interventions are designed to integrate producers into competitive value chains and improve their benefit in agro-processing. Strategies and interventions are categorized into product upgrading, process upgrading, function upgrading, market upgrading and governance interventions.

6.1.1 Product Upgrading

- Standard setting for fresh produce
- Improve product quality through proper grading, packaging and storing techniques
- Strengthen skills and capacities of the stakeholders
- Conduct market research for fresh and processed products to assess the feasibility.
- Provide technological support
- Quality maintenance of products needs skill development, promotional campaign and certification system
- Efforts required to establish branding for trust building
- Producers Organizations (POs) group should be federated to establish linkages with buyers.

6.1.2 Process Upgrading

- Need to organize producers in to a collective enterprise for efficient and organized delivery of products
- Inclusion of women has to be ensued organizing producer's groups and female enterprises
- Organize more training which are to be effective involving experienced resource persons
- Organize groups (Producers including Female entrepreneurs) in by motivation, developing plans and coordinating support from other stakeholders is required to develop capacities.
- Linking saving credit program in such groups to overcome challenges of finance for enterprise activities.

6.1.3 Function Upgrading

- Functions that can be accomplished for improvement of FVs cultivation and capability of producers and traders to undertake the functions need to be assessed.
- The key consideration should be on modern technologies of production, quality assurance, post-harvest handlings, value addition and marketing.
- Based on the assessment, an enterprise development plan for upgrading function has to be developed with a focus on increasing benefits to primary producers and entrepreneurs
- Before establishing enterprise to implement new functions, the institutional aspect has to be well thought out mainly in terms of management, benefit distribution, raw material sourcing, production management, finance and marketing.
- Finally, linkages should be established with supporting agencies for functional upgrading. Access to appropriate technologies is another key area to consider.

6. 1.4 Market Upgrading

- To upgrading market, need to start with the identification of potential markets, understanding requirements to access the market and identifying potential buyers.
- To identify markets, need analysis on the production, quality control, value adding activities, transportation, financial management, marketing activities, quality standard and trade related issues to target such market and buyers.
- If analysis suggests moving forward, exposure visits of the primary producers or traders will be helpful for improving understanding on market and their specific requirements.
- Upgrading market will be successful once the contractual agreement with potential buyers is signed.
- Need to establish a trustworthy relationship between the actors to facilitate exchange of information and skill. Market information is always important for primary producers and traders so that they can judge the offer they are receiving from the buyers.

6.2 Governance and Interventions

- Need to empower the POs and Entrepreneurs by information and skill development trainings to strengthen their position in value chains.
- There should be policies to promote producers and entrepreneurs to upgrade their skills.
- Effective policy implementation mechanism should be in place targeting to the services the POs and Entrepreneurs. This can be promoted by organizing and federating stakeholders and organizing forums and dialogues at different levels. If the networks of traders and processors are developed properly and objectively at district and regional levels, it helps a lot to overcome the challenges in trade whether that is in policy issues or the issues of unfair competitions and conflicts between traders.

- The Chambers of Business (Both men and women) can play vital role in organizing and federating stakeholders and establishing forums and dialogues at different levels by creating multi-stakeholders' networks.
- If the networks of traders and processors are developed properly and objectively at district and regional levels under the patronization of Chambers of Business, it will helps a lot to overcome the challenges in trade whether that is in policy issues or the issues of unfair competitions and conflicts between traders.

6.2.1 Specific Actions for Interventions

On the basis of information collected from the sub-sector actors and key informants, the BDS were narrowed down for priority interventions. The prioritization was made considering four indicators such as, unmet market demand, potential for market growth, potential for employment generation. The following major service provisions were selected as priority interventions:

1. Strengthen institutional support services
2. Organize producers and traders Self-help Groups
3. Provide training on production, post-harvest handling, value added enterprise development and marketing
4. Facilitate to develop working modalities for producer's groups and the enterprises
5. Support communities to star-up activities, prepare business plans and business management
6. Establish incubation centres through providing project supports in collaboration of Business chambers/associations to empower women in agro-enterprise development
7. Identify potential sources of finance and facilitate securing capital for enterprises
8. Technical support to establish physical infrastructure of marketing enterprise
9. Develop standard of fresh product, implement 'Bangladesh GAP' and establish certification system
10. Aware the stakeholders on the market standards of importing countries
11. Identify potential buyers and establish contractual agreements with them.
12. Support trade associations with more funds, especially to the women bodies to organize more skill development events focusing demand driven issues by developing module and hiring experienced resource persons. Hands on practical trainings for the women could be arranged for agro-processing by developing various schemes/projects.

CHAPTER 07:
POLICY RECOMMENDATIONS AND PROPOSED ACTION PLAN

7.1 Policy Recommendations for Agro-processing and Women Empowerment

1. Policy level: to address gaps in sectoral rules and their application

1.1 Integrate the needs and concerns of women, including those in the informal sector into SME policy formulation and programme

1.2 Include the development of women's entrepreneurship as a priority in sectoral policies and master plans for agro-processing

1.3 Develop a strategic policy framework for Women Empowerment Development (WED) and establish a national focal point for the promotion and coordination of women's Entrepreneurship Development.

2. Market level: to address gaps in accessibility to appropriate financial and nonfinancial services and to markets

2.1 Encourage financial service providers and build their capacity to target women entrepreneurs with gender sensitive credit and loan products that take into account women's lack of access to land and collateral, including in the informal sector, and provide them with adequate support to launch and grow their enterprises.

2.2 Increase the capacity of local service providers to offer gender-responsive entrepreneurship development training and support.

2.3 Develop business support infrastructures for women, notably, online and physical women's desks where they can easily access information, referral, and advice on how to access finance, business support and markets.

2.4 Support women entrepreneurs' associations and sectoral organizations to establish mentoring schemes for women entrepreneurs.

2.5 Encourage government, multinational and national enterprises, UN and donor procurement recommendations for export promotion programmes, especially in the agro-processing sector to adopt gender responsive procurement practices.

2.6 Implement an awards programme to recognize and celebrate the achievements of women entrepreneurs in the sectors of agro-processing.

2.7 Support advocacy of women associations for business development.

2.8 Reinforce the representation and participation of women entrepreneurs and their associations in the Chamber of Commerce and Industry and sectoral associations to better ensure that the concerns and interests of women entrepreneurs are raised in public-private sector dialogue.

3. Enterprise level: to address gaps in productivity and competitiveness of women's businesses

3.1 Agro Sector policy advocacy and issues related women traders in Export Policy

3.2 Skill development related to business procedures and regulations, product, marketing, packaging, negotiation, networking etc.

3.3 Pilot activities for promotion of exports by the women traders through women traders

business support centre

3.4 Link women entrepreneurs to various financial schemes of the government.

3.5 Implement women-focused training and information programmes to educate women about sources of financing, the criteria used in making funding decisions, and how to prepare proposals and plans to secure financing. This training should also include components on financial literacy.

3.6 Establish and expand entrepreneurship and cooperative training programmes for women entrepreneurs.

3.7 Sensitize women entrepreneurs in the various dimension of the agro-processing value chain they operate in to take advantage of opportunities and engage with actors in the chain to create opportunities for direct, indirect and induced employment.

3.8 Enhance E-commerce /She Trade business in agro-processing sector

3.9 Strengthening the Association/Chamber's business literacy programmes for women traders

3.10 Special economic zones /FDI for women traders and linkage with the regional women trade associations

4. Policy Recommendation for Export Promotion of Agro-products

4.1 Strengthen Hortex Foundation as Nodal Agency: There is a crucial need to strengthen Hortex Foundation by restructuring it as a Nodal Agency which will support promotion of export-oriented production and development of the products, setting the standards and specifications of the products, registration of exporters and improve packaging, provide export market access supports by collaborating with other related public and private agencies.

4.2 Crop Zoning and Contract Farming: Crop zoning is to be made for production of export-oriented crops. Discontinuing the current approach of *market-market* encourage supervised production systems. Contract farming needs to be encouraged not only to provide a broad base for fresh produce supply to exporters and raw materials for processing but also for the supply of the right type of inputs and other linkages necessary for the acceptability of the quality standards for competitive exports.

4.3 Support for Infrastructure Development: A major constraint to promoting exports is the lack of adequate infrastructure, particularly cold storage facilities and transportation. There is need to encourage public-private partnership in building such facilities and ensuring their proper maintenance. Incentives are essentially needed as capital investment subsidy.

4.4 Strengthen the Services of the Plant Quarantine Wing of the DAE: Establishment and effective fictionalization of National Quarantine Authority as per Plant Quarantine Act 2011 is urgently needed. Effective efforts need to be undertaken to strengthen PQW of DAE by improving its capacity for quarantine inspection and monitoring through one-stop quarantine inspection and certification facilities.

4.5 Increase Logistic Support: Increasing of facilities of temporary storage, establishment of more scanners and improvement of cargo handling facilities at the HSIA are the need

of hour. Besides, automation of PC processing and issuance are also urgently required. The current service provided by the Central Packing House is highly appreciable and more infrastructural supports are to be made to upgrade its facilities to fulfil the need of the exporters.

4.6 Upgrade Standards and Certification: Continue the current efforts to ensure integrity and quality of the products (both fresh and processed) and starts functioning of closer inspection/auditing following IPPC rules to increase the reliability of certificates specifying product quality. Ensure production and distribution of good-quality products following Good Agricultural Practice (GAP), GMP and based on Total Quality Management (TQM) principle. Adoption of risk-based quality assurance procedures and harmonization with CAC standards and compliance with the GMP and HACCP systems.

4.7 Upgrading of Testing Laboratory: An urgent need pressing the country to upgrade the facilities of testing laboratories to follow Good Laboratory Practices (GLP) and for international accreditation.

4.8 Human Resources Development: There is also a vital need for human resources development and to train the officers, exporters, producers about the quality standards and the sanitary and phytosanitary measures that need to be complied with.

4.9 Market Access and Information: There is a need to provide continuous updating of data on market information, data compilation, market access, procedures and processed etc. Side by side Bangladesh Embassies working in different importing countries should play more active role in providing market information/intelligence services.

4.10 Credit Facilities: It is essential to provide easy access of credit facilities to the exporters with liberal terms in addition as capital investment subsidy. Introduce different schemes to provide financial assistance to the SMEs for the export promotion.

7.2 Conclusion

Economic development of a country is accompanied by transformation of agricultural sector from a subsistence primary product oriented system to commercialized agriculture producing high value and processed products. With high potential demand in domestic and export market this sector can contribute significantly to enhanced farm incomes and employment generation. The country's next frontier of innovation is in the area of agribusiness and agro processing. Liberalizing the sector by removing overall structural constraints will help Bangladesh to a much larger extent in exploring its own path towards diversification and engagement of women which in turn contribute to the employment creation and income generation. Export of agro-processed products has huge demands and the Government is perusing to increase the growth in many ways and providing supports for trade facilitation while private sector is also providing pivotal role.

The low level of women's economic participation in trade of agro-products is a critical constraint to growth of the sector. The country's women involvement in entrepreneurship and trade particularly in agro-products is limited with most SMEs focused on the national

markets. Recent evidences of growth trend show that the agro-processing sector has vast export potentials but some prevailing constraints are arresting the export growth.

In Bangladesh Women Entrepreneurs Association of Bangladesh (WEAB) has several capacity building training program but it should be related with trade leadership development in agro- production, marketing in domestic and cross border trade, access to finance i.e. loan facilities in low interest, SME business promotion and cash /export incentives.

Focus on cluster development, improving quality of products, better compliances of international standards, focus on improving packaging standards, promotion of R&D activities, skill development, improving infrastructures, facilitating trade procedure, SPS & TBT response, establishment of accredited labs and creation of agri-start up fund especially for the youth and women is required to promote export of agro-products. If properly encouraged, promoted and managed, agro-processing sector may have the potential to increase income, generate employment and improve external balance position, and thereby contribute to overall industrial and economic development of Bangladesh.

7.3 Proposed Action Plan

Proposed action plans are attached as Annexure -01

7.3.1 Implementation Management Framework of Proposed Action Plan

This diagnostic study has proposed an action plan for export promotion of agro-processing sector so as to contribute to empowering women in trade and overall socio-economic development of the country. The execution of the activities outlined in the Action Plan depends on coordinated efforts of both public and private agencies and its success will depend on the ability of stakeholders to plan and coordinate actions in a tactical manner.

Indeed, the proposed agro-processing sector development and export promotion Action Plan is not the plan of any specific institution; rather it is the strategic direction of the country, and to ensure its success, it is necessary to foster an adequate environment and create an appropriate framework for its implementation. The following section presents some of the key success conditions considered necessary for the suggested Action Plan to be effectively implemented and achieve self-sustainability and long-lasting benefits for the country.

1. **Establish and operationalize a public and private coordinating platform and its subsidiary organs**

A key success criterion for the proposed Action Plan is stakeholders' ability to co-ordinate activities, monitor progress and mobilize resources for the implementation of the plan. It is recommended that the country establishes a single authority, to act as a one-stop service centre to promote and support the agro-industry under one roof for public–private deliberations, that acts in an advisory body to the relevant authorized Ministry of the Government and the private sector over issues related to or affecting the agro-processing sector, export promotion and its Action Plan. The entity could take the form of an inter-

branch organization under the patronization of the mandated Ministry and functioning on the basis of public–private collaboration.

The inter-branch organization will require high-level involvement of the policy makers and technical experts (public and private), as their role is crucial and will impact the effectiveness with which the Action Plan is implemented.

Likewise, the ability of the private sector to provide inputs to the implementation process will significantly influence the success of the Plan. A nominated secretariat that coordinate monitors and mobilizes resources for implementing the plan will also be required.

The main functions of the Authority should be the followings:

a) Act as a consultative group pertaining to the agro-processing sector, enabling the private sector and Government representatives to identify priority issues for implementation;
b) Coordinate and monitor the implementation of the action plan by the Government, private sector, institutions to ensure implementation of action plan is on track;
c) Identify and recommend allocation of resources necessary for the implementation of the plan;
d) Elaborate and recommend revisions and enhancements to the Action Plan if required so that it continues to best respond to the needs and long-term interests of the sector;
e) Propose key policy changes to be undertaken, based on Action Plan priorities, and promote these policy changes among national decision makers; and
f) Guide the secretariat in its monitoring, coordination, resource mobilization, and policy advocacy and communication functions to enable effective implementation of the Action Plan.

As discussed above, the inter-branch organization should be supported by a Secretariat to complete the daily operational work related to implementation management of the Action Plan. The core responsibilities of the secretariat should be to:

a) Support and organize regular meetings of the public and private stakeholders involved.
b) Monitor the progress and impact of Action Plan implementation.
c) Coordinate Action Plan implementation partners.
d) Mobilize resources to implement the Action Plan.

Specific tasks falling under these broad areas of activities include:

- Formulate project proposals, including budgets, for implementation of activities of the Action Plan;
- Develop annual and biannual work plans for approval by the organization;
- Collect information from project implementation and prepare regular monitoring reports to be submitted to the organization;
- Advocate in favour of the Action Plan to public and private partners;
- Execute any other tasks required by the inter-branch organization.

2. Private sector support and participation

The private sector should benefit from Action Plan implementation through improved productive capacities, reduced costs of doing business, facilitated administrative procedures, enhanced access to finance, etc.

However, the private sector clearly expressed during the study period its willingness to contribute, directly or in partnership with public institutions, to the implementation of the Action Plan. Their implementation efforts can range from advocacy to providing business intelligence to institutions, contributing to development projects, etc. In brief, the private sector's practical knowledge of business operations is essential to ensuring that the activities of the Action Plan are effectively implemented and targeted.

3. Sensitization of implementing institutions to build ownership

The key implementing institutions detailed in the Action Plan need to be informed of the content and the implications for developing programme. This sensitization is essential to building further ownership and it provides institutions with the opportunity to review the Action Plan in order to confirm the activities they can implement immediately, and in both the medium and long term. Such a programming approach will permit better resource allocation within the responsible agencies. This allocation can be formalized by integrating the activity of the Action Plan into the programme planning of the institution. While the financial dimension is often required, the human resource element is no less important.

4. Financial resource mobilization for implementation

While resource mobilization is only part of the solution, it plays a crucial and indispensable role in supporting Action Plan implementation. An integrated resource mobilization plan should be elaborated. Resource mobilization involves planning the sequencing of communications with donors, project design, project proposals/applications, and resources collection and management. This should facilitate, leverage and strengthen the impact of diverse sources of finance to support sustainable and inclusive implementation, including national resources, funds from development partners and private investment.

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Annexure

Annex I: Proposed Action Plan

A. ACTION PLAN FOR AGRO PROCESSING SECTOR

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
A. Developing Strategic Plan for the Implementation of Agro-Processing Industry (AP) Promotion Policy, 2020.						
1.	Formulate a Strategic Action Plan for implementing national policy for Agro-food Processing Industry Promotion, 2020.	i) To create an enabling environment to implement the AFP policy in Bangladesh; ii) To translate the policy in to action; iii) To foster the implementation of the AFP policy; iv) Ensure accountability of the stakeholders in implementing the policy; and v) To enhance capacity, capability and competitiveness in the export market.	Formation of national regulatory framework for implementation of the policy; Formation of National Steering Committee to ensure overall technical coordination of the implementation of the policy; Formation of Inter-Agency Expert Group on food processing with a view to develop and document good practices and guidelines on the concepts, methods and standards for various processed food products; Providing technical assistance available in key areas including supports and guidance for promoting agro-food processing system; and Provide training on various levels of core skills needed to produce quality and safe processed agro-products.	i) National Strategic plan for implementing National Agro-food Processing Industry Promotion Policy,2020; ii) Policy regulatory framework developed; iii) Capacity of the stakeholders enhanced on implementation of National Agro-food Processing Industry Promotion Policy,2020; iv) Technical skills at various levels of the stakeholders developed; and v) Competitiveness of agro-food processors in the global export market.	Short term	MoA, MoI, MoC, MOSICT, MoP & F and SMEF.

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
B. Finance						
1.	Enhance access to finance by introducing financial schemes	To enhance easy access to finance for AP enterprises	i). Change in lending policy; ii). Reduce the type and amount of collateral; iii). Establish venture capital for AP industries; iv). Increase access to finance to AP enterprises through credit wholesaling.	i) Credit lending policy changed ; ii) The type and amount of collateral for AP enterprises reduced; iii). Credit wholesaling for AP industries introduced.	Medium term	Bangladesh Bank, Commercial Banks, Leasing Companies and Venture Capital Companies.
C. Technology						
2.	Appropriate technology intervention	To enhance competitive efficiency through appropriate technology intervention	i) Assess the present technological capabilities of AP R&D institutes and identify weakness and strengths; ii) Increase fund for R&D activities to the universities and research institutes; iii) Provide credit, tax, VAT and duty facilities for import of technology to support the AFP industries; iv) Make inventory of available technologies and prepare a database and load on SMEF we-portal so that they are readily accessed; v) Conduct a survey to assess the technological needs of AP sector; vi) Increase coordination between research organizations and the AP	i) Capabilities of R&D institutes assessed; ii) Fund support increased for R&D activities; iii) Credit, tax, VAT and duty facilities for import of technology provided; iv) Database on technologies for AP sector available; v) Survey conducted to assess technological needs; vi) Coordination between R&D institutes and the AP enterprises increased;	Medium to long term	R & D institutions, Universities, BCSIR, BARI, BITAC, BSTI, SCITI, SMEF, Hortex Foundation, Krishi Gobeshona Foundation, BAPA and NASIB .

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
			industries vii). Provide assistance for new technology; viii). Strengthen R&D organizations and increase research facilities; ix). Introduce need based subjects in universities, vocational institutes and modernize education curricula for AP industrial promotion.	vii). Assistance for new technology provided; viii) R&D organizations strengthened and research facilities increased; ix) Universities and vocational institutional curricula modernized.		
D. Market for AP Products						
3.	Enhance access to market	i) To enhance AP products access to domestic and international markets.	i) Diversify AP products and identify new AP products; ii) Build display center for AP products; iii) Organize AP products fairs; iv) Participate in international fairs/exhibitions with AP products; v) Improve quality of products; vi) Provide incentive to build awareness about the advantages of AP products and their quality assurance mechanism through generic advertisement and publicity; vi) Initiate market promotion campaign for new products mix and brand name support.	i) AP products diversified and new products identified; ii) Display center built for AP products; iii) Organized fairs iv) Participated in international fairs/exhibitions; v) Quality of products improved; vi) Provided incentives to build awareness about the AP products through advertisement vi) Market promotion campaign initiated.	Medium term	MoA, MoI, MoC, BAPA, SMEF, BFVAPEA and Hortex Foundation

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
4.	Develop guidelines for agricultural marketing, market research and market information system for processed products	i) To strength marketing system and ensure adequate price of products; ii) To locate new and promising markets for processed products.	i) Marketing guidelines developed; ii) Marketing research areas selected.	i) Guidelines approved; ii) Marketing research conducted; iii) New markets identified.	Medium to Long term	MoI, SMEF, MD, FBCCI, Women Chambers, Universities, R&D institutions
E. Capacity Building and Skill Development Training for Technicians and Workers of AP Industries						
5.	Review of existing institutional programmes and facilities extending towards AP human resource capacity development	i) To increase human resource capacity of the AP industries to improve their knowledge and skills.	i) Prepare list of experts, review present curriculum, syllabus and examine standard of materials of various skill training and revise; ii) Conduct training need assessment to remove mismatch between supply and market demand; iii) Organize meeting with all relevant institutions and exchange information among agencies; iv) Organize market oriented training of trainers course for AP SMEs; v) Provide training on business startup and management, E-marketing to private entrepreneurs especially women and youth ;	i) Expert list prepared, curriculum and syllabuses, examined standard of materials, revised ; ii) AP sectoral training need assessed; iii) Organized meeting, exchanged information among institutions and agencies; iv) Organized market oriented training of trainers (ToT) courses; v) Provided training on management	Medium to Long term	SMEF, SCITI, INFST, BARI, BAU, BSCIC, Hortex Foundation, BFTI and WTO cell.

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
			vi) Support in-factory skill up-gradation and training activities through providing fiscal and other incentives. vii) Establish incubation center	development of AP entrepreneurs and managerial capabilities of AP SMEs enhanced; vi) In-factory skill up-gradation and training activities provided. vii) Incubation center established.		
F. Infrastructure and Institutional Facilities for AP Industry						
6.	Adopt policy to ensure utility (electricity, water and gas) services AP industry	i) To ensure an un-interrupted power and adequate water and gas supply; ii) To improve production system; iii) To minimize labour wastage.	i) Excluded AP industry from load shading and gas shortage; ii) Power supply in main grid in AP industry area increased.	i) Production increased; ii) New AP SME industry established iii) Profit in AP industry increased.	Medium to Long term	PDB, MoE, REB, Private companies, WASA,DESA & PDB.
7.	Develop scheme for strengthening of backward linkages of AP industries	i) To increase capacity utilization of AP industries; ii) To ensure remunerative price to farmers; iii) To ensure supply of high quality inputs and planting materials of appropriate varieties to farmers along with technical know-how etc. through the processor.	i) Ensure regular supply of quality raw materials through contract farming ii) Provide remunerative price by creating direct linkage between farmers and processors; iii) Ensure supply of high quality seeds/ fertilizers/ pesticides and planting materials of appropriate varieties to farmers along	i) Capacity utilization of AP industries increased through ensured contract farming; ii) Direct linkage between producer and processor created; iii) High quality inputs provided to the farmers by the	Medium to Long term	MoA, MoI, SMEF, BAPA,NGOs, Women Chambers and Hortex Foundation

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
			with technical know-how etc. through the processor.	processor.		
8.	Establish post-harvest infrastructure and cool chain facilities for agro processing.	i) To provide/develop post-harvest infrastructure like establishment of cold storage and cool chain facilities etc.; ii) To build efficient post-harvest handling system right from the farm to retail marketing; iii) To develop setting –up pre-cooling facilities, refrigerated transportation system and refrigerated retail outlets; iv) To develop cold storage system etc. in major ports and airports for food products meant for export.	Provide partial grant assistance (50%) of the cost of capital equipment and technical civil works.	Partial grant assistance provided.	Medium term	MOA, MoI, DAM, MoFL, BSTI, BAPA, BFVAPEA SMEF, Commercial Banks and Other financial institutes
9.	Strengthen capacities of SMEF to render better services.	To provide more services for AP industries through strengthening capabilities.	Provide support to increase the institutional capabilities.	More services received by the stakeholders.	Medium term	MoI, Donor Agencies
G. Handling, Grading and Transportation of Raw Materials						
10.	Develop handling and transportation guidelines for agro & food processed products.	i) To standardize a guideline ii) To facilitate the AP industry to use the guideline	i) A committee formed with experts ii) Draft prepared and submitted by the committee to authority for approval	Handling and transportation guidelines available for use	Short term	R&D institutes, Universities, BCSIR, BARI, Hortex & SMEF

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
11.	Formulation, dissemination and enforcement of grade and standards.	To standardize different grades of produces.	i) Expert committee formed ii) Draft for grades prepared.	Grades approved and circulated among the users.	Short term	R & D institute, Universities, HRC/DAE and DAM.
12.	Improve transportation of frozen foods to expand export.	To facilitate export from the country.	i) Refrigerated transport system made available; ii) Cargo/ship availability increased.	i) Frozen F&V transportation cost reduced; ii) Export cost decreased thus profit increased.	Medium To Long term	SMEF, MoCT, MoA, MoI and Associations/Companies.
H. Quality and Standards of AP Products						
13.	Improve quality and standards of ApP products.	Improve the quality and standards of farm produce/raw materials.	i) Implement "Bangladesh GAP" to ensure safety of farm produce	i) Strengthen farmers' capability to ensure production of quality farm produce and maintain quality of farm produces.	Medium term	MOA, MOC, Trade Bodies, BFSA and BAB and BSTI.
			ii) Make operationalize "Bangladesh GAP" scheme owners, Certifying and accrediting bodies along with an action plan.	ii) Strengthened Bangladesh GAP implementation	Short term	MOA, MOC, Trade Bodies, BFSA, Business Chambers, BAB and BSTI.
		To improve the quality and standards of AP products.	i) Strengthen capacity of industries to conform to the increasingly stringent quality standards in the global market by strengthening quality control measures and related institution.	i) Strengthened industrial capabilities to handle the quality and standards of manufactured products.	Medium term	MOI, MOF &E,, NBR, MOC, Trade Bodies, BSTI, SMEF, BOI and BSCIC.
			ii) Strengthen institutional /	ii) Strengthened national		MOI, MOC, MOA,

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
			national capacity in relation to Standard, Metrology, Testing and Quality (SMTQ).	capacity to address the issue related to product quality (SMTQ).	Short to medium term	MOF &LS, SMEF.
			iii) Enhance Quality Management System (QMS) complying international standards.	iii) Developed national quality management system	Medium term	MOI, MOC, MOA, MOF &LS and SMEF.
			iv) Enhance product certification system by BSTI and make it easier for SME entrepreneurs.	iv) Enhanced product certification system.		MOI, BSTI, MoA, and SMEF.
			v) Ensure compliance of quality assurance and environmental friendliness in the industries.	v) Increased compliances of quality assurance and environmental friendliness in the industrial sector.		MOI, MoF & E, BSTI and SMEF.,DAM and Hortex.
			vi) Develop programme on capacity building in the area of food hygiene and safety through implementing GMP, GHP and HACCP etc.	vi) Developed capacity in the area of area of food hygiene and safety.		MOI,MOA MOH& FW, BSTI, Hortex and SMEF. Business Chambers.
			vii) Introduce part grants for ISO 9000, 14000 and HACCP certification for AFP industries.	vii). Grant available for ISO and HACCP certification.		MOI, MOH&FW, BSTI and SMEF.
I. Business Support Services for Entrepreneurs						
14.	Extend Business Development Services for local and international trade.	To strengthen business development support services for AP entrepreneurs.	i) Organize more National & International trade fairs; ii) Enhance activities of Advisory Service Center	i) Organized increased numbers of national and international fairs; ii). Activities of	Medium term	SMEF, MoC, Hortex Foundation, Universities and R& D institutes and MoA

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
			of SMEF; iii) Advocate for insurance facilities; iv) To bargain for reducing customs and excise duties; v) Introduce award and incentives for well performance in AP industry sector.	SMEF's ASC enhanced; iii). Insurance facilities advocated; iv). AP industries earned more profit.		
15.	Development of public-private partnership	To facilitate join venture establishment	Initiative to start industry jointly	More SME industry under joint venture started	Medium To Long term	MoCT, MoI, SMEF
J. Coordination and Monitoring						
16.	Develop institutional mechanism for coordination and monitoring	To ensure effective monitoring to oversee the progress of AP industry sector	i) Formation of monitoring and evaluation committee ii) Assign concern institution(s) to coordinate with ministries and the stakeholders related to AP sector	Monitoring and Evaluation Committee formulated	Short-term	SMEF, MoA, MoC, BAPA and MoP&F
K. Public-Private-Partnership						
17.	Enhance and harmonize the service delivery activities of both public and private sectors in promoting AP industries	To rationalize the service delivery activities through public –private partnership	i). Develop regular consultation process with business associations and other stakeholders to foster the public-private partnership ii). Assist AP enterprises to work together through integrated networks to	i). Regular consultations held between business associations and other stakeholders ii). AP industries are assisted through integrated network of	Medium term	MoI, MoA, SMEF, BAPA, Professionals, NGOs, Development partners, R&D institutes, Trade bodies, Universities and Hortex Foundation

SL. No.	Key issues	Objectives	Activities	Expected outputs	Time frame	Assigned Organization
			improve competitiveness and access to markets iii). Enhance partnership between NGOs working in the field of AP enterprise development	partnership activities iii). Partnership between NGOs working for AP enterprise developed are enhanced		
L. Checking Environmental Pollution						
18.	Environmental pollution control	To minimize the adverse effects of industrial pollution due to establishment and growth of AP industry	i) Formulating policies, guidelines and standards to check and minimize the adverse effects of pollution due to industrial growth ii). Make arrangements in the MOI through manning it with qualified and skilled manpower, to conduct environmental impact assessment during the period of licensing itself. iii). Strengthen BSTI to develop standards to assess and monitor industrial pollution.	i) Policies and guidelines formulated to minimize environmental pollution ii). Environmental impact assessment conducted iii). Strengthened BSTI to assess and monitor the environmental pollution	Medium term	MOI, MOF&E, Trade Bodies, BSTI, SMEF, BOI, Boiler office, DPDT and BSCIC.

B. PROPOSED ACTION PLAN FOR EXPORT PROMOTION OF AGRO-PRODUCTS

Activity/Service	Responsibility
1. Strengthen Hortex Foundation by restructuring the organization as a dedicated authority (Nodal agency) to provide export promotion services.	MOA, MOC, MOI, Planning, Finance & Civil Aviation.
2. Establish crop zoning, farmer's registration, contract farming & introduce supervised production system.	BARC, DAE, DAM, Hortex & BFVPEA and BAPA.
3. Ensure quality production of produce by implementing 'Bangladesh GAP' with traceability system. A pilot project may be undertaken to implement contract farming in 2/3 locations through integrating farmers and exporters to implement Bangladesh GAP with traceability to ensure quality and safety of fresh produce for export.	DAE, DAM, Hortex, BARI, BAPA & BFVAPEA.
4. Upgrade capacity of stakeholders by organizing training to comply market requirements of importing countries particularly SPS and TBT measures of WTO.	DAE, DAM, Hortex, BFVAPEA, BAPA & EPB.
5. Increase capacity of quarantine and field level extension officers through training on GAP, international food quality standards, inspection and auditing of crop fields and certification process.	DAE, DAM, BARC, BAB, Hortex, BAPA & BFVAPEA.
6. Establish international standard integrated packing house and improve logistics supports by establishing cool chain management system, accredited laboratory and upgrade airport and sea port logistic services.	MOA (DAE, BARI and DAM) and Civil Aviation Authority, MoC, Shipping authority and Hortex.
7. Strengthen R & D services to promote export of agro-products.	BARI and Agricultral Universities.
8. Disseminate information on markets & their access requirements-	EPB, BFVAPEA and Hortex.
9. Upgrade the packaging standards.	Hortex, Packaging Association & EPB.
10. Provide financial assistance as matching grant to the exporters through establishing various schemes.	MOC, MOA, Ministry of Finance and Hortex.
11. Undertake massive and effective HRD programs selecting quality resource persons and developing high standard training materials with strong monitoring.	MOA and MOC.

Annex II: Questionnaire for Fresh Produce Farmers

কোডঃ | | | |

পণ্য উৎপাদক / কৃষকদের জন্য প্রশ্নাবলী

Questionnaire for Fresh Produce Farmers

১.০ সাধারণ তথ্যাবলী:

১.১ উত্তরদাতার নামঃ

১.২ পিতা / স্বামীর নাম: ১.৩ মায়ের নাম:

১.৪ ঠিকানাঃ ১.৫ মোবাইল নং:

ক) বর্তমান ঠিকানাঃ

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:

খ) স্থায়ী ঠিকানা

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:

১.৬	লিঙ্গ (কোডঃ ১=পুরুষ, ২= নারী, ৩=তৃতীয়লিঙ্গ)			
১.৭	বয়স (কোডঃ ১=১৫-২৪বছর, ২=২৫-৩৪বছর, ৩=৩৫-৪৪বছর, ৪=৪৫-৫৪বছর, ৫৫-৬৪বছর, ৬= ৬৫ বছরের বেশী)			
১.৮	পরিবারের সদস্য সংখ্যাঃ			
	মোটঃ	পুরুষঃ	নারীঃ	তৃতীয়লিঙ্গঃ
১.৯	শিক্ষা (কোডঃ ১= নিরক্ষর; ২ = সাক্ষর (স্বাক্ষর / পড়তে / লিখতে পারে), ৩ = প্রাথমিক (১-৫শ্রেনী পর্যন্ত,) ৪ = নিম্ন মাধ্যমিক(৬-৮ শ্রেনী পর্যন্ত), ৫= মাধ্যমিক, ৬= উচ্চ মাধ্যমিক, ৭= স্নাতক, ৮= স্নাতকোত্তর, ৯= অন্যান্য (উল্লেখকরুন.....)			
১.১০	পরিবার প্রধানের নাম:			
১.১১	পরিবার প্রধানের সাথে সম্পর্কঃ (১=স্বামী,২=স্ত্রী, ৩=পুত্র,৪=মেয়ে, ৫=ভাই, ৬=বোন, ৭=অন্যান্য(উল্লেখ করুনঃ.....)			
২.০	ফসল উৎপাদনঃ			
	শস্যাদি			
	আপনি জমিতে যে সব ফসলের চাষ	নামঃ		

	করেন তার নাম কি?	
	ফল	
	শাকসবজি	
	ডাল	
	তেলবীজ	
	অন্যান্য (উল্লেখ করুন.....)	

২.২	আপনার আবাদাধীন মোট জমির পরিমান (হেক্টর):	
	জমির মালিকানার ধরণ	পরিমান (শতাংশ)
	নিজস্ব	
	ইজারা	
	ভাড়া	
	অন্যান্য (উল্লেখ করুন)	
২.৩	আপনার খামারে মোট কতজন স্থায়ী কর্মচারী নিযুক্ত আছে?	
	কর্মচারী	সংখ্যা
	পুরুষ	
	মহিলা	
২.৪	আপনার খামারে মৌসুমে কতজন মৌসুমী কর্মচারী নিযুক্ত করেন?	
	কর্মচারী	সংখ্যা
	পুরুষ	
	মহিলা	
২.৫	আপনার স্থায়ী কর্মচারীদের মধ্যে কতজন আপনার পরিবারের সদস্য (নিজে বাদে)?	
	কর্মচারী	সংখ্যা
	পুরুষ	
	মহিলা	
২.৬	আপনার স্থায়ী কর্মচারীদের মধ্যে কতজন আপনার পরিবারের সদস্য (নিজে বাদে)?	
	কর্মচারী	সংখ্যা
	পুরুষ	
	মহিলা	
২.৭	আপনি এবং আপনার পরিবার উৎপাদনের কত ভাগ বিক্রি করেন? (এবং নিজের জন্য ব্যবহার না করে)? (কোডঃ ১= প্রায় উৎপাদনের পূর অংশ বিক্রি করি , ২= সর্বাধিক বিক্রয় করি, ৩= প্রায় অর্ধেক বিক্রি করি, ৪= অর্ধেকেরও কম বিক্রি করি)	
২.৮	আপনি আগে থেকে মাটি বিশ্লেষণ করেন কি?(কোডঃ ১=হ্যাঁ , ২= না) যদি হ্যাঁ, কোথায়? ……..... খরচ (টাকা) …….....।	
২.৯	আপনি কোন উৎস থেকে বীজ/ রোপণ সামগ্রী সংগ্রহ করেন? (কোডঃ ১= নিজস, ২=স্থানীয়ব্যবসায়ী, ৩=সরকারী প্রতিষ্ঠান, ৪=এনজিও, ৫=নার্সারি, ৬=অন্যান্য (উল্লেখ	

	করুন.....)
২.১০	আপনি আপনার জমিতে কোন ধরণের সার প্রয়োগ করেন? (কোডঃ ১=জৈব সার, ২= রাসায়নিক সার, ৩=জৈব সার+ রাসায়নিক সার, ৪=সার প্রয়োগ করেন না, অন্যান্য উল্লেখ করুণ..)
২.১১	আপনি কোথা থেকে সার সংগ্রহ করেন? (কোডঃ ১= বিএডিসি, ২= ডিলার, ৩= এনজিও, ৪= নিজে সংগ্রহ করেন)
২.১২	কীভাবে আপনি সারের পরিমান নির্ধারণ করেন? (কোডঃ ১=সুপারিশে;২=নিজস্ব হিসেব অনুসারে, ৩=অন্যান্য উৎস)
২.১৩	আপনি কৃষি রাসায়নিক দ্রব্যাদি কোথা থেকে সংগ্রহ করেন?(কোডঃ ১= বিএডিসি, ২= ডিলার, ৩= এনজি, ৪= নিজে সংগ্রহ করে)
২.১৪	আপনি কীটনাশক / ছত্রাকনাশক / অন্যান্য রাসায়নিকদ্রব্যাদি কীভাবে নির্বাচন করবেন?(কোডঃ ১= স্থানীয় কৃষি সম্প্রসারণ কর্মকর্তার পরামর্শ অনুসারে, ২= স্থানীয় ডিলারের সাথে পরামর্শে, ৩= নিজস্ব সিদ্ধান্তে, ৪= সহ কৃষকের পরামর্শ, ৫=অন্যান্য. উল্লেখ করুণ.....)
২.১৫	সেচ পানির উৎস কি? (কোডঃ ১=ভূগর্ভস্থ পানি;২=নদী;৩=খাল;৪=পুকুর;৫=বৃষ্টি;৬=নলকূপ)
২.১৬	আপনি যদি ভূগর্ভস্থ / নলকূপের পানি ব্যবহার করেন তবে আপনি কি জানেন, এই পানি? (কোডঃ ১= আর্সেনিকমুক্ত, ২=আর্সেনিক দূষিত, ৩=জানিনা নেই)
২.১৭	আপনি কি কোনও উৎস থেকে কোনও ঋণ গ্রহণ করেন? (কোডঃ ১= হাঁ;২=না)
২.১৮	যদি হ্যাঁ হয়, উৎসটির নাম দিন: (কোডঃ ১=ব্যাংক, ২= এনজিও, ৩= স্থানীয় অর্থদাতা থেকে, ৪= সমবায়, ৫= অন্যান্য উল্লেখ করুন.....)
২.১৯	প্রাপ্ত ঋণ সম্পর্কে আপনার কোন অভিযোগ আছে কি? যদি হ্যাঁ হয়, তবে দয়া করে উল্লেখ করুন.....।
২.২০	কীভাব আপনার কীটনাশক স্প্রে করেন (কোডঃ ১=স্প্রে মেশিন ব্যবহার করে, ২= অন্যান্য (উল্লেখ করুন.....)
২.২১	কীভাবে কীটনাশক প্রয়োগ করেন?(কোডঃ১= নিজের দ্বারা ;২=ভাড়া নেওয়া স্প্রে ম্যান)
২.২২	কীটনাশক স্প্রে করার সময় আপনি কোনও সুরক্ষা ব্যবস্থা গ্রহন করেন কি (কোডঃ ১= হাঁ;২=না)
২.২৩	আপনি কি ফসল কাটার সময় এবং পরে আপনার কাটা ফসল জমিতে রাখেন? (কোডঃ ১= হাঁ;২=না)
২.২৪	আপনি কখন আপনার ফসল কত্তন করেন?(কোডঃ ১= সকাল;২= দূপর;৩=বিকেল ;৪= সন্ধ্যা)
২.২৫	আপনার ফসল কত্তনের পদ্ধতি কী ? (কোডঃ ১=হাতের দ্বারা;২=ছুরি বা কাঁচি;৩= মেরু; ৪=ড্রপিং ব্যবহার করা;৫=অন্যান্য উল্লেখ করুন.....)
২.২৬	আপনি কি বাজারে পাঠানোর আগে আপনার পণ্যকে শ্রেণী বিন্যাস করেন? (কোডঃ ১= হাঁ;২=না).
২.২৭	আপনার জমিতে কীটনাশক ব্যবহারের সময় কী কী? (কোডঃ ১= প্রতিদিন, ২= সাপ্তাহিক, ৩= পাক্ষিক, ৪= মাসিক, ৫= ত্রৈমাসিক)

২.২৮	ফসল কাটার পরে আপনি কোন ধরণের পাত্রে / ব্যাগে আপনার পণ্য সংগ্রহ করেন? (কোডঃ ১= বস্তা, ২=বাঁশ ঝুড়ি, ৩=প্লাস্টিকের ক্রেট এবং ৪=অন্যান্য উল্লেখ করুন.....)
২.২৯	কীটনাশক প্রয়োগের পরে আপনার ফসল কর্তনের জন্য আপনি কী অপেক্ষামান সময় (পিএইচআই) অনুসরণ করেন? (কোডঃ ১= হাঁ, ২=না)
২.৩০	আপনি কি পাত্রে / বোতলে লিখিত কীটনাশকের নির্দেশনা পড়েন?(কোডঃ১= হাঁ, ২=না)
২.৩১	যদি হ্যাঁ হয়, আপনি কি এটি অনুসরণ করেন?(কোডঃ১= হাঁ, ২=না)
২.৩২	পোস্টহারভেস্ট লোকসানের পরিমাণ কত? .টাকা.....।।...)
২.৩৩	কীটনাশকের সঠিক ব্যবহার ও নিষ্পত্তি সম্পর্কে প্রশিক্ষণ পেয়েছেন কি?(কোডঃ ১= হাঁ;২=না)
২.৩৪	যদি হ্যাঁ হয়, প্রশিক্ষণের ব্যবস্থা কে করেছে? (কোডঃ ১= কৃষি সম্প্রসারণ অধিদপ্তর, ২= এনজিও, ৩= অন্যান্য উল্লেখ করুণ.....)
২.৩৫	আপনি কি ফসল পাকানোর জন্য কোন রাসায়নিক দ্রব্য ব্যবহার করেন? (কোডঃ ১= হাঁ;২=না)
২.৩৬	যদি হ্যাঁ, রাসায়নিক দ্রব্যাদির নাম দিন ……।
২.৩৭	আপনি কি বাজারে আনার আগে ফসলটি ধৌত করেন কি ? (কোডঃ ১= হাঁ, ২=না)
২.৩৮	যদি হ্যাঁ হয় , পানির উৎস কিঃ নল্‌কুপ/ গভীর নল্‌কুপ/খাল/ নদী/ নালা/ অন্যান্য.....
২.৩৯	আপনি কি আপনার উপকরন ব্যবহার এবং খামারের কাজকর্ম রেকর্ড সংরক্ষন করেন? (কোডঃ ১= হাঁ, ২=না)।
২.৪০	যদি হ্যাঁ হয়, তবে কিভাবে তা করেন?.....
২.৪১	আপনি / আপনার পরিবার কি আয় এবং ব্যয়ের লিখিত আর্থিক রেকর্ড রাখেন ? (কোডঃ ১= হাঁ, ২=না)
২.৪২	আপনি ফসল উৎপাদনে জিএপি(এঅচ)পদ্ধতি অনুসরণ করছেন? (কোডঃ ১= হাঁ, ২=না)
২.৪৩	যদি হ্যাঁ হয়, আপনি এই অনুশীলনটি কীভাবে শিখলেন? প্রতিষ্ঠানের নাম বলুন?
২.৪৪	আপনি কি আইপিএম(ওচগ) অনুশীলনগুলি অনুসরণ করেন? (কোডঃ ১= হাঁ, ২=না)
২.৪৫	যদি হ্যাঁ হয়, আপনি এই অনুশীলনটি কীভাবে শিখলেন? ..... ।
২.৪৬	আপনি কি ফসলের উৎপাদন সম্পর্কে কোন প্রশিক্ষণ পেয়েছেন? (১= হাঁ, ২=না)
২.৪৭	যদি হ্যাঁ হয়, কোথা থেকে প্রশিক্ষন পেয়েছেন? (কোডঃ১= কৃষি সম্প্রসারন অধিদপ্তর,২=প্রকল্প অফিস,৩= এনজিও,৪=অন্যান্য উল্লেখ করুণ.....)
২.৪৮	আপনি কি কোনও কৃষক / উৎপাদক গোষ্ঠীর সদস্য? হাঁ /না।
২.৪৯	যদি হ্যাঁ হয়, তবে গ্রুপটির নাম দিন:
২.৫০	কে আপনাকে দলে যোগ দিতে সহায়তা করেছে?
২.৫১	আপনি গ্রুপ (গুলি) এ যোগদান করে উপকৃত হয়েছেন কি? (কোডঃ ১= হ্যাঁ, ২=না)
২.৫২	যদি হ্যাঁ হয়, তার বর্ণনা দিনঃ

৩.০	**উৎপাদন বিপণন**
৩.১	আপনি কোন বাজারে পণ্য সরবরাহ করেন?(কোডঃ ১=স্থানীয়, ২=জাতীয়, ৩= আঞ্চলিক, ৪= বিদেশী (একাধিক উত্তর গৃহীত)
৩.২	আপনি আপনার পণ্য কার নিকট বিক্রয় করেন? (কোডঃ১=স্থানীয় এজেন্ট;২=সরাসরি বাজারে;৩= রফতানিকারক;৪= প্রস্তুত কারকের নিকট এবং অন্যান্য উল্লেখ করুন.....)
৩.৩	আপনি কি আপনার পণ্য বিপণনে কোন সমস্যার সম্মুখীন হন? এর প্রধান তিনটি সমস্যা উল্লেখ করুন: ক) খ). গ)
৩.৪	কা)।পাইকার / রফতানিকারীদের পণ্য বিষয়ক কোন শর্ত রয়েছে কি? (কোডঃ ১=হ্যাঁ, ২=না) হাঁ হলে, তা উল্লেখ করুনঃ
৩.৫	আপনি কীভাবে এজেন্ট / পাইকার / রফতানিকারীর সাথে চুক্তিতে আসেন? (কোডঃ ১=পরিবারের অন্যান্য সদস্যদের মাধ্যমে, ২=প্রতিবেশীদের মাধ্যমে, ৩=রফতানিকারী আমার সাথে যোগাযোগ করেন, ৪= স্থানীয় রপ্তানিকারকের সাথে, ৫=স্থানীয় ব্যবসায়িক সমিতি, ৬= অন্যান্য উল্লেখ করুণ.....)।
৩.৬	উৎপাদন পণ্য বিক্রয়ের মৌসুম কখন হয়? (কোডঃ ১= অল্প উৎপাদনের মৌসুমে;২= প্রচুর উৎপাদনের মৌসুমে);
৩.৭	প্রতি উৎপাদিত পণ্যের মূল্য কত থাকে?) টাকা ……।
৩.৮	আপনি বাজারের তথ্য কীভাবে পেয়ে থাকেন? (কোডঃ ১=ড্যাম, ২= সহযোগী কৃষক, ৩= স্থানীয় এজেন্ট বা মার্কেট, ৪= রেডিও, ৫= অনলাইন, ৬= মোবাইল অ্যাপ, ৭= অন্যান্য ((উল্লেখ করুন))
৩.৯	আপনি আপনার পণ্য ক্ষেত থেকে বাজারে পরিবহণ করেন কিভাবে?(কোডঃ ১= মাথায়, ২= রিকশা, ৩= ভ্যান, ৪= পিকআপ, ৫=ট্রাক, ৬=অন্যান্য ((উল্লেখ করুন.....)
৩.১০	আপনি কি আপনার উৎপাদিত পণ্য কোন প্রক্রিয়াজাতকারী শিল্পের নিকট বিক্রি করেন? (কোডঃ ১= হাঁ;২=না)
৩.১১	আপনার কাছ থেকে পণ্য প্রক্রিয়াকারী প্রতিষ্ঠানটির নাম বলুনঃ .....
৩.১২	প্রক্রিয়াজাতকারির নিকট থেকে কিভাবে ক্রয় করে থাকে ? (কোডঃ ১=সরাসরি আপনার কাছ থেকে কিনে, ২=চুক্তি চাষের মাধ্যমে, ৩== অথবা তারা আপনার পণ্য উৎস ব্যবসায়ী, ৪= মধ্যস্থতাকারীদের কাছ থেকে, ৫=অন্যান্য উল্লেখ করুন.....))
৩.১৩	আপনার কতটি পণ্য আপনি কৃষি-প্রক্রিয়াজাতকারির নিকট বিক্রি করেন?(উল্লেখ করুন.....)
৩.১৪	সরাসরি বাজারে বিক্রয় করা হলে আপনার পণ্যগুলি কী বেশী দামে বিক্রি হয়?(কোডঃ ১= হাঁ;২=না)
৩.১৫	কৃষি প্রক্রিয়াজাতকারি আপনাকে কতমূল্য দেয়?.....

৩.১৬	কৃষি প্রক্রিয়াজাতকারির নিকট বিক্রয় করাকে কি ভাল মনে করেন? (কোডঃ ১= হাঁ;২=না)
৩.১৭	কৃষি প্রক্রিয়াজাতকারির সাথে সংযুক্ত থাকার কারনে আপনি কী বিশেষ কোন সুবিধা পেয়ে থাকেন? (কোডঃ ১=এক্সটেনশন সেবাঋণ সুবিধা, ২=স্টোরেজ সুবিধা, ৩= ভাল ফসল সংগ্রহ ও পরিচালন প্রযুক্তি, ৪=আরও ভাল ইনপুটসি এবং অন্যান্য উল্লেখ করুন.....)
৩.১৮	আপনি কি প্রচলিত জাতগুলির পাশাপাশি বিভিন্ন "প্রসেসিং জাত" উৎপাদন করেন (কোডঃ ১= হাঁ;২=না)
৩.১৯	যদি হ্যাঁ হয়, তবে আপনি কীভাবে এই প্রসেসিং জাতগুলিকে সনাক্ত করেছেন? - এগুলি কৃষি প্রসেসর দ্বারা প্রবর্তিত হয়েছিল না কি?(কোডঃ ১= হাঁ;২=না)
৩.২০	উৎপাদন খরচ / বিঘা প্রতি
	আইটেম প্রতি ব্যয় খরচ (টাকা) বীজ শ্রম সার সেচ প্যাকেজিং কীটনাশক ও রাসায়নিক পরিবহন আইপিএম উপকরণ উৎপাদন খরচ মোট খরচ:
৩.২১	**বাজারজাতকরন খরচ**
	আইটেম প্রতি ব্যয় খরচ (টাকা) (কেজি প্রতি) শ্রমিক পরিবহন মোড়ক অন্যান্য মোট খরচ:
৩.২২	ফলন / বিঘা:
৩.২৩	আপনার পণ্য বিক্রয় মূল্য: টাকা ……।
৩.২৪	লাভ / বিঘা: টাকা ……।

৩.২৫	আপনি উৎপাদন কালিন সময়ে যে তিনটি প্রধান সমস্যার মুখোমুখি হচ্ছেন তার বিবরন দিন? ক) খ) গ)..
৩.২	আপনার দ্বারা উল্লেখিত সমস্যাগুলি সমাধান করার জন্য তিনটি পরামর্শ দিন? ক) খ) গ)..
৩.৩	আপনার যদি এ বিষয়ে অন্য কোন কিছু জানার/বলার থাকে তা বলতে পারেন।
৩.৪	আমাদেরকে সময় ও সহযোগিতা প্রদানের জন্য আপনাকে ধন্যবাদ ।

তথ্য সংগ্রহকারীর নামঃ	
মোবাইল নাম্বারঃ	স্বাক্ষরঃ

Annex III: Questionnaire for Agro-processers

কোড:

কৃষি পণ্য প্রক্রিয়াজাতকারীদের জন্য প্রশ্নাবলি
Questionnaire for Agro-processers

১.০সাধারণ তথ্যাবলি :

১.১ উত্তরদাতার নামঃ

১.২ পিতা / স্বামীর নাম: ১.৩ মায়ের নাম:

১.৪ কোম্পানি/প্রতিষ্ঠানের নামঃ

১.৫ মোবাইল নং:

১.৬ ঠিকানাঃ

ক) বর্তমান ঠিকানাঃ

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:

খ) স্থায়ী ঠিকানা

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:

১.৭	লিঙ্গ (কোডঃ ১=পুরুষ, ২= নারী, ৩=তৃতীয়লিঙ্গ)
১.৮	বয়স (কোডঃ ১=১৫-২৪বছর, ২=২৫-৩৪বছর, ৩=৩৫-৪৪বছর, ৪=৪৫-৫৪বছর, ৫৫-৬৪বছর ৬= ৬৫এর উপর)
১.৯	পরিবারের সদস্য সংখ্যাঃ মোটঃ | পুরুষঃ | নারীঃ | তৃতীয়লিঙ্গঃ
১.১০	শিক্ষা (কোডঃ ১= নিরক্ষর; ২ = সাক্ষর (স্বাক্ষর / পড়তে / লিখতে পারে), ৩ = প্রাথমিক (১-৫শ্রেনী পর্যন্ত,) ৪ = নিম্ন মাধ্যমিক(৬-৮ শ্রেনী পর্যন্ত), ৫= মাধ্যমিক, ৬= উচ্চ মাধ্যমিক, ৭= স্নাতক, ৮= স্নাতকোত্তর, ৯= অন্যান্য (উল্লেখকরুন.....)
২.০	**প্রতিষ্ঠান সম্পর্কিত তথ্যঃ**
২.১	আপনার শিল্প প্রতিষ্ঠান/ প্রসেসিং প্ল্যান্ট এর নাম কি?.....
২.২	প্রতিষ্ঠানটি চালু হওয়ার তারিখ:
২.৩	শিল্প প্রতিষ্ঠানটি কি নিবন্ধিত? (কোডঃ ১=হ্যাঁ , ২= না)

২.৪	শিল্প প্রতিষ্ঠানটির ধরন?(কোডঃ ১= ক্ষুদ্র পরিসরে, ২= ছোটপরিসরে, ৩=মোটামুটি বড়, ৪=বড়)
২.৫	প্রতিষ্ঠানটিতে প্রধানত কি ধরণের পণ্য সামগ্রী উৎপাদন করেন?(কোডঃ১=জুস, ২= জ্যাম, ৩=জেলি, ৪=বেকারি, ৫=শুকনো খাবার, ৬= অন্যান্য (উল্লেখ করুন..
২.৬	আপনার শিল্প প্রতিষ্ঠানে কতজন কর্মী নিযুক্ত রয়েছে? (দক্ষ (), অদক্ষ(.....)।
২.৭	আপনার শিল্প প্রতিষ্ঠানে কি কোন খাদ্য প্রযুক্তিবিদ/ সংশ্লিষ্ট কর্মী কাজ করে? (কোডঃ ১=হ্যাঁ, ২=না)
২.৮	যদি হ্যাঁ হয়, তবে তার শিক্ষাগত যোগ্যতা উল্লেখ করুন.....।
২.৮	আপনি কিভাবে কাচামাল আমদানি করেন? (কোডঃ১= কাউকে চুক্তিভিত্তিক নিয়োগ করে, ২= কৃষকের মাধ্যমে,৩= যোগানদার, ৪= বাজার, ৫= অন্যান্য (উল্লেখ করুন.....)
২.৯	আপনি কি ধরণের কাচাঁমাল ব্যবহার করেন (তাদের নামগুলো উল্লেখ করুন)<<<<<<<<<
২.১০	কোন কাঁচামাল বা উপাদান কি আমদানী করেন?(নাম উল্লেখ করেন.....)
২.১১	আপনি আপনার পণ্যের প্যাকেজিং কিভাবে করেন?(কোডঃ ১= কার্টুন বক্স; ২= প্লাসটিক ক্যারাটে; ৩= ব্যাগ; ৪=বাস্কেট; ৫=নেটেড ব্যাগ; ৬= প্যালেটাইজ ; ৬ অন্যান্য উল্লেখ করুন.....)
২.১২	আপনার পণ্য কিভাবে বাজারজাত করেন? (কোডঃ১=স্থানীয় এজেন্ট;২=সরাসরি বাজারে;৩= রফতানিকারক;৪= অন্যান্য উল্লেখ করুন.....)
২.১৩	উৎপাদিত পণ্য পরিবহন/ বিতরণের সময় আপনি কি পদ্ধতি অবলম্বন করেন? উৎপাদিত পণ্য পরিবহন/ বিতরণের
২.১৪	উৎপাদিত পণ্য পরিবহন/ বিতরণের জন্য কি মাধ্যম ব্যবহার করেন? (কোডঃ ১= মাথায়, ২= রিকশা, ৩= ভ্যান, ৪= ট্রাক,৫=পিকআপ; ৭=অন্যান্য ((উল্লেখ করুন.....)
২.১৫	আপনি পণ্য পরিবহনে কোন ঈড়ড়ষ ঈযধরহ ব্যবস্থা ব্যবহার করেন কি? (কোডঃ ১=হ্যাঁ, ২=না)
২.১৬	হ্যাঁ, হলে ধরন উল্লেখ করুন.....

৩.০	**বাজারজাত করন/মার্কেট ট্রেন্ড এবং ডিনামিক্স**
৩.১	আপনি কাদের নিকট আপনার পণ্য বিক্রি করে থাকেন ?(কোডঃ ১=বড় প্রতিষ্ঠান, ২=ছোট প্রতিষ্ঠান, ৩=পাইকার, ৪=খুচরা বিক্রেতা,৫=সরাসরি চাষিদের নিকট থেকে, ৬=অন্যান্য উল্লেখ করুন)
৩.২	আপনি কি পণ্যগুলি রপ্তানী করে থাকেন? (কোডঃ ১=হ্যাঁ, ২=না)
৩.৩	হ্যাঁ, হলে পণ্য ও দেশের নাম প্রদান করুন।
৩.৪	পণ্যের বিক্রয় মুল্য (কেজি প্রতি)কত?
৩.৫	ক্রেতাদের সাথে আপনার সম্পর্ক কেমন উল্লেখ করুন (যিনি বলে দেন যে কি পণ্য উৎপাদন করতে হবে, পণ্যের বিশদ বিবরণ, মূল্য এবং কতটুকু পরিমাণ পণ্য উৎপাদিত হবে?)।
৩.৬	আপনি কার মাধ্যমে আপনার পণ্যের প্রচার করে থাকেন?কোডঃ ১=ড্যাম, ২= সহযোগী কৃষক, ৩= স্থানীয় এজেন্ট বা মার্কেট, ৪= রেডিও, ৫= অনলাইন, ৬= মোবাইল অ্যাপ, ৭= অন্যান্য ((উল্লেখ করুন)।
৩.৭	এই মুহূর্তে বাজারে আপনার পণ্যের চাহিদা কেমন?
৩.৮	আপনি কি আপনার প্রতিষ্ঠানে জিএমপি, এইচএসিসিপি অথবা আইএসও স্ট্যান্ডার্ড অনুসরণ করেন? (কোডঃ১=হ্যাঁ, ২=না)
	যদি হ্যাঁ হয়, তাহলে বিস্তারিত ব্যাখ্যা করুন.....
৩.৯	আপনার কি ডব্লিউটিও, এসপিএস এবং টিবিটি ব্যবস্থার ব্যাপারে ধারণা রাখেন? (কোডঃ১=হ্যাঁ, ২=না), হ্যাঁ হলে কিভাবে তা জানতে পারলেন
৩.১০	গুনগত মান এবং সুরক্ষা ব্যবস্থা সঠিকভাবে না মানার কারণে কখনো কি আপনার মালামাল বিদেশ থেকে ফেরত এসেছে?(কোডঃ১=হ্যাঁ ২=না)
৩.১১	যদি হ্যাঁ হয়, তাহলে বিস্তারিত বর্ণনা করুন.....
৩.১২	বিক্রয় এবং রেভিনিউ বৃদ্ধির ক্ষেত্রে কিছু সংখ্যক গ্রাহক কি অন্যদের তুলনায় ভালো? সেক্ষেত্রে তারা কারা?
৩.১৩	আপনার মূল প্রতিদ্বন্দ্বী কারা? প্রতিষ্ঠানগুলোর নাম ব্লুন।
৪.০	**গুনগত মান এবং সার্টিফিকেশন**
৪.১	আপনার পণ্য রপ্তানী করার জন্য কি ধরণের মান এবং সার্টিফিকেশনের প্রয়োজন হয়?.....

৪.২	গুনগত ধরণ ও অন্যান্য বিষয়াবলী কোন প্রতিষ্ঠান দ্বারা নির্ধারন করা হয় ?..... ।
৪.৩	গুনগত মান এবং প্রয়োজনীয় নিয়ম কানুন নির্ধারণ ও নিশ্চিত করার ক্ষেত্রে আপনাকে কোন প্রতিষ্ঠান সহায়তা করেন?
৪.৪	উল্লেখিত কাজগুলো করার সময় আপনি কি কোন সমস্যার সম্মুখীন হয়েছেন/হয়ে থাকলে অনুগ্রহ করে তা উল্লেখ করুনঃ
৫.০	**প্রযুক্তি/যন্ত্রপাতি/দক্ষতা (সেবা প্রদানকারী সংস্থা)**
৫.১	পণ্য প্রক্রিয়াজাত করনে যে প্রযুক্তি ব্যবহার করেন তার উৎস কি?
৫.২	পণ্য ডিজাইন এবং উৎপাদনের ক্ষেত্রে আপনার প্রধান চাহিদা/ সুযোগ/ প্রতিযোগিতামূলক বাজারে এর সুবিধাগুলো কি কি?
৫.৩	অন্যান্য আরো কি কি পণ্য আপনি উৎপাদন/ বিক্রি করেন?.....
৫.৪	আপনার সামগ্রিক আয়ের ক্ষেত্রে প্রতিটি পণ্য কত শতাংশ ভূমিকা রাখে?(কোডঃ১=২৫%,২=৫০%,৩৭৫%,৪=১০০%)
৫.৫	আপনি সম্প্রতি আপনার পণ্য ও সেবার গুনগত মান বাড়াতে কি কোন পদক্ষেপ নিয়েছেন? হাঁ/ না; হাঁ হলে তা উল্লেখ করুনঃ .....
৫.৬	আপনি কোথা থেকে আপনার প্রয়োজনীয় যন্ত্রাংশ ও সরঞ্জামাদি সংগ্রহ করে থাকেন?(কোডঃ১=স্থানীয় বাজার,২= জেলা শহর থেকে,৩= বিভাগিয় শহর থেকে,৪= বিদেশ থেকে আমদানি করা হয়,৫= অন্যান্য)
৫.৭	আপনার বর্তমান সরঞ্জামাদি বা যন্ত্রপাতি কি আপনার উন্নতির ক্ষেত্রে কি কোণ বাধা প্রদান করছে? (কোডঃ ১=হ্যাঁ, ২=না)
৫.৮	যদি হ্যাঁ হয়, তবে কোন ধরণের সরঞ্জামাদি বা যন্ত্রপাতি আপনার ব্যবসার উন্নতি ঘটাতে সহায়ক হবে, ব্যাখ্যা করুন?.....
৫.৯	আপনার কর্মীদের প্রশিক্ষণ বর্তমানে যে পর্যায়ে রয়েছে, তাতে কি উন্নতি বাঁধাগ্রস্ত হচ্ছে বলে মনে করেন?(কোডঃ ১=হ্যাঁ, ২=না)

৫.১০	যদি হ্যাঁ হয়, তাহলে তাদের আর কি কি অতিরিক্ত প্রশিক্ষণের দরকার?.....
৫.১১	আপনার প্রতিষ্ঠানটিতে কি কোন পরীক্ষাগার রয়েছে?(কোডঃ ১=হ্যাঁ, ২=না)
৫.১২	যদি হ্যাঁ হয়, তাহলে আপনার পরীক্ষাগারের পরীক্ষা সমূহের সংক্ষিপ্ত বিবরণ দিন।
৫.১৩	আপনি কি জিএমপি/হ্যাচকাপ/আইএসও মান অনুসরণ করেন? (কোডঃ ১=হ্যাঁ, ২=না)
৫.১৪	যদি হ্যাঁ হয়, তাহলে নির্দিষ্ট করে উল্লেখ করুন
৫.১৫	আপনার প্রতিষ্ঠানটি কি কোন মান নিয়ন্ত্রক সংস্থা কর্তৃক প্রত্যায়ন পেয়েছে যার নিয়মাবলী দ্বারা আপনি প্রতিষ্ঠানটির নিয়ম কানুন অনুসরণ করবেন? (কোডঃ ১=হ্যাঁ, ২=না) ।
৫.১৬	যদি হ্যাঁ হয়, তবে প্রতিষ্ঠানটির নাম এবং মান উল্লেখ করুন .....
৫.১৭	আপনি কি চুক্তিভিত্তিক চাষের মাধ্যমে আপনার কাচামাল সংগ্রহ করে থাকেন? (কোডঃ ১=হ্যাঁ, ২=না)
৫.১৮	যদি হ্যাঁ হয়, নির্দিষ্ট করে তা উল্লেখ করুনঃ
৬.০	উপকরন
৬.১	উপকরন ক্ষেত্রে আপনার প্রয়োজনীয় চাহিদা/সুযোগ কি কি ? (কোডঃ ১=দাম, ২=গুনগত মান, ৩=সহজলভ্যতা, ৪=অন্যান্য উল্লেখ করূন)
৬.২	আপনি যেখান থেকে উপকরন সংগ্রহ করেন, তার দূরত্ব কত?(কোডঃ১=স্থানীয় বাজার,২= জেলা শহর থেকে,৩= বিভাগীয় শহর থেকে,৪= বিদেশ থেকে আমদানি করা হয়,৫= অন্যান্য)।
৬.৩	অনুগ্রহ করে যাদের নিকট থেকে আপনি উপকরন সংগ্রহ করেন তাদের পরিচিতি দিন (ব্যবসায়ী/ পাইকারি বিক্রেতা/ দিলার/ফরিয়া)।
৬.৪	উপকরন প্রাপ্তির ক্ষেত্রে আপনি কি কোন ধরণের সমস্যার সম্মুখীন হন?(কোডঃ ১=হ্যাঁ, ২=না) ব্যাখ্যা করুনঃ
৬.৫	যদি হ্যাঁ হয়, তা উল্লেখ করুনঃ
৬.৬	আপনি কি বিদেশ থেকে কোন উপকরন সংগ্রহ করেন? (কোডঃ ১=হ্যাঁ, ২=না)
৬.৭	হ্যাঁ, হলে উপকরনের নাম বলুন.।
৬.৮	যদি হ্যাঁ হয়, তাহলে এর আমদানীতে আপনি কি কোন বাঁধার সম্মুখীন হচ্ছেন?(কোডঃ ১=হ্যাঁ, ২=না)

৬.৯	আপনার বিদেশী ক্রেতা কি উপকরন ব্যবহারে কোন বাধ্যতামূলক নির্দেশনা করে থাকেন? (কোডঃ ১=হ্যাঁ, ২=না); হা হলে তা উল্লেখ করুনঃ
৭.০	**অর্থায়ন**
৭.১	আপনার ব্যবসায় অর্থের উৎসগুলো কি কি? (কোডঃ ১= নিজস্ব ব্যবস্থাপনা, ২=ব্যাংক, ৩=আত্নীয় সজন, ৪= অন্যান্য হলে তা উল্লেখ করুন..
৭.২	আপনি কি আপনার ক্রেতাদের নিকট থেকে উৎপাদন/ উৎপাদন প্রণালীর ক্ষেত্রে কোন অর্থায়ন পেয়ে থাকেন? (কোডঃ ১=হ্যাঁ, ২=না); হাঁ হলে তা উল্লেখ করুনঃ
৭.৩	এর শর্তাবলীগুলো কি কি?
৭.৪	আপনার কি এই মুহূর্তে অতিরিক্ত কোন অর্থের প্রয়োজন? যদি তাই হয়, তবে এটি কি কাজে ব্যবহৃত হবে?
৭.৫	ঋণ নেবার জন্য আপনি কি কি উৎস (আনুষ্ঠানিক বা অনানুষ্ঠানিক) ব্যবহার করেছেন এবং কি কি প্রধান সমস্যার সম্মুখীন হয়েছেন, যদি থাকে?.....
৭.৬	আপনি কি ব্যাংক অথবা অন্য কোন আর্থিক প্রতিষ্ঠান থেকে ঋণ নেবার সময় কোন ধরনের সমস্যার সম্মুখীন হয়েছিলেন? যদি হ্যাঁ হয়, দয়া করে বর্ণনা করুন
৭.৭	অন্যান্য (উক্ত খাতে পরিশোধের হার, ঝুঁকি ব্যবস্থাপনা বীমা, ইত্যাদি)।
৮.০	**নীতি/বিধান**
৮.১	সরকারি কোন কোন নীতিগুলো/বিধিগুলো আপনার ব্যবসার উন্নতিতে সহায়ক? (কোডঃ১=নিবন্ধকরণ, ২=পরিদর্শন,৩=ভর্তুকি, ৪=প্রণোদনা ,৫= অন্যান্য কিছু থাকলে তা উল্লেখ করুন.....)?
৮.২	সরকারি কোন কোন নীতিগুলো/বিধিগুলো আপনার ব্যবসার উন্নতিতে বাঁধাস্বরূপ বলে মনে করেন?(কোডঃ ১=হ্যাঁ, ২=না); হাঁ হলে তা উল্লেখ করুনঃ
৮.৩	আপনি কি পণ্য রফতানির জন্য সরকারের কাছ থেকে কোনও ধরনের প্রণোদনা গ্রহন করছেন ? (কোডঃ ১=হ্যাঁ, ২=না)
৮.৪	যদি হ্যাঁ হয়, দয়া করে বর্ণনা করুনঃ
৮.৫	প্রণোদনার টাকা নেয়ার ক্ষেত্রে কোন ধরনের সমস্যার সম্মুক্ষিন হচ্ছেন কি ? (কোডঃ ১=হ্যাঁ, ২=না)

৮.৬	যদি হ্যাঁ হয়, দয়া করে বর্ণনা করুনঃ
৮.৭	পন্য রপ্তানীর ক্ষেত্রে কাস্টম সেবার কোন সমস্যার সম্মুক্ষিন হচ্ছেন কি ? (কোডঃ ১=হ্যাঁ, ২=না)
৮.৮	যদি হ্যাঁ, হয় সমস্যাগুলি কি?.....
৮.৯	পার্শ্ববর্তী/ প্রতিবেশী দেশ সমূহে রপ্তানীর ক্ষেত্রে কোন সমস্যার সম্মুক্ষিন হলে তার বনর্ণা দিন?.....
৯.০	**অবকাঠামো**
৯.১	কোন কোন গুরুত্বপূর্ণ অবকাঠামোগুলো আপনার ব্যবসার লাভ এবং উন্নতির ক্ষেত্রে বাঁধাস্বরূপ ? (কোডঃ১=সড়ক/পরিবহনগত,২= পরিবেশ, ৩=টেলিফোন পরিষেবা, ৪=গ্যাস, ৫=বৈদ্যুতিক সরবরাহ, ৬=অপরাধ/দুর্নীতি, ৭=সংরক্ষণাগার, ৮=অন্যান্য উল্লেখ করুন.)
৯.২	এই সমস্যা থেকে উত্তরণের জন্য কি কি পদক্ষেপ নেয়া দরকার বলে আপনি মনে করেন ঃ
১০.০	**বাণিজ্যিক সদস্যপদযুক্ত প্রতিষ্ঠানসমূহ**
১০.১	আপনার প্রতিষ্ঠান/ বাণিজ্যে সহায়তা করার জন্য কোন জাতীয় বা স্থানীয় ব্যবসায়িক সংস্থা কি এগিয়ে এসেছে? (কোডঃ ১=হ্যাঁ, ২=না)
১০.২	যদি হ্যাঁ হয়, তাহলে নামগুলো উল্লেখ করুন।
১০.৩	সংস্থাগুলোর প্রাথমিক কর্মকাণ্ড কি? এবং কিকি সুবিধা/সেবা প্রদান করে থাকেন?
১০.৪	আপনার ব্যবসা সহায়তায় কি কি সেবা প্রদান করা হলে আপনি উপকৃত হবেন?(কোডঃ ১=হ্যাঁ, ২=না)।
১০.৫	হ্যাঁ , হলে তার বিবরন দিন।
১০.৬	আপনার ব্যবসা সহায়তায় আর ও কি কি সহায়তা প্রদান করা হলে আপনার ব্যবসার প্রসার হবে বলে মনে করেন তার বিবরন দিনঃ
১১.০	**লিঙ্গ বৈসাদৃশ্য বিশ্লেষণ**
১১.১	ক)। আপনার ব্যবসা/ প্রতিষ্ঠানে কি মহিলা কর্মী কাজ করেন? হাঁ /না; হাঁ হলে কত জন তা উল্লেখ করুনঃ। খ)।মহিলা উদ্যোক্তাদের বিকাশে বাধা প্রদান করে এমন তিনটি প্রধান সমস্যা বর্ণনা করুনঃ ক)। খ)।

	গ)।
১১.২	একজন উদ্যোক্তা হওয়ার জন্য আপনার কী ধরনের সহায়তা দরকার? ক) খ) গ)
১২.০	**প্রতিষ্ঠানগত সাধারণ প্রশ্নাবলি**
১২.১	ভ্যালু চেইনের ক্ষেত্রে বিনিয়োগ / বিনিয়োগের পরিবর্তন আনতে আপনার প্রধান চালিকাশক্তিগুলো কী কী?.....।
১২.২	এই ধরনের বিনিয়োগ করার ক্ষেত্রে আপনি কী ধরনের ঝুঁকি বা প্রতিবন্ধকতার মুখোমুখি হন?
১২.৩	স্থানীয় এবং/অথবা আন্তর্জাতিকভাবে আপনার শিল্পপ্রতিষ্ঠানের চালিকাশক্তিগুলো কি কি বলে আপনি মনে করেন?
১২.৪	আপনার শিল্প প্রতিষ্ঠানের মূল দুর্বল দিকগুলো কি কি? উল্লেখ করুনঃ
১২.৫	বর্তমান সময়ে আপনার প্রতিষ্ঠানটি মূলত সবচেয়ে কঠিন কোন তিনটি সমস্যার সম্মুখীন হচ্ছে? ক) খ) গ)
১২.৬	আপনার যদি এ বিষয়ে অন্য কোন কিছু জানার/বলার থাকে তা বলতে পারেন।
১২.৭	আমাদেরকে সময় ও সহযোগিতা প্রদানের জন্য আপনাকে ধন্যবাদ ।

তথ্য সংগ্রহকারীর নামঃ	
মোবাইল নাম্বারঃ	স্বাক্ষরঃ

Annex IV: Market Actors: Trader/Wholesaler/Retailer

কোডঃ | | | |

পাইকার/ খুচরা বিক্রেতা দের জন্য প্রশ্নাবলী
(Market Actors: Trader/Wholesaler/Retailer)

১। সাধারণ তথ্যাবলিঃ

১.১ উত্তরদাতার নামঃ

১.২ পিতা / স্বামীর নামঃ ১.৩ মায়ের নামঃ

১.৪ ঠিকানাঃ ১.৫ মোবাইল নংঃ

ক) বর্তমান ঠিকানাঃ

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নংঃ
উপজেলা / পৌরসভাঃ	জেলাঃ

খ) স্থায়ী ঠিকানা

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নংঃ
উপজেলা / পৌরসভাঃ	জেলাঃ

১.৬	লিঙ্গ (কোডঃ ১=পুরুষ, ২= নারী, ৩=তৃতীয়লিঙ্গ)
১.৭	বয়স (কোডঃ ১=১৫-২৪বছর, ২=২৫-৩৪বছর, ৩=৩৫-৪৪বছর, ৪=৪৫-৫৪বছর, ৫৫-৬৪বছর, ৬= ৬৫ বছরের বেশী)
১.৮	পরিবারের সদস্য সংখ্যাঃ মোটঃ | পুরুষঃ | নারীঃ | তৃতীয়লিঙ্গঃ
১.৯	শিক্ষা (কোডঃ ১= নিরক্ষর; ২ = সাক্ষর (স্বাক্ষর / পড়তে / লিখতে পারে), ৩ = প্রাথমিক (১-৫শ্রেনী পর্যন্ত,) ৪ = নিম্ন মাধ্যমিক(৬-৮ শ্রেনী পর্যন্ত), ৫= মাধ্যমিক, ৬= উচ্চ মাধ্যমিক, ৭= স্নাতক, ৮= স্নাতকোত্তর, ৯= অন্যান্য ; (উল্লেখকরুন.....)
২.০	**ব্যবসা সম্পর্কিত তথ্য**
২.১	যে সকল কৃষি প্রক্রিয়াজাতকারী/ব্যবসায়িরা আপনার নিকট থেকে কিনে থাকে তাদের নাম বলুন। .
২.২	তারা আপনার নিকট থেকে কি ধরনের পণ্য ক্রয় করেন।(কোডঃ ১=তাজা, ২ =প্রক্রিয়াজাত, ৩= শুকনা পণ্য).৪= অন্যান্য ।
২.৩	তারা কি আপনার নিকট থেকে সরাসরি ক্রয় করেন? নাকি এই পণ্যগুলো অন্য কোন (কোডঃ১=ব্যবসায়ী,২=মধ্যস্থতাকারী,৩= প্রতিনিধির মাধ্যমে ক্রয় করেন, ৪= অন্যান্য উল্লেখ করুন.)থেকে সংগ্রহ করে থাকেন।
২.৪	আপনি সরাসরি কৃষক থেকে কি পরিমান তাজা পণ্য সংগ্রহ করে থাকেন? (কেজি/টন হিসেবে)?.....

২.৫	আপনি /প্ক্রিয়াজাত পণ্য কি পরিমান বিক্রয় করেন? আর কি পরিমান অন্যান্য ক্রেতাদের নিকট বিক্রি করে থাকেন?(কেজি/টন হিসেবে)?.....
২.৬	যদি বাজারে সরাসরি বিক্রি করা হয় তাহলে আপনার পণ্যের কেমন দাম পেতেন?.....
২.৭	কৃষি প্রক্রিয়াজাতকারী আপনাকে কত মূল্য প্রদান করে থাকেন ?
২.৮	আপনি কি কৃষি প্রক্রিয়াজাতকারীর নিকট পণ্য বিক্রি করাকে লাভজনক বলে মনে করেন? (কোডঃ ১=হ্যাঁ, ২=না)
২.৯	কৃষি পণ্য ব্যবসায়ীদের সাথে সংযুক্ত থেকে আপনি কি অন্য আরও কোন সুযোগ সুবিধা পেয়ে থাকেন? (কোডঃ ১= পণ্য প্রসার,২= ঋণ সুবিধা, ৩=সংরক্ষণ সুবিধা, ৪=আরও ভালোভাবে ফসল সংগ্রহ ৫=ব্যবস্থাপনা প্রযুক্তি, ৬=আরও উন্নত উপকরন, ৭=অন্যান্য উল্লেখ করুন.)?
২.১০	আপনার ব্যবসার প্রসার কেমন? (যদি বড় হয়), আপনি কি মনে করেন যে কৃষি ব্যবসায়ীদের সুনজরে আসার জন্য কোন ধরনের পদক্ষেপ নেয়া প্রয়োজন?(কোডঃ ১=হ্যাঁ, ২=না)
২.১১	আপনার ব্যবসায় যদি কোন সমস্যা থেকে থাকে তার বনর্ণা দিন? ক. খ. গ.
২.১২	আপনি কি আপনার ব্যবসা কোন
২.১৩	আপনার যদি এ বিষয়ে অন্য কোন কিছু জানার/বলার থাকে তা বলতে পারেন।
২.১৪	আমাদেরকে সময় ও সহযোগিতা প্রদানের জন্য আপনাকে ধন্যবাদ ।

তথ্য সংগ্রহকারীর নামঃ	
মোবাইল নাম্বারঃ	স্বাক্ষরঃ

Annex V: FGD Checklist

এফজিডির অধিবেশনের স্থান:.....

গ্রাম/ মৌজা : ..... ইউনিয়ন : .....

উপজেলা : ..... জেলা: .... বিভাগ: .....

তারিখ : ..... সময় : .....

এলাকার নাম :.....

চেকলিস্ট

১.আপনাদের আবাদাধীন মোট জমির পরিমান (হেক্টর)

২.আপনাদের খামারে মোট কতজন স্থায়ী কর্মচারী নিযুক্তআছে?

৩.আপনাদের খামারে মৌসুমে কতজন মৌসুমী কর্মচারী নিযুক্ত করেন?

৪.আপনাদের স্থায়ী কর্মচারীদের মধ্যে কতজন আপনার পরিবারের সদস্য (নিজেবাদে)?

৫.আপনাদের স্থায়ী কর্মচারীদের মধ্যে কতজন আপনার পরিবারের সদস্য (নিজেবাদে)?

৬.আপনারা এবং আপনাদের পরিবার উৎপাদনের কতভাগ বিক্রি করেন?

৭.আপনারা আগে থেকে মাটি বিশ্লেষণ করেন কি?

৮.আপনারা কোন উৎস থেকে বীজ/ রোপণ সামগ্রী সংগ্রহ করেন?

৯.আপনারা আপনাদের জমিতে কোন ধরণের সার প্রযোগ করেন?

১০.আপনারা কোথা থেকে সার সংগ্রহ করেন?

১১.কীভাবে আপনারা সারের পরিমান নির্ধারণ করেন?

১২.আপনারা কৃষি রাসায়নিক দ্রব্যাদি কোথা থেকে সংগ্রহ করেন?

১৩.আপনারা কীটনাশক / ছত্রাকনাশক / অন্যান্য রাসায়নিক দ্রব্যাদি কীভাবে নির্বাচন করবেন?

১৪.আপনাদের সেচ পানির উৎস কি?

১৫.আপনারা কি কোনও উৎস থেকে কোন ও ঋণ গ্রহণ করেন?

১৬.প্রাপ্ত ঋণ সম্পর্কে আপনাদের কোন অভিযোগ আছে কি?

১৭.কীভাবে আপনারা কীটনাশক স্প্রে করেন?

১৮.কীভাবে কীটনাশক প্রয়োগ করেন?

১৯.কীটনাশক স্প্রে করার সময় আপনারা কোনওসুরক্ষা ব্যবস্থা গ্রহন করেন কি?

২০.আপনারা ফসল কাটার সময় এবং পরে আপনারা কাটা ফসল জমিতে রাখেন কি?

২১.আপনারা কখন আপনাদের ফসল কত্তন করেন?

২২.আপনাদের ফসল কত্তনের পদ্ধতি কী ?

২৩.আপনারা কি বাজারে পাঠানোর আগে পণ্যকে শ্রেণী বিন্যাস করেন?

২৪.আপনাদের জমিতে কীটনাশক ব্যবহারের সময় কী কী?

২৫.ফসল কাটার পরে আপনারা কোন ধরণের পাত্রে / ব্যাগে আপনাদের পণ্য সংগ্রহ করেন?

২৬.কীটনাশক প্রয়োগের পরে আপনারা ফসল কর্তনের জন্য কী অপেক্ষামান সময় (পিএইচআই) অনুসরণকরেন?

২৭.আপনারা কি পাত্রে / বোতলে লিখিত কীটনাশকের নির্দেশনা পড়েন?

২৮.পোস্ট হারভেস্ট লোকসানের পরিমাণ ?

২৯.কীটনাশকের সঠিক ব্যবহারও নিষ্পত্তি সম্পর্কে প্রশিক্ষণ পেয়েছেনকি?

৩০.আপনারা কি ফসল পাকানোর জন্য কোন রাসায়নিক দ্রব্য ব্যবহার করেন?

৩১.আপনারা কি বাজারে আনার আগে ফসলটি ধৌত করেন?

৩২.আপনারা কি ইনপুট ব্যবহার এবং কাজকর্মের রেকর্ড বজায় রাখেছেন?

৩৩.আপনারা / আপনাদের পরিবার কি আয় এবং ব্যয়ের লিখিত আর্থিক রেকর্ড রাখেন?

৩৪.আপনারা কি আইপিএম(IPM)অনুশীলনগুলি অনুসরণ করেন?

৩৫.আপনারা কি ফসলের উৎপাদন সম্পর্কে কোন প্রশিক্ষণ পেয়েছেন?

৩৬..আপনারা কি কোনও কৃষক / উৎপাদক গোষ্ঠীর সদস্য:

৩৭.কে আপনাদের কে দলে যোগ দিতে সহায়তা করেছে?

৩৮.আপনারা গ্রুপ (গুলি) এ যোগদান করে উপকৃত হয়েছেন কি?

উৎপাদনবিপণন

১.আপনারা কোন বাজারে পণ্য সরবরাহ করেন?

২.আপনারা আপনাদের পণ্য কার নিকট বিক্রয় করেন?

৩.আপনারা কি আপনাদের পণ্য বিপণনে কোন সমস্যার সম্মুখীন হন? এর তিনটি সমস্যা উল্লেখকরুন:

৪.পাইকার / রফতানিকারীদের কোন প্রয়োজনীয়তা রয়েছে কি?

৫.আপনারা কীভাবে এজেন্ট / পাইকার / রফতানিকারীর সাথে চুক্তিতে আসেন?

৬.উৎপাদিত পণ্য বিক্রয়ের মৌসুম কখন হয়?

৭.আপনারা বাজারের তথ্য কীভাবে পেয়ে থাকেন?

৮.আপনারা আপনাদের পণ্যক্ষেত থেকে বাজারে পরিবহণ করেন কিভাবে?

৯.আপনারা কি আপনাদের উৎপাদিত পণ্য কোন প্রক্রিযাজাতকারী শিল্পের নিকট বিক্রি করেন?

১০.আপনাদের কাছ থেকে পণ্য ক্রয়কৃত কৃষি-প্রক্রিয়াজাতকারী সংস্থার নাম কি ?

১২.আপনারা কতটি পণ্য কৃষি-প্রক্রিয়াজাতকারির নিকট বিক্রিয় করেন?

১৩.সরাসরি বাজারে বিক্রয় করা হলে আপনার পণ্যগুলি কী বেশী দামে বিক্রি হয়?

১৪.কৃষি প্রক্রিয়াজাতকারিরা আপনদের কতমূল্যদেয়?

১৫.কৃষি প্রক্রিয়াজাতকারির নিকট বিক্রয় করাকে কি ভাল মনে করেন?

১৬.কৃষি প্রক্রিয়াজাতকারির সাথে সংযুক্ত থাকার কারনে আপনি কী বিশেষ কোন সুবিধা পেয়ে থাকেন?

১৭.আপনারা কি প্রচলিতজাতগুলির পাশাপাশি বিভিন্ন "প্রসেসিংজাত" উৎপাদন করেন?

১৮.আপনারা উৎপাদনকালিন সময়ে যে তিনটি প্রধান সমস্যার মুখোমুখি হচ্ছেন তার বিবরন দিন?

১৯.উল্লেখিত সমস্যাগুলি সমাধান করার জন্য তিনটি পরামর্শ দিন?

এফজিডি'তে অংশগ্রহণকারীগণের উপস্থিতির তালিকাঃ

ক্রমিক নং	নাম ও ঠিকানা	পেশা ও পদমর্যাদা	শিক্ষাগত যোগ্যতা	মোবাইল নং	স্বাক্ষর
01.					
02.					
03.					
04.					
05.					
06.					
07.					
08.					
09.					
10.					

বি.দ্র.সমজাতীয় ব্যক্তিবর্গের সমন্বয়ে এফজিডি (FGD) করতে হবে এবং অংশগ্রহণকারী সাড়াৎদাতার ছবি,অডিও ও ভিডিও উভয়ভাবে ধারণ করতে হবে।

আলোচনা পরিচালনাকারী ঃ স্বাক্ষর ঃ মোবাইল ঃ

Annex VI: Checklist for Key Informant Interview (KII)

Questionnaire for KII- Exporter of Fresh and Agro-Processed Products

মূখ্য ব্যাক্তিবর্গের জন্য প্রশ্নপত্র - তাজা এবং কৃষি প্রক্রিয়াজাত পণ্যগুলির রফতানিকারক

১.০সাধারণ তথ্যাবলী:

১.১ উত্তরদাতার নামঃ...।

১.২ প্রতিষ্ঠানের নামঃ ১.৩পদবীঃ .

১.৪. যোগাযোগের ঠিকানাঃ

ক) বর্তমান ঠিকানাঃ

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:
মোবাইল নং..	ই-মেইলঃ

খ) স্থায়ী ঠিকানা

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:

প্রশ্নাবলীঃ

১. আপনি কোন ধরণের পণ্য রফতানি করেন (দয়া করে টিক√ চিহ্ন দিন)

ক. তাজা□ খ. প্রক্রিয়াজাতকৃত □ গ. শুষ্ক

২. আপনার প্রধান রফতানি সামগ্রী নাম উল্লেখ করুন।

৩.আপনার পণ্যগুলির প্রধান রফতানি গন্তব্যগুলি কোথায় কোথায়?

৪.আপনি আপনার পণ্যগুলি রফতানি করেন সে দেশগুলি কী কী?

৫. আপনার রফতানি বাজারের প্রকারগুলি কী কী? প্রচলিত / সুপার স্টোর?

৬.কৃষি-প্রক্রিয়াজাতকরণ খাতের মধ্যে, কোন ধরণের পণ্যগুলির দেশীয় এবং আন্তর্জাতিকভাবে সম্ভাব্য বাজারের সুযোগ রয়েছে?

ক. রফতানি বাজারে প্রচারের সম্ভাব্যতাগুলির জন্য প্রধান বাধাগুলি কী?

খ. আপনি কীভাবে আপনার পণ্য পরিবহন করে থাকেন?

গ.বাজারের প্রয়োজনীয়তা মেনে চলার জন্য আপনি কি কখন ও আপনার চালানের কোন প্রত্যাখ্যানের মুখোমুখি হয়েছিলেন?

যদি হ্যাঁ, দয়া করে বলুন .....।

ঘ. সহায়তা শিল্পের (মেশিনারি, প্রযুক্তি, পরামর্শ, আর্থিক পরিষেবা, গুণগত মান পরিষেবা ইত্যাদি) অবস্থা কী?

ঙ.সহায়তা শিল্পের জন্য নিদিস্ট অবস্থানে পৌছানো স্থিতাবস্থাটি কী (যন্ত্র, প্রযুক্তি, পরামর্শ, আর্থিক পরিষেবা, গুণগত মান পরিষেবা ইত্যাদি)?

চ. আরও উন্নতির কি এমন কোনও সুযোগ রয়েছে যা রফতানি বাজার বৃদ্ধি চালিত করতে পারে?

ছ.কোন শীর্ষস্থানীয় সংস্থা তাজা / প্রক্রিয়াজাত এবং শুকনো পণ্য রফতানীতে মান প্রয়োগ এবং প্রশংসাপত্র প্রদানের সাথে জড়িত?

জ.তাজা উৎপাদন / প্রক্রিয়াজাত এবং শুকনো পণ্যগুলির জন্য রফতানি মূল্য চেইনে অতিদরিদ্র এবং মহিলাদের জড়িত থাকার সুযোগ আছে কী?

ঝ.এই গুলিতে সরকার, উন্নয়ন সহযোগী এবং দাতা সংস্থাগুলির জড়িত থাকার স্তর কী?

ঞ.এ খাতে প্রবৃদ্ধি বাড়ানোর জন্য তারা আরও কী করতে পারে?

ট.আপনি এনটিএম সম্পর্কে জানেন?হ্যাঁ/না যদি হয় তবে,বিভিন্ন দেশে (বিশেষত শীর্ষ আমদানিকারক দেশগুলিতে) এই পণ্যগুলির দ্বারা এনটিএমগুলির মুখোমুখি হয়েছেন কী ?

ড.আপনি কি, যে কোনও রফতানি প্রচার পরিষেবা পান হাই-টেক ফাউন্ডেশন থেকে পেয়ে থাকেন কি? হ্যাঁ/না, যদি হ্যাঁ হয় তবে তার
বিবরন দিন.....।

ঢ. আপনি কি মনে করেন যে, হরটেক্স ফাউন্ডেশন কে আরো শক্তিশালী করা প্রয়োজন? হ্যাঁ হলে কিভাবে তা করা সম্ভব –মতামত
দিন.....

ণ. আপনার তাজা পণ্যসমূহ সংগ্রহোত্তর ব্যবস্থাপনা কোথায় করেন?

ত.আপনার পন্য "Central Packing House'' শ্যামপুর নিয়ে সংগ্রহোত্তর ব্যবস্থাপনাদি করেন কি?হ্যাঁ হলে কি কি ব্যবস্থাপনা করা হয় তার বিবরণ দিন?

থ.আপনি তাজা পন্য সংগ্রহের ক্ষেত্রে কোন ' চুক্তি ভিত্তি" চাষাবাদ প্রক্রিয়ায় জড়িত আছেন কি ? হ্যাঁ/না

দ.ফাইটো স্যানিটারি সার্কিট গ্রহনে কোন ধরনের সমস্যা বিদ্যমান কিনা ? যদি হ্যাঁ হয়, তার বিবরণ দিন?

ধ.রপ্তানি প্রসারের ক্ষেত্রে বিদ্যমান ৫টি সমস্যা কিকি?

১).

২).

৩)..

৪).

৫).

ন. উল্লেখিত সমস্যাবলি সমাধানের ক্ষেত্রে আপনার সুপারিশ গুলো কি কি?

প. রপ্তানি বাজার প্রসারের ক্ষেত্রে বিদ্যমান আইন-কানুন গুলির বিষয়ে আপনার মতামত কি?

ফ.

আইটেম প্রতি ব্যয় (কেজি প্রতি)	খরচ (টাকা)
কাঁচামালের সংগ্রহ ব্যয়	
বাছাই, গ্রেড, কোডিং	
কার্টন এবং প্যাকেজিং	
বিমানবন্দর / সমুদ্রবন্দর থেকে পরিবহন	
ক্লিয়ারিং এবং ফরোয়ার্ডিং	
এয়ার ফ্রেইট / সমুদ্রের চালান / 100 কেজি	
মূল্য নির্ধারণ	
মোট খরচ:	

১.আপনার প্রতিদ্বন্দ্বী দেশগুলিতে কি একই এনটিএম বা বাংলাদেশের মুখোমুখি হতে হবে? প্রয়োজনীয়তা (উভয় সরকার এবং স্বেচ্ছাসেবক)?

২. সরকার কী ধরনের ব্যবস্থা গ্রহণ করে? রফতানিতে এনটিএমগুলির প্রভাব হ্রাস করতে হবে?

৩. আমদানিকারক দেশগুলির এনটিএম প্রয়োজনীয়তামেনে চলার জন্য আপনি ইতিমধ্যে কী পদক্ষেপ / উদ্যোগ গ্রহণ করেছেন?

৪. এনটিএমগুলির আরও কার্যকর ভাবে মোকাবেলা করার জন্য বেসরকারী খাতের কোন ধরণের উদ্যোগ নেওয়া উচিত?

৫.এনটিএম / এনটিবি হ্রাস করার জন্য এমআরএগুলি (পারস্পরিক স্বীকৃতি চুক্তি) কার্যকর করতে বাংলাদেশ স্বীকৃতি বোর্ডের (বিএবি) ভূমিকা কী হওয়া উচিত?

৬. এনটিএমগুলিতে পর্যাপ্ত তথ্যের অভাবে সমস্যা সমাধানের জন্য প্রাতিষ্ঠানিক পদ্ধতিতে বিদ্যমান ফাঁকগুলি কী কী?

৭. এর প্রভাবগুলি বোঝার জন্য বেসরকারী খাতের কী ধরণের সক্ষমতা তৈরি করা উচিত এনটিএমের আন্তর্জাতিক বাণিজ্য আছে?

৮. আপনার পরামর্শ অনুসারে কোন ধরণের ব্যবস্থা গ্রহণ করা উচিত। এনটিএমগুলির প্রয়োজনীয়তা পূরণের পদ্ধতিগত বাধাগুলির সমাধান করতে?

৯. আপনি যে সমস্যার সম্মুখীন হয়েছেন তার বিশদ বিবরণ পেতে দয়া করে নীচের টেম্পলেটটি পূরণ করুন। (সমস্যা হিসাবে যতটা টেমপ্লেট ব্যবহার করুন দয়া করে)

- কেস:
- রফতানিকারক:
- চালান বিবরণ:
- এনটিএম / এনটিবি প্রভাবিত:
- সমস্যার প্রকৃতি:
- অতিরিক্ত খরচ:

তথ্য সংগ্রহকারীর নামঃ	
মোবাইল নাম্বারঃ	স্বাক্ষরঃ

নীতি নির্ধারক/সরকারী কর্ম কর্তা/সমিতি

Questionnaire for KII- Policy Makers/Government Officials/Associations

১.০সাধারণ তথ্যাবলী:

১.১ উত্তরদাতার নামঃ.....

১.২ প্রতিষ্ঠানের নামঃ ১.৬পদবীঃ

১.৩. যোগাযোগের ঠিকানা।

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:
মোবাইল নং;	ই-মেইলঃ

প্রশ্নাবলীঃ

১। কৃষি পণ্য (তাজা / প্রক্রিয়াজাতকৃত / শুস্ক) উৎপাদন ও রপ্তানি বিষয়ে আপনার প্রতিষ্ঠান কি কি সেবা প্রদান করে।

২। উল্লিখিত পণ্যগুলির উৎপাদন ও রপ্তানি ক্ষেত্রে কি কি সমস্যা বিরাজমান এবং তা দূরীকরণে আপনার প্রতিষ্ঠান কি কি সেবা প্রদান করে যাচ্ছে।

৩। কোন ধরণের পণ্য (তাজা / প্রক্রিয়াজাতকৃত / শুস্ক) বাংলাদেশ থেকে রফতানি বাজার প্রসারের সম্ভাবনা রয়েছে বলে আপনি মনে করেন ?

৪। উল্লিখিত পণ্যগুলির রফতানি প্রসারের দেশ গুলি কি কি এবং রফতানি বাজার সম্প্রসারনের প্রদান বাধা গুলি কিকি ?

৫। উত্তম কৃষি পদ্বতি (জিএপি), জিমএপি ও এইচএসিসিপি বিষয়ে আপনার প্রতিষ্ঠান কি কোণ সেবা প্রদান করে থাকে?

৬। বিভিন্ন দেশে (বিশেষতঃ শীর্ষ আমদানিকারক দেশগুলিতে) এই পণ্যগুলি রফতানিতে কী কোণ প্রকার এনটিএম এর বাধার সন্মুক্ষিন হচ্ছে ?

৭) বাংলাদেশের রফতানিকারক গন, আমদানিকারক দেশ কর্তৃক কি কোন প্রকার বৈষম্যমূলক এনটিএম বাধার মু সন্মুক্ষিন হচ্ছেন? হলে তা উল্লেখ করুন।

৮।এনটিএমগুলির প্রয়োজনীয়তা পূরণের জন্য কি পরিমান অতিরিক্ত ব্যয় প্রয়োজন পড়ে? পএই অতিরিক্ত ব্যয় আমাদের পণ্যগুলিকে প্রতিযোগিতামূলক বাজারে কি ধরনের প্রতিক্রিয়া এনে দেয়?

৯। আপনার মতে, এনটিএমগুলির প্রয়োজনীয়তা পূরণের জন্য রফতানিকারকদের প্রস্তুত করার জন্য বাংলাদেশের সংশ্লিষ্ট কর্তৃপক্ষের দায়িত্বে কোন প্রতিষ্ঠান কাজ করছে?

১০। আমাদের সংশ্লিষ্ট সংস্থা এবং কর্তৃপক্ষগুলি আমাদের রফতানিকারীদের সহায়তা প্রদানের জন্য সার্টিফিকেট , এনটিএম বিষয়ক সেবা পূরণের ্পদ্বতি সহজতর করার জন্য প্রস্তুত? এই প্রতিষ্ঠানের সেবা বাড়ানোর জন্য কি কি পদক্ষেপ নেয়া প্রয়োজন?

১১। এনটিএম বিষয়ক সেবা প্রদানে বাংলাদেশের রফতানিকারীদের প্রস্তুতি নিয়ে, সরকার বর্তমানে কি কোন নীতি গ্রহণ করছেন? যদি হ্যাঁ হয় নীতিটি কি সঠিকভাবে প্রয়োগ করা হচ্ছে? এই সমস্যা সম্পর্কিত আপনার নীতিগত সুপারিশগুলি আমাদের বলুন।

১২।বেসরকারী খাত কি এ ক্ষেত্রে কোন ভূমিকা নিতে পারে বলে মনে করেন?

১৩। এই পণ্যগুলির রফতানিকারকদের এনটিএমগুলির প্রয়োজনীয়তা মেনে চলার জন্য এই নির্বাচিত পণ্য রফতানিকারক সমিতির কী কি দায়িত্ব রয়েছে?

১৪। এ বিষয়ে অতিরিক্ত কিছু সুপারিশ যদি থাকে, তা আমাদের বলতে পারেন।

তথ্য সংগ্রহকারীর নামঃ	
মোবাইল নাম্বারঃ	স্বাক্ষরঃ

পরিবহন সেবা প্রদান কারী
Questionnaire for Transporters

১.০সাধারণ তথ্যাবলী:

১.১ উত্তরদাতার নামঃ...।

১.২ পিতা / স্বামীর নাম:.....১.৩ মায়ের নাম:.....।

১.৪ শিক্ষাগতযোগ্যতাঃ

১.৫ প্রতিষ্ঠানের নামঃ১.৬পদবীঃ . ১.৬. যোগাযোগের ঠিকানাঃ।

মোবাইলনং ই-মেলঃ.....।

১.৭ ঠিকানাঃ

ক) বর্তমান ঠিকানাঃ

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:

খ) স্থায়ী ঠিকানা

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:

প্রশ্নাবলীঃ

১। আপনার কি ধরনের পরিবহনে কৃষি পণ্য পরিবহন করেন?

২। এই পরিবহনটির বহন ক্ষমতা কত?

৩। আপনি কোন ধরণের কৃষি পণ্য (তাজা / প্রক্রিয়াজাতকৃত / শুস্ক) পরিবহন করেন?

৪। উপরোক্ত পণ্যগুলির প্রধান গন্তব্যগুলি কোথায় ?

৫। কৃষি পণ্য পরিবহনের প্রযুক্তি সম্পর্কে আপনি কি অবগত আছেন? হ্যাঁ হলে প্রযুক্তিগুলি কি কি?

৬।আপনার পরিবহণের তাপমাত্রা এবং আপেক্ষিক আর্দ্রতা নিয়ন্ত্রণের জন্য কি কোনও সিস্টেম আছে? যদি হ্যাঁ হয়, তবে দয়া করে তাপমাত্রা এবং আর্দ্রতা নিয়ন্ত্রণের এর পরিসীমা উল্লেখ করুন।

৭।আপনার পরিবহন ব্যয়ের হার কত এবং তা কিভাবে নির্ধারণ করা হয়?

৮।আপনি কৃষি পণ্য পরিবহনের প্রযুক্তির উপর কোনও প্রশিক্ষণ পেয়েছেন কি? যদি হ্যাঁ হয়, এর শিরোনাম, প্রশিক্ষণ প্রদান কারী সংস্থা এবং এর সময়কাল বলুন।

৯। আপনি আপনার দক্ষতা উন্নত করতে কোন প্রশিক্ষণ পেতে আগ্রহী? হ্যাঁ/না.

১০। কৃষি পণ্য পরিবহনের ক্ষেত্রে আপনি যে সব সমস্যার মুখোমুখি হন, তা আমাদের দয়া করে বলুন?

ক).

খ)

গ)..

ঘ).

১১. এই সমস্যাগুলি কাটিয়ে উঠতে আপনার পরামর্শ দিন।

ক).

খ).

গ).

ঘ).

১২. অতিরিক্ত সুপারিশ যদি কোন থাকে।

তথ্য সংগ্রহকারীর নামঃ	
মোবাইল নাম্বারঃ	স্বাক্ষরঃ

কোল্ড স্টোরেজ মালিকদের জন্য প্রশ্নাবলী

Questionnaire for Cold Storage Owners

১.০সাধারণ তথ্যাবলী:

১.১ উত্তরদাতার নামঃ...।

১.২ পিতা / স্বামীর নাম:.....১.৩ মায়ের নাম:.....।

১.৪ শিক্ষাগতযোগ্যতাঃ

১.৫ প্রতিষ্ঠানের নামঃ১.৬পদবীঃ . ১.৬. যোগাযোগের ঠিকানাঃ।

মোবাইলনং.. ই-মেলঃ..।

১.৭ ঠিকানাঃ

ক) বর্তমান ঠিকানাঃ

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:

খ) স্থায়ী ঠিকানা

গ্রামঃ	ইউনিয়ন / ওয়ার্ড নং:
উপজেলা / পৌরসভা:	জেলা:

প্রশ্নাবলীঃ

১। এই কোল্ড স্টোরেজটি কবে প্রতিষ্ঠিত হয়েছে? এবং তাতে কি কি কৃষি পণ্য সংরক্ষণ করা হয়?

২। কোল্ড স্টোরেজের ধারনক্ষমতা কত?

৩। আপনার কোল্ড স্টোরেজে কতটি কক্ষ রয়েছে?

৪। আপনি কি কোনও তাজা / প্রক্রিয়াজাতকৃত / শুষ্ক পণ্য সংরক্ষণ করেন? যদি হ্যাঁ হয়, দয়া করে তাদের নাম গুলি বলুন।

৫। আপনার কোল্ড স্টোরেজে তাপমাত্রা নিয়ন্ত্রণের পরিসীমা কত?

৬। আপেক্ষিক আর্দ্রতা নিয়ন্ত্রণের জন্য কি কোনও বিশেষব্যবস্থা বিদ্যমান আছে? যদি হ্যাঁ হয় , দয়া করে এর পরিসীমা ব্যাখ্যা করুন।

৭। কতদিন পণ্যগুলি কোল্ড স্টোরেজ সংরক্ষণ করা হয়?

৮। আপনি কী তাজা এবং প্রক্রিয়াজাত পণ্য সংরক্ষণের প্রযুক্তি সম্পর্কে জানেন? হ্যাঁ হলে, প্রযুক্তিগুলি নির্দিষ্ট করে বলুন।

৯। দয়া করে নষ্টযোগ্য তাজা পণ্য এবং প্রক্রিয়াজাত পণ্যগুলি সংরক্ষণ সংক্রান্ত প্রধান পাঁচটি প্রধান সমস্যা উল্লেখ করুন।

ক) সমস্যা:

ক).

খ)

গ)..

ঘ).

ঙ)

খ) উল্লেখিত সমস্যাগুলি কাটিয়ে ওঠার সুপারিশ করুন:

ক).

খ),

গ)..

ঘ).

ঙ)

১০। কোল্ড স্টোরেজ ফি কিভাবে নির্ধারণ করেন? এবং টন প্রতি কি পরিমান ফি নিয়ে থাকেন?

১১। আপনি কী নস্টযোগ্য পণ্য সংরক্ষণের প্রযুক্তি সম্পর্কে কোনও প্রশিক্ষণ পেয়েছেন? হ্যাঁ / না. যদি হ্যাঁ হয়, তবে, শিরোনাম এবং সংস্থা এবং সময়কাল নাম।

১২। আপনার দক্ষতা বাড়ানোর জন্য আপনি স্টোরেজ প্রযুক্তি সম্পর্কিত কোনও প্রশিক্ষণ পেতে আগ্রহী? হ্যাঁ না.

১৩। নষ্টযোগ্য তাজা পণ্য এবং প্রক্রিয়াজাত পণ্যগুলি সংরক্ষণের জন্য আপনি যে প্রধান পাঁচটি সমস্যার মুখোমুখি হন দয়া করে তা উল্লেখ করুন?

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এই সমস্যাগুলি কাটিয়ে উঠতে আপনার পরামর্শ দিন।

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তথ্য সংগ্রহকারীর নামঃ	
মোবাইল নাম্বারঃ	স্বাক্ষরঃ

Annex VII: List of FGD Participants

1. The place to complete the FGD(Venue):Farmer Leader Abdur Rahman's house Village: Tulatoli, Union: Word-9, ChandinaPourashava Upazila: Chandina, District:*Commila,* Division: *Chattogram*, Area: Tulatoli, Date: 27/02/21, Time:11.45a.m

List of participants (Market Actors: Trader)

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Saiful Islam	Business	B.com	01770002464	Signed
02.	Josna Begum	Business	Class -V	01876485041	Signed
03.	Shamsul Haque	Business	Class -V	01714438910	Signed
04.	Shiuli Akhter	Business	Class -VI	01821744616	Signed
05.	Abul Basar	Business	Class -VII	01821317932	Signed
06.	Runa Akhter	Business	Class -X	01878313821	Signed
07.	Abdul Mannan	Business	SSC	01849643917	Signed
08.	Ankurunnesa	Business	Class -0	01838551203	Signed
09.	Sumi Begum	Business	Class -VIII	01608276463	Signed

2. The place to complete the FGD (Venue): Baratakia Bazar Samiti Office Village: Baratakia Bazar, Union: Baratakia, Upazila: Mirshari, District: *Chattogram,* Division: *Chattogram,* Area: Baratakia , Date: 27/02/21 , Time: 12.00

List of participants (Market Actors: Trader)

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	AJM Alomgir	Business	H.S.C	01815407141	Signed
02.	Md. Abu Hasem	Business	S.S.C	01944668653	Signed
03.	Sakatosman	Business	S.S.C	01813204610	Signed
04.	Riazuddin	Business	M.A	01827717478	Signed
05.	Ojid Kumar Das	Farmer & Business	S.S.C	01933933734	Signed
06.	Md. Janal Abedin	Business	S.S.C	01727935570	Signed
07.	Janal Abedin Babul	Business	S.S.C	01679460212	Signed
08.	Ekramul Kabir	Business	H.S.C	01916943572	Signed

3. The place to complete the FGD(Venue): Boro Bazar, Jessore Sadar, Jessore Village:Boro Bazar, Union: *Ward No.2*, Upazila: Jessore Sadar, District:Jessore, Division:Khulna Area: Boro Bazar, Jessore Sadar, Jessore, Date: 22.02.2021, Time:8.30pm

List of participants (Market Actors: Trader)

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Anjan Shah	Business	Masters	01713910614	Signed
02.	Mohiuddin	Business	B.A	01971711266	Signed
03.	Sanjan Shah	Business	Honors	01716493988	Signed
04.	Tarun Shah	Business	B.A	01712708599	Signed
05.	Md. Hanif	Business	H.S.C	01714778513	Signed
06.	Badsha Mia	Business	Honors	01917092804	Signed
07.	Munshi AH Salam	Business	B.A	01921440473	Signed
08.	Tofail Ahmed	Business	S.S.C	01741435033	Signed
09.	Narayan Chandra Shah	Business	S.S.C	01713920091	Signed
10.	Babul Akhtar	Business	S.S.C	01959268230	Signed
11.	Rehena Islam	Woman entrepreneur	S.S.C	01778932254	Signed
12.	Muslima Khatun	Woman entrepreneur	Masters	01712336261	Signed

4. The place to complete the FGD (Venue): Tara Mollah' s house Village: Hakimpur,Union: JalshukaHakimara, Upazila: *shikupa* , District:Jhenaidah**,** Division:Khulna, Area: Hakimpur, Date:24.02.21, Time: 5.00pm

List of participants (Market Actors: Agro-processers)

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Md. Farman Sheikh	Agriculture & Business	Class-v	01782517845	Signed
02.	Md. Farooq Sheikh	Agriculture & Business	Class-v	01992545886	Signed
03.	Sufia Begum	Agriculture & Business	Class-v	01782517845	Signed
04.	Md. Shukuruzzaman	Agriculture & Business	Class-v	01725399609	Signed

05.	Mana Begum	Agriculture & Business	Class-v	01725399609	Signed
06.	Koli Akhter	Agriculture & Business	SSC	01728227562	Signed
07.	Md. Saheb Ali	Agriculture & Business	Class-v	-	Signed
08.	Md. Iddis	Agriculture & Business	Class-v	01956224037	Signed
09.	Md. LitonMollah	Agriculture & Business	Class-v	01794573596	Signed

5. The place to complete the FGD(Venue): Boubari, MizapurChatalbazar, Village: Mizapur,Union: Vendabari,Upazila: Pirganj, , District:Rangpur, Division:Rangpur Area: Mirzapur, Date: 20.02.2021, Time: 10.30am

List of participants (Market Actors: Trader)

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Md. Raghu Mia, Bhobanipur	Business	Class-v	0195014121	Signed
02.	Md. Nurnabi, Mirzapur	Business	Class-ii	01302128281	Signed
03.	Md. Motaleb, Mirzapur	Business	HSC	01733877595	Signed
04.	Md. Motafizar,Mirzapur	Business	Class-viii	01787324025	Signed
05.	Md. Shahinur Mia, Mirzapur	Business	Class-viii	01300108663	Signed
06.	Md. Samsul Alam, Barbari	Business	Class-v	01797818985	Signed
07.	Md. Mominur Mia, Baulbari	Business	Class-ii	01798911762	Signed
08.	Md. Manik Mia, Mirapara	Business	Class-viii	0175362861	Signed
09.	Md. Ashraful,Baulbari	Business	Class-v	01774301294	Signed
10.	Md. Mithu Mia,	Business	Class-ii	01773905828	Signed
11.	Md. Selim Mia,Panharpara	Business	Class-v	01729615383	Signed

6. The place to complete the FGD(Venue):On the verandah of Parveen Khatun's house, Village: Chowk Alampur ,Union: Ranihati,Upazila: Chapainawabganj, District:Rajshahi, Division:Rajshahi, Area: Miapara, Date:25.02.2021, Time: 11.30am

List of participants(Market Actors: Agro-processor)

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Tanjila Begum	Agro-processor	Class-v	01759264922	Signed
02.	Taslima Begum	Agro-processor	SSC	01714973201	Signed
03.	Baby Begum	Agro-processor	Class-v	01767008452	Signed
04.	Razia	Agro-processor	Class-viii	01792665119	Signed
05.	Shefali Begum	Agro-processor	Class-ii	01755221016	Signed
06.	Mitali	Agro-processor	Class-viii	01767008452	Signed
07.	Zahurul Islam	Agro-processor	SSC	01762614481	Signed
08.	Farhad Ali	Agro-processor	HSC	01793965888	Signed
09.	Parveen Khatun	Agro-processor	HSC	01786014842	Signed
10.	Setara Begum	Agro-processor	Class-ii	01778332156	Signed
11.	Chenoyara Begum	Agro-processor	Class-ii	01741763928	Signed

7. The place to complete the FGD(Venue):Backyard house of Md. Minarul Islam Village: RajrampurChatra,Union: Pakari, Upazila: Godagari, District: Rajshahi, Division:Rajshahi Area: School para, Date:23.02.2021, Time:11.00am

List of participants(Market Actors: Producers)

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Md. Monirul Islam	Farmer	SSC	01521352541	Signed
02.	Anjuara	Farmer	-	01789168379	Signed
03.	Mo Tushar Ali	Farmer	HSC	01812888587	Signed
04.	Shirin	Farmer	Class-viii	01787405253	Signed
05.	Alec Nur	Farmer	Class-ix	01792696460	Signed
06.	Jasmine	Farmer	Class-viii	01753521817	Signed
07.	Jamal Uddin	Farmer	Class-ii	01407831292	Signed
08.	Lily Begum	Farmer	Class-v	01761213751	Signed
09.	Md. Maqbool Hossain	Farmer	-	01751500597	Signed
10.	Sadiqul	Farmer	Class-iii	01749908226	Signed
11.	Apu	Farmer	Class-viii	01774899660	Signed

8. The place to complete the FGD (Venue): Mahasthan SNCDP Growas Market Bhaban, Village: Mahasthangarh,Union: Raynagar, Upazila: Shibganj, District:Bogra,Division:Rajshahi.

Area: Mahasthangar, Date:21.02.2021, Time:10.20am

List of participants(Market Actors: Trader)

SL. No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Md. Kajal	Wholesale	Class-Viii	01786911830	Signed
02.	Md. Abul Hossain	Wholesale	SSC	01725824285	Signed
03.	Abu Hanif	Wholesale	Class-Viii	01773869519	Signed
04.	Md. Shipon	Wholesale	SSC	01831484917	Signed
05.	Md. Imdadul	Wholesale	HSC	01732625231	Signed
06.	Md. Alamgir	Wholesale	SSC	01725184453	Signed
07.	Md. Raju Mia	Retail	SSC	01827553400	Signed
08.	Md. Sana Mia	Wholesale	HSC	01301654974	Signed
09.	Md. Moazem Hossain	Wholesale	SSC	01779686555	Signed

9. The place to complete the FGD(Venue): AgailjharaUpazila Office, Village: Agailjhara,Union: Agailjhara ,Upazila: Agailjhara , District:Barisal, Division:Barisal

Area: AgailjharaUpazila Office, Date:25.02.2021, Time: 11.00am

List of participants(Farmer)

SL. No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	AsadujjamanBokhtiar	Farmer	B.A	01712092422	Signed
02.	RameerJoydhar	Farmer	Class-x	01855505265	Signed
03.	Manoj Pande	Farmer	Class-viii	01643258907	Signed
04.	Jahid mia	Farmer	Class-x	01785588895	Signed
05.	KanonPande	Farmer	Class-x	01757535173	Signed
06.	Monware Begum	Farmer	Class-vi	01629376208	Signed
07.	MonjitaBoisnob	Farmer	Class-x	01849204859	Signed
08.	Biuti Begum	Farmer	Class-x	01765633484	Signed
09.	Momtaz Begum	Farmer	Class-viii	01832488114	Signed
10.	Chompa Holder	Farmer	Class-v	01797349049	Signed

11.	Sahidul Islam	Farmer	Class-iv	01855822086	Signed
12	Salam Sarder	Farmer	Class-v	01718971783	Signed

10. The place to complete the FGD (Venue): Hafizur Rahman's house Village:Konabari, Upazila: Tangail sada, District:Tangail, Division: *Dhaka*

Area: Konabariwestpara, Date:20.02.21 , Time: 5.00pm

List of participants

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Mia Chan	Farmer	Class-x	01742641920	Signed
02.	Shahjahan Siraj	Farmer	HSC	01732048462	Signed
03.	Ratna Begum	Farmer	Class-vii	01732045462	Signed
04.	Rasheda Begum	Farmer	Class-ix	01745417741	Signed
05.	Fatema Akhter	Farmer	Class-x	01838159194	Signed
06.	Lily Begum	Farmer	Class-viii	01734670898	Signed
07.	Lily Begum	Farmer	Class-ix	01728480926	Signed
08.	Samsul Alam	Farmer	Class-ix	01763258854	Signed
09.	Md. Manik Mia	Farmer	Class-viii	01720340688	Signed
10.	Md. Hafizur Rahman	Farmer	Diploma	0174774645	Signed

11. The place to complete the FGD(Venue): Lohagachhia Fayez Mia's house Village: Lohagachhia, Union: ,Upazila: Sreepur , District:Gazipur, Division: *Dhaka*. Area: Lohagachhia, Date: 09.03.21 , Time:2.15am

List of participants

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Abdur Karim	Farmer	SSC	01821733910	Signed
02.	Abdur. Arhim	Farmer	Class-vii	01960271892	Signed
03.	Md. Fayez Uddin	Farmer	Class- iii	01996312860	Signed
04.	Md. Saidul Islam	Farmer	Class-vii	01832608607	Signed
05.	Sahina Akhter	Farmer	SSC	01823364120	Signed
06.	Joynal Abedin	Farmer	Class-ii	01738763856	Signed
07.	Md. Rafiqul	Farmer	Class-v	01710898470	Signed
08.	Md. Obaidullah	Farmer	BBA	01823364120	Signed

09.	Md. Kakul	Farmer	Class-v	01851693846	Signed
10.	Begum of Kahinur	Farmer	Class-vi	01825821929	Signed

12. The place to complete the FGD (Venue): Field of CharradhaKandipur Mosque, Village: CharradhaKandipur, Union: Dogachhi,Upazila: Pabna, District: Pabna,Division:Rajshahi

Area: Charradha Kandi , Date: 22.02.21, Time:12.20pm

List of participants

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Md. Arju	Farmer	SSC	01748843735	Signed
02.	Md. Mukul	Farmer	Class-viii	01719487010	Signed
03.	Shariful	Farmer	Class- viii	-	Signed
04.	Word	Farmer	Class-v	01811580871	Signed
05.	Israel Hossain	Farmer	Class-v	01735569229	Signed
06.	Shamim	Farmer	Class-viii	-	Signed
07.	Helal	Farmer	Class-v	01724697902	Signed
08.	Sirajul	Farmer	Class-v	01952258477	Signed
09.	Omar Sunny	Farmer	Class-ix	01753626729	Signed
10.	Abdul Malek	Farmer	Class-v	01751816646	Signed

13. The place to complete the FGD(Venue): In the backyard of Jagir's house
Village: Jagir, Union: Jagir , Upazila: Sadar , District:Manikganj, Division: *Dhaka*
Area: Jagir, Date:15.02.2021, Time: 3.20pm

List of participants

SL.No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Rahim	Agro-processer	Class-ix	0195650192	Signed
02.	Ashim	Agro-processer	Class-viii	01955650189	Signed
03.	Momin	Agro-processer	Class- viii	01632753652	Signed
04.	Ashraful	Agro-processer	Class-x	01303743051	Signed
05.	Khalid	Agro-processer	Class-x	01739137735	Signed
06.	Adnan	Agro-processer	Class-viii	0167924766	Signed
07.	Biduth	Agro-processer	Class-viii	01736507762	Signed
08.	Sohail	Agro-processer	Class-x	01771084456	Signed

14. The place to complete the FGD(Venue): Kunderpara Bazar
Village: Chaipat, Union: Bagar, Upazila: , District:Narsingdi, Division: *Dhaka*
Area: Shibpur, Date:, Time:9.30am

List of participants

SL. No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Sufia Khatun	Agro-processer	SSC	01727330848	Signed
02.	Md. Mustafa	Agro-processer	Class-viii		Signed
03.	Rachel	Agro-processer	Class- v		Signed
04.	Mamota	Agro-processer	Class-viii		Signed
05.	Shahed Mia	Agro-processer	Class-v		Signed
06.	Shafia Begum	Agro-processer	Class-viii		Signed
07.	Fatema	Agro-processer	BA	01721634931	Signed
08.	Md. Mia	Agro-processer	Class-viii		Signed
09.	Md. Russell Mia	Agro-processer	SSC		Signed
10.	Mainur Begum	Agro-processer	Class-v		Signed
11.	Md. Abdur Razzak	Agro-processer	Class-viii		Signed
12.	Nasu Mia	Agro-processer	SSC	01751327735	Signed

15. The place to complete the FGD (Venue): Kaliakair,
Village: Birulia Union: Tetulia, Upazila: Savar, District: Dhaka , Division:Dhaka

Area: Kaliakair, Date: 24.02.21 , Time: 12.30

List of participants

SL. No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Samchu Mia	Farmer	-	01922926543	Signed
02.	Farida	Farmer	-	01822357950	Signed
03.	Naeem Hossain	Farmer	-	01641174446	Signed
04.	Piara Begum	Farmer	-	01965617738	Signed
05.	Ziaur Rahman	Farmer	-	01777965663	Signed
06.	Lucky	Farmer	Class-viii	01941069964	Signed
07.	Rozina	Farmer	Class-v	01745590767	Signed
08.	Sabana	Farmer	-	01724142786	Signed

16. The place to complete the FGD(Venue): Jaimat Ali's house (Fatema Akter's house)
Village:Nagua, Union: Fulpur, Upazila: : Fulpur, District: Mymensingh, Division:Mymensingh,
Area: NaguaNadirparPurbapara (East of Primary School), Date: 24.02.2021, Time:2.40

List of participants

SL. No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Nachima Khatun	Farmer	Class-viii	01907906958	Signed
02.	Jasmine Akhter	Farmer	Class-v	01947648490	Signed
03.	Runa Begum	Farmer	Class-v	01718521891	Signed
04.	Majeda Khatun	Farmer	0	01741753626	Signed

05.	Rehna Yasmin	Farmer	Class-ix	01406179000	Signed
06.	Fatema Akhter	Farmer	HSC	01741753626	Signed
07.	Hosne Ara	Farmer	Class-v	01811869331	Signed
08.	Kalpana Akhter	Farmer	Class-x	01025519010	Signed
09.	Lily Akhtar	Farmer	Class-viiii	01918193638	Signed
10.	Nargis Akhter	Farmer	Class-vi	01635491473	Signed
11.	Monwara Begum	Farmer	0	01977706177	Signed
12.	Smriti Akhter	Farmer	SSC	01937483665	Signed

17. The place to complete the FGD(Venue): Billal driver's house
Village: Kashempur, Union: *Agardari*, Upazila: Sadar, District:*Satkhira,* Division: *Khulna*

Area: Sardar Para / Colony Para, Date: 19.02.21, Time: 3:30PM

List of participants(Market Actor: Producer

SL. No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Shahidul Sardar	Farmer	Class-v	01763342058	Signed
02.	Rabiul Islam	Farmer	Class-viii	01795366982	Signed
03.	Md. Billal Hossain	Farmer	Class-vii	01311322618	Signed
04.	Moha: Khodeja	Farmer	Signature	-	Signed
05.	Moha: Khadija	Farmer	Signature	01888446239	Signed
06.	Kulchum Begum	Farmer	Class-v	01725993308	Signed
07.	Aklima Khatun	Farmer	Class-iv	01754573988	Signed
08.	Nachima Khatun	Farmer	Class-v	01954429965	Signed
09.	Monwara Begum	Farmer	Signature	01755499742	Signed
10.	Shahanara Begum	Farmer	Signature	01700969244	Signed
11.	Nachima Khatun	Farmer	Signature	01951627393	Signed
12.	Soufun Nahar	Farmer	SSC	01700969244	Signed
13.	Selina	Farmer	BA	01713532873	Signed

18. The place to complete the FGD(Venue):Kharakmara CNB Bazar
Village: Kharakmara,Union: Bagabo, Upazila:Shibpur , District:Narsingdi, Division: *Dhaka*
Area:Kharakmara CNB Bazar, Date: 20.02.21, Time:11:00am

List of participants

SL. No	The name of the participant& Address	Designation	Occupation	Mobile no	Signature
01.	Md. Alfaz Uddin	President	CIG/CCMC	01720293794	Signed
02.	Arif	Member	CIG/CCMC	01933251708	Signed
03.	Md. Kawshar Mia	Member	CIG/CCMC	01941670325	Signed
04.	Moidulal Mia	Cashier	CIG/CCMC	01717171221	Signed
05.	Md. Rabbi	Member	CIG/CCMC	01736038712	Signed
06.	Ramiz Uddin	Member	CIG/CCMC	01727330848	Signed
07.	Jahangir	Member	CIG/CCMC	01718798661	Signed
08.	Helena	Member	CIG/CCMC	01784881260	Signed
09.	Josna	Member	CIG/CCMC	01728492321	Signed
10.	Alamin Khan	Member	CIG/CCMC	01724896461	Signed
11.	Alam Mia	Member	CIG/CCMC	-	Signed

19. The place to complete the FGD(Venue):Kharakmara CNB Bazar Village:Kharakmara,Union: Bagabo, Upazila:Shibpur , District:Narsingdi, Division: *Dhaka* Area:Kharakmara CNB Bazar, Date: 20.02.21, Time:12.00am

List of participants

SL. No	The name of the participant& Address	Designation	Occupation	Mobile no	Signature
01.	Shariful	Member	CIG/CCMC	01712717607	Signed
02.	Jahangir	Member	CIG/CCMC	01671755665	Signed
03.	Sattar	Member	CIG/CCMC	-	Signed
04.	Suruj Mia	Member	CIG/CCMC	01726295001	Signed
05.	Arman	Member	CIG/CCMC	01969400678	Signed
06.	Md. Mosharraf Hossain	SAA	CIG/CCMC	01710838065	Signed
07.	Sohrab	Member	CIG/CCMC	01708703331	Signed
08.	Dulal	Member	CIG/CCMC	01717171221	Signed
09.	Suruj	Member	CIG/CCMC	01762083163	Signed
10.	Abtab Uddin	Member	CIG/CCMC	-	Signed
11.	Jauil	Member	CIG/CCMC	0178631223	Signed

20. The place to complete the FGD(Venue): Rashida house Village:Kharakmara,Union: Bagabo, Upazila:Shibpur , District:Narsingdi, Division: *Dhaka;* Area:Kharakmara, Date: 20.02.21, Time:1.00am

List of participants

SL. No	The name of the participant& Address	Designation	Occupation	Mobile no	Signature
01.	Rashida	President,	CIG/CCMC	01747220592	Signed
02.	Shahinur	General Secretary	CIG/CCMC	01754385058	Signed
03.	Masdura	General Secretary	CIG/CCMC	01754120164	Signed
04.	Josna	General Secretary	CIG/CCMC	01762535228	Signed
05.	Shamima	General Secretary	CIG/CCMC	01745936884	Signed
06.	Achma	Member	CIG/CCMC	01721634931	Signed
07.	Sahana	Member	CIG/CCMC	01986787458	Signed
08.	Julekha	Member	CIG/CCMC	01796265569	Signed
09.	Yasmin	Member	CIG/CCMC	01772305356	Signed
10.	Achma	Member	CIG/CCMC	01834241312	Signed

21. The place to complete the FGD (Venue): Osman Gani's house
Upazila: Kaliakair, District:Gazipur, Division: *Dhaka.* Area:Kharakmara Bazar, Date: 21.02.21, Time:4.00pm

List of participants: (Market Actor: Exporter)

SL. No	The name of the participant& Address	Designation	Occupation	Mobile no	Signature
01.	Md. Sharif Sarkar	Member	Exporter	01712131190	Signed
02.	Md. Atabuddin	Member	Exporter	01784546530	Signed
03.	Md. Ohaidul	Member	Exporter	01726740535	Signed

04.	Md. Jasim Mollah	Member	Exporter	01859836821	Signed
05.	Md. Mokarf	Member	Exporter	01712868956	Signed
06.	AH Dulal	Member	Exporter	01711898721	Signed
07.	Osman Gani	Member	Exporter	01711663833	Signed
08.	Satya Ranjan Das	Member	Exporter	01723468667	Signed
09.	Neel Kamal	Member	Exporter	01712386667	Signed
10.	Subrata	Member	Exporter	01734522214	Signed
11.	Sanjion	Member	Exporter	01784839087	Signed
12.	Mohiuddin	Member	Exporter	01863496992	Signed

22. The place to complete the FGD(Venue):Parertong Ful Mia Master House
Village: Parer Tong,Upazila: Srimangal, District: Moulvibazar, Division*: Sylhet*
Area: ParerTong, Date: 23/02/2021, Time: 3.00pm

List of participants(Farmer)

SL. No	The name of the participant& Address	Occupation& designation	Educational qualification	Mobile no	Signature
01.	Sufia Khatun	Farmer	Class-v	01768716184	Signed
02.	Md. Mostafa	Farmer	Class	01764609463	Signed
03.	Rachel	Farmer	Class	01764609463	Signed
04.	Momota	Farmer	Class	01765726089	Signed
05.	Shahed Mia	Farmer	Class-v	01752031342	Signed
06.	Safia Begum	Processer	Class-viii	01610637755	Signed
07.	Fatema	Processer	Class-viii	01610637755	Signed
08.	Md. Fulu Mia	Processer	Signed	01714705470	Signed
09.	Md. Russell Mia	Processer	Signed	01782331575	Signed
10.	Mainur Begum	Trader	Class-viii	01739407081	Signed
11.	Md. Abdur Razzak	Trader	Class-v	01305870235	Signed
12.	Nasu Mia	Trader	Class-viii	01739407081	Signed

Annex VIII: List of KII Participants

#	Name	Position&Address	Mobile No.&e-mail
01.	Md.Samim Akhter (Faruk)	Managing Director, Rex food & Beverage Karanigonj, Dhaka-1310	01716484928 rexfoods16@gmail.com
02.	Haji Md. Selim,	Managing Director Medina Cold Storage Ltd., 7/1, Ishwar Chandra Ghosh Street, Badamtali, Dhaka-1100, Word -32	01711530714,
03.	Rashid Mia,	Pelanpur, Pabna Sadar, Pabna	01683739500
04.	Achmat Mia	Janire, Manikganj	01731652164
05.	Md. Selim Khan	Transporter, North Shalgari, Pabna	01796618452
06.	Jihad Mia	Transporter, Jagir, Jagir Sadar, Manikganj	01994960766
07.	Aftab Uddin	Transporter, Dengarbun, Arshidul, Srinagar, Moulvibazar	01758253677
08.	Mr.Al Amin	Transporter, Cooler Tech, Mirpur, Narsingdi	-
09.	Abdul Qayyum	Owner, Qayyum Agro-house,Garangmara, Bagabu, Mirpur, Narsingdi	01710835108
10.	Md. Sohail Mia	Driver, Salam Paribahan, Barti, Gournadi, Barisal	01741123365
11.	Md. khaledBacheel	Owner,A N ENTERPRISE, Malik, Maskanda, word-11, Mymensingh	01711892164
12.	Md. AinulHaque	Messrs. Mostafa Traders, Director, NCDP, Gohas Market, Mahasthangarh, Shikaganj, Bogra	01740941842,
13.	Md. Ashraf Ali	Manager, HR & Admin Department, ASMMA COLD STORAGE (PVT) LIMITED, Tokipur, Airport Road, Baya, Rajshahi-6210.	01716695641, ad.acspi@gmail.com
14.	Md. Mostafizar Rahman	Executive Director, NAWHATA JUTE MILLS LTD, Puthiapara, Nawhata, Paba, Rajshahi.	01771220991,nawhatajutemill576@gmail.com
15.	Alhaz Md Rezaul Karim	Proprietor, M / S Rabeya Jute Mill, Islampur, Wad-15, Nawabganj, Chapainawabganj	01713774379,asamadandsons@gmail.com
16.	Abu Taleb Mia,	Manager, Tashir Uddin Cold Storage, BhularamMajidpur, Ramnathpur, Pirganj, Rangpur	01718613264
17.	Md. Karul Mia	Driver, Shahin Paribahan, Mirzapur, 2No. Vendabari, Pirganj, Rangpur	01315124836
18.	Md. Lutfar Rahman	Accountant, Jessore Cold Storage Ltd., Jessore, Khulna Road, Jessore, Bakchar, 9th Municipality, Jessore	01711065884
19.	Md. Bipul Mandal	M / S Bipul Transporter, Proprietor, Ahadduzzaman Road, pickup stand, Magura	01740857997
20.	Md. Zakir Hossain (Montu)	Proprietor, M / S Raj Trading, Bhomra Land Port, Bhomra, Satkhia, Bangladesh.	01712057534
21.	Md. Billa Hossain	Manager, Jhinaidah, Transport Agency, Probhati, Jhinaidah.	01711443394
22.	Mohhammed Abul Hossain	Proprietor, M / SLEE ENTERPRISE, 24, Mohini Mohan Das lane, Sutapur, Dhaka	01711522248

#	Name	Position&Address	Mobile No.&e-mail
23.	Jahangir Kabir Chowdhury	Owner, Chowdhury Trading, No. 14 Hait Kandi, Mirsarai, Chittagong	01703606445
24.	Nuruddin Chowdhury	Chairman, Noruddin Exporter LTD. Mirsarai, Chittagong	01739402916
25.	Mrs. Rosie Jalal,	Chairman, Messrs. Md. Sharikul Jalal, 18 / D Abdullatif Tower Chhota Katara Chowk Bazar, Dhaka	01711026822, 0122222315
26.	Akram Hossain	Transporter, Bhogra Bypass, City Corporation, Gazipur Sadar, Gazipur	0171290353
27.	Md. Ashraf Ali,	Director, Rudra Specialized Cold Storage, Bagali, SharifpurSadar, Jamalpur	01710336429, e-mail- rudrocold@yahoo.com
28.	Osman Gani	Export Crops Producer, Kaliakair,Gazipur	01711663833
29.	Md. Jasim Mollah	Exporter (Middle East), Kaliakair,Gazipur	01859836821
30.	Md. Atabuddin	Packaging, Kaliakair,Gazipur	01784546530
31	Mr. Anup Kumer Saha	ACI Food Limited, ACI Center 245, Tejgaon Industrial Area, Dhaka-1208	Mobile: 01713099834 Email: shadhin@aci-b.com
32.	Md. *Tanvir Islam*	General Manager (Export) ACI Food Limited, ACI Center 245, Tejgaon Industrial Area, Dhaka-1208	01704114275
33.	Minhaz Ahmed	Ahmed Food Products Pvt. Ltd. House M-4/4, Road-7; Section-7 Mirpr, Dhaka-1216	01911023310 Email: ahmedfd@dhaka.net
34.	Mrs. Fatema Amin	Managing Director. Amin Food Processing Industries Ltd.,21/A,PuranaPaltan,	01711532020 Email:henolux@gmail.com
35.	Mr.SyedShoaib Hasan	MD, HIFs Agro Food Industries 342, Asadgonj, Chittagong.	01819314974 Email:hifs786@yahoo.com
36.	Mr.Golam Sharif Chowdhury	Proprietor, Pranto Traders, RahmanItl. Complex (11th Floor), 28/1/C, ToyeenbeeCorcular Road, Motijheel, Dhaka-1000	01841918928 Email:export1@alinfood.com
37.	Md.Iqtadul Huque	General Manager, Pranto Traders, RahmanItl. Complex (11th Floor), 28/1/C, ToyeenbeeCorcular Road, Motijheel, Dhaka-1000	01819404957
38.	Mr.Khurshid Ahmed Farhad	General Manager, Bombay Sweets & Co., Ltd.4.1 (8) · Manufacturer Delta Life Tower (8th Floor), 37, Gulshan North, C/A Rd 90, Dhala-1212.	Phone: 01704123281 Email: gmimd@bombaysweets-bd.com
39.	Mrs. Fatema Amin	Managing Director. Amin Food Processing Industries Ltd. 21/A,Purana Paltan	Mobile: 01711532020 Email:henolux@gmail.com
40.	Mrs.Razia Begum	Proprietor, Tazmeen Agro Resource Accumulator Ltd. 89/2, Tejturi Bazar Chalk Lane (East Raja Bazar), 5A, Haque Chamber, Tejgaon, Dhaka-1212.	Mobile: 01818900900 Email:info@tazmeentraders.com
41.	Afroza Begum	Enterprise: **M/S. Rose Agro Complex** Address: Singerdighi, Mawna,	Cell: 01911506266

#	Name	Position&Address	Mobile No.&e-mail
		Shreepur, Gazipur; Product: Agro Product	
42.	Akter Jahan Simu	Enterprise: **M/S. Nova Trading House** Address: 138/B-2, Suruchi Falguni, Wapda Road, Rampura, Dhaka Product: Agro products	Cell: 01712019404 Phone: 9334754
43.	Hajera Begum	Enterprise: **Bristi Agro Farm** Address: Binadangi, Dholla Bazar, Singair; Product: Agro Products	Cell: 01727105369
44.	Nasrin Haque	Enterprise: **Indoor & Outdoor Plants** Address: House-75, Road-7, Block-H,Banani, Dhaka Product: Agro Based Industries	Cell: 01715042147
45.	Nazma Begum	Enterprise: **Zakia Enterprise** Address: B-38, Mazidpur, Savar, Dhaka Product: Agro Based Products	Cell: 01750000760
46.	Rawshan Ara	Enterprise: **Hazrat Shahjalal Agro Placket** Address: Vogra, National University,Gazipur Sadar, Gazipur, Product: Agro Product	Cell: 01923647693
47.	Mr.Md. Monsur,	General Secrretary, Bangladesh Fruits & Vegetables Exporters Association-Leader of Exporters Association.	01711524039
48.	Mr. Paritosh Chandra Das (Manik Babu)	DIP International	01715106144
49.	Mohhammed Abul Hossain	Proprietor, M/S LEE ENTERPRISE, 24, Mohini Mohan Das lane, Sutapur, Dhaka	01711522248
50.	Ms.Kazi Munni,Proprieter	Rifat Enterprise(A House of Quality Grower, Manufacturers & Exporterss), Nandipara main road *Khilgaon, Dhaka-1219*	01727365369
51	Mrs, Selina Kader, Forner Director, Bangladesh Women Chambers of Commerce & Industries.	Director, Agriconcern Ltd. Bangladesh 67, Purana Palton Line, Dhaka-1000. www.agriconcern.com	01711322633 sheikh@agriconcern.com

Annex IX: List of Public Consultant Participants

#	Name	Address & Designation	Contact information
01.	Dr.Md. Hafizul Haque Khan,	CSO, Postharvest Technology Division, BARI, Joydepur.	Mobile: 01556631691 Email: cso.pht@bari.gov.bd
02.	Mrs. Selina Kader,	Director Agriconcern 67,Purana Paltan Lane, Dhaka-100	Mobile: 01711322633 Email: sheikh@agriconcern.com
03.	Mr.Monjurul Islam,	Adviser, Bangladesh Fruits Vegetables & Allied products Exporters Assocition, Motijheel, Dhaka-1000	Mobile: 01776434339 Email: monjurulislam10@yahoo.com
04.	Dr.A.S.MAbdur Razzaque,	Deputy Director (Import),PlantQarantine Wing, DAE, Khamarbari.	Mobile: 01715562540 Email: ddimport@dae.gov.bd
05.	Mr.Raju Ahmed, Managing	Director, RMP Manufacturers Pvt.Limited; 50, Siddesheshori Circular Road, 1st Floor, Dhaka-1217	Mobile: 0171531877 Email: rajmango@gmail.com
06.	Mr.Mitul Kumar Saha,	AGM, Hortex Foundation Sech Bhaban, Dhaka-1207	Mobile: 01711370491 Email: mitulsaha@hortex.org mitulecon@gmail.com
07.	Mrs.Suraiya Akhter,	CEO, Nur Food Products House# 112, Road# 8A, Dhanmondi	Phone: 8153134-Ext-30 Email: nurfood@gmail.com; dolly196@gmail.com
08.	Mrs. B. N. Siddique,	Proprietor, Northern Agro-International, 78/3,Purana Paltan, 3rd Floor, Dhaka-1000	Phone: 9341856 Email: flaminltd@yahoo.com
09.	Mrs. Fatema Amin,	Managing Director. Amin Food Processing Industries Ltd.21/A, Purana Paltan,	Mobile: 01711532020 Email: henolux@gmail.com
10.	Mr.Syed Shoaib Hasan	MD, HIFs Agro Food Industries 342, Asadgonj, Chittagong.	Mobile: 01819314974 Email: hifs786@yahoo.com
11.	Dr.Md.MainuddionMollah,	Postharvest Technology Division, BARI, Joydepur.	Mobile: Email: mainuddinmolla@yahoo.com
12.	Mrs.Razia Begum	Proprietor, TazmeenAgro Resource Accumulator Ltd. 89/2, Tejturi Bazar Chalk Lane (East Raja Bazar), 5A, Haque Chamber, Tejgaon, Dhaka-1212.	Mobile: 01818900900 Email: info@tazmeentraders.com

#	Name	Address & Designation	Contact information
13.	Mr.Golam Sharif Chowdhury	Proprietor, Pranto Traders, Rahman Itl. Complex (11th Floor), 28/1/C, Toyeenbee Circular Road, Motijheel, Dhaka-1000	Mobile: 01841918928 Email: export1@alinfood.com
14.	Dr.Bimol Chandra Kundu,	PSO, Tuber Crops Research Center, BARI, Joydebpur	Mobile: 01712681181 Email: kundubcc@yahoo.com kundubcc@gmail.com
15.	Dr.Md.Khurshid Alam,	PSO, TCRC Sub-Station, Munshigonj	Mobile: 01911293579 Email: khurshidal@hotmail.com; tcrcinchargemunshi@gmail.com
16.	Prof.Dr.Md. Abdul Alim,	Member, Bangladesh Food Safety Authority, 13th Floor, ProbashiKallayan Bhaban, Dhaka-1000	Mobile: 01732252229 Email: malim07@yahoo.com
17.	Prof. Zulfikar	Department of Food Technology, Bangladesh Agricultural University, Mymensingh	Mobile: 01714074313 Email: zulfikar64@gmail.com
18.	Mr.MohammadFaiz,	Assistant Director, Department of Agricultural Marketing, Khmarbari.	Mobile: 01924444284 Email: faiz046@yahoo.com
19.	Dr.Taslima Ayesha Akhter Nasrin,	SSO, Postharvest Technology Section, HRC, BARI, Joydebpur	Mobile: 01751904470 Email: taanasrin@gmail.com
20.	Dr.Md.Abdus Sattar Mia	CSO & Director, Bangladesh Food Science & Technology Institute, BCSIR, Elephant Road, Dhaka	Mobile: 01924444284 Email: mabdussattar@yahoo.com
21.	Mr.Md.Abul Kalam,	Director, Department of Agricultural Marketing (DAM), Khmarbari.	Mobile: 01727531100 Email: director@birtan.gov.bd
22.	Ms.SadiaArfin, SSO,	Postharvest Technology Section, HRC, BARI, Joydebpur	Mobile: 01720085107 Email: arfinsadia@gmail.com
23.	Md. Munir Chowdhury	National Trade Expert BRCP-1, MOC	01711591060 chowdhury2341@gmail.com
24	Dr. Md.Saleh Ahmed	Team Leader, Agro – processing Study	saleh4s@yahoo.com
25	Ismail Hosain	Database Expert	Ismail.sta@gmail.com
26	HasibunNaherShila	Gender Expert	shila_hasibun@yahoo.com
27	Md. Mahabub alam	Sr. Manager, DTCL	01788953286 Mahabub.dtcltd@gmail.com

Public Consultation-2, Dhaka Date: 26th April, 2021

#	Name	Address & Designation	Contact information
1.	Mr. Md. Mijanur Rahman	Project Director, BRCP-1, MOC	Mobile:01711281713 pdbrcp1moc@gmail.com
2.	Md. Munir Chowdhury	National Trade Expert BRCP-1, MOC	Mobile: 01711591060 chowdhury2341@gmail.com
3.	Dr. Shahbuddin Ahmed	Project Manager BRCP-1, MOC	01742601461 shahabipm@gmail.com
4.	Dr.Abdul Kader	President, Bangladesh Potato Exporter Association,	Mobile: 01713015119 Email: sheikh@agriconcern.com
5.	Mr.Md. Monjurul Islam,	Adviser, Bangladesh Fruits Vegetables & Allied products Exporters Assocition, Motijheel, Dhaka-1000	Mobile: 01776434339 Email: monjurulislam10@yahoo.com
6.	Kbd.Md.Shamsul Alam,.	Former Deputy Director (Export), Plant Quarantine Wing, DAE, Khamarbari	Mobile: 01712038287 Email: ddexport@dae.gov.bd
7.	Mr.Mitul Kumar Saha,	AGM, Hortex Foundation Sech Bhaban, Dhaka-1207	Mobile: 01711370491 Email: mitulsaha@hortex.org mitulecon@gmail.com
8.	Mr.Khurshid Ahmed Farhad	GM, Bombay Sweets	Phone: 01704123281 Email: gm-imd@bombaysweets-bd.com
9.	Mrs. Shahnaz Neena,	Deputy Director, Department of Agricultural Marketing, Khamarbari.	Mobile: 01720107164 Email: neenashahnaz@gmail.com
10.	Mr.Masoodur Rahman,	Proprietor, M/S Shoronika Enterprise, 144 DIT Ext.Road, Fakirapol. Dhaka-1000	Phone: 0171536127 Email: marjaanfoods@gmail.com / shoronika2007@gmail.com
11.	Mrs. B. N. Siddique,	Proprietor, Northern Agro-International, 78/3,Purana Paltan, 3rd Floor, Dhaka-1000	Phone: 9341856 Email: flaminltd@yahoo.com
12.	Mrs. Fatema Amin,	Managing Director. Amin Food Processing Industries Ltd.21/A, Purana Paltan,	Mobile: 01711532020 Email: henolux@gmail.com
13.	Mr.Golam Sharif Chowdhury	Proprietor, Pranto Traders, Rahman Itl. Complex (11th Floor), 28/1/C, Toyeenbee Circular Road, Motijheel, Dhaka-1000	Mobile: 01841918928 Email: export1@alinfood.com
14.	Mr.S.M.Jahangir Hossain	President, Bangladesh Fruits Vegetables and	Phone: 01711671533 Email: smjhossain@yahoo.com

#	Name	Address & Designation	Contact information
		Allied Products Exporters Association (BFVPEA).	bfvpea_association@yahoo.com
15.	Dr. Md. Moshiur Rahman,	Principal Scientific Officer, Fruit Research Station, BARI, CitruRsearch Center, Jaintapur, Sylhet	Phone: 01716 838586 E-mail :moshiur.bari@yahoo.com
16.	Dr. AKM Quamruzzaman	Principal Scientific Officer Vegetable Division ,Horticultural Research Center, Bangladesh Agricultural Research Institute	Cell phone : 01754 112050 E-mail :akmqzs@gmail.com
17.	Kbd. Faruque Ahmed,	Project Director, Citrus Crops Extension and Productivity Enhancement Project, Khamarbari, Dhaka	Cell phone : 01712917262 E-mail:faruquepdcitrus@gmail.com
18.	Mrs.Fawzia Yasmin	Director, Ispahani.	fawzia@mmispahani.com
19.	Md. Belayet Hossain,	Global Agro-Resources House # 34/a, Road# 11/A, Dhanmondi R/A, Dhaka.	Phone: 01819288159
20.	Mr.Md.Monzurul Hannan,	MD, Hortex Foundation, Manik Mia Avenue, Dhaka-1207-***Keynote Speaker***	Mobile: 01711565731 Email: hortex@hortex.org manzurhannan@gmail.com
21.	Md.Obaidul Azam	Director & CEO, BFTI TCB Bhaban (5th Floor), 1 Karwan Bazar, Dhaka-1215	Mob:01711381683 Email:obaidulazam@gmail.com, director@bfti.org.bd
22.	Mr.Anamul Hassan Khan,	CEO, PromeAgro Foods Ltd.	Mobile: 01713247000 Email: promegroup@gmail.com
23.	Mr.Nazmul Haque,	Proprietor, Farhan Agro Processor, Bijoynagar, Dhaka-1000.	Mobile: 01715149688 Email: farhanagro2012@gmail.com
24.	Dr. Saleh Ahmed	Team Leader, Agro - processing	saleh4s@yahoo.com
25.	Dr. M M Amir Hosain	Team Leader, Baseline Survey	drmmamir@gmail.com
26.	Ismail Hosain	Database Expert	ismail.sta@gmail.com
27.	HasibunNaherShila	Gender Expert	shila_hasibun@yahoo.com

Annex X: Photograph Glimpses on Study Activities

Key informant Interviews (KII)

BSTI, Dhaka

Pran Group, Dhaka

Kaliakair ,Gazipur

Dhaka

Yeasmin Akter, Agro processor
Dhorogram,Mymensingh

Md. Ashraf Ali, Director,
Rudra Specialized Cold Storage, Bagali, Sharifpur Sadar, Jamalpur

Pabna

Jhenaidah

Dhaka

Commila

Barisal

Commila

Chattagram


LC-MS/MS
LAB
৬০৭

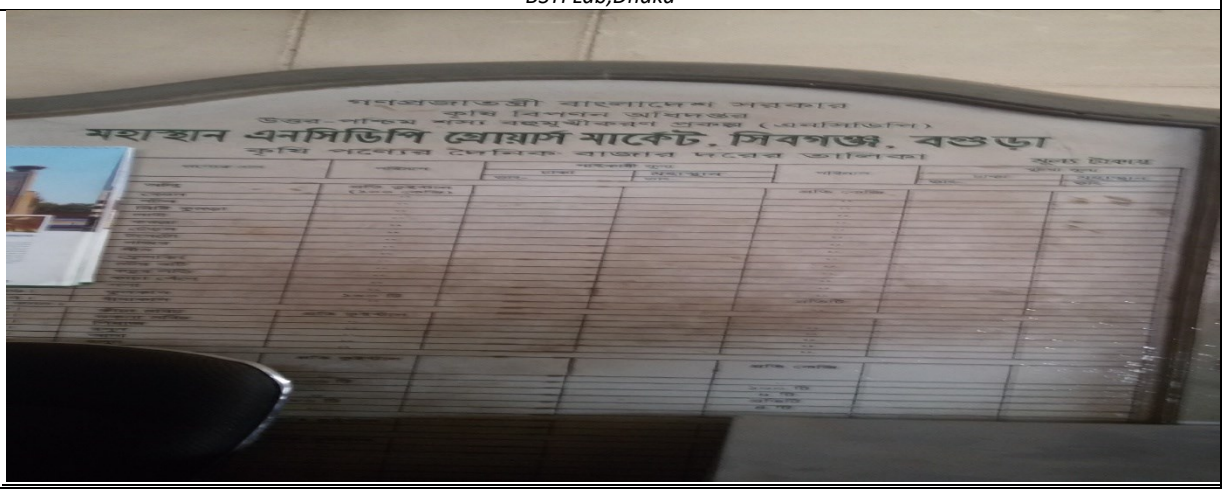

Atomic Absorption
Spectroscopy
(AAS) Lab
৬০৪


Liquid Chromatography
(LC) Lab
৬০৫


PHYSICAL TESTING LAB
Laboratory Building
BSTI
Building - 3
OFFICES & LABS IN THIS BUILDING
Floor
Offices & Labs
GROUND FLOOR (PHYSICAL LABORATORY)
Cement Testing Laboratory
Pipe Testing Laboratory
Brick Testing Laboratory
Fan Testing Laboratory
FIRST FLOOR (FOOD TESTING LABORATORY)
Conference Room
Microbiological Laboratory
Bakery Products Testing Laboratory
Processed Fruits Testing Laboratory
Milk and Milk Products Testing Laboratory
Water and Beverages Testing Laboratory
SECOND FLOOR (PHYSICAL LABORATORY)
Paper Testing Lab.
Ceramic Testing Lab.
LAS Battery Testing Laboratory
Double Capped Tubular Fluorescent Lamp Life Testing Lab.
Tungsten Filament Lamp Life Testing Lab.
Super Enamelled Copper Wire Testing Lab.
CFL Life Testing Laboratory
Textile Testing Laboratory
THIRD FLOOR (NATIONAL METROLOGY LABORATORY)
Hydraulic Pressure Measurement Laboratory
Pneumatic Pressure Measurement Laboratory
Thermocouple & Radiation Thermometry Laboratory
Liquid in Glass Resistance Thermometry Laboratory
Electrical, Time & Frequency Laboratory


ল্যাবরেটরী ভবন
BSTI
ভবন - ৩
অত্র ভবনে অবস্থিত অফিস এবং ল্যাবরেটরী সমূহ
ফ্লোর
অফিস এবং ল্যাবরেটরী সমূহ
নীচতলা (পদার্থ ল্যাবরেটরী)
সিমেন্ট টেস্টিং ল্যাবরেটরী
পাইপ টেস্টিং ল্যাবরেটরী
ব্রিক টেস্টিং ল্যাবরেটরী
ফ্যান টেস্টিং ল্যাবরেটরী
২য় তলা (ফুড টেস্টিং ল্যাবরেটরী)
সভা কক্ষ
মাইক্রোবায়োলজিক্যাল ল্যাবরেটরী
বেকারী প্রোডাক্টস টেস্টিং ল্যাবরেটরী
প্রক্রিয়াজাত ফলমূল টেস্টিং ল্যাবরেটরী
দুগ্ধ ও দুগ্ধজাত পণ্য টেস্টিং ল্যাবরেটরী
পানি ও বেভারেজ টেস্টিং ল্যাবরেটরী
৩য় তলা (পদার্থ ল্যাবরেটরী)
পেপার টেস্টিং ল্যাবরেটরী
সিরামিক টেস্টিং ল্যাবরেটরী
এলএএস ব্যাটারী টেস্টিং ল্যাবরেটরী
ডাবল ক্যাপড টিউবলার বাল্ব লাইফ টেস্টিং ল্যাবরেটরী
টাংস্টেন ফিলামেন্ট ল্যাম্প বাল্ব লাইফ টেস্টিং ল্যাবরেটরী
সুপার এনামেল কপার তার টেস্টিং ল্যাবরেটরী
সিএফএল লাইফ টেস্টিং ল্যাবরেটরী
টেক্সটাইল টেস্টিং ল্যাবরেটরী
৪র্থ তলা (ন্যাশনাল মেট্রোলজি ল্যাবরেটরী)
হাইড্রোলিক প্রেসার মেজারমেন্ট ল্যাবরেটরী
নিউমেটিক প্রেসার মেজারমেন্ট ল্যাবরেটরী
থার্মোকাপল এন্ড রেডিয়েশন থার্মোমেট্রি ল্যাবরেটরী
লিকুইড ইন গ্লাস রেজিস্টেন্স থার্মোমেট্রি ল্যাবরেটরী
ইলেকট্রিক্যাল, টাইম এন্ড ফ্রিকুয়েন্সি ল্যাবরেটরী

BSTI Lab,Dhaka



Focus Group Discussion (FGD)

Norshidi

Rangpur

Producer-Nagua, Phulpur,Mymenshingh

Manikgonj

Pabna

Satkhira

Jeshore

Dhaka

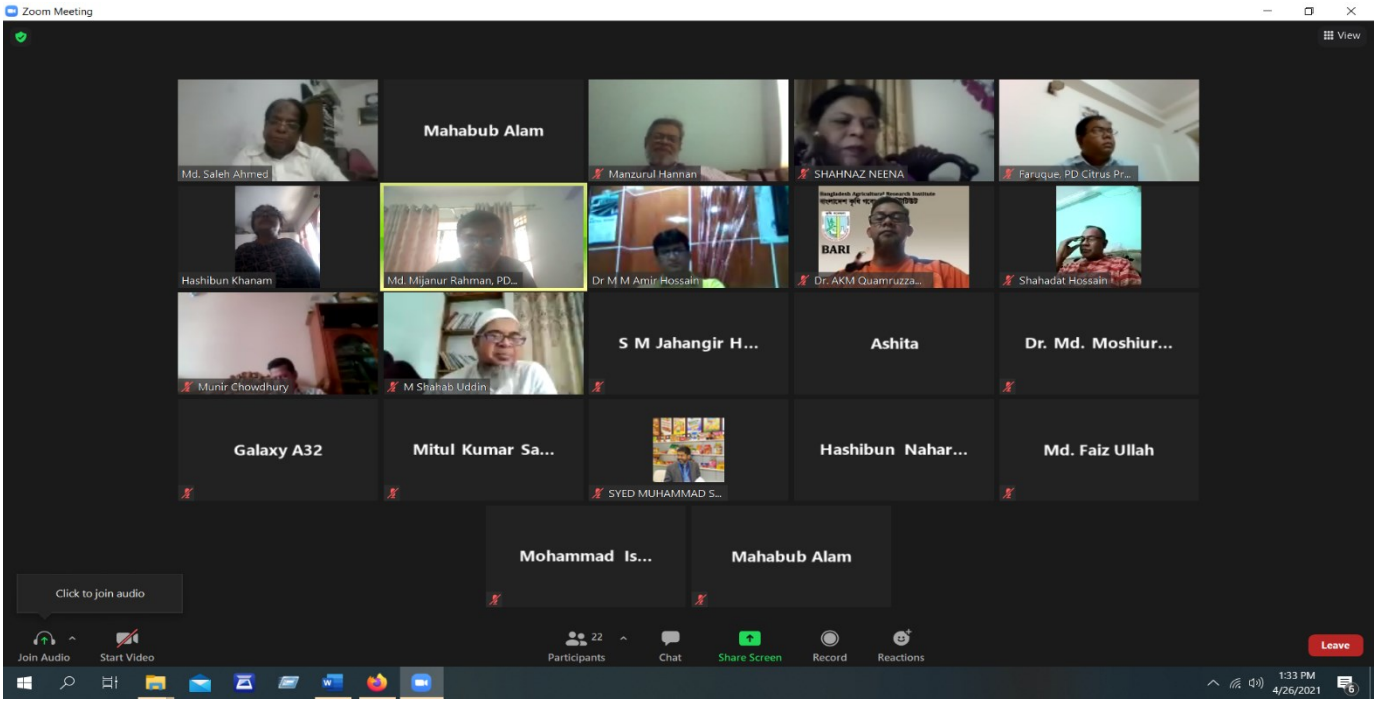
Bogura

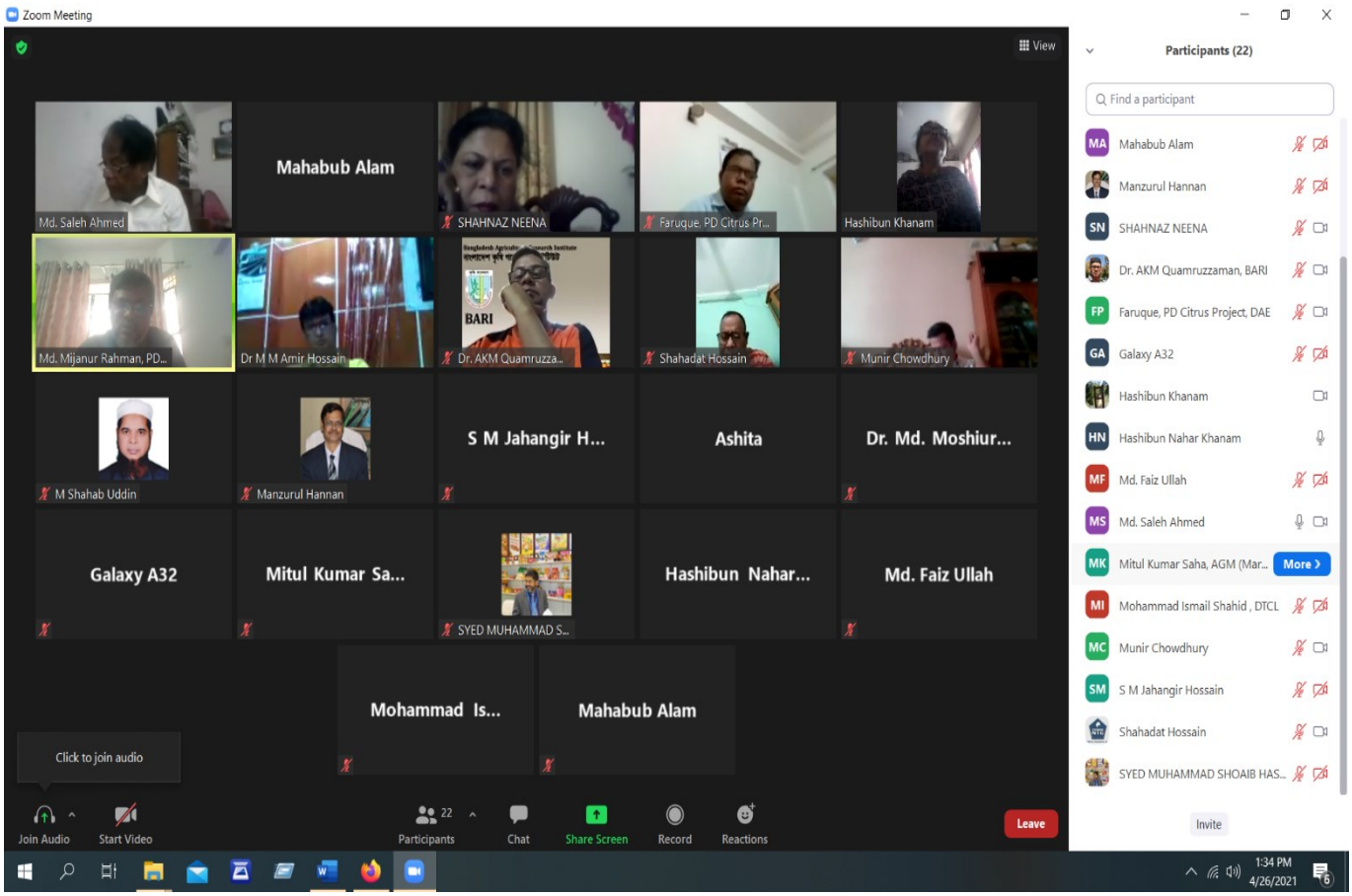
Barisal,

BSTI,Dhaka

Commila

Public Consultation Meeting





Annex XI: Terms of Reference

Section 7. Terms of Reference

Diagnostic Studies about export promotion in agro-processing sector (Contract package no SD 08)

Introduction

The Government of the People's Republic of Bangladesh has received an SDR 150 million Credit from the International Development Association (IDA) – a member of the World Bank Group – for financing the cost of the Bangladesh Regional Connectivity Project 1(BRCP-1), being jointly implemented by the Bangladesh Land Port Authority (BLPA), National Board of Revenue (NBR) and Ministry of Commerce. The second component of this umbrella project is being implemented by the Ministry of Commerce as a separate technical assistance project. The overall objective of this technical assistance project is to strengthen trade related institutional capacity in order to facilitate active and sustainable cooperation between multiple trade-related stakeholders and economic empowerment of women traders.

This technical assistance project consists of following three (3) components:

- **Component A: Capacity development of women traders:** Develop and implement training and pilot programs to support female traders and entrepreneurs. This component will pilot activities to help address barriers to women becoming more integrated into regional and global supply chains and trading opportunities.
- **Component B: Capacity Development Support for the National Trade and Transport Facilitation Committee.** The inter-ministerial National Trade and Transport Facilitation Committee (NTTFC) has been set up during the preparation of the BRCP-1 to coordinate all trade and transport-related policies and activities in Bangladesh, and will also serve as the Advisory Committee for the Project.
- **Component C: Improvements to Bangladesh Trade Portal and set up a National Enquiry Point for Trade.**
  This component will support further upgradation of the Bangladesh Trade Portal (BTP) that was launched in March 2016. This aims to expand its functionality to include information of relevance to potential Bangladesh exporters and to ensure that content is kept up to date. This component will also set up the National Enquiry Point for Trade, which will help Bangladesh to meet a key requirement of WTO Trade Facilitation Agreement.

The Ministry of Commerce through this technical assistance project intends to apply a part of the IDA Credit for procuring consultancy services from qualified research/consultancy firm or institution to conduct a diagnostic study of the agro-processing sector. This study is the first study among three specialized sectors with other two being ICT and Cut Flower.

2. Objectives of the Study

The objectives of the Agro-processing study are to develop an in-depth understanding about the present situation, export potential and support required for promotion of exports by

women traders involved in key value chains in this sector. The diagnostic study will examine the regulatory regime and propose necessary adjustments for facilitation of export by women traders in agro-processing sector. This diagnostic study will enable the government to take appropriate measures for enhancing the capacity of women traders through facilitating and promoting their export potential in regional and international markets.

3. Scope of Consultancy Services:

This sectoral diagnostic study will examine all relevant critical issues including the following five agendas for effective promotion of export potential of women traders in key value chains in the agro-processing sector:

1. **Value chain selection.**
   a. Provide a broad overview of the agro-processing industry in Bangladesh, including the overall legal and regulatory environment, its contribution to the Bangladesh economy, potential for growth, and impact on employment and income generation, especially for women;
   b. Identify the three key value chains (e.g. key tradable fresh, processed and dehydrated agricultural products) within the agro-processing sector that offer prospects for growth and development for women based on a desk review of available data; and verifying drivers and constraints of the identified chains, considering the competitors and available performance data as well as the production, trade, and main competitiveness factors impacting the performance of the sector under study (including potential poverty reduction impact);
   c. Review the legal, regulatory and procedural environment in which the selected value chains operate in Bangladesh and how it impacts women's participation. This review will focus on policies, licensing, incentives, available export promotion tools, financing of tangible and intangible capital outlays, training, employment, quality promotion, certification, standardization, competition, research and development, and partnerships

2. **Mapping the value chains**
   a. Create a map of the selected agro-processing chains which describes the structure and flow of the chains in logical clusters – the various actors of the chain, the links among them, and the whole range of chain operations from pre-production (supply of inputs) to industrial processing and marketing, and the involvement of women in each phase; and
   b. Quantifying the value chain. Add details to the basic maps (in 2a) drawn initially (structure and flow)by focusing on elements such as: size and scale of main actors; production volume; number of jobs (disaggregated by women and men); sales and export destinations and concentration.

3. **Analyzing value chain activities and performance:**
   a. Identify key quantitative and qualitative indicators (time, cost, value added and productivity at each stage) for the selected value chains;
   b. Analyze the value chains external sources of competitiveness, including its economic and social environment and its industrial and technological environment;
   c. Analyze the value chain technological capacities, including utilization of inputs, the production system and the products manufactured. This should include an analysis of women's competitive access to technology (including semi-automated), finance, efficient transportation and storage and information services; and
   d. Carry out an economic performance analysis and benchmarking against potential competitors.

4. **Identifying value chain performance constraints and development opportunities**
   a. Identify constraints and ranking them by assessing their impact on backward and forward linkages. This should include a quantitative assessment of the efficiency and distributional gains if the identified constraints are removed; and
   b. Identify and rank potential development opportunities for women at all stages of the chain.

5. **Defining development interventions**
   a. Develop a value chain upgrading strategy, including required interventions and related investments and planning of actions(with a focus on actions that would disproportionately benefit women);
   b. Recommend policy measures and support programs to be undertaken in order to enhance the competitive performance of the sector and increase women's participation. The same applies to support services (technology, financing, investment and export promotion, etc.); and
   c. Clarify the roles and responsibilities for the implementation of the upgrading strategy.

9. Methodology of Study:

Methodology

A mixed methods approach will be employed for this study:

- Document review/desk research (e.g. recent studies and researches in Bangladesh and abroad)

- Field work and Analysis: This analysis will include both quantitative and qualitative aspects. The focus of these analysis will be as follows:
    - Quantitative Analysis
        - Review of secondary data on production and export of agricultural items (food items excluding dairy and livestock products) from relevant government (such as, EPB, Bangladesh Bank and BBS)and international institutions;
        - Field Analysis of value chain actors and policy stakeholders in selected agro-processing value chains (considering minimum statistically acceptable sampling size with justification; software, steps for data entry, cleaning and analysis, quality assurance etc.). The questionnaire for survey/analysis will have to be tested at field and an analysis of pre-test has to be presented in tabular form in the report. The questionnaire has to be revised based on the pre-test;
    - Qualitative Analysis – will include interviews and consultations with representatives of the full spectrum of value chain actors, including but not limited to those described below:

- Focus Group Discussions (FGDs): At least 20 FGDs. Each FGD should include at least 10-15 persons;
- Key Informant Interviews (KIIs): At least 50 women entrepreneurs/exporters;
- Consultations:
    - Local level stakeholders and institutional consultations that would include community focus group discussions (FGDs) and key informant interviews with agricultural extension and marketing officials, women, local producers and traders, business and trade bodies and local government authorities [at least 4 (four) consultations at 4(four) different places].
    - National level consultation with government agency officials, think tanks, donors, NGOs, private sector, chambers, associations and women's chambers and associations etc. [at least 60 persons]

The above methodology is indicative and relevant instruments should be adjusted in consultation with PIU- BRCP-1, MOC and finalized before implementation.

Approach: The research firm/institution should state its understanding of the assignment in relevance to the scope of work. It should propose design and study methodology, which include sampling plan for the study, the development of data collection tools, checklists and question guides (both quantitative and qualitative), data collection plan, tabulation plan, study execution plan and quality control plans etc. The sample size has to be statistically significant

and the sampling plan and sample size have to be approved by the project authority. The project authority will take clearance from the Bangladesh Bureau of Statistics if there is a need to publish official statistics from this study.

a) **Work Plan**: The work plan should propose the main activities of the assignment, its content and duration, phasing and interrelations, milestones and delivery dates among the component of the assignment. The proposed work plan should be consistent with the technical approach and methodology, showing understanding of the TOR.

b) **Organization and Staffing**: The firm should propose the structure and composition of its team members and other administrative and technical support staffs. It should list the key experts showing main disciplines for the assignment and their responsibilities for each component of the assignment.

Consultant's Expected Deliverables:

Inception Report:

An Inception Report within two weeks of signing the contract. The Report shall include the staffing with responsibilities, work plan, sampling, questionnaire, tabulation plan, timeline, methodology, data analysis strategy and techniques, and logistical arrangements.

Overview Report:

An initial report comprising a broad overview of the agro-processing industry in Bangladesh and value chain selection that will inform the overall study should be submitted within 6 weeks of the of signing the contract.

Value Chain Analysis Report:

A Draft Value Chain Analysis Report will need to be prepared within twenty weeks of signing of the contact. This report will include among others the description of study procedure and sampling method, summary tables, data tables and analysis, findings of the study, challenges and opportunities and recommendations. STATA and NVivo or latest software have to be used for data analysis. This report will have to be presented in workshops at regional (at least 4 regions) and national level.

Final Value Chain Analysis Report:

The consultant shall revise the Draft Report by incorporating the comments and observations of the stakeholders and a final Report will be submitted by 24 weeks of signing the contract.

The Consultant's Team and Inputs

The proposed services under this Terms of Reference shall be carried out by using a firm/institution with adequate experience in designing and delivering studies/research programs as well as in-depth knowledge of the agro-processing sub-sector and key value chains, and trade facilitation. The firm should propose the structure and composition of its team members.

An indicative team structure may be as follows:

Position	Duration (man months)	Qualification and Experience	Responsibility
Team Leader/Lead Researcher	06	Post-graduate degree in Economics, Statistics, Social Sciences, Public Policy, Agriculture, Agricultural Marketing, or related field. Preference will be given to PhD in the area of social sciences. • Minimum of 10 years' experience in research related to export, agro-processing, women entrepreneurship development etc.; • Strong experience in conceptualizing and implementing diagnostic studies preferably in the context of Bangladesh; •Excellent communication and report writing skills in English.	The Team Leader will take the overall responsibility for the execution of the assignment in accordance with the TOR and also for the coordination of all professional inputs. She/he will be responsible to the client and maintain close contact with Project Director to ensure that the contract is implemented in accordance with the agreement between the client and the consultant. The Team Leader will act as the Consultant's authorized representative for both the design and implementation phase of the study and make decisions on all matters pertaining to the consulting services. The principal responsibilities of the Team Leader will be included but not limited to: Lead, manage, and supervise the works of the consultant team; coordinate with the project authority; setup methodology, conduct data analysis and write reports; be ultimately responsible for the consultant's deliverables and quality assurance.
Researcher	06	Post-graduate degree in Economics, Statistics, Social Sciences, Agriculture, Agricultural Marketing, or related field. Minimum of 05 years' experience in research related to export, agro-processing, women entrepreneurship development etc. Advanced skills in data management and analysis using statistical software and econometric tools.	Carry out research works; train and supervise survey or and research assistants/enumerators; ensure the quality of data collection.

Position	Duration (man months)	Qualification and Experience	Responsibility
Agro-processing and Value Chain Expert	06	Post-graduate degree in Agriculture or related areas. 5+ years of experience in research in agro-processing and marketing or related sectors.	Carry out research works; train and supervise survey or and research assistants/enumerators; ensure the quality of data collection.
Gender Expert	02	Post-graduate degree in Gender Studies, Public Policy or relevant field. 5+ years of experience in women entrepreneurship development research.	Carry out research works; train and supervise survey or and research assistants/enumerators; ensure the quality of data collection.
Policy Analyst	03	Post-graduate degree in Public Policy, Economics, Statistics, Social Sciences, Business Administration or related field. Minimum of 05 years' experience in research related to government policies, export, agro-processing, women entrepreneurship development etc. Advanced skills in data management and analysis using statistical software and econometric tools.	Carry out research works; train and supervise survey or and research assistants/enumerators; ensure the quality of data collection.
Surveyors / Moderators	06	Bachelor/master's degree in Agriculture or related fields. 5+ years of experience in data collection, data sorting, cleaning and management.	Carry out data collection activities.

The Consulting firm will also propose program support staffs like data entry staffs, data collectors, statistician, and other supporting staffs as per their work plan.

Payment Options:

Component-1: Payments shall be made in line with agreed-on outputs according to the following schedule:

- Inception Report: Ten (10%) per cent lump-sum of contract price shall be paid upon submission of the Inception Report for the study duly accepted by the Client;
- Overview report: Ten (10%) per cent lump-sum of contract price shall be paid upon submission of the Overview Report for the study duly accepted by the Client
- Draft Final Report: Forty (40%) per cent lump-sum of contract price shall be paid after submission of the draft report of the study duly accepted by the Client; and
- Final Report: Fifty (40%) per cent lump-sum contract Price shall be paid after submission of the final report duly accepted by the Client.

All relevant taxes and VAT shall be deducted at source at the applicable rates of the Government of Bangladesh.

Miscellaneous

The firm/institution (consultant) will facilitate monitoring of study by the client and World Bank officials. The project will provide the Consulting firm all key program documents & reports such as:

- Relevant extract of Technical Assistance Project proposal (TAPP), if required;
- Relevant extract of Project Appraisal Document (PAD), if required;
- Sharing relevant up to date project information for a better understanding of the project;
- Providing timely feedback to the consulting firm on inception report, questionnaire, sampling procedure, draft reports etc.;

Any logistic support such as transportation as well as office space will not be provided by the client.

Ownership of the Data, Documents, and Equipment –

- The client shall be the owner of all the data collected, data sets, reports, documents, etc. prepared by the consultant and any equipment procured under the assignment.
- All documents collected and software procured, if any, must be handed over to the client before final payment.
- All documents, reports and information from this assignment will be regarded as the client's property, so the mentioned outputs or part of it cannot be published, sold or used in any case without the prior permission of the client.

Duration of the Assignment: The study should take around 6 months. One month for preparation, one to two months for Field Survey, one to two months for Data Entry and Analysis and one month for Report Writing. The activities plan will be worked out with the selected consultancy firm. However, the duration may be increased or decreased based on the performance and needs of the Assignment.

Criteria for evaluation: The Consulting firm will be evaluated in accordance with the procedures set out in the World Bank Guidelines: Selection and Employment of Consultants by World Bank Borrowers,2016 updated in November 2018. The selection method will be 'Quality and Cost Based Selection (QCBS)' as per World Bank guidelines for the appointment of the consultant.

DTCL

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