



Analysing Export Readiness of the Vegetables Sector of Bangladesh

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(ATC-P)**

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Foreword

Bangladesh has achieved a significant growth in exporting vegetables. The export of vegetables rose from US\$ 44.67 million in FY 2008-09 to US\$ 147.54 million in FY 2013-14, spanning an export market that covers more than 40 countries. This growing trend in export suggests that Bangladesh has a significant potential to increase exports of vegetables to international markets, provided necessary measures are taken to comply with the market specific quality standards and that certifications for health and food safety are genuine.

In view of its potential as an export item the vegetables sector in Bangladesh, since the early 1990s, has witnessed various production and export promotion initiatives. Nevertheless, the production in the vegetables sector in Bangladesh and the accompanying performance in exports are often beset with a myriad of problems. The sector faces a number of constraints both in the domestic front as well as in the export market. For example, supply side constraints, supply chain and value chain issues, and policy-induced measures in the importing countries have all worked in constraining vegetables exports from Bangladesh. In that context, a study that attempts to analyse export readiness of vegetables sector in Bangladesh through identifying such constraints and suggesting remedial measures thereof acquires a paramount importance.

From that perspective, this particular study in its attempts to analyse export readiness of the vegetables in Bangladesh is an extremely useful and timely initiative. The study made a rigorous analysis of the production and export performance of the sector, challenges accompanying vegetables exports, backward and forward supply chain issues and requirements at the export destinations, and an assessment of government policies to address the supply side constraints in the vegetables exports.

I congratulate the ATC-P for undertaking this initiative and hope that this report will serve as a guide for the relevant stakeholders by identifying the constraints faced by the vegetables sector in Bangladesh and the requirements to access export markets, including tariff and non-tariff measures, as well as by highlighting the appropriate strategies to effectively deal with such constraints. I am confident the study report will also contribute to enhancing export competitiveness of Bangladeshi vegetable products.

The BFTI has received strong support, encouragement and patronage from the Ministry of Commerce, including from its Senior Secretary, Mr. Hedayetullah Al Mamoon, throughout the duration of the study. Debts to a number of individuals, whose support and cooperation have contributed in improving the quality of this study, should be acknowledged. The BFTI is heavily indebted to Dr. Md Khairuzzaman Mozumder, Deputy Chief of Party, and Dr. Mohammad Abu Yusuf, Customs Specialist, of USAID Bangladesh Trade Facilitation Activity, for their continuous support, assistance and guidance. Thanks are also due to Mr. Md. Ahsan Ullah, Consultant- PRA (Post Risk Analysis) Strengthening Phytosanitary Capacity in Bangladesh (SPCB), Department of Agricultural Extension (DAE), Mr. Mitul K. Saha, AGM (Supply & Value Chain, Marketing, R&D), of Hortex Foundation, Ms. Hazera Akter, Lecturer of Department of International Business, of the University of Dhaka, and all the survey and research assistants for their support in the conduct of the study and the preparation of the final report. I would especially like to put on record my deep appreciation of the contributions made by the research team of the BFTI but for whose untiring efforts the report would not have been what it is now.

I wish the ATC-P a complete success in putting in practice the recommendations of this study and in all their future endeavours in the related areas.

Ali Ahmed

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ACRONYMS

ADB	Asian Development Bank
AIP	Agro-Inputs Project
APBPC	Agro Products Business Promotion Council
ATC-P	Agri Business for Trade Competitiveness Project
AVE	Ad valorem equivalents
BADC	Bangladesh Agricultural Development Corporation
BARI	Bangladesh Agricultural Research Institute
BFTI	Bangladesh Foreign Trade Institute
BFVAPEA	Bangladesh Fruits, Vegetables and Allied Products Exporters' Association
BSTI	Bangladesh Standards and Testing Institution
CIP	International Potato Centre
DAE	Department of Agricultural Extension
DLS	Department of Livestock Services
DoF	Department of Fisheries
DRC	Domestic Resource Cost
EBA	Everything but Arms
EPB	Export Promotion Bureau
ETI	Ethical Trading Initiative
EU	European Union
FAO	Food and Agricultural Organization
FGD	Focus Group Discussion
FFS	Farmers' Field School
FLA	Fair Labour Association
FOB	Free on Board
FSP	Food Safety Programme
FtF	Feed the Future

FY	Fiscal Year
GAP	Good agricultural practice
GoB	Government of Bangladesh
GSP	Generalised Systems of Preferences/ Generalised Scheme of Preferences
HACCP	Hazard Analysis and Critical Control Points
HF	Hortex Foundation
Hortex	Horticultural Export Foundation
HSIA	Hazrat Shahjalal International Airport
IFC	International Finance Corporation
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
ITC	International Trade Centre
LDC	Least Developed Countries
MFN	Most Favoured Nation
MoA	Ministry of Agriculture
MoC	Ministry of Commerce
MoF	Ministry of Finance
MoFL	Ministry of Fisheries and Livestock
MRL	Maximum Residue Limit
NARS	National Agricultural Research System
NGO	Non-Government Organization
NSFL	National Food Safety Laboratory
NPPO	National Plant Protection organisation
NSP	National Seed Policy
NTB	Non-tariff Barrier
NTM	Non-tariff Measure
OP	Open Pollination
PC	Phytosanitary Certificate

PRICE	Poverty Reduction by Increasing the Competitiveness of Enterprises
RKB	Rice Knowledge Bank
RMG	Ready-made Garment
SAFA	Sustainability Assessment of Food and Agriculture systems
SAN	Sustainable Agriculture Network
SCM	Supply Chain Management
SMETA BPG	Sedex Members Ethical Trade Audit Best Practice Guidance
SPS	Sanitary and Phytosanitary
SPCB	Strengthening Phytosanitary Capacity in Bangladesh
SWOT	Strengths, Weaknesses, Opportunities and Threats
TBT	Technical Barriers to Trade
UAE	United Arab Emirates
UK	United Kingdom
US	United States
USAID	United States Agency for Aid and Development
USDA	United States Department of Agriculture
VC	Value Chain

Executive Summary

The study *Analysing Export Readiness of the Vegetables Sector of Bangladesh* has been undertaken as per the contract (no. CCER/D/GR/2015/30) awarded to Bangladesh Foreign Trade Institute (BFTI) by Swisscontact under the Agri-Business for Trade Competitiveness Project (ATC-P). The objective of this study is to analyse export readiness of the vegetables sector in Bangladesh. To do so, the study provides an account of the vegetables sector, including production, profitability, problems in vegetables production and export, value chain mapping, international market environment, successes in exports and challenges for future export growth, and so forth.

For the purposes of this study, only those vegetable products have been selected where Bangladesh has shown a significant export potential. Thus the study concentrated on the following vegetables: potatoes, tomatoes, eggplants (brinjal/aubergine), pointed gourds (patol), lady's finger (okra), beans or yardlong beans, cauliflowers, cabbages, and citrus fruits, including lemons and satkora.

The methodology used in the study in collecting data was essentially qualitative in nature. Primary data from the vegetables sector have been collected through interviews with key stakeholders using a Structured Questionnaire (Annex-B). The study also conducted four case studies in order to gain an in-depth insight from specific producers/exporters of their success factors, problems encountered by them and steps taken to overcome those, export readiness of the vegetables sub-sector, and hindrances in exporting vegetables from Bangladesh. In order to have a comprehensive understanding of vegetables export, its potentials/opportunities, impediments and measures needed to promote export, a focus group discussion (FGD), comprising the major stakeholders involved in production, distribution, storage, marketing and exports of vegetables, was conducted at the BFTI. Academics/researchers and think-tanks also participated in the FGD. Collection of data from more than one source (e.g. interview, case study, FGD) helped the study in terms of methodological triangulation.

A careful review of existing literature reveals that Bangladesh has achieved a significant growth in exporting vegetables. The export of vegetables rose from US\$ 44.67 million in FY 2008-09 to US\$ 147.54 million in FY 2013-14. The country exports vegetables to more than 40 countries, though the expatriate Bangladeshis are the main consumers of our exported vegetables. This

growing trend in export suggests that Bangladesh has significant potential to increase exports of vegetables to international markets, provided necessary measures are taken to comply with the market specific quality standards and that certifications for health and food safety are genuine.

In its attempt to analyse export readiness of the vegetables in Bangladesh, this study made a rigorous analysis of the production and export performances of the sector, challenges accompanying vegetables exports, backward and forward supply chain issues and requirements at the export destinations; it also made an assessment of government policies to address the supply side constraints in vegetables exports.

The study presents the status in terms of production and export performance of the vegetables sector in Bangladesh. It finds that vegetables (potatoes, eggplants, okras, long yard beans, pointed gourds, cauliflowers, citrus fruits etc.) are currently exported from Bangladesh to different countries of the world. Unlike the RMG exports, the export market for Bangladesh vegetables is not concentrated in the markets in the EU and the USA. Market destinations for vegetables widely vary across product bases, as each vegetables product has a different market concentration. The major export markets for our vegetables are the United Kingdom, Malaysia, Saudi Arabia, United Arab Emirates, Singapore, Qatar, Russia, Italy and Kuwait. In addition, the promising markets for Bangladeshi vegetables could be Japan, Canada, Indonesia, Sri Lanka, the United States, Bahrain, and Australia.

The study revealed that the current market infrastructure is inadequate, and that the export of vegetables suffer from a number of constraints, e.g. weak linkages among the supply chain actors (i.e., input suppliers, producers and markets), lack of well-structured and organised markets, dirty wholesale markets without modern facilities, such as warehouses and cold storages, lack of clean water and hygienic space to wash and store vegetables, poor connectivity and transportation system to carry vegetables from production areas to Dhaka city, lack of adequate Cool Supply Chain transport facility (including reefer vans) and perennial traffic jam along all the major highways and in the Dhaka city thoroughfares that affect getting vegetables to the Dhaka airport in time. All these deficiencies/constraints result in the deterioration in quality of vegetables.

Analysis of the policy frameworks and strategies adopted by the Government to support and promote vegetables export shows that the current provision of 20% cash incentives to exporters contributes significantly to sustain exports. The study finds that the relevant GoB organisations, such as the MoA, MoC, DAE, BARI, APBPC, EPB, and HF, have been playing a supportive role in areas, including quality production, product diversification, introduction of new variety, market development, conforming to standards, packaging improvement, provisioning for reefer van, and organising training programmes with a view to raising awareness among farmers and enhancing their knowledge on vegetables production and export. Despite such a supportive role from all relevant agencies, growth in exports of vegetables faces a number of impediments and challenges in producing quality vegetables. These include scarcity in cultivable lands, supply of quality inputs, lack of access to finance, lack of knowledge of appropriate use of fertilisers and pesticides, inadequate knowledge on GAP, and poor post-harvest management.

The study highlighted the role of various development partners, such as KATALYST, USAID, FAO, ADB, World Bank and civil society organisations, in providing financial and technical supports for the growth and enhancement of the vegetables sub-sector. It also elaborated and discussed various determinants of export of vegetables. These include- contract farming, improved quality (pest and disease-free vegetables), attractive packaging, strong SPS regime, and central packing house with cool chain facility and integrity of phytosanitary certificates. Again, the study provided a complete value chain (VC) mapping of the vegetables sector, including an account of *key actors, services/inputs, and service providers* in the value chain. This section shows that the vegetables value chain can be made more profitable for the farmers by developing contract farming, promoting direct farmer-market linkages, increasing involvement of exporters during production, reducing the use of chemical fertilisers and pesticides/insecticides, adding value through sorting, grading, washing and improved packaging in containers, use of cool chain transports for promoting export, and minimising the role of market intermediaries in the supply chain. Using brinjal as an example, the study also presented a detailed export value chain analysis of that vegetable product. It suggested possible interventions in the brinjal supply chain indicating that *farmers' share in consumer price could be increased by minimising (not eliminating) the role of market intermediaries in the existing supply chain and improved marketing system*. The study

also observed that the export supply chain of vegetables from Shibpur in Narsingdi district can be made more efficient through capacity building of different stakeholders along the chain.

The study also explored the supply side constraints faced in the vegetables exports. These constraints include backward supply chain constraints and forward supply chain constraints. These supply side constraints adversely affect vegetables exports from Bangladesh. Success of vegetables export depends, among others, on the ability of exporters to comply with SPS requirements, traceability and permissible pesticide residue level etc.

Providing a mapping of the international market environment for export of Bangladesh vegetables, this study finds that Bangladeshi vegetables' penetration in the vegetables markets in Saudi Arabia, United Kingdom, the UAE, Singapore, Russia, Italy and Canada is extremely poor, as its share is less than 1% of the total imports in each of those countries. The share is above 1% only in Malaysia (1.29%), Bahrain (1.12%), Kuwait (2.16%) and Sri Lanka (2.15%). This implies that Bangladesh needs to work hard to enhance its vegetables exports to these markets. The study revealed that China and India are the two largest competitors of Bangladesh in the world vegetables market. It also identified that meaningful horizontal diversification has not been possible in Bangladesh, while vegetables exports have remained concentrated in one product only, viz., potato.

With regard to market entry requirements, the study found that tariff barriers do not pose any threat to access the markets of export destinations, as the applied tariff rate on the export of vegetables to Bangladesh's major export destinations is either zero or very low. For example, in these major export destinations, Bangladeshi vegetables also enjoy duty-free entry. However, there are numerous NTMs (e.g. SPS and TBT requirements) that are currently imposed by these export destinations. These NTMs, such as phytosanitary measures, packaging and labelling requirements, certification, inspection and traceability requirements, have continued to hamper vegetables exports from Bangladesh. In some cases, governments in export market destinations (e.g., the EU market viz., in the UK, Italy, Germany and France) even imposed ban/restrictions on our exports, as in the case of betel leaf and potato, on health hazard grounds.

The study concludes with a number of policy recommendations. Some of the key recommendations are highlighted below:

- (i) The GoB should continue allocation of funds so that research, training and other supportive activities could be continued by the DAE, BARI, HF etc. aimed at promoting production, marketing and exports of Bangladeshi vegetables.
- (ii) The MoA and MoC, in collaboration with the HF, BFVAPEA, DAE, research organisations (BARI, BAU), development partners/NGOs and other relevant private sector organisations together can play a more active role in vegetables export promotion through assisting quality production following GAP, postharvest management, developing efficient market intelligence support for promoting exports, and enhancing capacity to comply with market entry requirements etc.
- (iii) The GoB also needs to take steps to ensure the timely implementation of ongoing projects, in the agricultural sector in general and the vegetables sub-sector, in particular, being implemented by the GoB with or without assistance and support from development partners.
- (iv) The GoB policy of providing cash incentives (currently @20% of FoB value) has immensely contributed to the gaining of competitive advantage by exporters and to mitigate the adverse impacts they have to endure due to lack of space in aircraft and high air fare. Therefore, the policy of cash incentive should continue.
- (v) A major implementation challenge for the GoB (viz., the DAE) is to impart training to uneducated and rural farmers in proper harvesting techniques and timing. Adequate steps can address this challenge effectively.
- (vi) To address the determinants that adversely affect exports of vegetables from Bangladesh, the GoB should undertake the following activities:
 - a. It should encourage the growth of contract farming. Contract farming effectively addresses the issue of traceability providing direct linkage between exporters and primary producers, and ensures adequate knowledge of buyer requirements.
 - b. The GoB should continue its efforts to ensure integrity and quality of the product and the reliability of certificates specifying quality. Establishment of more scanners at the HSIA, and automation of PC processing and issuance would be a welcome development.

- c. It should establish packing houses with controlled temperature, since these help exporters maintain quality and specifications of the product as per the requirements of either the importing country or the buyer. The GoB should take stringent actions against those exporting firms that are accused of exporting vegetables without any PC or with doctored PCs.
- (vii) There are growing fears that due to compliance problems some importers of fresh vegetables may divert their imports from Bangladesh to other countries. Hence, immediate intervention, in a concerted and coordinated manner, from different ministries, Bangladeshi exporters, government agencies or departments and growers is necessary to ensure quality production of vegetables, storage and transport through cold room facility to preserve freshness and supply to export markets on time at competitive prices.
- (viii) Bangladeshi firms will have to discontinue their current practice of serving export markets following a *market-to-market approach* (i.e. buying vegetables from domestic market and sell those to foreign markets). To ensure collection of quality vegetables to meet foreign buyers' requirements, exporters will have to reach the growers/farmers and to monitor whether or not vegetables are produced following certain procedures/standards in order to meet importers' requirements. Contract farming can be of great help in this regard. This will also help in determining traceability that would be instrumental in enhancing exports and in effectively catering to the need, especially of the EU market.
- (ix) Adoption of modern production methods, including contract farming, will ensure quality production of vegetables for export markets. Mechanisation in necessary areas and special policies for production and export of vegetables sector will also be necessary.
- (x) Efforts should be made from all concerned so that quality of the vegetables in demand improves by different value addition activities like upgrading the packaging, processing, handling, grading, and transportation system.
- (xi) The Plant Quarantine Wing of the DAE needs to be strengthened by improving its capacity for quarantine inspection and monitoring through one-stop quarantine inspection and certification facilities.

- (xii) The GoB must allocate more resources to enhance the capacity of the DAE and strengthen its SPS system by providing inspection tools and other necessary equipment. The GoB may also consider a separate wing within the DAE to deal with the SPS issues and other market entry requirements.
- (xiii) Implementation of a laboratory technician certification programme is necessary to build the capacity of laboratory technicians at the DAE to employ Good Laboratory Practices (GLPs) and perform analytical diagnostics. It will also be necessary to establish or identify (with adequate facilities and infrastructure, equipment and trained personnel) at least two fee-for-service laboratories for potential vegetables exporters.
- (xiv) 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. It serves as a powerful tool for addressing pest pressure and establishing the ability to export commodities (viz., citrus to the EU). Therefore, necessary efforts may be taken to establish Areas of Low Pest Prevalence/Pest Free Areas.
- (xv) Bangladesh's export diversification strategies in the case of vegetables should be geared keeping the Asian competitors, such as China, India and Myanmar, in view and examining the strengths and weaknesses they have. By doing so, Bangladesh will be able to capture not only the ethnic market but also the mainstream market in our existing and potential export destinations.
- (xvi) As Bangladesh has not been able to expedite any meaningful export diversification in the vegetables sector, there should be greater intervention from the GoB in facilitating both the horizontal and vertical diversification in the vegetables sector in Bangladesh.
- (xvii) Bangladesh must be ready to accept the reality that all countries will continue to maintain SPS measures to ensure health and food safety and to prevent the spread of pests or diseases among animals and plants. A number of private sector standards have also emerged in the developed societies. As these standards requirements are non-negotiable, our vegetables products must comply with those requirements. Efforts already undertaken by the

GoB/private sector to conform to the health and food safety standards of developed countries should be continued with active support and assistance from the GoB.

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1.0 Introduction:

Bangladesh, over the last decade, has experienced a rapid growth in its exports, which rose from a mere \$7.521 billion in FY 2004-05 to a staggering \$31.198 billion in FY 2014-15¹. However, it is also true that our export basket is filled with only one particular category of items, as Ready-made Garments (RMG) account for nearly 82% of the total export earnings for the country. Such an unhealthy concentration poses a potential risk, arising mainly from external market shocks and market access disruptions, for the long-term sustenance in the trend in our export growth. Diversifying our export base in terms of its product category is, therefore, a need of the hour, and the agricultural and agro-based products with their high export potential present themselves as ideal candidates for such an initiative.

Bangladesh is rich in producing agro-based goods, and has registered substantial agricultural growth in the last three decades through adoption of good agricultural practices² (GAPs), modernisation in production and harvesting procedures, and use of improved and sustainable technology. Currently, the country is self-sufficient in the production in cereal foodstuff through simultaneous rise in productivity and farming area. Among the other agro products, vegetables play a very important role in supporting the domestic demand for food and ensuring food security. Bangladesh's climate (both tropical and sub-tropical) and soil are suitable for a wide range of vegetables cultivation. Vegetables contribute to 3.2% of the agricultural Gross Domestic Product in Bangladesh³. Total production in vegetables reached 10,964 thousand/ metric tons in FY 2012-13, which was only 7,400 thousand metric tons in FY 2008-09⁴.

Analysis of the trends in exports of vegetables from Bangladesh in recent years reveals an encouraging sign of export potential for this sector. While Bangladesh exported vegetables worth US\$44.67 million in FY 2008-09, within 5 years it rose to US\$ 147.54 million in FY 2013-14⁵. Different types of vegetables are exported from Bangladesh to more than 40 countries in the world

¹ Data collected from Export Promotion Bureau, Ministry of Commerce, Government of Bangladesh.

² Good Agricultural Practices (GAPs) are differing sets of codes, standards and regulations developed by governments, NGOs and the private sector. As it is a standard affecting market access for Bangladesh vegetables, more detailed discussion on GAP ensues in Chapter 7.

³ Data collected from Bangladesh Bureau of Statistics, Government of Bangladesh.

⁴ Data collected from Bangladesh Bureau of Statistics, Government of Bangladesh.

⁵ Data collected from Hortex Foundation, Ministry of Agriculture, Government of Bangladesh.

with consumers basically being limited to expatriate Bangladeshi markets. In FY 2013-14, our export market for fresh vegetables comprised Middle Eastern countries with about 46.3% (Saudi Arabia 22.08%, UAE 7.67%, Kuwait 6.84%, Qatar 6.80%, Bahrain 1.65%, Oman 1.26%), EU region 25.87% (UK 19.09%, Italy 4.83%, and others 1.95%), East and South-East Asian countries 15.07% (Malaysia 12.52%, Singapore 2.55%), South Asian countries (Sri Lanka) 3.67%, and others 9%⁶.

Considering the potential of the vegetables sector, various production and export promotion initiatives have been underway in Bangladesh since the early 1990s. Nevertheless, the production in the vegetables sector in Bangladesh and the accompanying performance in exports are often beset with a myriad of problems. The sector faces a number of constraints both in the domestic front as well as in the export market. For example, supply side constraints, supply chain and value chain issues, and policy-induced measures in the importing countries have all worked in constraining vegetables exports from Bangladesh. In that context, a study that attempts to analyse export readiness of vegetables sector in Bangladesh through identifying such constraints and suggesting remedial measures acquires a paramount importance.

This Study has been undertaken as per the contract (no. CCER/D/GR/2015/30) awarded to Bangladesh Foreign Trade Institute (BFTI) by Swisscontact under the Agri-Business for Trade Competitiveness Project (ATC-P) to explore the export readiness of the vegetables sector in Bangladesh. The specific objectives of the Study are:

- To present an overview of the existing status and/or performance of the production and export of the vegetables sector of Bangladesh;
- To perform a complete value chain mapping of this sector, including SWOT Analysis;
- To perform a comparative analysis of the profitability of the vegetable products in the domestic market and to measure the production efficiency of vegetables;
- To assess the national policy framework and strategies supporting the vegetables sector of Bangladesh;

⁶ Data collected from Hortex Foundation, Ministry of Agriculture, Government of Bangladesh.

- To assess the institutional networks supporting the vegetables sector of Bangladesh;
- To identify the major constraints faced by this sector and its supporting industries both in production and in trade, especially the export trade;
- To investigate the determinants of export of the vegetables sector of Bangladesh;
- To perform an external market environment audit, including identifying potential export items, export markets and specific market access requirements; and
- To suggest a set of prospective policy interventions to tap the export potentials of the vegetables sector of Bangladesh.

2.0 Approach and methodology:

The Study focuses on conducting an in-depth analysis of the export potential of the vegetables sector in Bangladesh. It attempts to do so by analysing the current status of the export readiness of the vegetables sector in Bangladesh and investigating the determinants of its vegetables exports. It also attempts to suggest prospective policy interventions that would enable the country to effectively tap its export potential in the vegetables sector.

According to Harmonised Commodity Description and Coding System (H.S. Code), vegetables are classified under Chapter 07 of the WCO nomenclature, which categorises more than a hundred vegetable products into different headings and H.S. Codes, ranging from 07.01 to 07.14. A large majority of these vegetables is produced in Bangladesh. Some of the major vegetables items produced in Bangladesh are egg plants, cucurbits, yardlong beans, okra, radish, cauliflower, cabbage, tomato, beans, aroids, carrot, leafy vegetables etc. For the purposes of this study, only those vegetable products have been chosen in which Bangladesh has shown a significant export potential. Therefore, following the limits of the terms of reference, this study will remain confined to those vegetable products that Bangladesh exports, or has the potential to export. Accordingly, the study concentrated on the following vegetables: potato, tomato, eggplant (brinjal/aubergine), pointed gourd (patol), lady's finger (okra), beans or yardlong beans, cauliflower and cabbages, and citrus fruits, including lemons and satkora.

In order to carry out the task properly, the research Study was conducted on the following lines, namely -

(i) Stakeholder consultation:

The Study mainly focused on collecting primary data from the vegetables sector. To that end, it conducted interviews with key stakeholders using a Structured Questionnaire, attached as *Annex-B*, designed for the purpose. The stakeholders in this case were farmers and farmer groups, processors, transporters, exporters, external facilitators (including relevant government agencies), researchers, market authorities etc.

Based on their importance in the vegetables sector, two administrative districts⁷, viz., Narayanganj and Narsingdi, were selected for survey for this research. Five (5) farmers from Narayanganj, and 10 farmers from Narsingdi, who produce the vegetables selected for this Study, were interviewed. Similarly, 20 of the processors/suppliers/ transporters, 10 of the exporters and 30 of the researchers, market authorities, policy makers and external facilitators, including the exporters association, were randomly selected and interviewed by the team of interviewers, appointed for the purpose of this Study.

A Key Informant Interview (KII) approach was also used to identify the possible challenges for Bangladesh from international policy changes/consumer choices/ preferences and competitive environment from the perspective of farmers or exporters, and to identify potential strategies to cope with such situations from the national policy level.

(ii) Desk review:

The Study conducted desk review of existing research, information and literature relating to the vegetables sector in Bangladesh in general, and its vegetables exports, in particular, in order to collect secondary data. These relate to a review of - (a) the existing literature on national policy frameworks and strategies supporting the vegetables sector, (b) the existing literature on institutional framework for domestic as well as for international markets, and (c) the existing research on constraints faced by the vegetables sector and its support sectors in trade.

The desk review also involved - (a) an investigation of export determinants of the sector, and (b) identification, through an external market environment audit, of potential exports items, export markets and specific market access requirements.

⁷ At the inception, the study planned to collect sample data from at least 3 districts. However, as the study progressed, and the data collectors embarked on conducting surveys and collecting data, it was revealed through feedbacks from key participants that vegetables selected for this study and exported from Bangladesh originate predominantly from two districts, namely, Narayanganj and Narsingdi. It was also revealed that the entrepreneurs, including farmers, processors, exporters etc., also concentrate their focus and efforts in these two districts. Therefore, in order to ensure that the sample is actually representative of the real purpose of this study, we limited our samples to these two districts.

(iii) Case study approach:

The Study also used the case study approach for specific producer/exporter surveys. Accordingly, it has collected four Case Studies/success stories: (a) the success story of a farmer, (b) the success story of a supplier, (c) the success story of an exporter, and (d) a case study of Mr. Kazi Munir (an exporter).

(iv) Focus-group discussion:

To ensure an in-depth analysis and research in the area selected, the Study also conducted a focus group discussion (FGD) of all the major stakeholders involved in the production, distribution, marketing and exports of vegetables, and the research groups and think tanks. Inputs generated from the FGD proved very much useful for the Study in identifying the major supply side constraints faced by the vegetables sector and its support sub-sectors from production-to-distribution-to-international trade, and in conforming/verifying the data generated through the above three means (viz., stakeholder consultation, desk review and case studies).

(v) Data analysis and report writing:

In this phase, the Study synthesised all the data and information received through stakeholder consultation, focus group discussion, case studies and desk review. The process included - (a) an analyses of data, obtained through both primary and secondary sources, on the current status of the export readiness of the vegetables sector in Bangladesh, (b) an investigation of the determinants of vegetables exports from Bangladesh using both primary and secondary data, (c) identification of prospective policy interventions that would enable the country to effectively tap its export potential in the vegetables sector, (d) preparation of a draft report on the basis of all these analyses and assessments, and (e) finalisation of the draft report through holding a validation conference of stakeholders, taking into account the feedbacks generated from the said dialogue.

The final product of the Study is a comprehensive report that will serve as a guide for the relevant stakeholders by identifying the constraints faced by the vegetables sector in Bangladesh and the requirements to access export markets, including tariff and non-tariff measures, as well as by highlighting the appropriate strategies to effectively deal with such constraints. We strongly hope

that the study report will also contribute to enhancing export competitiveness of Bangladeshi vegetable products.

3.0 Vegetables export: an overview (literature review)

In recent years, there has been a growing concern over the extreme concentration of Bangladeshi exports on a handful of products, most notably, the RMG, which have resulted in reinforcing the governmental emphasis on the issue of product-based export diversification to reduce the risks associated with such concentration. Efforts to diversify the contents of our exports basket have been accompanied by initiatives to identify products that have good export potential. The agro-based and agro-processed products are such an area that received attention not only from the government policy planners, but also from the researchers, academia thinktanks and national and international development organisations. Within the agro-based and agro-processed products sector, the vegetables sub-sector has been receiving an increasing focus. As evident from the introductory chapter, this was due mainly to the fact that the country's climate and soil are suited for a wide range of vegetables cultivation, that the production of vegetables are increasing over the years, and that the trend in its exports has also shown an encouraging sign.

Interests in the vegetables subsector, especially among researchers and analysts (Abt Associates, 2006; Ferrer, 2006; Hoq et al., 2012; Karim et al., 2011; Quddus, 2009; Rashid et al., 2011; Sabur et. al., 2004; World Bank, 2008), have tended to focus on a varied number of issues that include output or production, productivity, value addition and value chain, distribution and marketing, supply side constraints that involve both forward and backward supply chain, constraints to exports, and market access issues. However, most of these researches actually attempt to investigate the macro concerns associated with the agro-based or agricultural sector, where the vegetables subsector is only looked upon as a small subset of that broader analysis. Hence, we find that despite these growing interests in the agro-based products, only a handful of studies (Hoq et al., 2012; Karim et al., 2011; Quddus, 2009; Sabur et. al., 2004) endeavour to provide an in-depth and exclusive focus on the vegetables sector as a whole.

Selecting three vegetables products, such as cowpea, snake gourd, and bitter gourd from a sample of 17 villages and focusing on four export markets (viz., United Kingdom, Saudi Arabia, Kuwait and Qatar), Hoq et al. (2012) attempts to determine the extent of value addition, cost and return on these three products at three different levels involving production, processing and exports from Bangladesh. The study reveals that with a per hectare production cost for cowpea, snake gourd,

and bitter melon at Taka 73,838, taka 72,029 and taka 1,04,644, respectively, value addition by farmers for cowpea, snake gourd, and bitter melon were at taka 86,162, taka 1,52,611 and taka 2,37,356 respectively. Second, with the average marketing costs incurred in Bangladesh by suppliers at taka 2,906 per ton, value addition by suppliers was taka 3,094 per ton. Third, with the average marketing costs incurred by different exporters for UK, Saudi Arabia, Kuwait, and Qatar at taka 1,69,442, taka 98,429, taka 1,03,499, and taka 85,324 per ton, respectively, value addition by different exporters for UK, Saudi Arabia, Kuwait, and Qatar was taka 55,778, taka 16,661, taka 16,902, and taka 23,754 per ton, respectively. The main shortcoming of Hoq et al. (2012) is that it only offers a simplistic, generalised presentation of value addition, and thus fails to explain the difference in value addition across products and across export destinations, and the factors attributable for such differences.

Karim et al. (2011) assesses the comparative advantage of production and export of vegetables from Bangladesh. It uses the Domestic Resource Cost (DRC)⁸ method to evaluate the efficiency of production in relation to comparative advantage, cost of both domestic resource and non-traded inputs and traded inputs for production of fifty-four kinds of different vegetables exported from Bangladesh. The study finds that the demand for summer vegetables was higher than that of winter vegetables. Against a total export quantity of 6,046 metric tons of vegetables in FY 2005-06 mainly catering to the ethnic Bangladeshi expatriates, Bangladesh earned foreign exchange of Taka 1,120 million, which was only 1.18 percent of total value of vegetables production in the country. Among the export marketing cost items, air freight charges was found to be the highest. It finds that for all the vegetables, DRCs were less than one (for example, on average, DRC was far below i.e. 0.35), implying that Bangladesh has a comparative advantage in vegetables production, and therefore trade is profitable. Karim et al., therefore, concludes that exporting vegetables to the Middle Eastern countries has the higher comparative advantage. Similar to Hoq et al. (2012),

⁸ The DRC is the ratio of cost of domestic resources and non-traded inputs (valued at their shadow prices) of producing the commodity to the net foreign exchange earned or saved by producing the good domestically. DRC indicates whether the domestic economy has a comparative advantage in products (viz., vegetables) relative to other countries. If the DRC is greater than one for a particular product, it implies that the country has a comparative advantage. If the DRC is less than one, it implies that the country has a comparative disadvantage in the product.

Karim et al. (2011) is a simplistic study, and lack the analytical detail that a rigorous study usually contains.

Quddus (2009) addresses the vegetables sector from a different perspective. Accepting that fresh vegetables in Bangladesh has a comparative advantage in their production following the DRC method, the study then proceeds to examine why agribusiness in fresh vegetables is not flourishing commercially. It analyses the present conditions for fresh vegetables production from the point of view of the supply side for developing agribusiness. This is done by estimating financial performance and identifying constraints that exist at the levels of both production and marketing using primary data collected from four districts, namely, Dhaka, Gazipur, Jessore, and Thakurgaon. Quddus (2009) shows that the domestic supply of vegetables is constrained by the seasonal nature of production and the unavailability of production inputs in time, and that high production costs discourage farmers from producing vegetables in a large scale. However, analysing the utilisation pattern of locally-produced vegetables, the study suggests that domestic vegetables production has the potential to support the development of business in fresh vegetables. The main shortcoming of the study is that it concentrates only on the constraints in production and marketing aspects and how these affect the development of agribusiness in the vegetables sector in Bangladesh. It, therefore, covers a portion of backward supply chain issues, while lacking any direct relevance to forward supply side constraints that exporters face in accessing export markets.

Using primary and secondary data in the area of fresh vegetables collected in FY 2003-04, Sabur et al. (2004) examines the profitability of producers and the marketing margin of traders, and tries to identify problems encountered by the vegetables exporters. It finds that in the export marketing chain the vegetables farmers/producers sold three-fourths of their produce (vegetables) to the *bepari*/selected agents, and received an average profit of Taka 32.00 by spending taka 100 as production cost. The *beparis*/agents received Taka 12 to 13 by investing taka 100 within a very short period of time. In terms of export profitability, Sabur et al. reveals that it is more profitable to export vegetables to other Asian countries when compared to the Middle East countries⁹. The exports constraints for vegetables exporters as identified in the study include the scarcity of cargo

⁹ Please note this finding contrasts, in a way, the conclusion of Karim et al. (2011).

space, high cost of airfreight, delay in the flights and lengthy customs procedure, low quality of packaging, poor quality of vegetables, seasonality of production and high domestic prices, lack of domestic transportation, lack of sufficient storage management, inadequate market information and off-loading. Sabur et al. (2004) is basically a research note and, therefore, like the three researches identified earlier, lacks the analytical detail and an in-depth focus of a rigorous study.

The above review of existing research on Bangladeshi vegetables reveals that these do not adequately cover the whole gamut of the country's vegetables subsector ranging from production, productivity, distribution and marketing, value addition and value chain, supply chain and market access; nor do these offer any in-depth and detailed analysis of a particular subset of these issues. We may, therefore, conclude that the existing literature is unable to offer any comprehensive understanding of the wide ranging issues, either as a whole or as a single subset, that affect the export diversification initiative in the vegetables subsector in Bangladesh at the moment.

The review of existing literature also revealed that there has been a lack of initiative to examine the export readiness of the vegetables sector in Bangladesh. One of the effective means of exploring the export readiness is through identifying the export constraints. Although there were several attempts to identify the constraints to exports of agricultural crops and agro-processed products from Bangladesh, concentrated focus in identifying the constraints specific to the vegetables sector has not been attempted at before. The present study will remove this lacunae by attempting to analyse the export readiness of the Bangladeshi vegetables sector through identifying the constraints and suggesting remedial measures. As the study will be rigorous, in-depth and analytical, it will no doubt contribute in enabling the country to effectively tap the export potential of its vegetables sector.

In its attempt to analyse export readiness of vegetables sector in Bangladesh, this study will make a rigorous analysis of the backward supply chain issues (viz., issues that affect the post-production and post-harvest problems, such as, storage, distribution, marketing, and transportation etc.) and the forward supply chain issues (viz., export processing, trade processing, compliance with international standards, international freight or transportation etc.), and a thorough investigation of government policies to address the supply side constraints, or the lack thereof, and the initiatives from the entrepreneurs, the private sector and the international development agencies and their

shortcomings. The study will thus be able to offer a single repository of a plethora of information for all concerned having an interest in any of the issues associated with the export of vegetables from Bangladesh. In that way, it will undoubtedly be able to make a significant contribution to the existing literature.

4.0 Status and performance of the vegetables sector of Bangladesh

This section will progress through the presentation of the status and performance of the vegetables sector in Bangladesh in three sub-sections. Sub-section 4.1 will highlight the production performance of the vegetables sector through elaboration of general performance of the agriculture sector as a whole, general export performance of Bangladesh, production status of vegetables in Bangladesh, strengths in such production and their trends. Sub-section 4.2 will elaborate the export performance of fresh vegetables and potato in Bangladesh and the challenges these face. Sub-section 4.3 will highlight the current market infrastructure, which will also include identification of the problems or constraints associated with the marketing of vegetables.

4.1 Production performance of the vegetables sector

4.1.1 General performance of agriculture in Bangladesh

Agriculture is one of the main drivers of the Bangladesh economy. Agriculture in the country has shown a remarkable achievement over time in enhancing production and in diversifying towards high value crops and non-crop agriculture. The agricultural GDP and the total GDP increased by 5.6 & 20.8 times, respectively since FY 1973-74 till FY2014-15. Value of the agriculture GDP increased from US\$ 5.21 billion in FY 1973-74 to US\$ 28.92 billion in FY 2014-15, while the national GDP increased from US\$ 8.92 billion in FY1973-74 to US\$ 194.98 billion in FY 2014-15¹⁰. Average growth in the agricultural GDP reached 3.5% during the Sixth Five Year Plan (FY 2010-11 to FY 2014-15). This has contributed to the achievement of food self-sufficiency, as the country is now almost able to feed its entire population with domestically-produced staples.

¹⁰ Bangladesh Bureau of Statistics (BBS), Ministry of Planning, GOB and Bangladesh Economic Review 2015

Steady progress in diversification in vegetables¹¹, fish¹² and livestock production¹³ has also contributed to the nutritional improvement in Bangladesh. In FY 2013-14, the agriculture sector contributed 16.33% to the national GDP, but the share of agriculture to the GDP declined to 15.6% in FY 2014-15. Again, agriculture continues to be the largest employing sector (accounting at present for about 44% of the labour force), thus contributing to poverty reduction. The case of Mr. Md. Jahid Miah, highlighted in

Box 1: Success Story of a Supplier:

Mr. Md. Jahid Miah is a supplier of green bananas. He is 39 years old and have passed the Higher Secondary School Certificate Examination. He caters to a wholesale market at *Shyambazar*. The exporters collect green bananas from the wholesale market, pack them and then export. Green bananas are grown in huge quantity in Jahid Miah's native village in Pirojpur District. He brings the raw bananas from Pirojpur and sells them in Shyambazar. He buys the bananas from the farmers at taka. 7.5 per *Hali* (four Pieces), brings them to Dhaka by Motor launch, and sells at taka. 12 per *hali*. He can send 2800 *hali* green bananas per shipment at a transportation cost of Tk. 3,780. He earns a profit of Tk. 8,820 against each shipment. Mr. Jahid has two children, both of whom are currently school-going. He is able to lead a somewhat comfortable life dealing in bananas. He wants to supply more of quality vegetables to the exporters in the future.

Box 1, illustrates how vegetables supply has contributed to his family income and eradicated his poverty. It is expected that the agriculture sector will continue to play an important role in achieving the overall goal of “accelerating growth, empowering citizens” during the 7th Five Year Plan (FY 2015-16 to FY 2020-21). It will remain the mainstay for ensuring food and nutrition security and poverty reduction in Bangladesh. The spectacular growth in agriculture in Bangladesh is largely attributable to the sincere and strenuous efforts by different value chain actors, which include farmers, National Agricultural Research System (NARS) institutes, agricultural universities, government and non-government organisations and the development

¹¹ Bangladesh is now the 3rd largest vegetables producing country in the world.

¹² Bangladesh is now the 4th largest aquaculture fish producing country in the world.

¹³ Livestock contributes 14.08% to the total agricultural production and 2.51% to National GDP.

partners. Again, the vital role played by the Department of Agriculture Extension (DAE), Department of Livestock Services (DLS) and the Department of Fisheries (DoF) along with the NGOs, in disseminating new agricultural (crop, livestock and fisheries) technologies to the farmers. And the integrated approaches taken by the Ministry of Agriculture (MoA) and the Ministry of Fisheries and Livestock (MoFL) in developing research-extension linkages also need to be acknowledged.

Agriculture in Bangladesh has been transforming gradually from low input subsistence to semi-commercial to commercial agriculture with higher level of use of input and production of high value produces. Moving ahead with this transformation process will require acceleration of technology diffusion and adoption. Although Bangladesh achieved self-sufficiency in food grains production support from the Government of Bangladesh (GoB) is still needed to transform it into commercial farming. Need for such support is clearly evident from the case study of Mr. Jahangir Mia, highlighted in **Box 2**. Hence, the GoB attaches a high importance on the production and export of high value and high quality horticultural crops, especially vegetables and fruits, through the product diversification, viz., diversification of produces, and the market promotion.

Box 2: Success Story of a Farmer:

Jahangir Mia is a young farmer from the Bhrahmandi village. He passed Secondary School Certificate, and is 25 years old. He has 10 years of experience in farming. This year, he has cultivated vegetables in 4.2 bighas of land. He owns two-thirds of this land, and the rest is taken as lease. He generally buys seeds, fertilisers, pesticides etc. from the local dealers, and occasionally uses imported seeds. He tries to use less of fertilisers and pesticides in farming. However, he has to use high quantity pesticides for brinjal. He does not harvest or sell any vegetable until the expiry of 7 days from the day of using pesticides. From brinjals, cultivated on an area of 16 decimals, he earns a profit of taka. 45,300 on an average. For Cauliflower, using a land of 20 decimals, he gets a profit of Tk. 26,250, and for Cabbage, he earns Tk. 20,000 profit, cultivating 15 decimals of land. Although he does not get any support from agricultural office or other government officials, a private organisation, named ACI, provides him support and directions. He believes that exports can be increased if quality of inputs is ensured by the government.

Within the broad agricultural sector, the vegetables sub-sector has been performing very well. This sub-sector has not only been catering to domestic demand, but also contributing to employment generation for small farmers/traders. Vegetables are also exported to more than 40 countries as highlighted in the introductory chapter. There are many examples that show how small farmers have changed their lot and have become economically self-reliant by dealing in vegetables. **Box 2** illustrates the success story of Mr. Jahangir Mia, a vegetable farmer.

Although Bangladesh has been performing well in exporting vegetables to foreign destinations, the vegetables sub-sector is beset with a myriad of problems. Effectively addressing these problems will require investment in this sub-sector for development of market and value chains, minimisation of postharvest loss, promotion of contract/group/supervised farming and group marketing, promotion of entrepreneurship, and enhancement of transportation and storage facilities. It will also require investment in capacity development for vegetables quality and safety management, speeding up of dissemination and adoption of new or improved technology, enhancing institutional capabilities delivering essential services to the small farmers, traders, exporters and different supply chain actors for developing demand-led value chains and improving market linkages of the smallholder farmers. It is crucial to develop functional and technical capacities of individuals (like farmers, exporters, processors, entrepreneurs, agriculture researchers, extension personnel), organisations, enabling business environment and the exchange of knowledge among the diverse actors in agricultural value chain for improving the livelihoods of farmers, agricultural entrepreneurs, exporters and consumers for their food, nutrition security and, finally, export promotion.

4.1.2 General export performance of Bangladesh

General exports from Bangladesh to the global market has crossed US\$ 31 billion in FY2014-15. While the RMG plays the central role in such an achievement, the strong support from the national agricultural production, and high domestic demand should not be overlooked. Exports¹⁴ play an important role in the growth of the national GDP, as its share to the GDP was 16%. In FY 2014-15, Bangladesh exported 729 products to 196 destinations across the world, where USA and the

¹⁴ Contribution of export to GDP includes many positive impacts on the economic development of Bangladesh

European Union were the major destinations, while Russia and the CIS countries, the African region, and the Latin American countries are still unexplored for exportable produces. Only seven products¹⁵ contributed about 92% to our national export earnings. It indicates that Bangladesh's export basket is quite narrow. The decision at the recently-concluded Nairobi Ministerial Conference of the WTO of 25% local value addition for LDCs in the case of DFQF will accelerate exports of Bangladeshi products, including RMG, Chemical and Agro-processing products. The decision on Preferential Market Access would provide Bangladesh greater access to the global market. As Bangladesh is the third largest vegetables producing country in the world, the country needs to utilise the enormous scope for exporting vegetables to the mainstream export market by fulfilling import country/foreign buyers' requirements.

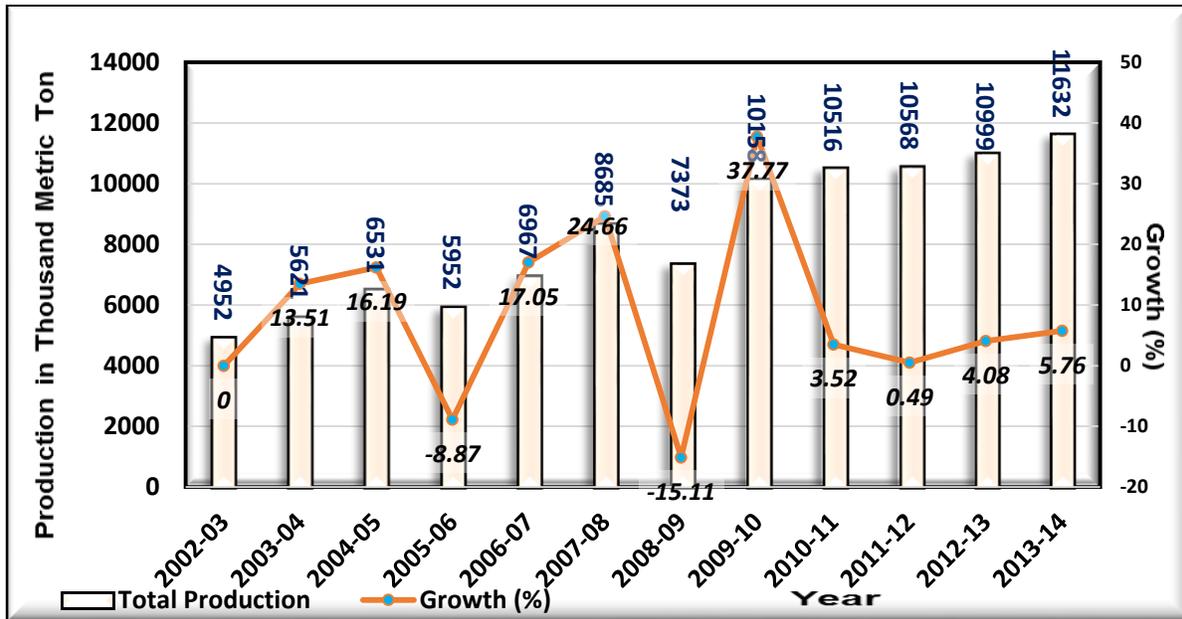
4.1.3 Production performance and trend:

As illustrated in Figure 4.1, total production of vegetables, including Pumpkin, Brinjal, Patol, Potato, Lady's finger, Jhinga, Bitter gourd, Arum, Puishak, Chichinga, Cucumber, Cabbage, Cauliflower, Water gourd, Tomato, Radish, Beans, was 5,621 and 6,531 thousand metric tons in FY 2003-04 and 2004-05, respectively. There was a sharp increase in production from FY 2009-10 (10,158 thousand metric tons) that continued to demonstrate a positive trend in FY 2013-14 (11,632 thousand metric tons).

In terms of area of cultivation and the productivity, we find that in FY 2004-05, a total of 721,000 acres of land was used for vegetables cultivation. Coverage of vegetables cultivation has increased somewhat over the years, as in FY 2011-12, the area of cultivation was 907,000 acres. But there has been a significant improvement in terms of productivity, as per acre yield has risen from 2,607 kg per acre in FY 2004-05 to 6,530 kg in FY 2013-14. [Yearbook of Agricultural Statistics, 2008, 2010, 2011, 2012; Statistical Yearbook of Bangladesh, 2009, 2010].

¹⁵ Woven garments (41.86%), Knitwear (39.82%), Jute & jute goods (2.78%), Home textile (2.58%), Leather & leather goods (2.07%), Frozen food (1.82%), Leather footwear (1.55%)

Figure 4.1: Year-wise Total Production of Vegetables



Source: Statistical Year Book of Bangladesh (2010, 2014)

Table 4.1: Product-wise production trend of selected vegetables

Product	Year (Fiscal)	Quantity (thousand metric tons)	Growth (year-on-year percentile)
Potato	2003-04	3,907	15.39
	2009-10	7,930	50.53
	2013-14	8,950	4.03
Brinjal/Eggplant	2003-04	358	-3.24
	2009-10	341	0.89
	2013-14	444	20.65
Okra/Lady's finger	2003-04	24	9.09
	2009-10	42	5.00
	2013-14	45	2.27
Beans	2003-04	59	18.00
	2009-10	89	1.14
	2013-14	110	18.28
Potal/Pointed gourd	2003-04	41	5.13
	2009-10	78	8.33
	2013-14	48	-43.53
Radish	2003-04	211	6.03
	2009-10	260	1.17
	2013-14	252	0.00
Cauliflower	2003-04	101	20.24
	2009-10	160	4.58
	2013-14	813	389.76
Cabbage	2003-04	129	9.32
	2009-10	220	6.80
	2013-14	217	8.50
Tomato	2003-04	120	17.65
	2009-10	190	25.83
	2013-14	360	43.43
Citrus fruits	2003-04	12	-
	2009-10	20	25.00
	2012-13	19	-5.00

Source: *Statistical Yearbook Bangladesh, 2010 & 2014*

Table 4.1 reveals the product-wise trend in growth in production in Bangladesh, over a period of 11 years, of vegetables that have been selected for this study. While potato constitutes the bulk in vegetables production in Bangladesh (viz., production increased from 3.907 million metric tons in

FY 2003-04 to 8.95 million metric tons in FY 2013-14), other products that have shown good growth are cauliflower (viz., production increased from 101,000 metric tons in FY 2003-04 to 813,000 metric tons in FY 2013-14), eggplant (viz., production increased from 358,000 metric tons in FY 2003-04 to 444,000 metric tons in FY 2013-14), and tomato (viz., production increased from 120,000 metric tons in FY 2003-04 to 360,000 metric tons in FY 2013-14). But some items did not exhibit any measurable impact in terms of production growth. These include pointed gourd (viz., production increased from 41,000 metric tons in FY 2003-04 to only 48,000 metric tons in FY 2013-14), radish (viz., production increased from 211,000 metric tons in FY 2003-04 to only 252,000 metric tons in FY 2013-14), and citrus fruits (viz., production increased from 12,000 metric tons in FY 2003-04 to only 19,000 metric tons in FY 2013-14).

4.2 Vegetables exports and accompanying challenges:

As explained in the introductory chapter, exports of agro-processed or agro-based products have shown a great promise as a non-traditional export item, and within the sector, the vegetables sub-sector has exhibited a higher potential.

As will be evident from Table 4.2, that highlights the trend in vegetables exports from Bangladesh over a period of 7 years between FY 2008-09 to 2014-15, vegetables export has risen from US\$41.77 million in FY 2008-09 to US\$77.43 million in FY 2011-12. Exports volume continued to soar further, reaching US\$147.55 in FY 2013-14. The noticeable thing is that even relatively small entrepreneurs (in terms of capital and the size of their businesses) are contributing enormously to vegetables export. Some have been able to change their lot,

Box 3: Success Story of an Exporter:

Mr. Md. Abdul Hakim Sheikh has been exporting vegetables since 2013. He is 62 years old and a graduate. He runs his own office, located at Mirpur Zoo Road, Dhaka. He exports potatoes, yard-long beans, beans, colocasia stems, green chilies, pointed gourds and Teasle gourds. Currently, he is exporting potatoes only. He is financing a farmer in Rangpur in producing potatoes. He exports the potatoes from Rangpur to Russia and Singapore through the Chittagong port. He uses a 40 feet 'refer container' for exporting potatoes. His profit depends on the purchase price of potatoes and enjoys highest profit at that time of the year, when the price is low. He gets 20% export incentive for exporting potatoes. At the time of the interview, he mentioned that he was getting a profit of taka. 3.15 per kg. He believes, if modern equipment are used, laboratories are developed and pest control is ensured, Bangladesh can greatly increase the export of vegetables.

as the case study of Mr. Md. Abdul Hakim Sheikh highlighted in **Box 3**, illustrates.

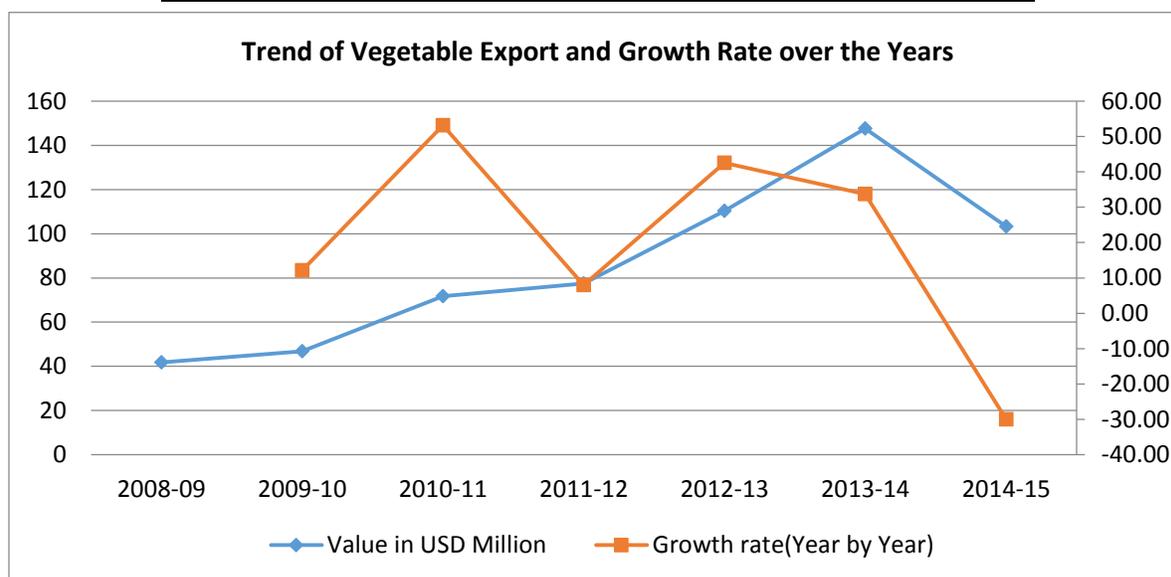
As Table 4.2 also shows, the bulleth growth trend was halted in FY 2014-15 and in fact, slid down, as exports fell by US\$44.31 million in comparison to that of the previous year (FY 2013-14). However, it still remained above the 100 million dollar benchmark, staying at US\$103.24 million. This somewhat poor performance during the last year could emerge as a cause for concern; however, it is too early to come to any conclusion on that and the results in the coming year (FY 2015-16) will be critically important to derive at any meaningful conclusion. Figure 4.2 attempts to capture the scenario accurately, where the blue solid line reflects the increasing trend in vegetables export, and a sharper decline in FY 2014-15, whereas the red solid line indicates the instability in annual growth rate over the years.

Table 4.2: Vegetables export from Bangladesh (value in USD million)

Year	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Vegetable	41.77	46.84	71.73	77.43	110.33	147.55	103.24
Growth Rate (%)	-	12.14	53.14	7.95	42.49	33.72	-30.03

Source: Export Promotion Bureau.

Figure 4.2: Vegetables Export and Growth Trend of Bangladesh



Considering the export potential of the vegetables sector, the government has correctly given emphasis on enhancing exports of vegetables as part of its export diversification initiatives. This resulted in continuing the increasing trend in exports of vegetables from the country. The following

Table (Table 4.3) attempts to illustrate the product-wise export performance of the vegetables products, selected for this study, over a period of 7 years. It demonstrates that while some vegetable products exhibited a promising growth during the period, others did not. The products that have bright export potential are potatoes, tomatoes, pointed gourd, and beans, all of which have registered increasing volumes of exports. For example, export of potatoes has increased from a mere volume of US\$686,890 in FY 2008-09 to a staggering US\$33.82 million in FY 2013-14 and remained at US\$32.22 million in FY 2014-15. Again, data collected from the Trade Map database of the International Trade Centre (ITC) revealed that in 2014 calendar year, the volume of exports of potato from Bangladesh was worth US\$37.43 million.

Of the other promising exportable vegetables, exports of tomatoes have risen from US\$2,690 in FY 2008-09 to US\$239,370 in FY 2009-10 and then, going down to US\$ 136,810 in FY 2013-14¹⁶. Export of pointed gourds/potol increased from US\$41,120 in FY 2010-11 to US\$126,580 in FY 2014-15. In the case of beans, exports have risen from US\$239,890 in FY 2008-09 to US\$718,290 in FY 2009-10. Beans exports then decreased in the following years, but rose again to US\$494,000 in FY 2013-14.

On the other hand, trends in exports of okra, eggplant, cabbage, cauliflowers and citrus fruits have exhibited a high degree of instability. For example, Okra exports in 2012-13 was US\$193,920, which then decreased to a negligible volume of US\$14.13 in 2013-14, and, then, rose again in FY 2014-15 to US\$93,250. In the case of cabbage and cauliflowers, exports have reflected high instability, as it rose from US\$16,950 in FY 2008-09 to US\$32,660 in FY 2009-10. It then decreased to a very negligible level over the next two years but rising again to US\$32,590 in FY 2012-13, and then falling yet again to an insignificant level. Exports of eggplants is shown recorded only in FY 2010-11 and the volume was a mere US\$2,930 in FY 2010-11, but this product failed to make its presence in the country's export basket during the subsequent years. Citrus fruit is another product that has a good prospect, but export performance does not reflect its true potential. For example, exports of citrus fruits varied from US\$2,010 in FY 2009-10 to US\$12,180 in FY 2010-11, and it fell in the subsequent years.

¹⁶ One participants in the focus group discussion, however, observed that Bangladesh does not export tomatoes much.

Table 4.3: Top vegetables exports from Bangladesh (value in Thousand USD)

Product Name	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Potatoes	686.89	3454.65	16730.79	8497.61	10930.07	33822.64	32221.15
Tomatoes	2.69	239.37		8.26	175.77	136.81	88.54
Cabbage and Cauliflowers	16.95	32.66	13.27	4.28	32.59	0.85	12.23
Pointed gourd			41.12	13.2			126.58
Beans	239.89	718.29	74.20	-	25.30	494.00	-
Brinjal/eggplants			2.93				
Okra/lady's finger					193.92	14.13	93.25
Citrus fruits		2.01	12.18	4.09	0.01		

Source: Calculation based on the data from Export Promotion Bureau.

As evident from the data presented in this Section, vegetables exports in both the general and product categories have demonstrated fluctuations across years. An attempt is made here to provide some explanations for such fluctuations.

The main reason for the fluctuation was the ban/embargo on some products due to Bangladesh's non-compliance with quality standards. For example, there were restrictions/embargo to export betel leaf, lemons/citrus and cucurbit vegetables (e.g. pointed gourd, teasel gourd) to the EU market. More discussion on these will follow in the following chapters.

Again, in the case of potato, exports increased significantly during FY 2013-14 that saw a quantum leap by trebling to \$33.82 million. An investigation into the matter reveals that Bangladeshi exporters enjoyed wider market opportunities in the Russian Federation due to a ban on Pakistani potatoes over pest risks (Parvez, 2016; Interview, 2016). Exports to other traditional markets, such as Malaysia, the Middle East and Sri Lanka also increased owing to a slow supply from Pakistan and India where adverse weather took a toll on production. However, exports plunged in FY 2014-15 and the subsequent year mainly due to a temporary ban by the Russian Federation allegedly for the presence of *Ralstonia Solanacearum* (Smith) Yabuuchi et al. (Brown Bacterial Rot Agent) in Bangladeshi potatoes.

Further, an enquiry into why there was no reported export of brinjal/eggplant since 2011-12 revealed that eggplants were packaged with other vegetables in bulk at the time of export, as revealed by one Respondent. As such, there was no export figure for brinjal. Another respondent said that at times, export figures of some vegetables having small export quantity/value are not shown separately, and instead are combined as “Miscellaneous vegetables items”. This could explain the fluctuation in export reports for brinjal across years.

An examination of the export destinations for Bangladeshi vegetables is attempted in Table 4.4. Previous analysis in this chapter revealed that, among the vegetables products, potato alone stands out as the star performer in terms of both production and export potential. The place of potato therefore, come at the top of Table 4.4, showing the top ten export performing vegetables from Bangladesh. It demonstrates that in the case of potato (no. 1 vegetables exports category from Bangladesh), Malaysia is the top export market receiving an import of US\$7.30 million worth of potatoes from Bangladesh. Other destinations, such as Singapore (2nd largest), Sri Lanka (3rd largest) and Indonesia (4th largest) have almost equivalent concentrations in terms of volume of imports of potato from Bangladesh. But the country to watch is Russian Federation, which is our 5th largest export market for our potato at the moment. The point to note is that potato exports to Russia began only in 2010 (US\$.072 million) and within a span of one year it reached US\$1.087 million. With proper guidance and policy intervention from the Government of Bangladesh, Russian Federation has the potential of emerging as the no. 1 market destination for Bangladeshi potato.

Market destinations for fresh vegetables of HS Heading 07.04 are United Kingdom (top), United States (2nd largest), Russia (3rd largest), United Arab Emirates (4th largest), and Kuwait (5th largest). On the other hand, market destinations for fresh vegetables of HS Heading 07.09 are United Kingdom (top), Saudi Arabia (2nd largest), Qatar (3rd largest), United Arab Emirates (4th largest), and Italy (5th largest). Export markets for cabbages and cauliflowers are Malaysia (top), Italy (2nd largest), Canada (3rd largest), Australia (4th largest), and French South Atlantic territories (5th largest). Export markets for tomatoes are Singapore (top), Malaysia (2nd largest), United States (3rd largest), and United Kingdom (4th largest). Market destinations for fresh leguminous vegetables of HS Heading 07.08, such as beans, peas etc., are Malaysia (top), United Kingdom (2nd largest),

Japan (3rd largest), and United Arab Emirates (4th largest). Market destinations for dried leguminous vegetables of HS Heading 07.13, such as beans, peas etc., are Canada (top), United States (2nd largest), Malaysia (3rd largest), United Arab Emirates (4th largest), and Bahrain (5th largest).

Table 4.4: Top 5 export destinations for Bangladeshi vegetable products

Product	Base Year	Value in Million US\$				
		Top Market	2 nd largest Market	3 rd largest Market	4 th largest Market	5 th largest Market
Potato (HS Heading 07.01)	2011	Malaysia (7.305)	Singapore (2.575)	Sri Lanka (2.149)	Indonesia (2.113)	Russia (1.087)
Fresh Vegetables (HS Heading 07.09) (viz., eggplants etc.)	2011	United Kingdom (13.809)	Saudi Arabia (7.802)	Qatar (6.622)	United Arab Emirates (6.524)	Italy (3.873)
Fresh Vegetables (HS Heading 07.03) (viz., onions, garlic etc.)	2011	United Kingdom (1.32)	United States (0.308)	Russia (0.085)	United Arab Emirates (0.061)	Kuwait (0.056)
Cabbages & Cauliflowers (HS Heading 07.04)	Various years	Malaysia (0.186 in 2010)	Italy (0.133 in 2007)	Canada (0.06 in 2005 & 0.039 in 2007)	Australia (0.017 in 2011)	Fr. South Atlantic territories (0.01 in 2008)
Tomatoes (HS Heading 07.02)	Various years	Singapore (0.206 in 2010)	Malaysia (0.031 in 2007)	United States (0.002 in 2009)	United Kingdom (0.001 million in 2003 in 2007)	-
Leguminous Vegetables fresh (HS Heading 07.08) (viz., beans, peas etc.)	Various years	Malaysia (0.033 in 2011)	United Kingdom (0.014 in 2007)	Japan (0.008 in 2011)	United Arab Emirates (0.001 in 2004)	-
Leguminous Vegetables dried (HS Heading 07.13) (viz., beans, peas etc.)	Various years	Canada (0.369 in 2011)	United States (0.181 in 2011)	Malaysia (0.016 in 2010)	United Arab Emirates (0.002 in 2011)	Bahrain (0.001 in 2010)

Source: Data from ITC Trade Map, 2016

It is evident from Table 4.4 that vegetables products selected for this study are currently exported from Bangladesh to different countries of the world. Unlike the readymade garments, the leading export category from Bangladesh, where the export market is extremely concentrated, mainly in the European Union and the United States, the situation is somewhat different in the case of exports of vegetables. Our vegetables exports market is not concentrated in such a way. Market

destinations for vegetables widely vary across product bases. As Table 4.4 reveals, each vegetables product has a different market concentration. When combined, the major markets for our vegetables can be categorised as United Kingdom, Malaysia, Saudi Arabia, United Arab Emirates, Singapore, Qatar, Russia, Italy and Kuwait. In addition, the promising markets for Bangladeshi vegetables could be Japan, Canada, Indonesia, Sri Lanka, United States, Bahrain, and Australia.

4.3 Current market infrastructure for vegetables export:

Discussion in sub-section 4.2 showed the existence of a diversified export market base for Bangladeshi vegetables. Existence of such diversification also implies existence of numerous and diverse country-specific constraints or challenges faced by these products in those markets. As vegetables are highly perishable, and, more often than not, directly relate to health and food safety concerns, the standard and testing requirements imposed at the export destinations constitute the basic criteria for vegetable exports, and are therefore understandable. In addition to studying those international market constraints, equal emphasis should also be given to the existing domestic market infrastructure for the sector. For, appropriate distribution and marketing infrastructures have a great importance on production and export of vegetables. Efficient transportation and product handling is a crucial requirement for trade of agricultural products and is an important factor in assuring good prices and alleviation of poverty in rural areas (Khandker et. al, 2009, p. 685-722).

This sub-section will, therefore, attempt an analysis of the data collected through in-depth interviewing to identify the current market infrastructure, both domestic and international, that affect vegetables exports from Bangladesh.

4.3.1 Poor market infrastructure

Interviews with farmers, suppliers, middlemen and exporters revealed that the market infrastructure of vegetables export from Bangladesh is not well organised. The weak linkages between supply chain actors (i.e., input suppliers, producers and markets) and the lack of well-structured and organised markets hamper the export performance of vegetables. Bulk of the vegetables in Bangladesh are produced in the rural areas, that also include different Char, Hawar, Beel and some backward areas, where infrastructural and transportation facilities are not sufficient.

Respondents cited the poor connectivity of these rural areas with the Dhaka city as a major problem that greatly affects the efficient distribution of vegetables. Vegetables exporters of Bangladesh are generally based in Dhaka city and due to the absence of an effective marketing network, they tend to purchase vegetables from the wholesale markets of Shyambazar & Kawran bazar etc. for exports. Therefore, such wholesale markets play a vital role in the supply chain of vegetables exports from Bangladesh, namely, in preserving the quality of the products, packaging and pre-shipment treatment, and the transportation of products to destinations, both home and abroad. However, these wholesale markets in Bangladesh are generally old, dirty, and lack basic and modern facilities such as warehouses, cold storages, proper drainage systems. There is also a lack of clean water and hygienic space to wash and store vegetables, and, therefore, the produces are often washed with dirty or polluted water. These hinder collection, storage and supply of quality vegetables for export.

Again, these marketplaces are largely inaccessible due to narrow roads that often makes it extremely difficult to get an access of large vehicles, such as, trucks for loading and unloading of vegetables products.

4.3.2 Poor transportation system

The study revealed that a handful of exporters are either directly linked to the vegetables production process itself or directly purchase from the farmers for export. But they are greatly hamstrung due to an absence or lack of prior transportation process in the country, such as absence of the Cool Supply Chain transport facility (including reefer vans), insufficient road access to the growing/production areas for large vehicles for loading and unloading etc., which often cause the loss of a large quantity of vegetables due to their highly perishable nature. Again, as opined by the stakeholders during the FGD, the poor road conditions hamper the proper functioning of reefer vans. All these result in the deterioration in quality of vegetables. Respondents, during the interviewing, opined that even though quality of Bangladeshi fresh vegetables have significantly improved than it was 15 years ago, the problem of transportation actually eats away their profit margin, as about 30 percent of vegetables normally gets deteriorated or spoiled due to this nagging problem. In most cases, vegetables are transported by open trucks, which leads to degradation in the quality of fresh vegetables. This problem could have been resolved through the introduction

and adoption of the cool chain maintenance system for fresh vegetables from the farms to the Customs ports of exports, which requires governmental intervention and assistance. This will obviously increase the shelf-life of vegetables.

But it is also true that introduction of this modern system will not be easy for a number of reasons. First, the system will make transportation more costly than through open trucks. Second, as mentioned earlier, road transport from villages to Customs ports is not very good at the moment. Especially during the rainy seasons, the rural roads get muddy rendering them virtually useless at least temporarily. Third, the modes of transports currently in use are not designed especially for carrying the vegetables. Fourth, the perennial traffic jam in all the major highways and in the Dhaka city thoroughfares poses a serious obstacle to the exporters to get their products to the Dhaka airport in time¹⁷. Most often, the exporters find it difficult to reach the Dhaka airport, and as a result, they miss the flight due to this problem of traffic jam, especially in Dhaka city thoroughfares. If the flight is missed, vegetables will have to be sold quickly at the local market at a much lower price. To add more injury to the exporters, the export order from the importer also gets cancelled, thereby adding the financial burden of the exporter. Findings from interviews with the growers and exporters suggest that about 25 to 30 percent of vegetables get rotten or lose their quality during the transportation from producers to consumers. To promote marketing and export of vegetables, the Government needs to take steps aiming to improve road networks to and from the areas where fruits and vegetables are grown extensively.

The above analysis reveals that the inadequate post-harvest technology and the poor transportation network are causes for concerns, as these contribute to higher losses in terms of both the quantity and quality of vegetables. All these disrupt the vegetables export from Bangladesh, which ultimately affects the ability of our exporters to compete efficiently with their competitors in the international market.

¹⁷ Please note that as vegetables are highly perishable in nature, the exporters are forced to export these products through Hazrat Shahjalal International Airport situated at Dhaka.

4.3.3 Political Uncertainty

Respondents, especially the exporters, reported that frequent strikes and hartals and other forms of political unrest hamper and disrupt the transportation of vegetables. Trucks or vans are often burnt, especially during the road blockades, which prompt the truck drivers to abstain from driving their vehicles during those periods. Securing insurance at the time of strike has also become difficult. Even if some of the drivers are found to be willing to drive in those days, the demanded truck fare for taking the risks prove to be exorbitantly high. It increases the transportation costs for exportable vegetables. Again, the disruption in transportation due to political unrest leads to the unwillingness of the buyers to procure vegetables during those days. The uncertainty also prompts the suppliers to refrain from taking any order from the exporters. Therefore, the farmers cannot harvest their vegetables in time. As a result, quality of vegetables get deteriorated. This problem cost the vegetables farmers and exporters most dearly, especially during the recent political unrest that continued throughout the first half of 2015.

4.3.4 Delay and Cancellations of Flights

Some respondents, namely, the exporters, reported that the general phenomenon with flights by Biman Bangladesh Airlines is that these are usually delayed. Such frequent delays in arriving at different destinations have an actively adverse impact on the quality of fresh vegetables. Exporters also said as there is no certainty of Biman's flight schedule, so they often incur huge losses when the national flag carrier changes or cancels its flight schedules. Exporters also commented that while they normally export approximately 30 tons of vegetables every month, this figure came down to 20 tons during the last few months due to Biman's frequent schedule cancellations. Again, as Horticultural Export (Hortex) Foundation (2015) reported, some importers of fresh produces diverted their business from Bangladesh and started sourcing in other countries, such as, Malaysia, India and Thailand. While restriction of imports from Bangladesh due to quarantine pests is one reason, other chief reasons behind this diversion are irregular supply, cancellation of flights, and untimely arrival of flights at the importing countries' airports.

There are some other issues that affect vegetables export from Bangladesh. These issues, such as, poor standards and testing facilities and other supply side constraints will be discussed under the

rubric of 'Supply side constraints' in the next chapter. The next chapter (Chapter 5) will assess policy frameworks and strategies supporting the vegetables sector in Bangladesh.

5.0 Assessment of policy frameworks and strategies supporting vegetables sector in Bangladesh

This section will attempt an assessment of policy frameworks and strategies adopted by the Government of Bangladesh to support and promote vegetables export from the country. Sub-section 5.1 will provide a comprehensive account of government supports to promote export of vegetables. Sub-section 5.2 will explore and outline various institutional networks, such as Department of Agricultural Extension, Hortex Foundation etc., engaged in supporting vegetables producers/exporters to enhance exports of vegetables. Sub-section 5.3 will examine the development partners' initiatives for the Bangladesh vegetables sector through provision of financial and technical assistance. Sub-section 5.4 will try to examine the successes and failures in implementing the governmental policies supporting vegetables production and export. Sub-section 5.5 will outline various issues that determine the export competitiveness of Bangladeshi vegetables vis-à-vis similar products from other country competitors. Sub-section 5.6 will try to provide a complete value chain (VC) mapping of the vegetables sector, including a SWOT analysis. Finally, sub-section 5.7 will attempt to identify the supply side constraints faced by vegetables exports.

5.1 Government initiatives supporting vegetables export

The GoB has given high importance to the production and export of vegetables, including high value agro-processed commodities, through diversification of produces and market promotion. The GoB plays a supportive role in encouraging exports of vegetables. For example, it has formulated and implemented National Agriculture Extension Policy, National Seed Policy (NSP) 1993, Seed Rules 1997 and Integrated Pest Management Policy. Implementation of these policies have ensured overall development of the agriculture sector. The NSP and Seed Rules included a number of provisions to guarantee quality of seeds whether produced domestically or imported¹⁸. Import procedures for seeds have been simplified as well. The NSP outlines and maps out the specific role of the Department of Agricultural Extension (DAE) in popularising and monitoring quality seeds to the farmers. Again, the Government has declared agro products and agro processed

¹⁸ Vegetables seeds are supplied and marketed mainly by the private sector.

items as a priority sector in the 2015-18 Export Policy. As such, these products will enjoy income tax rebate, assistance in exploring foreign markets, loan on easy terms etc. Moreover, the GoB provides cash incentives to promote exports of vegetables. As per the latest Bangladesh Bank circular (FE circular no. 8, dated 13 July 2015), vegetables and fruits receive a cash incentive/export subsidy of 20% of the FOB (Free on Board) value of the exported vegetables. Cash incentives at 20% on the FoB value is also offered on exports of potatoes.

Relevant ministries and divisions of the GoB, such as the Ministry of Commerce (MoC), the Ministry of Finance (MoF) and the Ministry of Agriculture (MoA), also play important roles in encouraging exports of vegetables. For example, the MoA has set up Hortex Export Development Foundation, commonly known as the Hortex Foundation, with a view to boosting export earnings of the country. It was established as a company under the MoA as a non-profit horticulture development and promotional agency in the private sector to facilitate market development for a wide range of value-added products (ADB, 2012 p.21). The ministry has sought a seed fund of Tk 100 million to strengthen Hortex Foundation's financial as well as technical base¹⁹. Hortex Foundation has contributed immensely to the growth of vegetables production and exports.

The DAE, under the MoA, plays a key role in supporting production of quality fruits and vegetables for export. The Upazila Agriculture Office under the DAE provides the farmers with the seedlings, need-based training and other technological support to make cultivation a success²⁰. Agriculture officers provide advice on various matters, including use of pesticides and fertilisers. They work actively with farmers so that Maximum Residue Limit (MRL) is not exceeded. Exporters seek technical assistance from the DAE, mostly from the Quarantine Wing and field services, to produce quality vegetables. The Quarantine Wing help them in quarantine aspects while officials from the field services extend all kinds of support to farmers in producing vegetables with acceptable levels and methods of use of pesticides keeping within MRL.

¹⁹ The Financial Express, 06 Aug, 2015 Seed fund sought to strengthen Hortex Foundation

²⁰ The DAE's Block Supervisors cover each part/area of the country, however remote it is, to provide extension services at the farm level.

DAE officials also provide services for the field application of the research output for better cultivation or quality produce. It has implemented a number of donor and GOB-funded projects for horticultural development in Bangladesh, which include, *inter alia*, projects on Integrated Pest Management (IPM)²¹, Crop Diversification, Irrigation Improvement, Integrated Area Development, Seed Production, Storage and Distribution, Small-holder Support, Integrated Agriculture Nutrition, Command Area Development, Food Security, etc. The DAE has also developed some strategies, such as Farmers Field School (FFS), IPM Club, Extension Agent Visit and Field Days for better extension of IPM practices²². The DAE introduced its Second Crop Diversification Project in 52 upazilas across the country in 2011 to produce various high-value crops, including vegetables such as summer tomato. Following DAE instructions, the farmers make tunnels with polythene and bamboo sticks to protect the tomato plants from heavy rainfall and severe heat. The DAE has recently taken a project to automate the issuance of import permit and the phytosanitary certification regime. The automation programme for issuing import permit, release order and issuance of phytosanitary certificate has been taken by the Plant Quarantine Wing with the help of the International Finance Corporation (IFC). A senior official of the DAE as a respondent for this study informed that another project titled “*Strengthening Phytosanitary Capacity in Bangladesh*” is being implemented by the DAE with a GoB fund of taka 151 crore for strengthening quarantine services and capacity building of laboratory and other quarantine services.

The Ministry of Commerce (MoC) also provides support services to the vegetables sector. However, such services relate mainly to the export promotion of vegetables and the addressing of supply side constraints. The MoC has created the Agro Products Business Promotion Council (APBPC) to adequately address the supply side constraints associated with the agro products sector in general, where vegetables is an important subsector. One recent success story of the APBPC is facilitating the export of mango to ASDA, the Walmart supermarket chain shop, in the United

²¹ The GoB in collaboration with the Food and Agriculture Organization first started IPM in 1981. The major purpose of this policy was to reduce the over dependency on pesticides.

²² DAE/DANIDA SPPS project and DAE/UNDP/FAO staff from the DAE and different NGOs have so far produced 829 farmer trainers (FTs). DANIDA have completed training 117,000 rice and country’s 14.7 million households that depend on 78,000 vegetable farmers on IPM.

Kingdom. This shipment marked the first export of mango from Bangladesh to the mainstream international supermarket. As recollected by an exporter, a respondent of this study, the APBPC helped the exporters in bagging the product. The MOC also influences the MoF and MoA in framing policies in support of export promotion of vegetables. For capacity building of vegetables exporters, the Export Promotion Bureau (EPB), under the MoC, regularly organises seminars on fresh produce, harvesting, packaging, market opportunities and techniques on market exploration. It also offers trainings on export market requirements and export formalities. The Trade Information Centre of EPB regularly collects information on vegetables sub-sector and disseminates the same to potential exporters and other stakeholders.

5.2 Institutional networks supporting vegetables export

Agricultural universities and other agricultural research institutes/councils make important contribution to the production and export of vegetables through the development of new/improved varieties of vegetables. This Study will highlight the role played by only a few key selected institutes/councils in the following paragraphs.

Among the government agencies, BARI, a research think-tank, conducts research on development of variety and protection of different plants, and post-harvest management. Some of the new varieties are excellent in tastes and flavours by. For instance, BARI Aam-3 (Amrapali) is one of the three mango varieties that Walmart (United Kingdom) accepted for import from Bangladesh under FAO-FSP²³. The vegetables department under BARI introduced an '*organic farming model*'. Using this new model of bio-farming, farmers may produce the same quantity or more of crops without using chemical fertilisers and pesticides. This helps reduce production costs by 25 percent resulting from the non-use of chemical fertilisers and pesticides²⁴ (Wardad, 2014). BARI has developed 8 OP (open pollination) varieties and 2 hybrids of brinjal. It has also developed 5 varieties of hyacinth bean, 2 pointed gourds, 2 danta, 1 ribbed gourd, 1 okra (BARI Dherosh-1), 1 bitter gourd, 1 wax gourd, 1 red amaranth (BARI Lalsak-1) utilising local germplasm. BARI

²³ Hortex Newsletter, July-December, 2014.

²⁴ However, the DAE is of the view that about 90% of the farmers in the country were familiar with bio-farming until mid-eighties, but later most of them adapted chemical-based farming.

horticultural research scientists also developed new varieties of potato for domestic consumption as well as for export purposes. BARI Alu 23 is developed targeting export market overseas. Our interview with an agricultural scientist has revealed that the BARI has developed a variety of tomato which has thin skin (flush character). As such, these tomatoes have long shelf-life. This tomato variety of BARI is a good one for potential export, for it is of good quality and is portable due to thin skin. BARI's summer tomatoes (Bari Hybrid 4) can be produced during off-season. This variety is harvestable in one-and a-half months' time. BARI has won APEED Award 2008 for promoting sustainable and safer vegetable production. Bari and International Potato Centre (CIP) have jointly developed new seeds for Potato (BARI Potato-46), the first of its kind in Bangladesh. This variety would fight Late Blight better.

Among the private sector agencies, the Hortex Foundation (HF) has assumed a central responsibility in recent times in promoting exports of vegetables. The HF has been supporting new entrepreneurs, producers, exporters and researchers. It has organised production for export through contract farming²⁵ system involving BRAC, an NGO, and providing them with extensive support and assistance. Supports provided include, *inter alia*, training of farmers and their field staff, supplying of seeds and other production inputs, making them aware of import market requirements, and assisting them to introduce EUREP-GAP and other quality measures²⁶. Although there were some problems at the initial stage, with the support and technical assistance from Hortex Foundation, BRAC succeeded in exporting more than 1300 tons of quality

²⁵ Contract farming provides market access of small and medium-scale farmers.

²⁶ For instance, subject to the special provisions for each class and the tolerances allowed, the aubergines/eggplant must be:

- Intact, sound; produce affected by rotting or deterioration, such as, to make it unfit for consumption is excluded
- clean; practically free of any visible foreign matter, practically free from pests, free from damage caused by pests affecting the flesh,
- fresh in appearance, firm, sufficiently developed without the flesh being fibrous or woody and without over-development of the seeds
- provided with a calyx and peduncle which may be slightly damaged, free of abnormal external moisture, free of any foreign smell and/or taste. All consignments must comply with the minimum packaging requirement; wooden packaging will have to comply with the international standard on wooden packaging (*International Standard for Phytosanitary Measures, ISPM-15*).

horticultural produces (fruits and vegetables) from July, 1997, to March, 2003. Export started with French bean, a new crop for Bangladesh, and then expanded to other high-value Asian crops like green chilli, bitter gourd, yardlong bean, okra, etc.

Hortex Foundation provides value chain services to the private sector through the development of packaging, transport logistics, and quality control. It also provides various services to growers and exporters. These include export cost analysis (on green chilli), *market intelligence support services*, distribution of export directory, imparting advice/knowledge on quality requirements and regulations of export destinations, postharvest treatment and storage system of pineapples, business ideas on quality production of vegetables under contract farming system for export and providing export guidelines for exporting vegetables (cauliflower, sweet gourd, spinach and cucumber) to Scandinavian countries and teasel, pointed gourd, stolon of taro, lemon, eddo, cabbage to Malaysia (Bhuyan, 2014). It organises seminars and workshops to make producers, exporters, and other stakeholders aware of various quality requirements and regulations that are increasingly being put in place by the foreign buyers under SPS and TBT. The adoption of GAP, including traceability, strict compliance with sanitary and phytosanitary measures and quality packaging are important market entry requirements to enter the mainstream market. The HF also helps exporters have direct linkages with importers to facilitate the export of fresh/frozen fruits and vegetables, value added processed agro-commodities, foliage (betel leaf) and spices, ornamental plants, flowers, mushrooms, ayurvedic, herbal and medicinal products, and some other agricultural items. For instance, in 2014, Hortex facilitated trial export of 45 kgs of hot water treated mango (nine varieties) to Walmart, ASDA Chain Shop (UK) through local exporter, M/S Dip International.

5.3 Development partners' initiatives supporting vegetables export

Development partners, such as, Food and Agricultural Organisation (FAO), Asian Development Bank (ADB), USAID, UKAID, European Union, World Bank, and the international NGOs provide financial and technical support to agricultural sector development. This sub-section will highlight some of the initiatives and supports provided by the development partners in the promotion of vegetables sector of Bangladesh.

5.3.1 USAID' PRICE project:

In 2008, USAID initiated the Poverty Reduction by increasing the Competitiveness of Enterprises (PRICE) programme. Three key sectors have been identified by PRICE to work in. The sectors included:

- Horticulture, as a key to crop diversification and export opportunities;
- Aquaculture, including fish and shrimp, as the country's highest agricultural foreign exchange earner and provides more than 60 percent of animal protein to Bangladeshis; and
- Leather sector (especially footwear), which has registered a healthy growth in the past decade.

Through PRICE's interventions in the horticulture, aquaculture, and leather sectors, PRICE-supported firms and farmers have directly benefited from improved productivity, increased yields, and stronger market linkages. PRICE staff assisted nearly 100 private enterprises, 33,000 aquaculture and horticulture farmers, and created full time works for more than 83,000 individuals. PRICE programme helped introduce diversified crops to promote a larger range of nutritious vegetables in the area. PRICE focused on improving the domestic supply and export potential of key horticultural products, increasing incomes and employment and contributing to food security. This programme, after consultations with key experts and stakeholders, took an integrated, value-chain approach to promoting development of three horticultural crops: potato, eggplant, and mango. To contribute to the food security and nutrition aims of Feed the Future (FtF), USAID broadened PRICE's focus in 2011 to include a wider basket of nutritious vegetables, such as tomatoes, beans, and gourds.

PRICE, in conjunction with partners, such as, PRIDE Agro Enterprise, undertook local variety improvement programmes for eggplants (such as, Red-Eye-ret, White Eye-ret and Kushtia Chega) to minimise losses and to produce higher yields. It also advocated the adoption of modern, pest resistant high-yielding varieties. Such varieties have high market demand. *Parthib* is a hybrid variety of eggplant, similar to the local green oval-shaped eggplant, but produces a significantly higher yield and is also resistant to several local insects. PRICE staff carefully selected this variety from a number of available hybrids for demonstration during the summer season (USAID, 2014).

A similar project from the USAID, which is currently ongoing, is the Agricultural Value-Chain project that works under the FtF initiative, and aims to ensure food security in the southern districts of Bangladesh through enhancing value chain of agricultural products, including vegetables. USAID also provides support in other areas. Recently, USAID, CIP, The World Vegetable Centre (AVRDC) and BARI jointly organised a programme to disseminate information on the newly released potato variety Bari Potato-46. USAID funded Agro-Inputs Project (AIP) is another project that is currently being implemented by Cultivating New Frontiers in Agriculture (CNFA). The objective of this project is to improve the quality and availability of agricultural inputs for farmers in the Feed the Future (FTF) zone of Bangladesh.

Another project titled '*SPS Capacity Building in Bangladesh*' (2012) was implemented jointly by USAID, USDA, FDA and K-STATE (<https://www.bookstore.ksre.ksu.edu/pubs/SB666.pdf>). The objective of the project was to determine the capacity, limitations, and constraints to establishing a viable and sustainable SPS system that could ensure the safety of the domestic food supply as well as increase opportunities for economic growth through international trade.

5.3.2 Asian Development Bank (ADB):

The Asian Development Bank also undertook various projects to support vegetables sector development. *Bangladesh Agribusiness Development Project* is one such project. The objective of the credit component of the Bangladesh Agribusiness Development Project includes downstream agribusinesses and value chain activities (e.g., collection, storage, processing, and transport of agricultural produce), and was extended to include upstream activities as well (e.g. provision of inputs, machinery, fertilisers). Loans were made available through microfinance institutions, which allowed processors to purchase raw materials. Stakeholders in the *Bangladesh Agribusiness Development Project* formed an association for marketing vegetables, fruits, and spices and established linkages with retail outlets in Dhaka. The project supported the stakeholders in forming marketing organisations to improve the negotiating position of farmers and develop market linkages through the appointment of an agent.

Bangladesh undertook its first Crop Diversification Project in the 1990s and implemented the same with the support of CIDA. This project later continued and expanded with ADB assistance. A second crop diversification project, started in 2010 (SCDP), is now under underway with ADB

assistance. Recently (Nov. 2015), DAE organised a four-day training for 200 farmers on ‘Post-harvest Management and value addition of high value crops’ in Chapai Nawabganj with the financial support of ADB under SCDP²⁷.

5.3.3 KATALYST:

Agri-business for Trade Competitiveness Project (ATC-P), also branded as KATALYST, has programmes in place to promote vegetables production and export. KATALYST is co-funded by the Swiss Agency for Development and Cooperation (SDC), the UK Government, and the Danish International Development Agency (DANIDA), and implemented by Swisscontact & GIZ. KATALYST has been operating in Bangladesh since 2002. KATALYST is a market development project under the MoC. It aims to contribute to increasing the income of poor men and women in rural areas, and it is done through facilitating changes in services, inputs and product markets that in turn increases the competitiveness of farmers and small enterprises. The project is currently supporting a number of sectors and cross-sectors that include agricultural sectors like vegetables, seed, maize and services, such as, ICT, rural distribution and media. It also works in partnership with different market players, such as, the government, private sector companies and business associations to improve the enabling environment for businesses. In FY 2011-2012, KATALYST and APBPC completed one partnership project on potato sector²⁸.

Before this, KATALYST implemented another programme titled ‘Bringing knowledge to vegetable farmers: Improving embedded information in the distribution system’ in 2006. The project was mainly focused on areas in and around Dhaka, Faridpur, Rajshahi, Rangpur, Bogra and Rangpur. The main objective of this project was to help improve competitiveness of the horticulture (vegetables) sector through providing training, interventions and other technical services to the farmers, retailers and input suppliers²⁹

²⁷ The Financial Express, Nov. 12, 2015, Farmers’ training ends in Chapai Nawabganj.

²⁸ The study report can be accessed at http://www.bpc.org.bd/apbpc_activities.php

²⁹ Syngenta and others. (http://www.katalyst.com.bd/docs/case_studies/Vegetable%20Farmers.pdf).

5.3.4 Food and Agricultural Organisation:

FAO provides various financial and technical support for the development of vegetables sector. For example, it has been providing technical assistance under the Bangladesh Integrated Agricultural Productivity Project, which is funded by the GoB under its Annual Development Plan (July 11–June 16 -1st revised³⁰), where the MoA acts as the implementation agency. The project aims to initiate effective, inclusive and country-owned agriculture, food security and nutrition investment programmes through strengthened national capacities. FAO also helped the Hortex Foundation to conduct its Certified Master Trainers’ Training Programme on Food Control in Horticulture Value Chain (held on 22-27 Nov, 2014 in Dhaka), organised by the HF in collaboration with FAO-Food Safety Programme (FSP) and the DAE.

5.3.5 Other projects: The Netherlands-based international civil society organisation, Solidaridad Network Asia (SNA), has been implementing a project titled SaFaL (Sustainable Agriculture, Food security and Linkages) to bring 57,000 farm households under sustainable agriculture farming in five districts located in the Southern part of Bangladesh by August 2016. (The Financial Express, January 15, 2016). The EU funded a study on the requirements for entrance of Bangladeshi fresh horticultural produce to the upstream markets in the United Kingdom (BGD/75/21A). This project was implemented by ITC, Geneva under Bangladesh Quality Support Programme (BQSP), component-2 from November to December, 2009. The EU also supported HF in its capacity building by providing assistance through the EU-SPF (Small Project Facilities) Project in Administering SPS & Environmental standards relating to fresh produce export to European Union from July 2006 to October 2007³¹.

Other ongoing projects in the area include the National Agricultural Technology Project from IFAD-World Bank, and Pilot Implementation across the Horticultural Value Chain project from FAO. Both these projects are implemented by Hortex Foundation.

³⁰ Ministry of Agriculture, GoB, Annual Report 2014-15 (p.53)

³¹ <http://www.hortex.org/Project.htm>.

5.4 Policy implementation status: success and failure

This sub-section will try to chronicle the successes and failures experienced by the Government in implementing the policies that aim to support production and export of vegetables. In the process, implementation challenges, including the appropriateness of such policies, will also be highlighted.

A key component of the export policy of Bangladesh for the past decade has been the use of cash incentives³² for promotion of export of certain agricultural products. Cash incentive varies across products and across time in the range of 10 to 30 percent. Although the cash-incentive scheme was introduced with the intention of assisting the export of locally-produced jute products and other local textiles, its scope, both in terms of overall outlays on cash incentives and number of products, has expanded over the years. For instance, fruits and vegetables and processed agro-products were not eligible for cash incentives at the beginning. These were included in the programme only in FY 2002-03, and potato was included in 2004 (Morrison and Rashid, 2011). Since then, vegetables exporters have been enjoying cash incentives through the Bangladesh Bank.

A majority of the respondents (viz., exporters, associations, academics) of this Study opined that while the existence of various supply side constraints, such as, high wastage resulting from the lack of a cool chain system and high freight rates, reduced their ability to be competitive as exporters, the GoB policy of providing cash incentives (currently @20% of FoB value) acted as a very effective policy support in promoting vegetables export. According to a majority of the respondents from vegetables exporters, such incentive has not only encouraged them (vegetable exporters) to export but also aided them immensely to continue to export. One exporter mentioned, *“Export of vegetables would have totally stopped if there were no such incentives.”* Another exporter claimed, *“Our competitors in export market (viz., Thailand, Pakistan and Kenya) have their dedicated aircraft for carrying exportable vegetables. Their airfare is also low compared to ours. Cash incentives help us compensate for the huge airfare Bangladeshi exporters have to bear”*.

³² Cash incentives are provided to exporters for internal and international handling, transport and freight charges, which are allowed under Article 9.4 of the WTO Agreement on Agriculture.

There are also divergent views regarding the effectiveness of prevailing cash incentives.

According to a safe food consultant, a former scientist at BARI (a participant in the FGD organised for this Study), cash incentive does not always lead to expected results. It will give more benefits if support is given in cash, kind and capacity building form (i.e. some sort of apportionment). Moreover, the cash incentives as it is practiced now mostly goes to the exporters. **Findings of the FGD reveals that cash incentives will be more effective if certain percentage of it is given in the form of technology support and ingredients/seeds etc. to produce safe production. In other words, instead of exporters only, such incentives should also go to the growers of vegetables and ultimately in the production process. This will result in quality production to meet foreign buyers' requirements and help sustainability of export.**

In this regard, another participant (in the vegetables sub-sector) observes that traditional exporters have not yet been able to enter into the mainstream export market in the developed countries. They are still exporting to global ethnic markets. This export to ethnic market represents the lowest segment of the market, which are more or less protective in nature, where buyers/customers are mostly either from Bangladesh (viz., the Non-resident Bangladeshis) or from nearby Asian countries like India, Pakistan, Sri Lanka, Nepal, Bhutan, and Maldives, among others.

Respondents, especially the exporters of vegetables, also observed that the Government needs to do more to enhance competitiveness of Bangladeshi vegetables in the export destinations. For example, as a respondent (who is an exporter) observed, high air fare borne by Bangladeshi exporters (about taka 170 per kg) vis-à-vis competitors' air fare (which is about taka 110-120) to ship to UK erodes Bangladesh's competitiveness in the export market. Another problem lies with the lack of cooling chains at airports. As vegetables are highly perishable, these need to be carried from exporters' premises to the airport through a cooling chain. But as there is a lack of reefer van to carry vegetables from exporters' premises to airports and there is no cooling chain warehouse in airports, quality of vegetables deteriorates quickly. Moreover, the lack of cargo aircraft and inadequate space for cargo in Biman Bangladesh Airlines force exporters to ship vegetables through passenger aircraft and foreign aircrafts. According to an exporter, such passenger aircrafts are not customised for carrying goods, and they lack cooling chamber. Absence of cooling chamber in passenger planes affects the quality of vegetables adversely). **In order to increase**

competitiveness of vegetables from Bangladesh, additional space in the aircrafts should be allotted and separate cargo aircrafts need to be arranged without delay. More importantly, a central packing house with cool chain (in addition to the one being built in Shyampur, Dhaka) adjacent to the airport is most urgently needed to help export of fresh vegetables. A cool chain from field to factory is absolutely essential.

According to a respondent, who is an expert in the vegetables export marketing sector, entry to the mainstream market has not been possible due to a number of factors. These include - the lack of adoption of international quality and marketing standards³³, absence of widespread contract farming³⁴, inability to effectively address traceability, lack of global standard testing facility, and lack of other logistic supports. Governmental support is essential to address these problems to enable our exporters to meet the importing country's specific demands in terms of standards, quality etc. **Governmental support is also needed to establish regional collection centres for vegetables in areas where production of vegetables are largely concentrated. This will help carry out collections of vegetables in regions, and transport them in refrigerated vans from there to the airport central packing house under controlled temperature.**

Overall, it can be said that the policy of cash incentive was a pragmatic step on the part of the Government in the sense that it contributed immensely to support the vegetables exporters to mitigate their comparative disadvantage vis-à-vis the competitors and gain competitive advantage. Such incentives help them mitigate the adverse impacts they have to endure due to lack of space in aircraft and high air fare³⁵. The World Bank study (Ahmed et al., 2007:p.4) notes that while the share of agricultural in total exports has fallen from 37 percent in the 1970s to 7 percent in 2004-

³³ Quality control and standards is virtually non-existent for fresh horticultural produce, especially vegetables, in Bangladesh. Bangladesh is yet to comply with the minimum legal requirements e.g. Sanitary and phytosanitary (SPS) measures, Vertical traceability (EC/178/2002), Hygiene rules for foods of non-animal origin (EC/852/2004), and other/additional requirements.

³⁴ Under such contracts, the farmer assumes the production related risks, while the price risk is transferred to the company. In some cases, multinational companies enter into contracts for marketing of the horticultural produce. Providing technologies and capital to contract farmers has also gained in importance.

³⁵ The policy documents, however, do not contain explanation of the basis for having these specific measures. There is also lack of independent studies that evaluated the effectiveness of the cash incentives in promoting incentives.

05 (due to increased exports of readymade garments), the recent growth in shrimp exports, which now has a 65 percent share of agricultural exports and vegetables with a 6 percent share has been driven to a large extent by the cash incentives. Similarly, the creation of Hortex Foundation resulted in significant improvement in quality enhancement and diversification of vegetables to the export markets. In addition, the role played by the DAE and the research organisations as well as the initiatives from the entrepreneurs themselves have also contributed to the growth of the vegetables sector.

Growth in exports of vegetables, however, depends also on some other factors, such as the ability of the sectors to comply with SPS requirements, traceability, and permissible pesticide residue level etc. Further improvements in this area could provide a significant additional boost to the exporters. However, there are a number of impediments and challenges that need to be addressed by the Government. Impediments in producing quality vegetables include scarcity in cultivable land and supply of quality inputs, lack of access to finance, lack of knowledge on appropriate use of fertilisers and pesticides, inadequate knowledge on GAP, and poor post-harvest management of vegetables. Among them, lack of storage of vegetables in regional areas (where vegetables are grown extensively), lack of access to finance and lack of post-harvest knowledge have been found to be affecting the vegetables growers very adversely. One respondent observed, *“Knowledge gap of the vegetables farmers is the main constraint in producing quality vegetables. They lack knowledge of proper harvesting time and tools. They should know and follow ‘proper harvesting time (viz., morning or afternoon) ‘and right harvesting tools (viz., use of knife, small scissors/cutters) and ‘maturity index for seed’ as well as proper irrigation system”*. Another problem lies in the fact that farmers are often engulfed by greed to make cash, and do not want to wait recommended days after harvesting. Therefore, a major implementation challenge for the GoB (viz., the DAE) is to impart training and educate the uneducated and rural farmers on proper harvesting techniques and timing. Another major implementation challenge to enhance export readiness lies in the timely implementation of ongoing projects undertaken by the GoB, such as, the projects being implemented by the DAE.

5.5 Determinants of vegetables export from Bangladesh

This sub-section outlines various issues that determines the demand level and export competitiveness of Bangladeshi vegetables vis-à-vis similar products from other country competitors. It also details the factors that adversely affect export of vegetables from Bangladesh.

5.5.1 Export determinants:

These export determinants include:

(a) **Contract farming:** The objective of contract farming is to produce, harvest, store, package and export vegetables in such a way that it meets the country-specific requirements and buyer requirements. Among the country-specific requirements, elimination of pests, maintaining MRL, elimination of contaminants and additives are the main ones. Buyers' requirements usually involve, among others, the quality, size and specification of vegetables. Some examples are- bottle gourd (lau) will have to be tender (it is tender when pierced with thumbnail), must not be more than one kilogram, colour of teasel gourd (kakrol) should not be yellow (it must be at deep green stage) etc. Contract farming is conducive to export, for the buyer/importer informs the grower beforehand of all rules and standards to be followed. Contract farming also gives certainty to the growers/exporters about the market and price of their vegetable produces. In order to meet the phytosanitary requirements in export destinations, Bangladesh have started contract farming system for production of exportable fruits and vegetables. It is currently more visible in the production of eggplants and few leafy vegetables.

(b) **Product integrity:** Integrity/quality of the product and the reliability of certificates specifying quality largely determine the volume of demand and the willingness of the buyers to buy the produce. In order to ensure the genuineness of phytosanitary certificates, the DAE has procured a scanner costing taka 3 crore to be installed at the air freight unit in the Dhaka airport to prevent fake phytosanitary certificates (PCs) and to eliminate forgery in the reference of quantity and description of vegetables on those PCs (as opined one respondent: a DAE official).

(c) **Establishing packing house:** Packing house with controlled temperature helps exporters maintain quality and specifications of the produce as per the requirements of either the importing country or the buyer. Establishment of such packing houses will be of great help to the exporters

in sorting, grading, washing and packaging produces at a controlled temperature, which will ultimately contribute to reducing the risks of deterioration of quality of the export vegetables. The GoB is currently constructing a central pack house at Shyampur in Dhaka at a cost of taka 250 million for facilitating export of fruits and vegetables. In this pack house, facilities will be created for sorting, grading, treatment (if required), packaging, certification, cooling at different degrees. Once established, it will undoubtedly reduce the costs to the exporters.

5.5.2 Determinants that adversely affect export of vegetables

(a) Presence of pests and harmful organisms in vegetables and the use of fake certificates:

Buyers, especially from the European Union (EU), refused to allow entry of Bangladeshi fruit and vegetable consignments into their territory for presence of pest in the shipped fresh produce. In addition, the use of fake phytosanitary certificates and doctoring of such documents by a section of unscrupulous exporters has emerged as a grave concern. Such malpractices forced buyers to impose ban on our vegetables exports. For instance, the EU countries detected harmful organisms in vegetables and fruits in 270 consignments from Bangladesh between 2011 and 2014. Again, some 211 consignments were detected with fake or no phytosanitary certificates during the same period. Between January and July 2015, the EU refused entry of 43 consignments from Bangladesh. Similarly, the ban on the entry of Bangladeshi betel leaves was extended by the EU due to repeated detection of fake phytosanitary or plant health certificates against consignments of vegetables and fruits. There are also frequent import alerts issued by the EU.

Vegetable exports without any PC or with fake PCs are taking place repeatedly due to the absence of coordination among the government agencies. A Customs official (a respondent of this Study) is of the opinion that fake PCs are not detected at Customs points due to the absence of automation at Customs and lack of connectivity between the Plant Quarantine wing of the DAE and the Airport Customs.

(b) Poor awareness of SPS requirements within the industry: Bangladeshi farms and exporters do not have adequate knowledge of the importance and requirements of SPS. Moreover, there is a lack of adequate monitoring and vigilance to stop export of consignments of vegetables that do not comply with buyers' requirements. This results in a loss of Bangladesh's export competitiveness

as well as its market access. In this regard, an official from the Hortex Foundation (a respondent) observed that the country's export of fruits and vegetables to the EU suffers, as the EU countries require the exporting countries to have stronger quarantine and traceability system in place to ensure the quality and the supply of safe food. **Bangladesh is yet to have a strengthened SPS regime that could earn the total confidence of foreign buyers of vegetables.**

(c) **Unreliable/unacceptable quality:** Quality of vegetables is another determinant. Export channels are mainly controlled by 'middle-men', as most of the vegetable produces are procured through them, and, as a result, the link between producers and exporters is very weak. There is almost no direct linkage between the exporters and the primary producers, as exporters buy vegetables either from the wholesale markets or from their suppliers in the producing regions. Exporters, therefore, have little influence on the quality of the produce. As a result, quality of the vegetables cannot be maintained and the source of contamination, in case of pest attacks, remains untraced in the absence of traceability. Contract farming, discussed in the previous sub-section, by exporters can help ensure cultivation of safe and high quality vegetables. Evidence from Madagascar also shows that smallholder farmers are able to supply high-quality vegetables for exports through innovative contract farming with intensive farm assistance (from exporting firms) (Dagmar & Waibel, 2011). As vegetables production is labour-intensive and post-harvesting activities (viz., sorting, grading, washing, packing and labelling) to maintain quality standards require more labourers, increased vegetables export would also contribute to rural employment creation.

(d) **Recent detection of malpractices and actions taken by the DAE:** Recently, a number of exporters have been accused of exporting vegetables and fruits without taking PCs, or exporting additional agricultural produces not included in the PCs given by the DAE. The DAE has cancelled PCs of 11 firms (such as Tapan International, K & K Corporation, Dip International, M.H. Guljar, Embrotia Exports etc.) for exporting vegetables (betel leaf, lemon, bitter gourd, potato, and amaranthus etc.) to a number of EU countries without any PC or with a doctored PC. Moreover, it has suspended PCs of 12 firms³⁶. These measures were taken following receipt of complaints from

³⁶ It is to be noted that vegetables exporters need to register with the Plant Protection Wing of the DAE if they want to export ship fresh produces.

the recipient countries that various pests and bacteria were found in some consignments of agricultural products exported from Bangladesh. Such malpractice not only tarnishes the image of the country, but also adversely affects vegetables export by giving a negative signal to the buyers and export markets of the reliability of our produce. An official from the DAE mentions that ‘*to avoid fraudulent activities Bangladesh has started use of secured Phytosanitary Certificate printed from Government Printing Press from January, 2016.*’

5.6 Value chain and supply chain of vegetables export from Bangladesh

This sub-section presents a complete value chain mapping³⁷ of the vegetables sector, including a SWOT Analysis. Through this value chain mapping, the amount of value added at each stage, the scope for intervention to reduce costs against value addition in each stage, and the opportunity for improvement have been identified. Supply chain of vegetables from production to marketing in export destinations is also highlighted to identify possible scopes for improvement in terms of both time and cost.

A supply chain and value chain³⁸ analysis is a precondition to identify the constraints and opportunities in the export of selected commodities (in this case, vegetables). This analysis will help decision-makers and stakeholders involved in the supply chain of vegetables, such as, farmers, transporters, local traders, paikars/farias and cold storage owners, to understand the current status, and identify the weak areas in the chain. This will enable them to design an appropriate intervention strategy and implementation plan with a view to promoting export. Keeping the necessity of having such supply chain and value chain analyses for necessary intervention (and remedial measures), this Study conducted a supply chain and value chain analysis of brinjal (as a sample from the vegetables sub-sector). The analysis and its results are presented in the following sub-sections:

³⁷ The effectiveness of a value chain approach for vegetables is needed to identify constraints and required interventions.

³⁸ Often the terms ‘production chain’ and ‘value chain’ are used interchangeably; however, there are important differences between the two. In its simplest definition, a production chain is the description of all participants in an economic activity that relates to taking inputs to a final product and delivering the final product to the final consumers. Conversely, a value chain is understood as a vertical alliance or strategic network among a number of independent business organisations within a production chain.

5. 6.1 Supply chain analysis of vegetables

A supply chain consists of multiple parties/firms, both upstream (i.e., supply) and downstream (i.e., distribution), and the final consumer. The Supply Chain Management (SCM) of vegetables constitutes the processes from production to delivery of the agro-fresh produce, i.e. from the farmer to the customer. Agriculture supply chain consists of small and medium enterprises, such as farmers and raw material producers, suppliers of agricultural inputs, processors of agricultural outputs, farmers co-operatives, brokers, suppliers, distributors, wholesalers and retailers, who tend either to operate independently or in collaboration, mainly at the final stages of supply chain.

Supply chain analysis is the process of planning, implementing and controlling the operations of the supply chain as efficiently and effectively as possible from point-of-production to point-of-consumption. Supply chain analysis is the precondition for preparation of activity schedule for specific intervention area. All activities of a particular chain are directed towards the market. If there is one weak link in the chain, the competitiveness of the overall value chain is endangered. This is because individual enterprises do not compete with each other; and instead the entire value chain work together. This is especially true in a business environment in which local enterprises increasingly compete with foreign companies not only in the local market but also and especially, at export destinations.

One of the key constraints in designing any intervention in the agribusiness sector is the lack of sufficient and authentic information on the size of the enterprises, value generated and the different sub-sectors. The process will provide a deeper understanding of constraints and opportunities in each sub-sector (vegetables) and lead to the development of activities for interventions. It will also illustrate roles and responsibilities for each stakeholder.

5.6.2 Supply chain management

There are many factors involved in supply chain management. Flow is the foremost element, the foundation for all aspects of the process. There are three main types of flow, such as the product flow, the information flow, and the financial flow. The product flow includes the movement of goods from a supplier to a customer, as well as any customer returns or service needs. The information flow involves transmitting orders and updating the status of delivery. The financial

flow consists of credit terms, payment schedules etc., to ensure prompt, efficient and accurate monetary transactions.

An efficient supply chain can contribute to an increase in the marketable surplus by lowering down the inefficiencies in production, processing, storage and transportation. Improving the efficiency and the performance of the whole supply chain in vegetables sector are expected to significantly reduce the perishable food waste and increase the income of farmers and other supply chain actors³⁹. It ensures better prices to the farmers inducing them to invest more in the vital inputs so productivity leapfrog. It widens market opportunities for products and thus helps in maintaining an ever-increasing demand for the same.

5.6.3 Value chain analysis

Value chain generally starts with the supply of raw materials at the farm level and ends with consumers who make the choice to buy, or not to buy, the produce. A value chain (links between the farm and the consumer such as procurement, transportation, processing, storage, packaging, distribution, retailing, and other services) analysis is conducted to identify the actors involved in the supply chain of any sub-sector, and to improve access of inputs, markets and services by mobilising the small farmers and policy environment towards facilitation of the chain.

5.6.4 Rationale of the value chain analysis

Entrepreneurs, including the farmers and traders might have suffered from the lack of knowledge on market information and process of operations in the chain. That limits the growth of the market, the profitability of entrepreneurs or exporters, and reduces the ultimate satisfaction of the final consumers. The value chain analysis offers a greater understanding of the market players, their roles and interrelationship, and the point of value chains where inefficiencies of specific vegetable value chains lies. It will enable the GoB and the private sector to identify possible measures required to minimise impediments and improve the environment for private investment, thus increasing the competitiveness and growth potential of the private sector.

³⁹ Because inefficient supply chain results in high wastage of fresh Produce, instability in prices resulting in farmers not getting remunerative prices.

5.6.5 Methodology of value chain analysis

An extensive review of the policies, environmental issues and other barriers affecting the vegetable value chains was done. From this information, the gaps and potential areas for value-adding interventions along the chains towards increased productivity and higher farmer profitability were assessed. The study team organised meetings and Key Informant Interviews (KIIs) with stakeholders (farmers, traders, suppliers, exporters, entrepreneurs, Government officials etc.). Information was collected according to the chain of activities starting from sourcing of inputs to marketing of the particular vegetables down to the consumers. Considering the high intensity of vegetables production and availability of growers/suppliers as well as the closer distance from Dhaka, Shibganj upazilla of Narsingdi district and Sonargaon & Narayanganj Sadar upazillas of Narayanganj district were selected as a study area for the selection of exportable vegetable growers and traders. Then a vegetable export value chain study was conducted in the said upazillas for cost and margin analysis, and chain and subsystems identification of constraints and potentialities. Furthermore, the accumulated knowledge, experience and expertise of the study team guided the analysis based on the objectives of the project. The FGD with vegetables value chain representatives, including exporters, government officials and Hortex foundation was conducted to seek additional information on vegetables export issues as well as to validate the study findings.

5.6.6 Value chain (VC) maps

The term value chain⁴⁰ refers to the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to consumers, and final disposal after consumption. These include designs, production, marketing, distribution and support services. The activities that comprise a value chain may contain within a single farm or

⁴⁰ A 'value chain' in agriculture identifies the set of actors and activities that bring a basic agricultural product from production in the field to final consumption, where at each stage value is added to the product. A value chain can be a vertical linking or a network between various independent business organisations and may involve processing, packaging, storage, transport and distribution. The terms "value chain" and "supply chain" are often used interchangeably (<http://www.fao.org/docrep/013/i2008e/i2008e04.pdf>).

many farms. In order to analyse the value chain, identification of different activities in vegetables farming and export is necessary.

Major activities involved in vegetables farming and export are provided below:

1. Development of vegetables seed at breeder farm/imported seed;
2. Distribution of quality seed to the farmers;
3. Distribution of quality fertilisers to the farmers;
4. Distribution of quality pesticides/insecticides to the farmers;
5. Distribution of bio-agents/sex pheromone trap to the farmers for biological control of fruit flies;
6. Distribution of irrigation equipment to the farmers;
7. Production management/intercultural operation of vegetables;
8. Postharvest management- processing (sorting, grading, washing, treatment) of vegetables;
9. Collection and trading of vegetables (at local level);
10. Marketing of vegetables (in national and international markets);
11. Storage;
12. Packaging of vegetables;
13. Quarantine inspection and certification for export;
14. Customs clearance;
15. Export of vegetables; and
16. Cash incentive support provided by the GOB.

Efficiency of value chain depends on the respective roles of main actors and service providers involved in the value chain. With a view to analysing the roles of the actors involved in the value chain, a comprehensive account of key actors/service providers is shown in Table 5.1.

Table 5.1: Comprehensive account of key actors, services/inputs, and service providers

Actors	Major embedded	Service providers
<ul style="list-style-type: none"> • Input manufacturers/dealers/retailers ▪ Farmers <ul style="list-style-type: none"> ▪ Local traders/collectors ▪ Commission agents ▪ Suppliers ▪ Wholesalers ▪ Retailers ▪ Grader/packers ▪ Transporters ▪ Packaging manufacturer ▪ Processors ▪ Exporters ▪ Household consumers ▪ Supermarket consumers ▪ Wholesalers/importers in international market ▪ Retailers in international market ▪ Consumers in abroad (Ethnic, Mainstream/Supershops) 	<ul style="list-style-type: none"> ▪ Land ▪ Labour ▪ Capital/Financial support/credit ▪ Seed/Planting materials ▪ Fertiliser ▪ Pesticides ▪ Irrigation ▪ Bio-agents ▪ Equipment/machinery ▪ Extension services ▪ Postharvest management services ▪ Marketing services ▪ Transport services (local) ▪ Training (GO/NGO) ▪ Human resource (education, research & extension) ▪ Processing facilities ▪ Packaging facilities ▪ C&F services ▪ Quarantine services ▪ Customs services ▪ Air shipment services ▪ Media/ICT ▪ Waste management 	<ul style="list-style-type: none"> ▪ Ministries (Policy, Act, rules & regulations) ▪ DAE (Production, Extension & Quarantine services) ▪ EPB ▪ Hortex Foundation (Export marketing facilitator) ▪ Education, training and research (Agricultural Universities, Training institutes, NARS Institutes) ▪ Vegetables seed breeder farms ▪ Inputs manufacturers ▪ Input distributors/agent/retailers ▪ Access to finance (Bank/Financial Institutes) ▪ Access to information ▪ Lab (Quality, safety & certification) ▪ Infrastructure and transport facilities ▪ Cold storage ▪ Customs ▪ C&F agents ▪ Media ▪ Airlines ▪ Business associations ▪ NGO/Private sector activities ▪ National political stability ▪ Cultural and religious practices ▪ Development Partners ▪ Public Private Partnership (PPP)

5.6.7 Relationship of value chain actors

Farmer

Small scale farmers sell their vegetables to the village buyers/collectors who go around the villages and bring majority part of their vegetables to the local market for supplying to the exporters.

Collector

A collector is a small-scale trader. Usually, these traders buy vegetables direct from the small scale farmers and mainly sell to local traders/suppliers or to the local markets.

Trader/Supplier

They are small-scale wholesalers who purchase vegetables from the local market/collectors and directly supply to the exporters. On the other hand, some suppliers supply vegetables to the different district/city wholesale markets and superstores.

Exporter

They are the traditional vegetables exporter in Bangladesh. In most cases, they collect vegetables through their selected agents/suppliers across the country. Some exporters are now planning to establish contract farming system following GAP for exporting vegetables as per Government decision.

5. 7 Vegetables domestic supply chain

Vegetables supply chain is characterised by a large number of market actors and outlets including farmers, input sellers, traders, wholesalers, commission agents, retailers, transporters and exporters, and a number of other smaller actors, each contributing to a specific stage in the supply chain.

Its management implies managing the relationship between the chain actors responsible for the efficient production and supply of fresh vegetables from farm to table with the aim of satisfying requirements of consumers and international buyers in terms of produce quality and safety, quantity, supply continuity and price. With an extremely limited control over the pricing of

agricultural inputs, outputs and with inadequate market access and information, Bangladeshi farmers are poorly rewarded for the efforts they make and risks they undertake⁴¹.

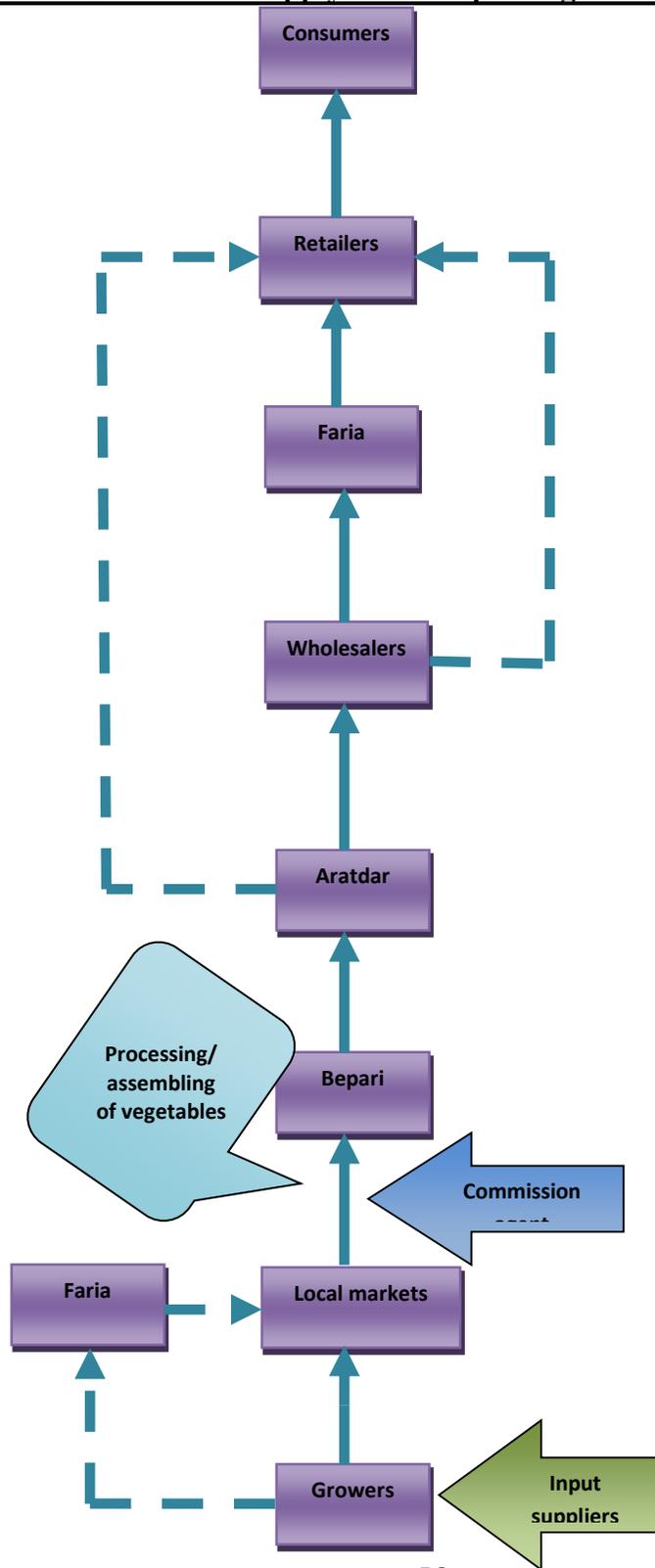
Furthermore, inadequate marketing infrastructure and quality control often result in a significant reduction in produce quality and gross returns. Current postharvest management practices of vegetables, inefficient in nature, often result in considerable deterioration of physical and nutritional quality. Improvement in post-harvest management can largely reduce high levels of postharvest losses in produce. The management of the supply chain starting from cultivation through to the sale to consumers is one of the major options available for minimising this waste. Capacity building or capacity enhancement of stakeholders is a demand of the time to deliver proper services to make quality vegetables for the satisfaction of consumers/buyers.

Bangladesh produces a diversity of vegetables on a seasonal as well as on a round-the-year basis. Simultaneous harvesting often leads to an abundant supply of vegetables in the market and so reduced prices to farmers. Overcoming periodic gluts necessitates the preservation and minimal processing of vegetables⁴². Market opportunities exist for processed vegetables, canned vegetables, frozen vegetables, pickled vegetables, tomato ketchup and paste, potato chips, flakes and other value added potato products, both in the domestic and the export markets. In this context, supply chain management of vegetables has become crucial in agribusiness sector, for most of the vegetables have a very short shelf-life. Hortex developed generalised supply chain map of vegetables at domestic market reflecting the stakeholders involved in the vegetables supply chain. This is shown in Figure 5.1 in the next page.

⁴¹ Facilitation of development of supermarkets and other large-scale retail centres can help small farmers have direct agreements with local growers and be better integrated into the value chain. This will help reduce influence of market intermediaries effectively.

⁴² Minimal processing of vegetables like zero energy evaporative cooler system, which was successfully demonstrated by SCDC of NATP, Hortex Foundation, at project areas during 2008-2014, funded by the World Bank, IFAD and GOB.

Figure 5.1: Generalised supply chain map of vegetables at domestic market



Different functions are associated with vegetables supply chain. The major functions are related to production and marketing.

(a) Production:

Land, seeds/planting materials, irrigation, fertilisers, pesticides and finance are the major inputs for smooth and sustainable production of vegetables.

(b) Marketing:

Marketing system plays an important role in the physical distribution of vegetables as they move from the producers to the consumers. In the absence of a properly organised system for collection and distribution, a very small portion of the vegetables reach the local consumers directly, while the larger part passes through several categories of traders known as middlemen. There are three principal types of marketing channels in the domestic market of vegetables, such as *local, regional and inter-regional*⁴³. In general, farmers sell their vegetables to *faria, paikers and beparies*/selected agents. *Beparies*/selected agents are traders who assemble vegetables from the farmers and local markets and send the same to distant bigger markets for a profit.

5.7.1 Vegetables export supply chain

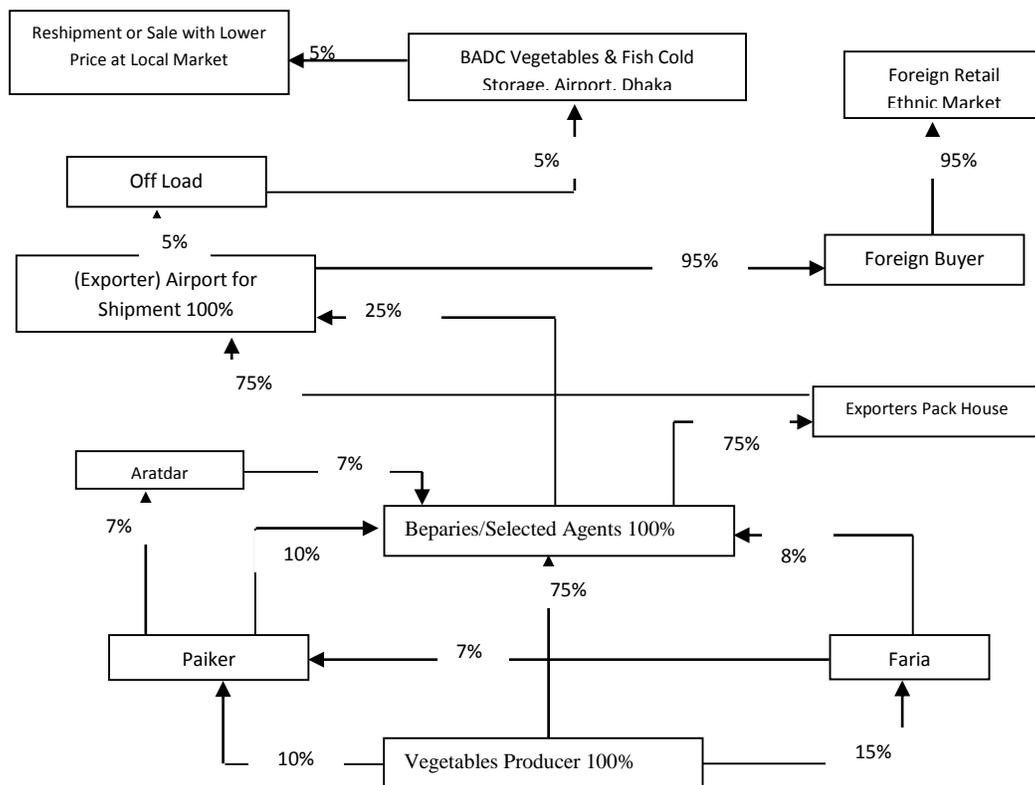
Exporters usually collect vegetables through suppliers/selected agents for export. These middlemen/agents collect orders from various exporters, then go to the producing areas, collect vegetables from farmers/local markets and arrange to deliver the same to the godown/warehouse of the exporters or the processing centres on the day of shipment. The exporters then arrange for sorting, grading, washing and packaging of vegetables in their own traditional way and go for export shipment. They do not use any cool chain, nor do they use international standards for packaging and grading. As a result, postharvest losses⁴⁴ are enormous, sometimes more than 30%.

⁴³ The first type of channel is characterised by the intervention of fewer middlemen between the vegetable producers and their consumers; regional marketing channels consist of an extended chain of intermediaries compared to the local marketing channels, and the inter-regional channels are the most lengthy, both in terms of the number of traders involved between producers and consumers, and the distance over which the vegetables are transported.

⁴⁴ Bangladesh produced over 8 million tons of fruits and vegetables per year except potato. Postharvest losses of fruits and vegetables vary from 18 to 44 percent and cause enormous losses, which are estimated around Tk. 3,392 Crore/year in the country (Hortex Foundation, 2014). This avoidable wastage of high-value produce requires serious

In the export supply chain, vegetables producers sell their produce to Faria (15%), Paikers (10%) and Beparies/selected agents (75%)⁴⁵. Beparies/selected agents working for exporters collect vegetables from the production areas. Exporters invest money through Beparies/selected agents for collecting export quality vegetables. After field level sorting and packing, Beparies/selected agents hand over vegetables to exporters. Export supply chains of vegetables in Bangladesh are shown below in Figure 5.2.

Figure 5.2: Export supply chain of vegetables in Bangladesh



(Source: Saha, 2000, incorporating interview findings of this study)

5.7.2 Supply chain of vegetables at Shibpur, Narsingdi district

Considering the high intensity of vegetable production and availability of growers, traders and suppliers, Shibpur upazilla of Narsingdi district was selected as a study area for the selection of

attention of all, such as the farmers, the market handlers, the scientists and the policy planners as there is no sense in producing more for wasting.

respondents. In Shibpur/Narsingdi district, farmers bring their vegetables to the faria/local hat/bazar where a large number of paikars/traders/exporters' agents procure vegetables for Dhaka city markets and supply to the exporters. About 90% of the vegetables from Shibpur/Narsingdi district are distributed to Dhaka City⁴⁶,

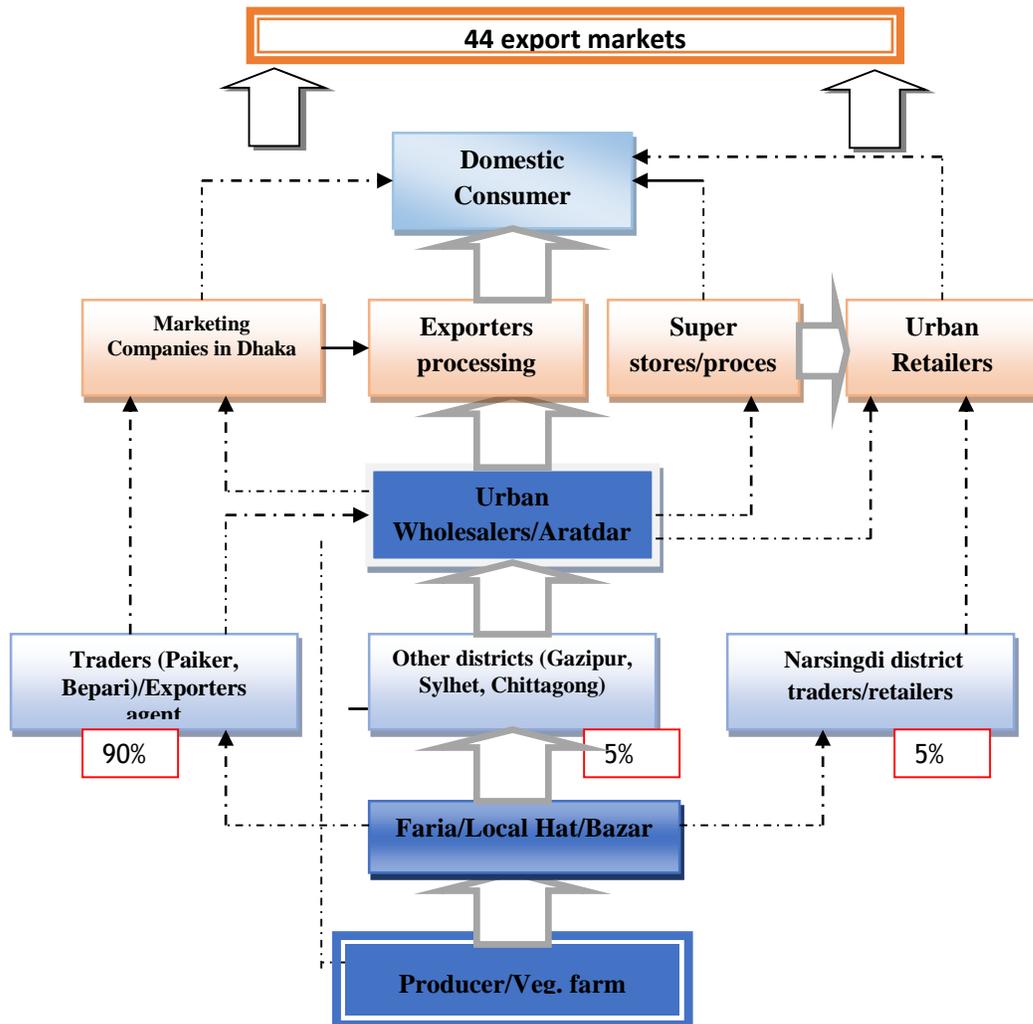


Figure 5.3: Supply chain map of vegetables at Shibpur/Narsingdi district

While 5% is destined to other districts, and 5% are consumed at Shibpur/Narsingdi through local traders. The retailers collect vegetables mostly from the Dhaka whole sale markets. Marketing

⁴⁶ Outside Shibpur/Narsingdi, the primary destinations of the vegetables are the wholesale markets of Dhaka city and the different marketing companies, super stores, processors and exporters.

companies and superstores also collect vegetables from City traders/suppliers who collect vegetables from Shibpur/Narsingdi through traders. Vegetables supply chain map at Shibpur/Narsingdi district is incorporated above in Figure 5.3.

A large number of local traders are associated with fresh vegetables business in the study area. Supply chain analysis reveals that most of the actors in the supply chain suffers from acute lack of knowledge on product quality and safety, sources of microbial and chemical contamination of vegetables, proper postharvest activities (sorting, grading, washing, packaging), and transportation. As a result postharvest loss is incurred at different stage of the supply chain. To make the export supply chain of vegetables from Shibpur/Narsingdi district more efficient, capacity building of different stakeholders along the chain needs to be strengthened.

5.7.3 Designing of value chain diagram

Shibpur upazila of Narsingdi and Sonargaon upazila of Narayanganj districts are considered as the important exportable vegetables producing areas in Bangladesh. Despite its enormous contribution to the national economy and employment, the vegetables sub-sector is beset with a number of problems. For mapping the value chain, information was collected from relevant stakeholders, viz., farmers, input dealers, traders, suppliers, transporters, retailers and exporters. Shibpur upazila holds a number of roadside markets where brisk transactions take place between the farmers and traders/selected agents, and they supply eggplant (brinjal) to major wholesale markets of Dhaka City and to the exporters. The exportable types of brinjal includes: BARI-8, Purple king, Kajla, Singnath, Challenger, Surma, Delight, Banani etc⁴⁷. To understand the constraints and opportunities, value chain maps are developed for vegetables and interventions are identified to mitigate the constraints.

The cost of production of brinjal per bigha (33 decimals) in Shibpur upazila is calculated at Taka 61,015, gross return Taka 1,26,000 and net return taka 64,985. It indicates that brinjal cultivation is a profitable venture for the farmers. Farmers' average selling price of brinjal was Taka 18 per kg. It is to be noted that the market prices of brinjal remain higher during the period of July-

⁴⁷ Training Manual for vegetables production and post-harvest management under contract farming, by BFVAPEA, BPC, Ministry of Commerce and Agri Business for Trade Competitiveness Project, Bangladesh (ATC-P)

September. Average price (per kg) was taka 20 for traders, taka 32.60 for wholesalers and taka 37 for retailers. This value chain can be made more profitable for the farmers by developing contract farming, direct farmer-market linkages, involvement of exporters during production and introduction of sex pheromone trap⁴⁸ for minimising the input cost primarily through reduced use of chemical fertilisers, pesticides/insecticides, enhancement of productivity through replacing local varieties with high yielding improved varieties, adding value through sorting, grading, washing and improved packaging in containers, use of cool chain transport for promoting export and minimising the role of market intermediaries in the supply chain. In a small first step, the DAE in Dinajpur hung 100 pheromone traps on 100 litchi trees in Dinajpur Sadar and Biral upazila. The trap is a small pheromone capsule in a plastic bucket, half filled with water. Male pests are attracted to pheromone and drown in the water (Karmaker, 2016). The use of such trap in vegetables fields will help farmers' tendency to use pesticides excessively and thereby comply with phytosanitary requirements.

A sample value chain analysis and value addition of brinjal on one crop season is given below in Figure 5.4 and Figure-5.5 respectively. Calculation of monetary gains along 4-phase value chain of brinjal at the domestic market and export value chain of brinjal is incorporated in Figure 5.6 and Figure 5.7, respectively.

⁴⁸ The most serious insect of brinjal is shoot and fruit borer. To control insect damage, higher doses of insecticides with shorter intervals are very often practiced by the farmers. In the case of brinjal, the major disease is bacterial wilt. The major insecticides uses by the farmers are of the Cypermethrin (Superthion) groups, whereas the major fungicides are Dithane M45, Thiovit, Minicaper and Redomil. It is noted here that sex pheromone trap is gaining popularity for the control of insect pests to avoid chemical residues in brinjal. The trap is in use to control insect pests, where porous plastic tubes containing 2-3 ml pheromone attract male moth for 6-7 weeks. Still, the rate of adoption of the technology is lower, and the farmers are increasing their production cost by spending on both for the pheromone trap and the chemical pesticides side by side. However, they admitted that, the sex pheromone trap alone can control insect pest by 80%.

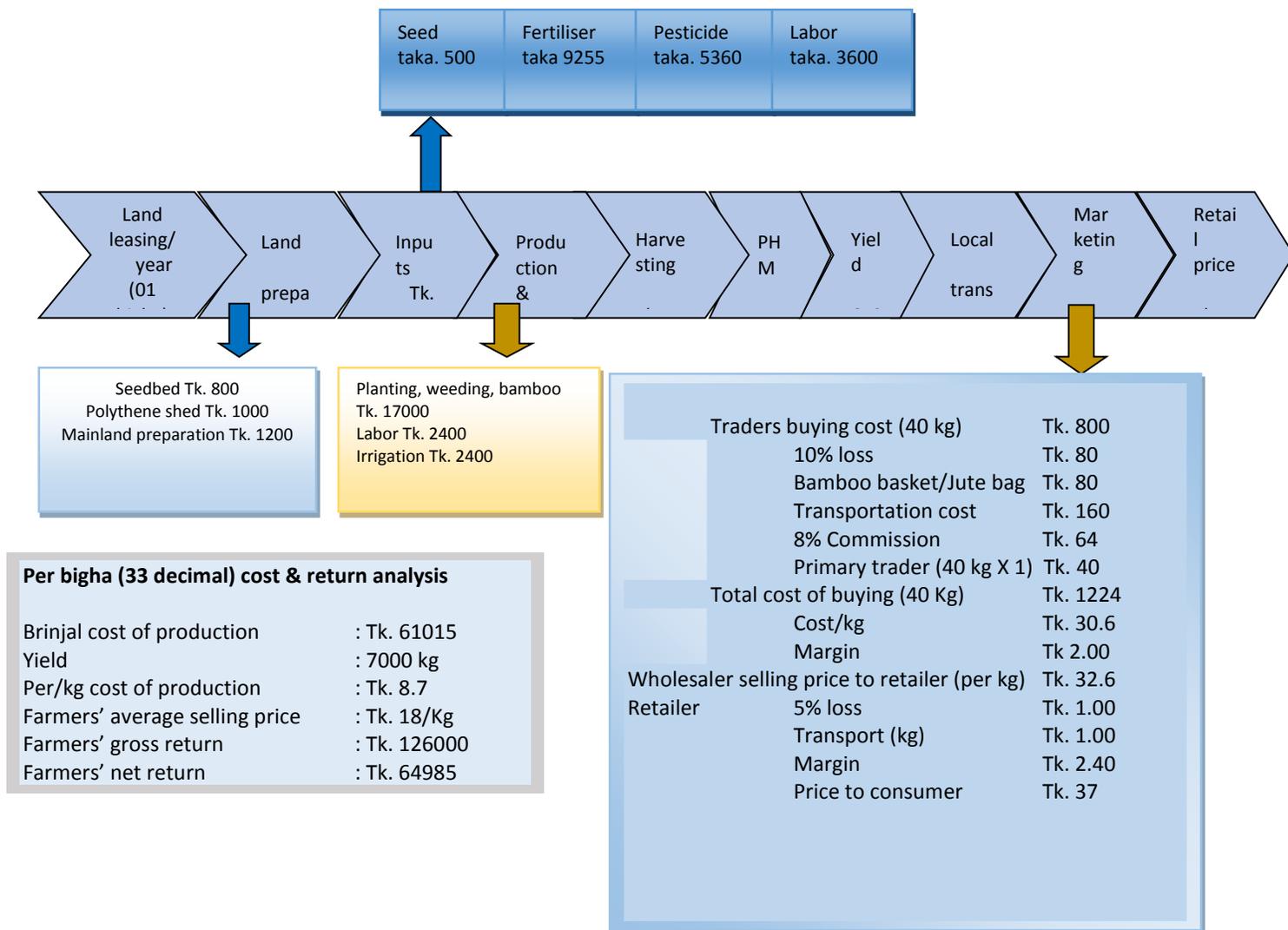


Figure- 5.4: Value chain analysis of brinjal per bigha (33 decimals) at Shibpur upazila

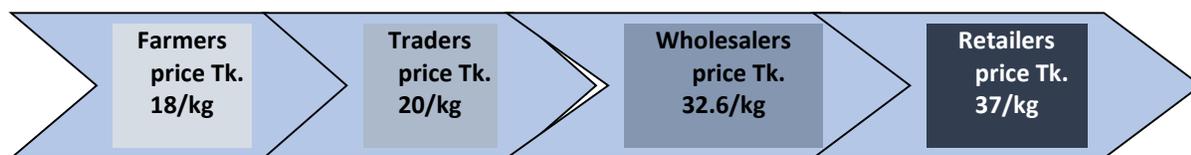


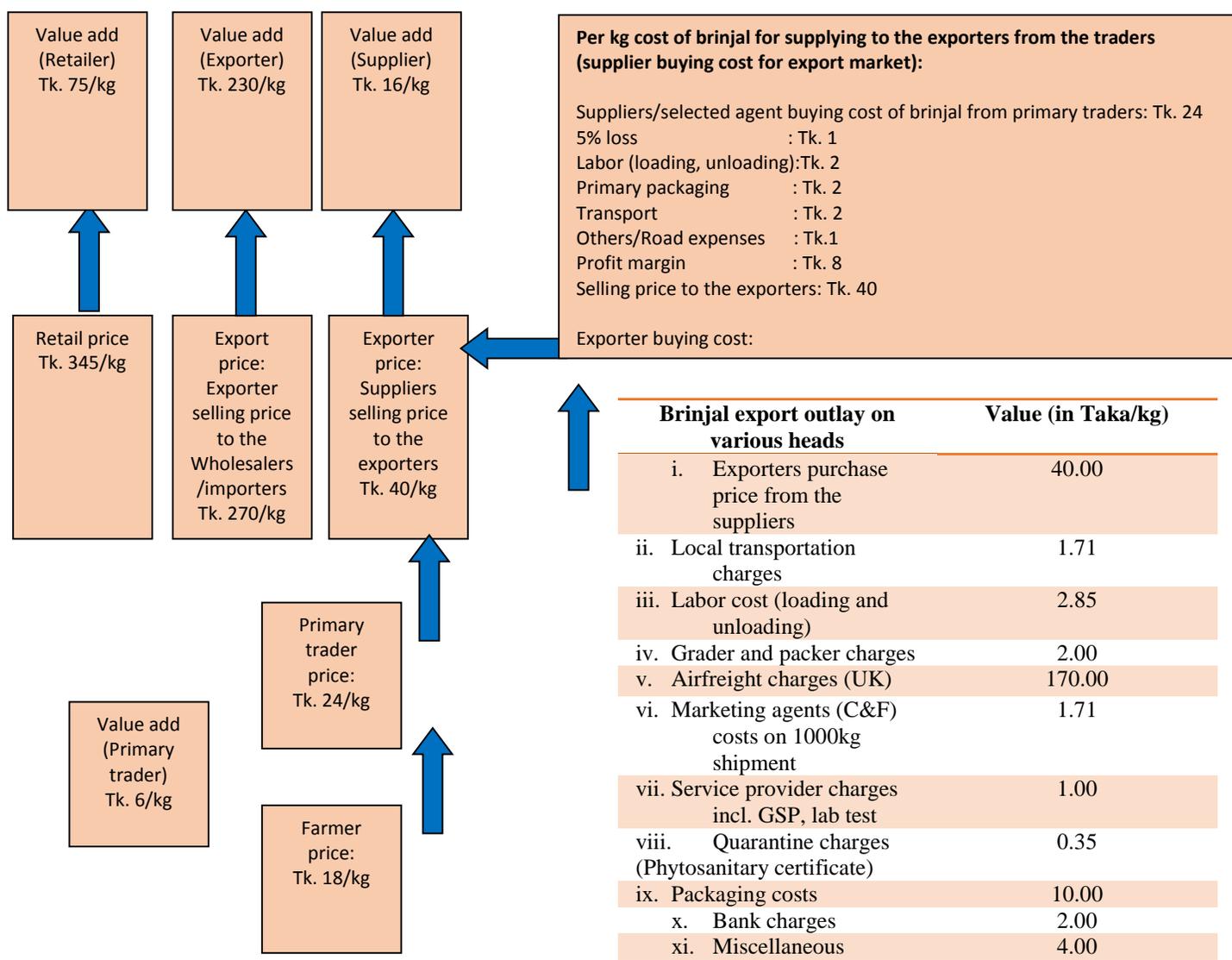
Figure 5.5: Value addition of brinjal in the domestic market

(Note: The value addition by different stakeholders vary greatly along the supply chain.)

Figure 5.6: Calculation of monetary gains along 4-phase value chain of brinjal (domestic market)

	<p>PRIMARY PRODUCER = Brinjal farmer (<i>delivers vegetables/brinjal buyer/consumer</i>)</p> <ul style="list-style-type: none"> ➤ Production Costs (PC) = taka 8.7/kg ➤ Sales Price (SP) = taka 18/kg ➤ Marketing Profit (MP) = SP - PC = taka 9/kg
	<p>PRIMARY MARKET = primary trader/collector/faria (<i>supply to the traders</i>)</p> <ul style="list-style-type: none"> ➤ Purchase Price (PP) = taka 18/kg ➤ Marketing Cost (MC) = taka 1/kg ➤ Sales Price (SP) = taka 20/kg ➤ Marketing Margin (MM) = SP - PP = taka 2/kg ➤ Marketing Profit (MP) = MM - MC = Taka 1/kg
	<p>SECONDARY MARKET = secondary trader/selected agents (<i>supply to wholesaler/market</i>)</p> <ul style="list-style-type: none"> ➤ Purchase Price (PP) = taka 20/kg ➤ Marketing Cost (MC) = taka 10.6/kg ➤ Sales Price (SP) = taka 32.6/kg ➤ Marketing Margin (MM) = taka 12.6/kg ➤ Marketing Profit (MP) = MM - MC = Taka 2/kg
	<p>RETAIL MARKET = retailer/seller (<i>retail marketing</i>)</p> <ul style="list-style-type: none"> ➤ Purchase Price (PP) = taka 32.6/kg ➤ Marketing Cost (MC) = taka 2/kg ➤ Sales Price (SP) = taka 37/kg ➤ Marketing Margin (MM) = taka 4.4/kg ➤ Marketing Profit (MP) = MM - MC = taka 2.4/kg

A four-phase value chain shows above 200% rise in the price for brinjal from taka 18/kg at the farm gate to taka 37/kg as the final retail price at Dhaka City.



Note: Our traditional exporter pays Taka 40.00/kg on an average price for brinjal to their suppliers/selected agents for export. However, contract farming production of vegetables have recently been started in some areas in Bangladesh, where the exporters purchased brinjal and other vegetables from the farmers directly by Taka 40-50/kg.

Figure 5.7: Export value chain of brinjal

Brinjal is one of the major exportable vegetables in Bangladesh. It is exported mainly to ethnic markets abroad. Most of the exporters collect brinjal from the farmers through their selected suppliers/agents and some of them also collect from the local market and Shyambazar/Karwan bazar of Dhaka City. The vegetables are sorted, graded, washed and packed in paper carton boxes for air shipment without maintaining cool chain for transportation to the airport.

In the value chain analysis, land leasing and land preparation was estimated to constitute 16.40% and 4.9%, respectively, of the total cost of production, while inputs, production & intercultural operation, harvesting, postharvest management (PHM), and local transport cost incurred constitute 30.68%, 35.72%, 6.55%, 0.82% and 4.93%, respectively. In the export value chain, there is a huge price gap between farmers' price and retail price at the overseas market in UK. Farmers sell their brinjal at the price of Taka 18.00 per kg while an ethnic consumer's (in the UK) purchase price is seen Taka 345.00/kg (Figure-7). Inefficient postharvest handling (causing losses), poor packaging, deterioration during transport, including cost of quarantine certificate and customs clearance, add to the cost of brinjal marketing. *The farmers' share in consumer price could be increased by minimising (not eliminating) the role of market intermediaries⁴⁹ in the existing supply chain and improved marketing system.*

Contract farming should be developed for ensuring quality and safe produce and supporting better price for the farmers. Inadequate market infrastructure facilities, inadequate transport systems, lack of efficient market information system hinders the development of a strong value chain of brinjal. Lack of Producers Organisation and Commodity Collection and Marketing Centres at the production areas also constrains export of vegetables. Integration, coordination and capacity building of all value chain partners need to be strengthened for developing efficient supply chain of all vegetables, including brinjal, for promoting export.

⁴⁹ Profits earned by middlemen play an important role in Bangladesh in bringing fruits and vegetables from producers to markets. They earn a larger profit margin. In Dhaka city, for example, retailers capture 43 percent and 31 percent of total profits for eggplant and banana compared to only 18 percent for rice (Sabur, 24 Aug, 2014, Improving the value chain of fruits and vegetables, *The Daily Star*, Dhaka,)

5.7.4 Access to finance for small-scale vegetable farmers

Vegetables producers do not get subsidised prices for fuel and electricity and are not entitled for tax exemption. They also do not have access to cheap sources of finance. However, it is also true that credit programmes/matching grants can facilitate access to finance for vegetables farmers. The case study of Ms. Kazi Munni, a potato exporter, highlighted in **Box 4** below clearly illustrates the supply side constraints faced by vegetables exporters in the country, and the remedial measures required from the Government in order to effectively address those constraints.

Development partners/NGOs can assist vegetables farmers in improving farm productivity, income and effectiveness of vegetables production system through the promotion of technology generation, dissemination, adoption, and increase of efficiency of extension systems.

Box 4: Case Study of Kazi Munni (Exporter)

Kazi Munni is a successful potato exporter from Bangladesh. She started this business in 1993 through establishing her business enterprise, named Rifat Enterprise. For the last 8 years, she has also been exporting all types of vegetables as well as fruits, agro products and sea foods. Her major exports target are the Asian countries. As an exporter, she has found Russia, Saudi Arab, Kuwait, Indonesia, Vietnam etc. trustworthy in maintaining business contracts. For her vegetable export business, she finds bureaucratic procrastination and poor transport infrastructure in Bangladesh as the main constraints in increasing vegetables export in the highly competitive international market. She faces difficulties regularly in renewing licences, transporting vegetables at different stages, collecting cash incentive on export value, processing large numbers of documents in different stages, receiving authentic SPS certificates etc. However, she has been continuing her business successfully for the last two decades. She considers that policy interventions by the Government, such as provision of financing for small vegetables farmers (for 10-15 years) at minimum interest rates of 3-5% for exporters, developing vegetables' storage facility and safe/smooth transport facility can effectively address the constraints faced by the vegetables export sub-sector. She also suggests that the Government should build as well as improve bilateral trade relations with countries like Russia, Sri Lanka, etc. She is very optimistic about Bangladesh's high potential in vegetables export and rising demand of fresh vegetables in international market.

They can also intervene through establishing direct farmer-market linkage for minimising the role of the market intermediaries in the supply chain⁵⁰.

5.7.5 Constraints and opportunities

As identified during the value chain analysis of vegetables, the major factors that limit the growth of the vegetables sub-sectors in Bangladesh are highlighted in Table 5.2.

Table 5.2: Constraints and opportunities of vegetables farming

<i>Constraints identified</i>	<i>Opportunities prevailed</i>
Farmers lack knowledge about quality seed, fertilisers, pesticides/insecticides, bio-agents and the selection criteria of planting materials of vegetables during their purchase	Formation of farmers' groups and capacity-building of the small scale farmers through proper training
Lack of knowledge of farmers on improved production management of vegetables	Provide extension services to build capacity of small-scale farmers for improved vegetables farming and its postharvest management through proper training.
Lack of quality inputs like seed, fertilisers, pesticides/insecticides.	Development of farmers' linkage with the good commercial input suppliers, Govt. extension department and NGOs.
Lack of vegetables collection and processing centres at field levels.	Establish adequate numbers of collection and processing centre at field level for proper postharvest management.
Lack of effective transport system to carry vegetables from farmgates to market/exporters/processing centres	Ensure cool chain transport and develop farmers groups marketing system to minimise the cost of transportation to supply to the exporters and super shops.
Inappropriate wholesale market.	Develop good infrastructure for the national wholesale market and newly-developed national distribution centres with modern facilities
Farmers lack linkage with organised buyers viz., wholesaler, super stores, processors, exporters	Develop direct <i>farmer-market linkages and adoption of group marketing</i> approach to link with the wholesalers, super stores, processors, exporters as
Lack of knowledge of farmers, traders, suppliers, wholesalers, retailers, transporters, processors, exporters on quality and safety of vegetables	Provide training to different stakeholders on vegetables quality and safety, protection against microbial, chemical and physical contamination in the vegetables supply chain.

⁵⁰ Main focus of the Development Partners/NGOs should be to integrate small and marginal producers of vegetables with the market through development of specific supply chains.

Lack of vegetables contract farming	Develop contract or group farming for ensuring vegetables quality and safety.
Limited contact with DAE and Marketing Department for improved & hygienic production, postharvest management and marketing of vegetables.	Develop effective linkage with DAE, DAM, Hortex Foundation, Business Associations.

If these constraints can be effectively addressed, productivity of farming, marketing of vegetables and incomes of growers/exporters would be enhanced.

5.7.6 Strategies for implementing interventions

Before implementing any intervention, the following 8 steps/set of activities (Figure 5.8) need to be followed sequentially. Some steps, however, may be skipped, if required.

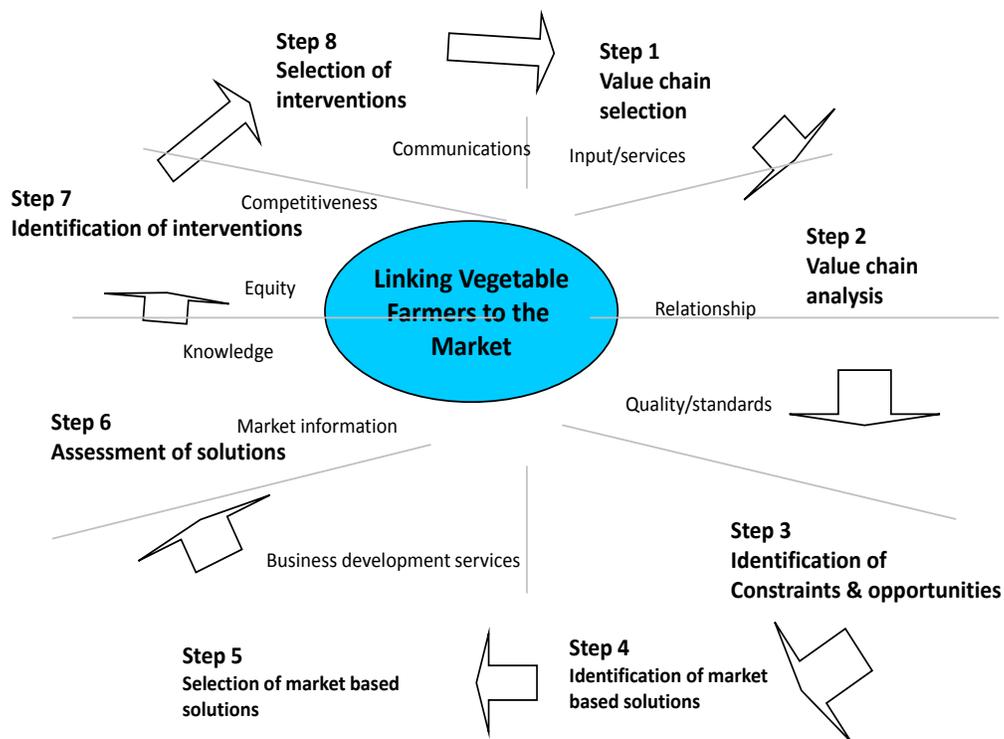


Figure 5.8: Strategies for implementing interventions

5.7.7 Identification of interventions

One of the key constraints in designing any intervention in the agribusiness sector is the lack of sufficient and authentic information on the size of the enterprises and values generated. To adopt interventions, constraints need to be prioritised based on their gravity, i.e., those that need immediate attention. Some of the selected interventions are presented in Table 5.3 for implementation on commercial vegetables farming for promotion of exports.

Table 5.3: Identification of interventions

VC actors	Existing constraints	Proposed interventions
Vegetable farmers	Lack of capital	Provision of timely loan on easy terms from Bank/NGO to vegetables farmers.
	Lack of technical knowledge on improved production, postharvest management and marketing.	Capacity-building of farmers through training.
	Lack of market information.	Government needs to develop Horticultural Crops Marketing Information System and disseminate it through MOA (Hortex Foundation, DAM) and MoC (EPB)
Collector and Trader	Inadequate facilities of transportation	Especially developed cool chain/pick-up van for transportation of vegetables from farm gate to market, supershop, processor and exporters
	Lack of facilities in the market place	Improvement of market facilities in terms of space, sanitation, sorting, grading, washing, cool chamber
Input supplier/	Demand for quality inputs (seed, fertilisers, pesticides/insecticides, machinery/equipment) by farmers	GoB and private sector interventions are required to ensure supply of quality inputs to the farmers.
Service providers	Inadequate linkage among VC actors to share the available business information	Development of Horticultural Crops Knowledge Bank in line with Rice Knowledge Bank (RKB) for VC actors and disseminate it through ICT based communication network (mobile, website) by developing business model.
	Lack of knowledge and experience of VC actors	Develop VegVC training module based on training needs and improve capacity building of VegVC actors through training.
	Lack of business plan and enterprise experience of farmers	Business plan for VegVC actors needs to be developed to bring vegetables as commercial

		venture. Development Partners, NGOs, Private sector, Exporters, Processors, Super stores may come forward for larger investment for developing contract farming.
	Lack of institutional capacity	For export promotion of vegetables, different institutions, who are involved as production/extension/research/marketing facilitator, need to be strengthened both of technically and financially.

5.7.6 Plan of action

It has been reported by some respondents (viz., exporters) that some importers of fresh produces (vegetables, fruits) have diverted their imports from Bangladesh to other countries such as Malaysia, India, Thailand, Kenya and Ghana, due to lack of quality, irregular supply, untimely arrival of air flights, restriction of imports for quarantine, pest & diseases. Immediate intervention from different ministries, Bangladeshi exporters, government agencies/departments, growers etc., among others, are needed to work in coordination with others for ensuring quality production of vegetables, storage in cold storage to preserve freshness and supply to export markets on time at competitive prices.

More importantly, Bangladeshi firms (who do not follow contract farming) have to discontinue its current practice of serving export markets following *market-to-market approach* (i.e. buying vegetables from domestic market and selling those to foreign markets). The reason is that when exporters buy vegetables from domestic market, they buy produce of heterogeneous quality. Not all the vegetables procured from open market meet import buyers' requirements. In order to produce quality vegetables to meet foreign buyers' requirements, suppliers/exporters will have to reach out to the grower stage and monitor if vegetables are produced following certain procedures/standards in order to meet importers' requirements. Contract farming can be of help in this regard.

Again, quality of the vegetables in demand has to be improved by different value addition activities like upgrading the packaging, processing, handling, grading and transportation system.

Further, Plant Quarantine Wing of the DAE needs to be strengthened by improving its capacity for quarantine inspection and monitoring through one stop quarantine inspection and certification facilities.

The MOA and MOC, in collaboration with the Hortex Foundation, the Vegetables and Allied Products Exporters Association (BFVAPEA), the DAE, research organisations (such as BARI, BAU), development partners/NGOs and other private and service providing organisations, can play a more active role in vegetables export promotion. The roles that the HF, BFVAPEA and DAE could play include- assisting quality production following GAP, postharvest management and developing efficient market intelligence support for promoting exports.

5.8 Supply-side constraints of vegetables export from Bangladesh:

Vegetables producers/suppliers and exporters face a number of impediments in producing and exporting vegetables. These major supply side bottlenecks are of two types: Backward supply chain constraints and forward supply chain constraints. These are detailed in this sub-section.

5.8.1 Backward supply chain constraints:

The main backward supply chain impediments include poor and traditional production methods, lack of knowledge about appropriate use of secondary inputs, including fertiliser/pesticides, use of modern technology, lack of awareness about proper harvesting time and technique, post-harvest management (viz., peeling, sorting, grading, washing, packaging and storage), traceability and lack of knowledge on GAP.

5.8.1.1 Poor and traditional production methods: A majority of the vegetables farmers in Bangladesh still follow traditional production methods. Vegetables produced using traditional methods often fail to meet quality standards of export markets and thereby lose their ability to remain competitive. Modern methods of cultivation through mechanisation of cultivation, planting, harvesting, and postharvest handling are needed to reduce production costs, reduce labour inputs, and increase farming efficiency and productivity. The critical commodities, such as brinjals, chilies, leafy vegetables, citrus (citrus variety, locally known as zara lebu⁵¹) and snake

⁵¹ Citrus variety is acceptable to foreign buyers if it is free from canker. If the citrus variety contains black spots, it will be rejected.

gourd (chichinga) are not yet produced through contract farming, even though contract farming is helpful for even small-scale farmers, as it offers access to new markets, and brings in technical assistance, specialised inputs and financial resources.

5.8.1.2 Lack of knowledge about timing and dosage of pesticides use: Most growers of vegetables are small farmers having minimum or no institutional knowledge about the proper dosage of pesticides and cultivation techniques. They follow traditional production techniques learnt from their predecessors, although their knowledge has increased to some extent in recent times due to knowledge transfer by DAE officials and Hortex Foundation activities. But they still follow practices that are dangerous to quality vegetables and human health. For instance, in a recent test, the National Food Safety Laboratory (NFSL) of the Institute of Public Health found that out of 27 cauliflower samples, collected from the growers as well as from the wholesale and retail outlets between November 1 to November 15, 2015, eight contained residues of three dangerous pesticides in eight samples at levels much higher than what is permissible.

In cauliflower, presence of Malathion residues was 12 times higher (251 microgram as against the permissible 20 micrograms). Use of other pesticides was also found beyond the legal limit/normal dosage. Similarly, out of 27 Red Amaranth samples collected from the growers as well as from the wholesale and retail outlets in 16 days beginning November 16, the presence of Chlorpyrifos residues were found in three samples at levels 28 to 31 times higher than what is permissible (*The Daily Jugantor*, 24 Dec, 2015; *The New Age*, Dec, 27, 2015). The indiscriminate overuse of pesticides poses serious health hazard. Similarly, farmers often are not aware of, and do not follow the proper time of, final spraying before harvesting. Farmers and traders often use spray directly on the vegetables just before harvesting, although such pesticide spray has to be applied not less than 7 days before harvest. This causes serious health risks for consumers.

5.8.1.3 Lack of awareness about proper harvesting time and technique: Findings of the study reveal that Bangladeshi vegetables growers/pickers lack proper harvesting knowledge. They are also not much aware of the exact moment/stage to pick a crop; i.e. their knowledge of maturity indices for each variety of vegetables/crops is often inadequate. The stage at which the vegetables would be harvested has an important bearing on quality. This is even more applicable in the case

of perishable vegetables⁵². The maturity index of okra is the 6th day after anthesis. So, if okra is harvested after 15 days of anthesis, its quality will suffer. For instance, vegetables harvested too soon may look green but are of poor quality. On the contrary, delayed harvesting may increase their susceptibility to decay, resulting in poor quality and hence low market value. Delayed harvesting (i.e. over-matured) usually result in poor taste, flavour and shorter post-harvest life. Similarly, use of improper or poorly designed harvesting tools/equipment and harvesting containers, rough and non-hygienic handling of harvested produces and dumping of produces reduce the quality of vegetables. As such, farm workers must be properly trained in harvesting if quality is to be assured. The farm workers must also avoid doing things near the non-protected vegetables that can lead to contaminating them, such as smoking, spitting, chewing gum, eating and sneezing.

5.8.1.4 Lack of knowledge on GAP: Growers also lack proper knowledge on Good Agricultural Practices (GAP). One respondent mentions that the pesticide spray has to be applied not less than 7 days before harvest. Farmers often use spray directly on the vegetables just before harvesting due to lack of knowledge and their greed to have high price of vegetables. These practices create health hazards for consumers. Farmers and business lack knowledge about the quarantine rules and regulations of different countries.

5.8.2 Forward supply chain constraints:

Forward supply chain constraints are concerned with export processing, trade processing, compliance with international standards, international freight or transportation etc. These constraints include poor standards and testing facilities, lack of modern storage facility in vegetables producing regions, poor transportation facility including insufficient refrigerated reefer van, lack of central and regional packing house with controlled temperature, constraints at Hazrat Shahjalal International Airport (HSIA) (viz., lack of loading and unloading facilities, lack of

52 For example, if tomatoes are picked after full colour is developed, the fruits do not survive transport beyond the primary market. Mechanical injury due to poor handling, microbial infection during storage and packing and transport from distant areas, are causes of post-harvest spoilage. It is estimated that 16-43 percent of postharvest losses are experienced in the handling of perishable vegetables and fruits. ('Bangladesh - Articulating trade related support measures for agriculture' by Tofazzal Hossain Miah and Jamie Morrison in FAO , 2011)

sufficient storage management in airport, lack of adequate scanning facilities, lack of cold storage inside the airport, insufficient air space) high air fare, lack of traceability and lack of proper research.

5.8.2.1 Poor standards and testing facilities: Vegetable exports from Bangladesh suffer due to the absence of adequate and state-of-the-art laboratory and testing infrastructure and facility, which is extremely essential in order to ensure that our vegetables comply with international health and food safety standards that are applied at the port of entries in the export destinations.

The DAE needs to carry out laboratory testing in some cases in order to issue phytosanitary certificate. An official from the DAE confirms (in the FGD and subsequent interview) that their laboratory lacks necessary equipment and facilities to ensure food safety of vegetables and other exportable items before issuance of phytosanitary certificate. For example, the DAE does not have even proper inspection tools (including inspection tables and handy microscopes such as Dino-Lite digital microscope with lighting options) with proper lighting connection. Such table is needed to inspect if there are any insects and pests (which are very small in size) in vegetables. In the absence of such inspection tables with proper lighting, DAE officials rely on observation with naked eyes, which cannot detect foreign elements, including insects, in exportable items. Such observations through naked eye often fail to detect small-sized insects in exportable items. As a result, there is great a risk of export of vegetables consignment containing insects. Similarly, the DAE laboratory lacks necessary tools to identify gas concentration for fumigation. Dry items, such as rice and tobacco need fumigation. Findings from the FGD revealed that the DAE needs to have inspection tools (such as white inspection table with lighting options) to get accurate results in inspection before issuance of phytosanitary certificate (PC) for export. Some export markets (viz., Indonesia) require accreditation of the laboratory from where vegetables are tested to assess their food safety. The DAE laboratory is not equipped with modern equipment and necessary skilled personnel to meet international standards for testing and certification. As such, it is not internationally accredited. At times, export market authorities do not accept the phytosanitary certificates issued by the DAE because the certificates do not contain necessary comments in appropriate columns.

Similarly, the Bangladesh Standards and Testing Institute (BSTI) suffers from a number of problems, which include the absence of modern testing equipment, lack of skilled manpower and the poor ability to enforce Hazard Analysis and Critical Control Points (HACCP) to carry out tests that meet international standards. Again, the lab facilities available at the BARI are very limited, and it does not have modern machinery and equipment to meet international standards for testing. Moreover, the BARI also suffers from logistic support, dearth of skilled manpower as well as inadequate prior funding facilities.

5.8.2.2 Lack of modern storage facility in vegetables producing regions: Currently, there is a lack of cold storages (with controlled temperature) in regional centres where vegetables are produced extensively. This is a major constraint in maintaining freshness and other quality parameters of vegetables. There is also no cold storage facilities inside airports where vegetables are kept before shipment. As a result, the freshness of vegetables deteriorates.

5.8.2.3 Constraints at the HSIA: Respondents, especially the vegetables exporters, opined that a large number of problems and obstacles faced by them actually centre around the Hazrat Shahjalal International Airport itself. Such problems, as identified by the respondents, are highlighted below:

A. Lack of loading and unloading facilities: Loading, unloading and handling procedures at the HSIA for vegetables are not modern and adequate, and are also time-consuming. The whole process at the airport involves the following:

- (a) Unloading from open trucks,
- (b) Loading into trolleys,
- (c) Weighing,
- (d) Unloading from trolleys for scanning,
- (e) Reloading into trolleys after scanning, and
- (f) Waiting for the flight while keeping the vegetables consignment under the open sky at the cargo village.

The process usually consumes 7 to 8 hours, and is very much cumbersome. The unloading is done in a totally careless manner. Packets containing vegetables are thrown from trucks to trolleys or on the floor. The limited space in the small cargo village area adds to the problem. Only three

trucks with a vehicle load of 2.5 metric tons each can unload vegetables at a time. This implies that other trucks will have to wait outside the cargo village queuing up for their turn for unloading. The long period of time taken in processing and the careless handling at the airport result in spoiling a major portion of the fresh vegetables.

B. Lack of sufficient storage management at the airport: Respondents also reported that while the absence of post-harvest storage management is one of the reasons for high wastage in the vegetables sector, another reason is the absence of cold storage facility in the cargo village at the airport. As revealed in sub-section 4.3.5.1 above, vegetable exporters need to wait with their vegetables in the cargo village for 7 to 8 hours. During the summer season, it emerges as an acute problem for the exporters, as the scorching heat spoils a high portion of the vegetables. Exporters have been demanding the introduction of a cold storage in the cargo village for perishable goods, but to no avail. While the Bangladesh Agricultural Development Corporation (BADC) has a cold storage in its premises, its capacity is inadequate.

C. Inferior and unhygienic packaging: Inferior and unhygienic packaging is a major barrier to export of vegetables. Packaging used for exportable vegetables consists of mainly round bamboo baskets and second-hand cartons of different shapes. As a consequence, vegetables are not properly positioned, and thereby get mis-shaped and damaged. Further, the second-hand cartons usually have no ventilation holes and do not have the necessary strength, which cause bruising of the vegetables (Sabur, Palash and Khairunnahar, 2004). A key respondent mentioned that Bangladeshi packaging will have to improve a lot to make our vegetables export competitive. He opines that the packaging used by Bangladesh vegetables exporters are not scientific. As a result, these packaging absorbs excess moisture and get spoiled before reaching export destinations. Again, if the package is found of higher weight than the standard, it entails more airfare, which makes the exports less competitive.

D. Lack of adequate scanning facilities: During data collection phase in the first quarter of 2016, respondents commented that there was no scanner at the cargo village of the HSIA to scan the vegetables-laden container. The absence of this non-intrusive inspection technology implies that all exports consignments will have to undergo physical inspection and examination. This not only increases the processing time but also enhances the transaction costs for vegetables exports. It also

leads to a huge amount of vegetables waste during the transportation process involved in air shipment. Recently (April, 2016), the Civil Aviation Authority of Bangladesh has allocated a separate scanner (one of the four screening machines at Hazrat Shahjalal International Airport) for fruits and vegetables at the Dhaka airport following demands from exporters. Many of these exporters were failing to make their shipments due to delays in screening since March 21. This scanner is being used solely for fresh produce since April 11, 2016 (Mirdha, 2016). The situation at the airport has improved to some extent after the allocation and use of a separate scanning machine for fresh produce. More scanning machines are necessary for quick scanning of exportable vegetables.

E. Insufficient Cargo Space: Insufficient cargo space is another problem for the vegetables exporters. As Biman Bangladesh Airlines, the national flag carrier, has no dedicated cargo planes, vegetables products are exported in passenger aircrafts. Therefore, space for cargo depends on the number of passengers and frequency of passenger flights. There are more cargo space if there are less passengers in a particular flight, meaning that a full passenger flight inherently reduces the cargo space availability for vegetables. Scarcity of cargo space becomes more acute during the summer season from June till October, which is actually the pick time for vegetables export. At that time, demand for vegetables in export market destinations far outweighs demand during the other months.

The space crisis in aircrafts has become even more severe in recent times due to the ban imposed on direct flights from Dhaka to the UK. This problem now seems to have been taken care of with the appointment of Redline Aviation Security Ltd (a British firm) in charge of overall HSIA security affairs. Exporters complained recently that they faced space crisis in shipping goods to the UK in flights operated by foreign airlines. After the ban, the cargo flights now go through re-screening in a third country after the initial screening done at HSIA.

To worsen the matter further, export of readymade garments, whose exporters can afford a higher freight than the vegetables exporters, also creates a severe competition for air-cargo space. It is learnt that Biman Bangladesh Airlines is trying to procure a special cargo plane to resolve this problem. If it is done soon, this will not only contribute in timely shipment of vegetables, but also greatly contribute to reducing costs of air freight, as air freight in a passenger plane is much higher

than in a cargo plane. Currently, Biman Bangladesh Airlines carries 18-20 thousand tons of perishable items every year, while the country has the potential for increasing vegetables exports by at least three times of that figure.

5.8.2.4 Traceability⁵³: Traceability is the ability to identify all the actors or players throughout the value chain so that source of any defect or contamination (or the point at which deterioration of a food product occurred) can be identified quickly and accurately. Traceability systems can provide information on the source, location, movement and storage conditions of produce, thus allowing growers, packers, processors and distributors to find the source of the problem (viz., defect or contamination) in fruits or vegetables. It is the ability, in the case of a food safety or quality, to trace a food product forward and backward along the supply chain. As such, traceability is both a backward and a forward supply chain issue. The benefit of being able to trace a product forward to the market and consumer is that it will help rapidly remove any affected product from the marketplace (Christen, Squires, Lal and Hudson, 2000).

Any exportable vegetable or agro-product has to meet the import country buyers' specifications/ conditions. If the end user lodges a complaint about the produce to the importer or the authority of the importing country, they have every right to know from where the product has come. In the case of fruits and vegetables, it is necessary to know from which firm/farmer was the vegetables in question been produced. Records from cultivation to packaging (time and using of manures and fertilisers and pesticides, and other records such as which types of irrigation water used, when harvested, sorting, grading, packaging facilities, treatment done etc.) are also required in case there is a complaint of quality. Especially a product is supposed to come from a pest free area or supposed to provide some treatments. If that is not done, traceability system (if present) will help the importer know (from the exporter) from where/which firm the products are coming.

The lack of sufficient ability of Bangladesh to address the problem of traceability is a serious forward supply side constraint, as traceability has recently emerged as a major compliance condition in the European Union. For instance, it is a requirement of the EU to record information

⁵³ The EU law defines 'Traceability' as the ability to trace and follow a food, feed, food-producing animal or substance intended to be or expected to be incorporated into a food or feed, through all stages of production, processing and distribution (Reg. EC 178/2002). It is usually maintained by coding system.

of all steps starting from the procurement of seeds till the completion of harvesting of exportable eggplant (and other vegetables) in a register for traceability. The EU countries want the exporting countries to have stronger quarantine and traceability system to ensure the availability of quality and safe food⁵⁴ (*Daily The News Today*, 2015).

Existence of very limited records of activities by Bangladeshi firms/enterprises mean that the current system of official export checks do not ensure compliance with this EU requirement. In the absence of traceability, it is not possible to detect who is at fault in the production and supply of a non-compliant consignment of vegetables. Exporters find it difficult to determine the traceability of the products they export, as it is hard to identify the specific farmers supplying the produces and the inputs used for production by the farmers. In the case of vegetables, the DAE and the HF are trying to establish such traceability system from the farm to the factory to promote export.

5.8.2.5 Ban on cargo exports via direct flights from Dhaka: While the EU is a big market for Bangladesh vegetables, it is also true that about 55% of the total exports to the EU are actually shipped to the United Kingdom (UK). Agricultural products are shipped by airlines to maintain quality and freshness. The UK government put a ban on cargo exports from Bangladesh via direct flight from Dhaka to the UK airports on March 8, 2016 citing Bangladesh's failure to meet international security requirements at the cargo complex in HSIA (*Dainik Kaler Kantho*, 10 March, 2016.). The UK ban on Bangladesh export cargo still exists. However, the UK validation team allowed three airlines-Bangladesh Biman, Etihad Airways and Lufthansa to carry cargo to the UK and the EU countries from Bangladesh, after the cargo village of HSIA secured the RA355 status on May 5 (The Financial Express, May 10, 2016). Earlier, on December 19, 2015, Australia also

⁵⁴ In addition to **Products**, the EU enforces traceability provision on food business **Operators** with the aim of ensuring that food business operators are able to identify the immediate supplier of a product and the immediate subsequent consignee (“one step back-one step forward” principle), from the EU importer up to retail level, excluding supply to the final consumer. Food and feed operators are also required to have systems and procedures in place that allow for this information to be made available to the Competent Authorities upon request (<http://exporthelp.europa.eu/thdapp/taxes/show2Files.htm?dir=/> on 7 Apr, 2016).

⁵⁵ Achieving the RA3 status is mandatory as per the cargo handling regulations of the European Union to ship cargo to any EU country by air.

banned direct air cargo flights from Bangladesh citing the same concern. This ban, if not withdrawn soon, will have an adverse impact on the competitiveness of vegetables. One large exporter expressed his dissatisfaction on this ban issue, *‘We will be the worst affected ones because of this ban. If vegetables are unloaded and scanned in a third country, it will escalate costs making vegetables exports prohibitively expensive, which will erode our competitiveness and profitability’*. . The good news is that Australia has relaxed the ban on freight from Bangladesh, allowing Bangladeshi air cargo to be re-screened in a third country. This relaxation came as a result of overall improvement of cargo security at HSIA.

5.8.2.6 Lengthy cargo screening process: After the ban imposed by the UK, strict screening measures were put in place at the HSIA since last March 21. This has resulted in excessively lengthy cargo screening at the airfreight unit. One negative impact of this is that it is increasingly causing shipment failures by our vegetables exporters. One exporter mentioned that though his vegetables consignment arrived at the airport at 12.00 am, it missed the 7.40am flight as screening had not been completed by then. He was forced to sell his perishables at a throwaway price in Shyambazar. Exporters will lose overseas market due to their missing the supply deadline. Another exporter said, *“Now that I missed the supply deadline, I am worried whether or not my Saudi buyers would again place orders for me”*. (Mirdha, 2016). But this frustrating situation is expected not to continue in the days to come as a separate screening system for vegetables has reportedly been put in place after the change in the airport security arrangements.

6.0 Mapping international market environment for Bangladesh Vegetables export

This section will try to map the international market environment for export of Bangladesh vegetables. Sub-section 6.1 will outlines the global scenario for vegetables trade. Sub-section 6.2 will provide a mapping of existing market for vegetables export from Bangladesh, and explore the potential export destinations. Sub-section 6.3 will present the competitive scenario in the export market for vegetables, and will, in particular, identify those competitors who offer strong competition to Bangladesh's exporters. Sub-section 6.4 will explore the possibilities and scopes for horizontal diversification among different vegetables products and vertical diversification within the same technology.

6.1 Global scenario for vegetables trade

Vegetables trade is considered a part of the global horticultural trade industry that consists essentially of fruits, vegetables and flowers. Among them, trade in vegetables has been particularly flourishing. Growth in international trade in vegetables is also contributing to greater employment. Global vegetable production in 2013 was estimated at 879.2 million tons, with China and India being the two largest producing countries. Among all internationally traded vegetables, potato was by far the most popular, with other widespread vegetables being sweet potato, tomato, onions and cabbage⁵⁶. The export and import scenario for vegetables is presented in the following Table (Table 6.1).

⁵⁶ Source: (Global Horticulture (2014 -2018), <http://www.prnewswire.com/news-releases/global-horticulture-2014--2018---pink-and-healthy-271781701.html>).

Table 6.1: Global scenario of vegetables trade

World	Import		Export	
	Value (in million USD)	Growth (%)	Value (in million USD)	Growth (%)
2004	32214	0	30391	0
2005	35224	9.35	33256	9
2006	39823	13.06	38420	16
2007	46911	17.8	44650	16
2008	51140	9.02	49160	10
2009	49428	-3.35	48700	-1
2010	56994	15.31	56394	16
2011	61772	8.38	62219	10
2012	60706	-1.73	58042	-7
2013	67988	12	65908	14
2014	68601	0.9	67525	2

Source: Calculation based on data from ITC trade map.

As illustrated in Table 6.1, global import of vegetables has shown a significant growth over the span of 11 years beginning from 2004. It rose from US\$32.214 billion in 2004 to US\$49.428 billion in 2009. World import growth for vegetables remained stable until it fell in 2009 and 2012. The growth rate was at its peak in 2007 and the lowest in 2009. Then it started climbing up and by 2014, total annual global import rose to US\$68.601 billion, exhibiting a growth of 112.95% over the total global import in 2004. Global export of vegetables has also shown a similar trend. It rose from US\$30.391 billion in 2004 to US\$48.7 billion in 2009. Global export growth has remained stable until it fell in 2009 and 2012. Then it resumed the growth trend and rose further by 2014 to US\$67.525 billion, posting a growth of 122.19% over the total global export in 2004.

Table 6.2: Top ten vegetables (HS Chapter 07) exporters globally (Value in million USD)

Year	China	Netherlands	Spain	Mexico	USA	Canada	Belgium	France	Thailand	Italy
2004	2,537	4,336	4,172	2,997	2,151	1,471	1,730	1,733	562	1,003
2005	3,052	4,258	4,308	3,122	2,421	1,714	1,829	1,812	518	1,084
2006	3,715	5,076	4,410	3,479	2,681	1,910	1,967	1,991	673	1,211
2007	4,043	6,122	5,037	3,558	3,010	2,379	2,315	2,431	789	1,416
2008	4,222	6,630	5,528	3,869	3,468	3,039	2,508	2,452	730	1,564
2009	4,853	5,939	5,539	3,694	3,401	3,023	2,295	2,174	858	1,438
2010	7,477	6,779	5,297	4,324	3,785	3,365	2,319	2,385	1,071	1,756
2011	8,723	7,462	5,474	4,992	3,939	3,667	2,312	2,599	1,278	1,696
2012	6,906	6,981	5,591	4,969	4,045	3,169	2,335	2,381	1,371	1,583
2013	7,871	7,906	6,367	5,398	4,405	4,275	2,812	2,773	1,590	1,793
2014	8,226	7,620	6,330	5,420	4,512	4,448	2,579	2,350	1,797	1,719

Source: Calculation based on the data from ITC trade map

Table 6.2 (above) presents the top ten vegetables exporter countries in the world in order to highlight the main competitors that Bangladesh faces while exporting its vegetables to other countries. As Table 6.2 shows, even though Netherlands was the number one vegetables exporter in the world in 2004 with total annual export of US\$4.172 billion, its top position was lost to China by 2014. In 2014, China emerged as the number one exporter as it exported vegetables worth about US\$8.226 billion, while Netherlands's position dropped to number two with total export of US\$7.62 billion. Other major exporters are Spain (3rd largest) with exports of US\$6.33 billion, Mexico (4th largest) with exports of US\$5.42 billion, USA (5th largest) with exports of US\$4.512 billion, Canada (6th largest) with exports of US\$4.448 billion, Belgium (7th largest) with exports of US\$2.579 billion, France (8th largest) with exports of US\$2.35 billion, Thailand (9th largest) with exports of US\$1.797 billion, and Italy (10th largest) with exports of US\$1.719 billion. Considering data over an 11 year period, we find that vegetables exports from China, USA, Canada

and Thailand have shown a modest growth. On the other hand, vegetables exports from Netherlands, Spain and Mexico have exhibited a moderate growth, while that from Belgium, France and Italy was only nominal. Bangladesh's position in global trade as an exporter of vegetables was 60th in 2010, and it did not improve much over the next five years, as the position slid to 64th in 2014 (source: ITC Trade Map).

Table 6.3 (below) presents the top vegetable importer countries in the world in order to highlight the potential market destinations for exports of vegetables from Bangladesh. As Table 6.3 demonstrates, the United States was the number one importer of vegetables in the world in 2004 with total annual import of US\$4.48 billion. Although it lost the top position to Germany in 2009, it was regained by 2011. In 2014, the US continued to hold the top position with imports of US\$8.324 billion, while Germany, as in 2004, remained at number two with total import of US\$6.698 billion. Other major importers are United Kingdom (3rd largest) with imports of US\$4.478 billion, France (4th largest) with imports of US\$3.389 billion, Russia (5th largest) with imports of US\$2.959 billion, Canada (6th largest) with imports of US\$2.869 billion, India (7th largest) with imports of US\$2.694 billion, Netherlands (8th largest) with imports of US\$2.62 billion, China (9th largest) with imports of US\$2.58 billion, and Japan (10th largest) with imports of US\$2.446 billion. Considering data over an 11 year period, we find that vegetables imports into Russia, India and China have shown a modest growth. On the other hand, vegetables imports into USA, Germany and Canada have exhibited a moderate growth, while that into United Kingdom, France and Netherlands was only nominal.

Table 6.3: Top ten vegetables (HS Chapter 07) importers globally (Value in Million USD)

Year	USA	Germany	UK	France	Russian Federation	Canada	India	Netherlands	China	Japan
2004	4480	3807	3243	2241	466	1417	474	1514	405	1938
2005	4736	4367	3573	2348	723	1613	594	1494	524	1915
2006	5264	4861	3747	2448	934	1788	875	1702	756	1925
2007	5731	5181	4366	3024	1389	2026	1280	2162	800	1757
2008	6099	5584	4498	3260	1759	2143	1465	2210	584	1684
2009	5832	5928	3625	2906	1660	2137	2067	1854	1053	1713
2010	6486	6620	3902	3125	2224	2394	1875	2101	1516	2153
2011	7249	6446	4042	3134	3040	2615	1865	2649	1824	2532
2012	7418	6162	3848	3130	2485	2492	2281	2559	2407	2691
2013	8203	6919	4532	3482	2882	2800	2305	2846	2549	2512
2014	8324	6698	4478	3389	2959	2869	2694	2620	2580	2446

Source: Calculation based on the data from ITC trade map

6.2 Existing and potential market for vegetables export from Bangladesh

In subsection 4.4 of Section 4, we have identified the top export destinations for Bangladesh. Even though each vegetables product has a different market concentration, when we combined them we found that the major existing markets for our vegetables could be categorised as the United Kingdom, Malaysia, Saudi Arabia, United Arab Emirates, Singapore, Qatar, Russia, Italy and Kuwait. We have also identified Japan, Canada, Indonesia, Sri Lanka, United States, Bahrain, and Australia as the promising or potential markets for Bangladeshi vegetables. Following up from Section 4, this sub-section (sub-section 6.2) will further explore those export markets in order to identify the level of competition Bangladesh currently faces from other exporters of vegetables. Here, we will examine the extent of competition that vegetables exports from Bangladesh currently face in both the major markets and the potential ones, and the current market enjoyed by

Bangladesh vegetables in those export destinations. For the purpose of analysis, we will select all the nine existing major markets identified in Section 4, such as The United Kingdom, Malaysia, Saudi Arabia, United Arab Emirates (UAE), Singapore, Qatar, Russia, Italy and Kuwait. However, among the potential markets, we will only select three, such as Sri Lanka, Bahrain and Oman for the sake of an in-depth focus.

Table 6.4: Bangladesh’s existing & potential export markets in vegetables

Export Markets	Base Year	Bangladesh’s Position/Rank as an Exporter	Bangladesh’s Share in Total Vegetables Imports (%)
Saudi Arabia	2013	20	0.64
United Kingdom	2015	30	0.23
Malaysia	2015	10	1.29
UAE	2008	27	0.31
Qatar	2014	16	1.63
Singapore	2014	16	0.42
Russia	2015	21	0.28
Italy	2014	39	0.13
Kuwait	2014	12	2.16
Canada	2015	38	0.02
Sri Lanka	2014	7	2.15
Bahrain	2014	16	1.12

Source: Calculation based on the data from ITC trade map

Trade share for Bangladeshi vegetables in the existing and potential export markets highlighted in Table 6.4 provides us with a grim outlook. Bangladeshi vegetables’ penetration in the vegetables markets in Saudi Arabia, United Kingdom, the UAE, Singapore, Russia, Italy and Canada is extremely poor, as its share is less than 1% of total imports in each of these countries. The share is slightly above 1% in two countries, such as Malaysia (1.29%) and Bahrain (1.12%). Bangladeshi vegetables have been able to capture more than 2% of market share only in two countries, namely Kuwait (2.16%) and Sri Lanka (2.15%). This implies that Bangladesh needs to work hard to enhance its vegetables exports to these markets.

Analysing Trade Map data from the ITC, we find that Bangladesh's position as a vegetable exporter in Saudi Arabia was 20th in 2013. Its position in the United Kingdom (UK) in 2015 was 30th, where there is a high export potential as a large number of ethnic communities, including the Bangladeshis, live in the UK. Bangladesh held the 10th position as a vegetables exporter in Malaysia in 2015. Exports to Malaysia rose sharply from 2013 onwards, and there exists a huge potential of Bangladeshi vegetables. Bangladesh held the 12th position in Kuwait in 2015, where our vegetables sector has the potential of capturing both the ethnic and the mainstream markets. Export of vegetables to Qatar by Bangladesh has been increasing steadily over the years, and we ranked 16th in Qatar in 2014. Bangladesh was the 39th leading exporter of vegetables to Italy in 2014, and the 27th leading exporter to the UAE. The ethnic Bangladeshis in Italy and the huge Bangladeshi labour force in the UAE can be major consumers of Bangladeshi vegetables. Bangladesh has captured the 7th position among the exporters to Sri Lankan market, where Bangladesh has a huge potential, especially in exporting potato.

6.3 Competitors of Bangladesh in exporting vegetables

Having presented a mapping of existing export markets for Bangladesh vegetables in the previous sub-section, this sub-section will attempt to identify the main exporters that offer a strong competition to Bangladeshi vegetables exports. In order to measure the competition that Bangladesh faces in its existing and potential major export markets, it is necessary to identify the top exporters to those 12 existing and potential export markets, which is attempted in the following Table.

Table 6.5: List of top competitors in Bangladesh's existing & potential export markets in vegetables

Export Markets	Base Year	Top 7 Competitors in BD Main Markets / Volume of Exports (in US\$ million)						
		1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
Saudi Arabia	2013	Egypt/ 120.43	China/ 43.91	UAE/ 43.22	Australia / 36.11	India/ 36.01	Jordan/ 35.55	Yemen/ 22.22
UK	2015	Spain/ 1107.34	Netherlands/ 973.54	Belgium/ 255.17	Ireland/ 229.79	France/ 219.41	Poland/ 149.94	Italy/ 132.36
Malaysia	2015	China/ 470.27	India/ 112.60	Myanmar/ 43.03	Thailand/ 42.66	Australia /35.66	Vietnam/ 35.37	Netherlands/ 28.81
UAE	2008	India/ 109.26	Canada/ 80.58	Jordan/ 63.67	Saudi Arabia/ 57.93	China/ 55.88	Australia/ 48.50	Myanmar/ 34.55
Qatar	2014	India/ 45.56	Jordan/ 34.27	Saudi Arabia/ 20.37	Egypt/ 17.36	UAE/ 17.14	Netherlands/ 11.87	Lebanon/ 11.43
Singapore	2014	Malaysia/ 173.54	China/ 143.65	Australia/ 36.24	Thailand/ 28.99	USA/ 22.49	India/ 21.83	Indonesia/ 19.89
Russia	2015	China/ 430.42	Turkey/ 420.66	Israel/ 187.68	Egypt/ 162.84	Belarus/ 143.24	Morocco/ 100.04	Iran/ 93.61
Italy	2014	Spain/ 326.03	France/ 274.79	Netherlands/ 222.83	China/ 157.91	Egypt/ 103.80	Germany/ 98.45	Belgium/ 93.79
Kuwait	2014	India/ 49.96	Egypt/ 43.86	Jordan/ 38.31	Lebanon/ 37.88	Iran/ 36.79	USA/ 19.50	Netherlands/ 18.79
Canada	2015	USA/ 1873.87	Mexico/ 670.48	China/ 116.57	Peru/ 42.76	Spain/ 36.21	Guatemala / 20.03	India/ 13.06
Sri Lanka	2014	Australia/ 85.95	India/ 74.77	Canada/ 51.61	China/ 31.49	Pakistan/ 10.76	Myanmar/ 7.70	Bangladesh/ 6.03
Bahrain	2014	India/ 21.22	Saudi Arabia/ 11.98	Jordan/ 11.15	Lebanon/ 10.68	China/ 7.15	UAE/ 5.96	Egypt/ 5.55

Source: Calculation based on the data from ITC Trade Map

Table 6.4 reveals China and India as the largest competitors for Bangladesh in those markets. The name of China comes up 9 times as one of the top 7 exporters to these countries, and the name of India comes up 8 times. Other major competitors for Bangladesh are Jordan (ranks among top seven in 5 countries), Australia (ranks among top seven in 5 countries), Netherlands (ranks among top seven in 5 countries), Egypt (ranks among top seven in 3 countries), Myanmar (ranks among top seven in 3 countries), Spain (ranks among top seven in 3 countries) and Lebanon (ranks among top seven in 3 countries). Among these competitors, the countries from Asia, such as China, India and Myanmar merit our special attention, as these have geographic proximity and export more or less similar categories of vegetables. Our export diversification strategies on vegetables should be

geared in keeping these Asian competitors in view and examining the strengths and weaknesses they have. For example, meeting the quality and health standards would enable Bangladesh to capture not only the ethnic market but also the mainstream market in our existing and potential export destinations.

Table 6.6: Product-wise list of top competitors for Bangladeshi vegetables

Product A: Potato (HS Heading 07.01)

Export Markets (Base Year)	Top 7 Exporters to BD Main Markets / Volume of Exports (in US\$ million)						
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
Malaysia (2015)	China /	Bangladesh /	USA/ 7.07	Pakistan/ 5.34	Germany /	Australia/ 2.26	Netherlands / 2.05
Russia (2015)	Egypt /	China/ 32.70	Pakistan /	Azerbaijan /	Israel/ 20.84	Netherlands /	Germany/ 6.16
	45.54	7.32	22.18	20.89	2.89	13.20	
	114.1						
	9						

Product B: Tomato (HS Heading 07.02)

Export Markets (Base Year)	Top 7 Exporters to BD Main Markets / Volume of Exports (in US\$ million)						
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
Malaysia (2015)	Thailand/ 1.33	Vietnam/ 0.41	Bangladesh / 0.24	China/ 0.22	Netherlands / 0.18	Malaysia/ 0.12	Australia/ 0.11
Singapore (2014)	Malaysia / 29.71	Netherland s / 1.92	Thailand/ 1.20	Australia/ 0.95	Vietnam/ 0.74	Indonesia/ 0.46	Japan/ 0.25

Product C: Leguminous Vegetables fresh (HS Heading 07.08) (viz., beans, peas etc.)

Export Markets (Base Year)	Top 7 Exporters to BD Main Markets / Volume of Exports (in US\$ million)						
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
Malaysia (2015)	China/ 4.88	Thailand/ 1.53	Australia/ 0.82	Canada/ 0.46	Indonesia/ 0.30	Bangladesh / 0.25	UK / 0.23

Product D: Fresh Vegetables (HS Heading 07.09) (viz., eggplants etc.)

Export Markets (Base Year)	Top 7 Exporters to BD Main Markets / Volume of Exports (in US\$ million)						
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
Malaysia (2015)	Vietnam / 26.61	China / 26.25	Thailand / 21.56	Bangladesh / 3.48	Australia/ 3.03	USA/ 2.85	Korea / 1.99
UK (2015)	Netherlands / 304.42	Spain/ 255.93	Ireland/ 176.20	Peru/ 63.47	Poland/ 58.74	Italy/ 36.59	Germany/ 33.19

Source: Calculation based on the data from ITC Trade Map

Table 6.6 provides the product-wise list of the top seven countries that imports potatoes (HS Heading 07.01), Tomatoes (H.S. Heading 07.02), fresh leguminous vegetables (HS Heading 07.08) that includes beans, peas etc., and fresh vegetables (HS Heading 07.09) that includes eggplants etc. In the case of potato, Bangladesh's two major export destinations are Malaysia and Russian Federation. Table 6.6A reveals that Bangladesh holds the 2nd position in the Malaysian market, and faces stiff competition from China (ranked 1st), USA (ranked 3rd), Pakistan (ranked 4th), Germany (ranked 5th), Australia (ranked 6th) and Netherlands (ranked 7th). Bangladesh shares 9.44% of the total exports to Malaysia. In Russian Federation, Bangladesh does not hold any position within the list of top seven, but our exports are growing, and we share 2.03% of total exports of potato to Russia. Here, Bangladesh faces stiff competition from Egypt (ranked 1st), China (ranked 2nd), Pakistan (ranked 3rd), Azerbaijan (ranked 4th), Israel (ranked 5th), Netherlands (ranked 6th) and Germany (ranked 7th).

In the case of tomatoes, Table 6.6B reveals that Bangladesh's two major export destinations are Malaysia and Singapore. Bangladesh holds the 3rd position in the Malaysian market, and faces stiff competition from Thailand (ranked 1st), Vietnam (ranked 2nd), China (ranked 4th), Netherlands (ranked 5th), Malaysia (ranked 6th) and Australia (ranked 7th). Bangladesh shares 8.67% of the total exports of tomato to Malaysia. In Singapore, Bangladesh does not hold any position within the list of top seven, and our exporters share 0.14% of total imports of tomato potato to Singapore. Here, Bangladesh's main competitors are Malaysia (ranked 1st), Netherlands (ranked 2nd), Thailand (ranked 3rd), Australia (ranked 4th), Vietnam (ranked 5th), Indonesia (ranked 6th) and Japan (ranked 7th).

In the case of fresh leguminous vegetables (H.S. Heading 07.08) that includes beans, peas etc., Table 6.6C reveals that Bangladesh's main export destination is Malaysia. Bangladesh holds the 6th position in the Malaysian market, and faces stiff competition from China (ranked 1st), Thailand (ranked 2nd), Australia (ranked 3rd), Canada (ranked 4th), Indonesia (ranked 5th) and the UK (ranked 7th). Even though Bangladesh regularly exports fresh leguminous vegetables to Malaysia, the volume was negligible until 2014. In 2015, it jumped to US\$0.181 million.

In the case of fresh vegetables (HS Heading 07.09) that includes egg plants etc., Table 6.6D reveals that Bangladesh's two major export destinations are Malaysia and the UK. Bangladesh holds the 4th position in the Malaysian market, and faces stiff competition from Vietnam (ranked 1st), China (ranked 2nd), Thailand (ranked 3rd), Australia (ranked 5th), USA (ranked 6th) and Korea (ranked 7th). Bangladesh exports fresh vegetables of H. S. Heading 07.09 on a regular basis to Malaysia. It peaked at US\$3.85 million in 2013 and dropped to US\$3.48 million in 2015. In the case of UK, Bangladesh exports of fresh vegetables of H. S. Heading 07.09 in 2015 was US\$ 7.48 million. It peaked in 2011 with exports worth US\$9.21 million. Here, Bangladesh's main competitors are Netherlands (ranked 1st), Spain (ranked 2nd), Ireland (ranked 3rd), Peru (ranked 4th), Poland (ranked 5th), Italy (ranked 6th) and Germany (ranked 7th).

6.4 Export diversification within the vegetables sub-sector

This sub-section will try to explore whether horizontal export diversion⁵⁷ within the vegetables sub-sector in general, and vertical export diversification⁵⁸ within a particular vegetables product are possible in Bangladesh. In order to examine the scenario we have collected data from Bangladesh Bureau of Statistics and the Trade Map database of the ITC, and posted them in Table 6.7 and 6.8, respectively.

⁵⁷ The term 'horizontal diversification' refers to export diversification that takes place within the same sector (primary, secondary or tertiary), and entails adjustment in the country's export mix by adding new products on existing export baskets within the same sector.

⁵⁸ The term 'vertical diversification' refers to export diversification that a shift from the primary to the secondary or tertiary sector. It entails contriving further uses for existing products by means of increased value added activities, such as processing, marketing or other services.

As illustrated in Chapter 4, potato has remained the star performer among our exportable vegetables products. But other vegetables have not been able to perform that well in exports. Hence, there is a pressing need to strive for horizontal diversion, and thus to focus on enhancing exports of other vegetables. Data from Bangladesh Bureau of Statistics (Statistical Yearbook of Bangladesh, 2010 & 2014) over a period of 11 years beginning from FY 2003-04 to FY 2013-14 reveal (as illustrated in Table 6.7) that the production of brinjal/eggplant and its annual growth have remained quite satisfactory. The production rose from 358 thousand metric tons in FY 2003-04 to 444 thousand metric tons in FY 2013-14. But the export could not match with the performance in production. As Table 6.8 shows, exports of eggplant basically began in 2010 with just 1 metric tons, by 2014 it rose to 336 metric tons, which is still a negligible quantity.

Table 6.7: Product-wise data of yearly growth in vegetables production in Bangladesh in quantity (in thousand metric tons)

Year	Pumpkin	Brinjal	Potato	Patol	Lady's finger	Bitter gourd	Cucu-mber	Cabb-age	Cauli-flower	Tomato	Radish	Bean
2003-04	126	358	3907	41	24	26	25	129	101	120	211	59
2004-05	138	340	4856	61	26	33	24	142	109	122	223	61
2005-06	161	334	4161	61	33	33	28	176	138	131	229	73
2006-07	158	333	5167	68	39	34	32	183	139	137	236	83
2007-08	190	338	6648	70	39	40	37	211	156	143	267	83
2008-09	208	338	5268	72	40	40	44	206	153	151	257	88
2009-10	217	341	7930	78	42	41	55	220	160	190	260	89
2010-11	217	340	8226	83	43	45	48	207	168	232	257	95
2011-12	341	354	8205	86	45	46	50	213	166	255	260	94
2012-13	218	368	8605	85	44	52	49	200	166	251	252	93
2013-14	245	444	8950	48	45	51	55	217	813	360	252	110

Source: Statistical Year Book Bangladesh 2010 & 2014

Table 6.7 shows that in the case of tomato, the production has been able to exhibit a satisfactory growth over the years, as it rose from 120 thousand metric tons in FY 2003-04 to 360 thousand metric tons in FY 2013-14. On the other hand, Table 6.8 shows that export of tomato was not equally promising. Tomato exports in 2008 was on 3 metric tons, and it rose to 336 metric tons in 2014. In the case of cabbage, according to Table 6.7, the production was 129 thousand metric tons in FY 2003-04, which rose to 217 thousand metric tons in 2013-14. But as in the case of tomato, cabbage export has not been able to pick up (Table 6.8). While exports of cabbage was only 3 metric tons in 2005, it rose to 358 metric tons in 2014. In the case of cauliflower, the production was 101 thousand metric tons in FY 2003-04, which rose to 813 thousand metric tons exhibiting a very high performance in growth in production (Table 6.7). From that sense, the export performance in cauliflower was extremely unsatisfactory. Cauliflower exports was 1 metric ton in 2006, and rose to 13 metric tons in 2014 (Table 6.8).

Table 6.8: Product-wise export performance of Bangladeshi vegetables in quantity (thousand metric tons)

Year	Potato	Egg-plant	Tomato	Pumpkin	Cabbage	Cucumber	Bean	Radish	Cauliflower
2003	0.162								
2004	1.709								
2005	5.171				0.003				
2006	14.714								0.001
2007	2.728						0.048		
2008	4.551		0.003				0.001		
2009	0.503		0.002		0.005		0.182	0.011	
2010	12.538	0.001	0.973				0.548	0.033	
2011	59.763	0	0				0	0	0.016
2012	25.803	0.264	0.021	0.6	0.05	0.049	0.199	0.011	0.019
2013	50.488	0.23	0.312	0.85	0.016	0.058	0.242	0.008	0.014
2014	129.925	0.336	0.336	0.55	0.358	0.054	0.153	0.038	0.013

Source: Calculated from the data of ITC Trade Map

The production of pumpkin in Bangladesh has increased gradually during the last 10 years (Table 6.7). In both FY 2009-10 and 2010-11, the production of pumpkin was about 217 thousand metric tons. It increased to 341 thousand metric tons in FY 2011-12, but then dropped to 245 thousand metric tons in FY 2013-14. Even though pumpkin could be a good addition to our vegetables

export basket, the current trend in its export is dismal. Bangladesh has started exporting pumpkin in 2012, and has been exporting since, but the volume is still negligible as the country exported only 550 metric tons in 2014 (Table 6.8).

Radish is another vegetable. In FY 2003-04, the production of radish was 211 thousand metric tons (Table 6.7). It peaked to 267 thousand metric tons in FY 2000-08, but then it dropped and in FY 2013-14, it was 252 thousand metric tons. But its export is yet to take off. Bangladesh began exporting radish since 2009, but like pumpkin, it remained negligible. For example, only 38 metric tons of radish were exported in 2014 (Table 6.8). Analyses of data in Table 6.7 and 6.8 will reveal a similar picture in the case of cucumber and beans as well.

The above discussion clearly suggests that the horizontal diversification, that is, inclusion of new vegetables products into our exports basket, has not been possible in Bangladesh, while vegetables exports have remained concentrated in one product only, that is, potato. For the same reason, the possibility of vertical diversification, or moving up the value chain, has also remained elusive. Vertical diversification has not been possible even within the potato sector, as exports of processed food products made from potato, such as chips, flakes and mashed potato, have not been able to pick up at all.

It has become abundantly clear by now from the discussion in this sub-section that except in the case of potato, there remains a mismatch between production and export of vegetable products. This warrants the intervention from the Government with a view to expediting both the horizontal and vertical diversification in the vegetables sector in Bangladesh. Such export diversification assumes urgency when we consider the following phenomenon prevalent in Bangladesh. This relates to the fact that production in vegetables varies with the changes in seasons in Bangladesh. In the peak season, supply of vegetables increases sharply so that price falls equally sharply. As supply outweighs demand, producers lose out heavily. The availability of good opportunity of exports will obviously turn the table in favour of the growers, and ultimately enhance domestic production further.

7.0 Analysing specific international market entry requirements

Section 7 will attempt to elaborate on various policy/market entry requirements to access the export destinations for Bangladeshi vegetables. Sub-section 7.1 will highlight the tariff structure of each potential export market to provide an understanding of the tariff barriers our exporters of vegetables face. Sub-section 7.2 will outline the Sanitary and Phytosanitary (SPS) measures the Bangladeshi producers and exporters of vegetables are required to comply with to gain access to export markets, and present a list of the packaging, labelling or any other technical barriers to trade (TBT) measures at the export markets. Sub-section 7.3 will look into the quality standards, including private standards, and report the same, if any.

7.1 Tariff structure in potential export markets

We have already identified, in Section 4.0, the existing main export destinations for Bangladesh in vegetables, which were the UK, Malaysia, Saudi Arabia, United Arab Emirates, Singapore, Qatar, Russia, Italy and Kuwait. In this sub-section, we will pick up eight of them, such as Malaysia, the UK, Saudi Arabia, the UAE, Qatar, Italy, Singapore and Kuwait for our analysis. The existing tariff structure in these eight countries against the import from Bangladesh on the selected vegetables will be highlighted separately in the following tables (Table 7.1 to Table 7.6). The vegetables that have export potential were also selected in Section 4.0 and here we will use the same product category, that include potato, eggplant (brinjal), lady's finger (okra), beans (viz., yardlong beans), pointed gourd (patol), and citrus fruits (lemon and satkora). Our analysis begins with Malaysian tariff structure in Table 7.1.

Table 7.1: Tariff structure in the UK and Italy against vegetables from Bangladesh (in 2014/2015)

Products	Product code	Product description	Tariff regime	Applied tariff (as reported)	Applied tariff (converted)	Total AVE tariff
Potatoes	0701901000	Potatoes for manufacture of starch, fresh or chilled	Preferential tariff for LDCs	0%	0%	0%
	0701905000	Fresh or chilled new potatoes from 1 January to 30 June	Preferential tariff for LDCs	0%	0%	0%
	0701909010	"Potatoes, fresh or chilled (excl. new potatoes from 1 January to 30 June, seed potatoes and potatoes for manu. of starch) : so-called ""New"", from 1 July to 31 December"	Preferential tariff for LDCs	0%	0%	0%
	0701909090	Potatoes, fresh or chilled (excl. new potatoes from 1 January to 30 June, seed potatoes and potatoes for manu. of starch) : Other	Preferential tariff for LDCs	0%	0%	0%
Egg plant	0709300000	"Fresh or chilled aubergines (eggplants)	Preferential tariff for LDCs	0%	0%	0%
Yard long beans	0708200010	"Fresh or chilled beans, shelled or unshelled : Yard long beans	Preferential tariff for LDCs	0%	0%	0%
Patol	0709939000	"Fresh or chilled pumpkins, squash and gourds ""Cucurbita spp."" (excl. courgettes)"	Preferential tariff for LDCs	0%	0%	0%
Lemon	080550101001	"Fresh or dried lemons: Fresh. If declared price is higher than or equal to 46.2 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%

Products	Product code	Product description	Tariff regime	Applied tariff (as reported)	Applied tariff (converted)	Total AVE tariff
	080550101002	"Fresh or dried lemons: Fresh. If declared price is higher than or equal to 45.3 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
	080550101003	"Fresh or dried lemons: Fresh. If declared price is higher than or equal to 44.4 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
	080550101004	"Fresh or dried lemons: Fresh. If declared price is higher than or equal to 43.4 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
	080550101005	"Fresh or dried lemons: Fresh. If declared price is higher than or equal to 42.5 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
	080550101006	"Fresh or dried lemons: Fresh. If the declared price is higher than or equal to 0 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
	080550109001	"Fresh or dried lemons: Other. If declared price is higher than or equal to 46.2 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
	080550109002	"Fresh or dried lemons: Other. If declared price is higher than or equal to 45.3 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
	080550109003	"Fresh or dried lemons: Other. If declared price is higher than or equal to 44.4 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
	080550109004	"Fresh or dried lemons: Other. If declared price is higher than or equal to 43.4 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%

Products	Product code	Product description	Tariff regime	Applied tariff (as reported)	Applied tariff (converted)	Total AVE tariff
	080550109005	"Fresh or dried lemons: Other. If declared price is higher than or equal to 42.5 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
	080550109006	"Fresh or dried lemons: Other. If the declared price is higher than or equal to 0 EUR/100 kg"	Preferential tariff for LDCs	0%	0%	0%
Shatkora	0805900000	"Fresh or dried citrus fruit (excl. oranges, lemons, limes, grapefruit, etc., incl. tangerines and satsumas and similar citrus hybrids)"	Preferential tariff for LDCs	0%	0%	0%
Okra	0709999020	Fresh or chilled vegetables n.e.s. : Okra	Preferential tariff for LDCs	0%	0%	0%
	0709999020	Fresh or chilled vegetables n.e.s. : Okra				

Source: ITC Market Access Map; 2016

Table 7.2: Tariff structure in Malaysia against vegetables from Bangladesh (in 2014)

Products	Product code (HS 2012)	Product description	Tariff regime	Applied tariff (as reported)	Applied tariff (converted)	Total AVE ⁵⁹ tariff
Potato	070190000	Potatoes, fresh or chilled: Other	MFN (Applied)	0%	0%	0%
Eggplant	070930000	Other vegetables, fresh or chilled : Aubergines (egg-plants)	MFN duties (Applied)	0%	0%	0%
Lady's finger	070999200	Other vegetables, fresh or chilled : Other : Other : Lady's fingers	MFN duties (Applied)	0%	0%	0%
Yardlong Bean	070820200	Leguminous vegetables, shelled or unshelled, fresh or chilled : Beans : Long beans	MFN duties (Applied)	0%	0%	0%
Pointed Gourd	070993000	Other vegetables, fresh or chilled : Other : Pumpkins, squash and gourds (Cucurbita spp.)	MFN duties (Applied)	0%	0%	0%
Citrus fruit	080550100	Citrus fruit, fresh or dried : Lemons and limes : Lemons	MFN duties (Applied)	5.00%	5.00%	5.00%
	080550200	Citrus fruit, fresh or dried : Lemons and limes : Limes	MFN duties (Applied)	5.00%	5.00%	5.00%
Satkora	080590000	Citrus fruit, fresh or dried : Other	MFN duties (Applied)	10.00%	10.00%	10.00%

Source: ITC Market Access Map; 2016

⁵⁹ Ad valorem equivalent (AVE) methodology: AVE based on the World Tariff Profile (WTP)

Table 7.3: Tariff structure in Saudi Arabia against vegetables from Bangladesh (in 2014)

Products	Product code	Product description	Tariff regime	Applied tariff (as reported)	Applied tariff (converted)	Total AVE tariff
Potato	07019000	Potatoes, fresh or chilled: Other	MFN duties (Applied)	0%	0%	0%
Eggplant	07093000	Other vegetables, fresh or chilled: Aubergines (eggplants)	MFN duties (Applied)	0%	0%	0%
Okra (ladies finger)	07099920	Other vegetables, fresh or chilled: Other: Other: Okra	MFN duties (Applied)	0%	0%	0%
Yardlong bean	07082000	Leguminous vegetables, shelled or unshelled, fresh or chilled: Beans	MFN duties (Applied)	0%	0%	0%
Pointed gourd	07099300	Other vegetables, fresh or chilled: Other: Pumpkins, squash and gourds (Cucurbita spp.)	MFN duties (Applied)	0%	0%	0%
Citrus fruit	08055010	Citrus fruit, fresh or dried: Lemons and limes : Fresh	MFN duties (Applied)	0%	0%	0%
	08055020	Citrus fruit, fresh or dried: Lemons and limes : Dried	MFN duties (Applied)	0%	0%	0%
Satkora	08059000	Citrus fruit, fresh or dried: Other	MFN duties (Applied)	0%	0%	0%

Source: ITC Market Access Map; 2016

Table 7.4: Tariff structure in Kuwait against vegetables from Bangladesh (in 2015)

Products	Product code	Product description	Tariff regime	Applied tariff (as reported)	Applied tariff (converted)	Total AVE tariff
Potato	07019000	Potatoes, fresh or chilled: Other	MFN duties (Applied)	0%	0%	0%
Brinjal	07093000	Other vegetables, fresh or chilled: Aubergines (eggplants)	MFN duties (Applied)	0%	0%	0%
Okra (lady's finger)	07099920	Other vegetables, fresh or chilled: Other: Other: Okra	MFN duties (Applied)	0%	0%	0%
Yardlong bean	07082000	Leguminous vegetables, shelled or unshelled, fresh or chilled: Beans	MFN duties (Applied)	0%	0%	0%
Pointed gourd	07099300	Other vegetables, fresh or chilled: Other: Pumpkins, squash and gourds	MFN duties (Applied)	0%	0%	0%
Citrus fruit	08055010	Citrus fruit, fresh or dried: Lemons and limes: Fresh	MFN duties (Applied)	0%	0%	0%
	08055020	Citrus fruit, fresh or dried: Lemons and limes: Dried	MFN duties (Applied)	0%	0%	0%
Satkora	08059000	Citrus fruit, fresh or dried: Other	MFN duties (Applied)	0%	0%	0%

Source: ITC Market Access Map; 2016

Table 7.5: Tariff structure in Singapore against vegetables from Bangladesh (in 2015)

Products	Product code	Product description	Tariff regime	Applied tariff (as reported)	Applied tariff (converted)	Total AVE tariff
Potato	07019000	Other potatoes fresh or chilled (tne)	MFN duties (Applied)	0%	0%	0%
Brinjal	07093000	Aubergines fresh or chilled (tne)	MFN duties (Applied)	0%	0%	0%
Okra	07099900	Other vegetables fresh or chilled (tne)	MFN duties (Applied)	0%	0%	0%
Yardlong Bean	07082020	Long beans fresh or chilled (tne)	MFN duties (Applied)	0%	0%	0%
Pointed Gourd	07099300	Pumpkins squash & gourds fresh or chilled (tne)	MFN duties (Applied)	0%	0%	0%
Citrus fruit	08055000	Lemons & limes fresh or dried (tne)	MFN duties (Applied)	0%	0%	0%
Satkora	08059000	Other citrus fruit fresh or dried (tne)	MFN duties (Applied)	0%	0%	0%

Source: ITC Market Access Map; 2016

Table 7.6: Tariff structure in the UAE & Qatar against vegetables from Bangladesh (in 2015)

Products	Product code	Product description	Tariff regime	Applied tariff (as reported)	Applied tariff (converted)	Total AVE tariff
Potatoes	07019000	Potatoes, fresh or chilled: Other	MFN duties (Applied)	0%	0%	0%
Eggplant	07093000	Other vegetables, fresh or chilled: Aubergines (eggplants)	MFN duties (Applied)	0%	0%	0%
Okra	07099920	Other vegetables, fresh or chilled: Other: Other: Okra	MFN duties (Applied)	0%	0%	0%
Yardlong Beans	07082000	Leguminous vegetables, shelled or unshelled, fresh or chilled: Beans	MFN duties (Applied)	0%	0%	0%
Patol	07099300	Other vegetables, fresh or chilled: Other: Pumpkins, squash and gourds (Cucurbita spp.) (Patol)	MFN duties (Applied)	0%	0%	0%
Lemon	08055010/20	Citrus fruit, fresh or dried: Lemons and limes: Fresh/Dried	MFN duties (Applied)	0%	0%	0%
Shatkora	08059000	Citrus fruit, fresh or dried: Other	MFN duties (Applied)	0%	0%	0%

Source: ITC Market Access Map; 2016

Data presented above outlines the tariff structure that exports of vegetables from Bangladesh currently faces in its major market destinations. It is known that Bangladesh receives zero tariff benefits in the EU under the Generalised Systems of Preferences (GSP) that allow the LDCs to receive duty-free entry into the EU market. As an LDC, the GSP package for the LDC countries, known as the Everything but Arms (EBA), is also applicable for exports from Bangladesh. Therefore, as Table 7.1 shows, exports from Bangladesh to the UK and Italy enjoy duty free entry benefits (as UK and Italy are members of the EU). When we look at Tables 7.2 to 7.6 to examine the tariff structure in other export destinations of Bangladeshi vegetables, we find that other than Malaysia, zero duty is applicable on vegetables on a most favoured nation (MFN) basis in all other existing major export markets, such as Saudi Arabia, the UAE, Qatar, Singapore and Kuwait. This implies that in these major destinations of our vegetables, Bangladeshi vegetables also enjoy duty-free entry. In the case of Malaysia (Table 7.2), Shatkora faces 10% customs duty on an MFN basis,

while another citrus fruit, viz., lemon, faces 5% MFN customs duty. But the good thing is that other vegetables enjoys zero duty in Malaysia on an MFN basis. This zero tariff in Malaysia is also applicable on potato, as a result of which Malaysia has emerged as the top destination for the exports of Bangladeshi potato (please see Table 4.4.).

The above analysis amply demonstrates that tariff barriers are not posing any threat to our vegetables exports, as the tariff structure in our major export destinations is either non-existent (viz., in the case of 7 countries) or very low (viz., in the case of Malaysia). The following sub-section will, therefore, try to examine whether our vegetables exporters are facing any non-tariff barrier (NTB), or, more specifically, any non-tariff measure (NTM), in those 8 major export markets.

7.2 Non-tariff Measures affecting vegetables exports from Bangladesh

Before proceeding in this sub-section with the outline of the non-tariff measures, it is important to discuss Good Agricultural Practices (GAP), the most important and basic set of standards emphasised by countries throughout the world and the international organisations as well. GAPs are differing sets of codes, standards and regulations developed by governments, NGOs and the private sector. GAP applies available knowledge to address environmental, economic and social sustainability for on-farm production and post-production processes resulting in safe and healthy food and non-food agricultural products. (FAO COAG 2003 GAP paper). GAP is now formally recognised in the international regulatory framework for reducing risks associated with the use of pesticides, taking into account public and occupational health, environmental, and safety considerations. In the context of agreed international goals to reduce hunger and promote food security, four principles of GAP apply to all scales of farming:

- economically and efficiently produce sufficient, safe and nutritious food;
- sustain and enhance the natural resource base;
- maintain viable farming enterprises and contribute to sustainable livelihoods; and
- meet the cultural and social demands of society.

The GAP standard consists of the following criteria:

- a. *Safety and quality of the produce.* Safety is one of the main criteria of standards. For example, private food safety standards have emerged in the wake of a series of high-profile food poisoning cases in the 1990s in order to ensure food quality. Similarly, quality standards (grading standards) are set to ensure that the produce are of good quality. The basic quality standard is that the produce must be edible. As such, severely diseased or badly damaged vegetables is not accepted even in the simplest markets.
- b. *Sustainability of natural resources for future production* (e.g. preservation of land, prevention of land erosion, maintenance of fertility of land).
- c. *Sustainability of environment.* Development of organic agriculture, preservation of the natural habitat of birds, protection of rainforests and/or limiting the contamination of the environment by GMOs are the main objectives/criteria that are taken into account in setting environmental standards.
- d. *Social acceptability.* Ensuring worker health and safety, reducing child labour, promoting social equity and fair-trade, or preserving the rights of indigenous communities are the criteria (i.e. operational objectives) for social standards (FAO, 2009).

Most private and public sector standards include all these four pillars of GAP. A thorough review of literature on various standards employed in export markets suggests that the hygiene criteria/food safety criteria, process hygiene criteria, product quality criteria, traceability requirements, packaging criteria to keep food/vegetables fresh/free from contamination, maximum residue level (MRL) criteria for pesticides/lead, country of origin criteria⁶⁰, preservation of natural resources, marketing criteria, maintenance of land fertility and promoting social equity and maintaining workers' legitimate right, and fair trade are mainly emphasized in the standards. Suppliers and exporters of freshly cut or minimally-processed products, which are known to be higher risk products, must meet the food safety and hygiene criteria. For instance, the EU legal

⁶⁰ Pursuant to Article 113a(1) of Regulation (EC) No 1234/2007 fruit and vegetables which are intended to be sold fresh to the consumer, may only be marketed if they are of sound, fair and marketable quality and if the country of origin is indicated. These are general marketing standards.

minima for import of fresh fruits and vegetables include, among others, the following (as shown in **Box 5**):

Box 5: EU GAP requirements for fruits and vegetables Import

- Each consignment must be accompanied by a phytosanitary (plant health) certificate
- Labelling of consignment must state country of origin, name and contact details of exporter, name of the product and its date of expiry
- Suppliers must demonstrate on demand that they comply with the EU hygiene criteria for food of non-animal origin
- Contamination with pesticides, lead and cadmium must not exceed the maximum levels permitted under EU law
- Pesticides banned in the EU must not be used or allowed to contaminate the food
- Wooden packaging made after 28th February 2005 complies with the international standard on wooden packaging (ISPM-15)
- Consignments that fall under the EU market grade standards have a certificate of conformity

This sub-section will now outline the non-tariff measures⁶¹ that include - (a) the Sanitary and Phytosanitary (SPS) measures the Bangladeshi producers and exporters of vegetables are required to comply with either during the production stage or the export stage, or both, to gain access to export markets, and (b) the packaging, labelling or any other technical barriers to trade (TBT) measures imposed at the export markets. It will examine the market entry requirements in the same

⁶¹ There are academic debates whether NTBs are a sub-set of NTMs, or NTMs are a sub-set of NTBs. This study will not delve into that debate. NTMs arise as intentional or unintentional consequences of pursuance of trade policies by the governments. Such policies are not always adopted in order to discriminate against imported goods or intentionally distort trade. Often, these are in place in order to serve legitimate policy goals like ensuring a minimum quality of imported products. The WTO tried to lay out rules, guidelines, standards and codes for fair and just application of NTMs. This was done through specific multilateral agreements, such as Agreement on the Application of Sanitary and Phytosanitary Measures (SPS), Agreement on Technical Barriers to Trade (TBT) and Agreements on Antidumping, Customs Valuation, Pre-shipment Inspection, Rules of Origin, Import Licensing, Subsidies, Countervailing Measures and Safeguards, etc.

eight countries, such as the UK, Italy, Malaysia, Saudi Arabia, the UAE, Qatar, Singapore and Kuwait. As in sub-section 7.1, the products categories include potato, eggplant, lady's finger, yard long bean, pointed gourd, and citrus fruits, such as lemon and Satkora. The NTM Codes used in analysing the market entry requirements in these export markets and the NTM Description against those codes are elaborated in Table 7.7. The country-wise requirements in Bangladesh's main export markets are outlined in Table 7.8 through Table 7.14, where a single table (Table 7.8) is used to outline the requirements in the UK and Italy since both are members of the EU and, therefore, have the same requirements.

Table 7.7: NTM Codes and their Descriptions for measuring standards requirements

NTM Code	NTM Description
A120	Geographical restrictions on eligibility
A130	Systems Approach
A140	Special Authorisation requirement for SPS reasons
A150	Registration requirements for importers
A190	Prohibitions/restrictions of imports for SPS reasons n.e.s.
A210	Tolerance limits for residues of or contamination by certain (non-microbiological) substances
A220	Restricted use of certain substances in foods and feeds and their contact materials
A310	Labeling requirements
A320	Marking requirements
A330	Packaging requirements
A410	Microbiological criteria of the final product
A420	Hygienic practices during production
A490	Hygienic requirements n.e.s.
A510	Cold/heat treatment
A590	Treatment for elimination of plant and animal pests and disease-causing organisms in the final product
A610	Plant growth processes
A630	Food and feed processing
A640	Storage and transport conditions
A810	Product registration requirement
A820	Testing requirement
A830	Certification requirement
A840	Inspection requirement
A850	Traceability requirements

A851	Origin of materials and parts
A852	Processing history
A853	Distribution and location of products after delivery
A860	Quarantine requirement
B110	Prohibition for TBT reasons
B140	Authorization requirement for TBT reasons
B310	Labeling requirements
B320	Marking requirements
B700	Product quality or performance requirement
B840	Inspection requirement
C100	Pre-shipment inspection
C400	Import monitoring and surveillance requirements and other automatic licensing measures
C900	Other formalities, n.e.s.
E321	Prohibition for religious, moral or cultural reasons
E322	Prohibition for political reasons (embargo)
F610	Custom inspection, processing and servicing fees
F620	Merchandise handling or storing fees
F650	Import licence fee
F690	Additional charges n.e.s.
F900	Prince control measures n.e.s.
G320	Bank authorization
G390	Regulation on official foreign exchange allocation, n.e.s.
G400	Regulations concerning terms of payment for imports

Table 7.8: Market entry requirements in the EU in general, and the UK and Italy in particular, for imports of vegetables

Product & HS Code	Applicable NTM Codes
Potatoes for manufacture of starch, fresh or chilled (HS Code 0701.90.10.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310
Fresh or chilled beans: Yard long beans (HS Code: 0708.20.00.11)	A120, A130, A140, A150, A210, A220, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B310, B320, B700, B840
Fresh or chilled, aubergines (eggplants) (HS Code 0709.30.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840
Other vegetables, fresh or chilled: Other: Other: Okra (HS Code 0709.99.20)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310 , B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Fresh or chilled pumpkins, squash and gourds (HS Code 0709.93.90.00)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A850, A851, A852, A853, B140, B310
Citrus fruit, fresh or dried: Lemons and limes: fresh (; HS Code: 08055010)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400

Source: Calculation based on data from ITC Market Access Map

Table 7.9: Market entry requirements in Kuwait for imports of vegetables

Product & HS Code	Applicable NTM Codes
Potatoes for manufacture of starch, fresh or chilled (HS Code 0701.90.10.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310
Fresh or chilled beans: Yard long beans (HS Code 0708.20.00.11)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840
Fresh or chilled Brinjals (eggplants) (HS Code 0709.30.00.00)	A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840
Other vegetables, fresh or chilled: Other: Other: Okra; (HS Code 0709.99.20)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Fresh or chilled pumpkins, squash and gourds (HS Code 0709.93.90.00)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A850, A851, A852, A853, B140, B310
Citrus fruit, fresh or dried: Lemons and limes: Fresh (HS Code 0805.50.10)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400

Source: Calculation based on data from ITC Market Access Map

Table 7.10: Market entry requirements in Malaysia for imports of vegetables

Product & HS Code	Applicable NTM Codes
Potatoes for manufacture of starch, fresh or chilled (HS Code 0701.90.10.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310
Fresh or chilled beans, shelled or unshelled : Yard long beans, sprouts (HS Code 0708.20.00.11)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840
Fresh or chilled aubergines (eggplants) (HS Code 0709.30.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840
Other vegetables, fresh or chilled: Other: Other: Okra (HS Code 0709.99.20)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Fresh or chilled vegetables n.e.s. : Okra (HS Code 0709.99.20)	A120, A130, A140, A150, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840
Fresh or chilled pumpkins, squash and gourds (HS Code 0709.93.90.00)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A850, A851, A852, A853, A860, B140, B310
Citrus fruit, fresh or dried: Lemons and limes: Fresh (HS Code 0805.50.10)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Citrus fruit, others, Satkora (HS Code 0805.90.00.00)	A120, A130, A140, A190, A210, A220, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840

Source: Calculation based on data from ITC Market Access Map

Table 7.11: Market entry requirements in Qatar for imports of vegetables

Product & HS Code	Applicable NTM Codes
Potatoes for manufacture of starch, fresh or chilled; HS Code: 0701901000	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310
Fresh or chilled beans, shelled or unshelled : Yard long beans, sprouts (HS Code 0708.20.00.11)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A830, A840, A851, A852, A853, B140, B310, B320, B700, B840
Fresh or chilled aubergines (eggplants) (HS Code 0709.30.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840
Other vegetables, fresh or chilled: Other: Other: Okra (HS Code 0709.99.20)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A630, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Fresh or chilled pumpkins, squash and gourds (HS Code 0709.93.90.00)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A850, A851, A852, A853, B140, B310
Citrus fruit, fresh or dried: Lemons and limes: Fresh (HS Code 0805.50.10)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Citrus fruit, others, Satkara (HS Code 0805.90.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B110, B310, B320, B700, B840

Source: Calculation based on data from ITC Market Access Map

Table 7.12: Market entry requirements in Saudi Arabia for imports of vegetables

Product & HS Code	Applicable NTM Codes
Potatoes for manufacture of starch, fresh or chilled (HS Code 0701.90.10.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850
Fresh or chilled beans, shelled or unshelled : Yard long beans, sprouts (HS Code 0708.20.00.11)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840
Fresh or chilled aubergines (eggplants) (HS Code 0709.30.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700
Other vegetables, fresh or chilled: Other: Other: Okra (HS Code 0709.99.20)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Fresh or chilled pumpkins, squash and gourds (HS Code 0709.93.90.00)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A850, A851, A852, A853, B140, B310
Citrus fruit, fresh or dried: Lemons and limes: Fresh (HS Code 0805.50.10)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Citrus fruit, others, Satkora (HS Code 0805.90.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, A860, B140, B310, B320, B700, B840

Source: Calculation based on data from ITC Market Access Map

Table 7.13: Market entry requirements in Singapore for imports of vegetables

Product & HS Code	Applicable NTM Codes
Potatoes for manufacture of starch, fresh or chilled (HS Code 0701.90.10.00)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840
Fresh or chilled aubergines (eggplants) (HS Code 0709.30.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Other vegetables, fresh or chilled: Other: Other: Okra (HS Code 0709.99.20)	A120, A130, A140, A150, A190, A210, A220, A310, A320, A330, A410, A420, A490, A510, A610, A630, A640, A810, A820, A830, A840, A850, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Fresh or chilled pumpkins, squash and gourds (HS Code 0709.93.90.00)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A850, A851, A852, A853, B140, B310
Citrus fruit, fresh or dried: Lemons and limes: Fresh; (HS Code 0805.50.10)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Citrus fruit, others, Satkora (HS Code 0805.90.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, A860, B110, B140, B310, B700, B840

Source: Calculation based on data from ITC Market Access Map

Table 7.14: Market entry requirements in the UAE for imports of vegetables

Product & HS Code	Applicable NTM Codes
Potatoes for manufacture of starch, fresh or chilled (HS Code 0701.90.10.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310
Fresh or chilled beans, shelled or unshelled : Yard long beans, sprouts (HS Code 0708.20.00.11)	A120, A130, A140, A150, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, A860, B140, B310, B320, B700, B840
Fresh or chilled aubergines (eggplants) (HS Code 0709.30.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, A860, B140, B310, B320, B700, B840
Citrus fruit, fresh or dried: Lemons and limes: Fresh (HS Code 0805.50.10)	A130, A140, A150, A190, A210, A220, A310, A320, A330, A490, A510, A590, A610, A640, A810, A820, A830, A840, A851, A852, A853, A860, B110, B140, B310, B700, B840, C100, C400, C900, E321, E322, F610, F620, F650, F690, F900, G320, G390, G400
Citrus fruit, others, "Satkora" (HS Code 0805.90.00.00)	A120, A130, A140, A190, A210, A220, A410, A420, A630, A830, A840, A850, A851, A852, A853, B140, B310, B320, B700, B840

Source: Calculation based on data from ITC Market Access Map

Data outlined in Tables 7.8 through Table 7.14 reveal that there are numerous SPS and TBT requirements that are currently imposed by the countries where the exports of Bangladeshi vegetables are mainly concentrated. This provides some explanation to the puzzle that we were

faced with in sub-section 7.1 when we found that Bangladeshi vegetables export have not really taken off in spite of the fact that our vegetables export did not encounter any noticeable tariff barriers in their export destinations.

Furthermore, it is evident from the above presentation of prevailing SPS and TBT measures in eight major importing countries that market-entry requirements in the form of SPS and TBT (i.e. NTMs) stand in the way as the most serious obstacles. These NTMs have continued to hamper vegetables exports from Bangladesh, as we have seen occasional disruptions or even periodic stoppages of exports of particular categories of vegetables to those countries, more specifically, in the EU market (viz., in the UK, Italy, Germany and France). For example, the issue of canker substance in the area of citrus fruits (viz., satkora, lemons etc.), the issue of golden nematode in potatoes, and the issue of salmonella in betel leaves etc. continue to plague our export performance of those products. Further, use of fake PCs and export of products to countries, where their exports are prohibited, through concealment in baggage or in any other way often result in the extension of the ban or bring in other punitive measures from the export destinations. These unscrupulous behaviour also tarnishes the image of Bangladesh. For example, as observed by a participant of the FGD, some exporters have recently shipped potato and jujube (boroi) to countries where entry of these two products are prohibited (viz., potato is banned in the EU market). It is also reported in a reputable daily newspaper that a number of enterprise recently exported capsicum, lemon, guava, data, potato and bitter gourd to Sweden, the UK and Switzerland without any PC. For instance, Trading BD Worldwide exported potato, bitter gourd and lemon to Switzerland while Oritra Trade International exported amaranthus (datashak) to the UK (Islam, 2016). For these malpractices, EU recently issued a non-compliance notification to IPPC contact point of Bangladesh (i.e. NPPO of Bangladesh who is a director in the Plant Quarantine wing). This non-compliance notification has been issued in line with International Standards for Phytosanitary Measures No 13 (ISPM-13⁶²).

One needs to keep in mind that the agriculture sector is considered as very sensitive for each and every country regardless of their level of development. Again, due to increasing awareness among

⁶² ISPM 13 (2001) is *Guidelines for the notification of non-compliance and emergency action*.

the consumers and civil society in the developed countries, the issues of health and food safety are receiving greater attention and focus. Therefore, all countries maintain SPS measures to ensure food safety, and to prevent the spread of pests or diseases among animals and plants. Hence, the NTMs outlined in this sub-section are often in place in order to serve legitimate policy goals like ensuring a minimum quality of imported products. The World Trade Organisation (WTO) has tried to lay out rules, guidelines, standards and codes for fair and just application of NTMs through its Agreement on SPS Measures and Agreement on TBT. Measures highlighted in this sub-section conform to the WTO provisions, and therefore, can be considered legitimate.

As revealed from Tables 7.8 to 7.14, the criteria of standards for export of vegetables/food items vary from country to country. However, most countries follow and adopt standards/requirements based on guidelines of International Standards for Phytosanitary Measures (ISPM). The main criteria of standards that are common in most of the export destinations, include food safety issues (e.g., free from harmful diseases, pests and substances, hygienic practices during production, restrictions to import from disease prone area, requirement for MRL in food items, etc.), packaging/labelling requirement for customer/end user information (e.g. EU labeling criteria requires detailed ingredients list that must include all ingredients including additives or enzymes, shelf life requirements, etc.) and inspection requirements. Presentation in Tables 7.8 to 7.14 elucidates the standards only in their codes, and avoided any detailed description in words of the criteria under these standards, because that exercise will be immensely voluminous, will unnecessarily increase the volume and size of this study, and will perhaps require a separate study⁶³. However, a few of the criteria of standards in our major export markets are highlighted in Table 7.15 below:

⁶³ Anyone interested in the detailed description of the criteria of a particular coded standards may retrieve it from the ITC Standards Map.

Table 7.15 Brief description of the criteria of a few standards in export markets

Country	Standards	Criteria
Malaysia	SPS standards	<p>Import of plant and plant products into Malaysia is governed by the Agricultural Pests and Noxious Plants (Import/Export) Regulations 1981. The aim of plant quarantine regulations is to control the import of plants for the purpose of prevention of introduction of pests and diseases from foreign countries.</p> <p>Import Permit will be required for the purposes of meeting the phytosanitary requirements</p>
	TBT standards	<p>Microbiological criteria of the final product Hygienic practices during production On October 1st, 2011, Malaysia began fully enforcing new grading, packaging and labelling regulations on fruits and vegetables.</p>
Kuwait	SPS standards	<p>Sanitary/Phytosanitary certificate is needed for plants and plant products (e.g., bulbs and tubers, or seeds for propagation, fruits and vegetables, cut flowers and branches).</p>
	TBT standards	<p>Geographical restrictions on eligibility.</p> <p>Restricted use of certain substances in foods.</p> <p>Marking requirements (B 320: for brinjals).</p>
EU	SPS standards	<p>Exports of plants and plant products to the EU must:</p> <ul style="list-style-type: none"> ▪ be accompanied by a plant-health certificate issued by the relevant competent authorities of the exporting country; ▪ undergo Customs and phytosanitary inspections at the point of entry into the EU (border);

-
- be imported into the EU by an importer registered in the official register of an EU country; and
 - be announced before arrival to the Customs office at the point of entry.⁶⁴

Additional declarations on phytosanitary certificates: For certain items, EU countries require additional declaration.

For instance, official statement that the cut flowers and the leafy vegetables: – originate in a country free from *Liriomyza sativae* (Blanchard) and *Amauromyza maculosa* (Malloch), OR – immediately prior to their export, have been officially inspected and found free from *Liriomyza sativae* (Blanchard) and *Amauromyza maculosa* (Malloch).

Prohibitions/restrictions of imports for SPS reasons. For instance, EU asks for procuring citrus fruits (viz., Ada Lebu, Elachi Lebu, Zara Lebu, Kagji Lebu) from disease-free zones in Bangladesh after it found “canker disease” in fruits exported from certain areas of the country.

TBT standards

Labelling requirements (B 310) for potato. Indeed, all foodstuffs marketed in the European Union (EU) must comply with the EU labelling rules. Table 7.15 details all the criteria to be fulfilled to comply with EU labeling standards. For instance, the ingredients, list shall include all ingredients including additives or enzymes), in descending order of weight as recorded at the time of their use in the manufacture and designated by their specific name.

⁶⁴ <http://www.exporthelp.europa.eu/thdapp/display.htm?>

Qatar	<p data-bbox="475 191 727 338">SPS Standards</p> <p data-bbox="475 394 727 443">TBT standards</p> <p data-bbox="475 877 727 957">Inspection requirements</p>	<p data-bbox="748 191 1427 317">Phytosanitary certification issued by the approved authority in the country of origin needed (For plant and plant products)⁶⁵ .</p> <p data-bbox="748 344 1427 590">Labelling criteria: Qatari health officials do not allow the importers to affix Arabic label stickers to products in Qatar and request that labels/stickers be applied prior to importation (e.g.B310 for eggplants). Qatar adopted the labeling and shelf life standards (GSO 9/2007).</p> <p data-bbox="748 625 1427 705">However, Production and expiry (P/E) dates are not required for fresh fruits and vegetables⁶⁶.</p> <p data-bbox="748 737 1427 898"><i>Packaging:</i> Goods should be securely packed to guard against rough handling, extreme heat in summer, humidity in winter and periods of storage in the open. Steel strapping is recommended.</p> <p data-bbox="748 930 1427 1052">All imports of plants are subject to inspection by the Agricultural Quarantine Unit of the Ministry of Municipal Affairs and Agriculture.</p>
Saudi Arabia	SPS standards	<p data-bbox="748 1087 1427 1377">Agricultural consignments are to be referred to <i>Animal and Plant Quarantine</i>, for examination and authorisation of release. Imported Fruits and vegetables are to be inspected and/or tested according to appropriate official procedures and are considered to be free from quarantine pests specified by the Ministry of Agriculture (MOA)⁶⁷.</p> <p data-bbox="748 1409 1427 1575"><i>Preshipment requirement:</i> The <u>Pre-Shipment Inspection Certificate (PSI)</u> has been replaced by a <u>Certificate of Conformity</u> (also known as a <i>SASO CoC</i>. It requires that every product exported to Saudi</p>

⁶⁵ <http://www.austrade.gov.au/Australian/Export/Export-markets/Countries/Qatar/Doing-business/Tariffs-and-regulations> accessed on 26 July, 2016

⁶⁶ APEDA AGRI EXCHANGE (http://agriexchange.apeda.gov.in/IR_Standards/Import_Regulation)

⁶⁷ GAIN Report SA 1513 date 10/13/2015

	Preshipment Inspection	<p>Arabia is accompanied by such a <i>Certificate of Conformity</i> (CoC) to indicate compliance with demands of applicable standards and technical regulations. It may also involve a <i>physical inspection</i> of goods in order to:</p> <ul style="list-style-type: none"> • Ensure that prices charged by exporters reflect true value of shipped goods. <p>Prevent substandard goods from entering the country's commerce.</p>
Singapore	<p>SPS standards,</p> <p>Prohibition for religious, moral or cultural reasons (E 321)</p> <p>TBT standards</p>	<p>The Agri-Food and Veterinary Authority (AVA) of Singapore is the national authority for food regulations. According to the Control of Plants (Import & Transshipment of Fresh Fruits & Vegetables) Rules, fresh fruits and vegetables imported should not contain any prohibited pesticide, or levels of pesticide residue or toxic chemical residue exceeding the prescribed levels specified in the Ninth Schedule of the Food Regulations or recommended in the Joint FAO/WHO Codex Alimentarius Commission⁶⁸. (www.ava.gov.sg)</p> <p>Exporters must ensure that the containers (baskets, cartons, etc.) of the produce are labelled properly, including: name and address of the producers, product description and date of export /packing.</p>
UAE	SPS standards (for potato)	<ul style="list-style-type: none"> • Residue analysis for each consignment is a must. Vegetables will not be allowed to enter UAE without a residue analysis report. (the UAE had decided “for the health and safety of consumers, entry of chilli peppers, mangoes and cucumbers” will not be allowed “without a residue analysis report with each consignment) • Exporters there have now been ordered to carry out new pesticide residue tests on their produce before it can be approved for sale in the UAE.

⁶⁸http://agriexchange.apeda.gov.in/IR_Standards/Import_Regulation/Food

TBT standards

Labelling requirement (B 310): Bulk cartons of fresh fruits and vegetables must contain most label information, but need not carry production/expiry dates. (Discussed in detail in Table 7.16)

Inspection requirement (B840) on arrival: -

- All consignments of plants and plant products may be subject to inspection on arrival. [The new rules follow inspections by the Ministry for Climate Change and Environment].
-

In order to comply with SPS standards and adequately address other food safety issues, Bangladesh has made efforts to improve the sanitary quality of its vegetable produces exported to the developed countries so that they conform to their health and food safety standards. Continuation of our flow of exports to these export destinations requires an enhanced understanding of the NTMs listed in Tables 7.8 to 7.15 because each NTM has its own rules and nuances to understand for proper compliance. For instance, we take the example of an NTM named labelling requirements (B 310) that has to be complied with to export okra (HS Code 0709.99.20) to the EU market, which is elaborated below:

NTB B310: Labelling for foodstuffs⁶⁹

All foodstuffs marketed in the European Union (EU) must comply with the EU labelling rules. The aim of these rules is to ensure that consumers get all the essential information to make an informed choice while purchasing their foodstuffs. General rules on food labelling are shown in Table 7.16.

⁶⁹http://www.exporthelp.europa.eu/thdapp/taxes/show2Files.htm?dir=/requirements&reporterId1=EU&file1=ehir_eu15_01v002/eu/main/req_lblfood_eu_010_0612.htm&reporterLabel1=EU&reporterId2=SE&file2=ehir

Table 7.16: General rules for Labelling for foodstuffs

Issue	Legislation from 13/12/2014
Name of the food	<p>The name of the foodstuff shall be its legal name. It shall not be replaced with a name protected as intellectual property, brand name or fancy name.</p>
List of ingredients	<p>Preceded by the word "Ingredients", the list shall include all ingredients (including additives or enzymes) in descending order of weight as recorded at the time of their use in the manufacture and designated by their specific name.</p> <p>The indication of the quantity of an ingredient or category of ingredients used in the manufacture or preparation of a food shall be required where such an ingredient/category of ingredients:</p> <ul style="list-style-type: none"> • appears in the name of the food or is usually associated with it by the consumer; • is emphasised on the labelling in words, pictures or graphics; or • is essential to identify a food and to distinguish it from other similar products.
Net quantity	<p>It shall be expressed in units of volume in the case of liquid products (litre, centilitre) and units of mass in the case of other products (kilogram, gram)</p> <p>For glazed frozen foods the net weight should be exclusive of the ice glaze</p>
Minimum durability date	<p>It shall be the date until which the foodstuff retains its specific properties when properly stored.</p> <p>The date shall consist of day, month and year in that order and preceded by the words "best before" or "best before end"</p>
Storage conditions or conditions of use	<p>Where foods require special storage conditions and/or conditions of use, they shall be indicated.</p> <p>Once the package is opened, in order to enable appropriate storage or use of the food, the storage conditions and/or time limit for consumption shall be indicated, when needed</p>
Country of origin or <i>place of provenance</i>	<p>Indication of these issues shall be mandatory: where failure to indicate this might mislead the consumer as to the true country of origin or place of provenance of the food</p> <p>Where the country of origin or the place of provenance of a food is different than of its primary ingredient, the latter shall also be given or indicated as being different to that of the food.</p>

(Source: <http://www.exporthelp.europa.eu/thdapp/taxes/show2Files.htm?dir=/requirements&reporterId1=EU&file>)

These particulars must appear on the packaging or on a label attached to pre-packaged foodstuffs. Moreover, a right mindset of all concerned in the production to export of vegetables to comply with the country specific requirements (plus buyers' requirements) and close monitoring on keeping the health standards of the vegetables products and food safety are essential to sustain and enhance export.

7.3 Quality standards for vegetables export (including private standard)

The issue of market entry barriers becomes all the more problematic when the NTMs discussed in the previous sub-section are combined with quality standards, including those often imposed by the private sector, which will be the focus of our discussion in this sub-section.

7.3.1 Private and voluntary standards affecting agricultural trade

The Standards Map⁷⁰ database of the ITC can be considered an excellent information portal for collecting information on the numerous private and voluntary standards that exporters of agricultural products face in their export destinations, particularly in Europe and North America. A brief account of these private and voluntary standards, as they also have a bearing on vegetables exports, is presented below:

(i) National Organic Programme: Through the National Organic Programme, the United States Department of Agriculture (USDA) manages public and voluntary standards for organic products in the US. These standards regulate the production, handling, labelling, trade, and enforcement of all USDA organic products. In 2011, some 17,281 organic farms and processing facilities in the US were certified to the USDA organic regulations. Worldwide, there are 28,386 certified organic operators across 133 countries.

(ii) Sustainable Agriculture Code: The Unilever Sustainable Agriculture Code was launched in 2010 as the basis of the Sustainable Sourcing programme, inspired by the company's sustainability commitment that by 2020 Unilever will buy all its agricultural raw materials from farms applying sustainable agricultural practices. The sustainable sourcing programme relies on compliance with the Unilever Sustainable Agriculture Code, either through self-assessment and verification against

⁷⁰ <http://www.standardsmap.org/identify?standards>, accessed at March 7, 2016.

the Code or through external certification standards recognised as equivalent to the Code. Through mandatory and good practices standards, it defines a process of continuous improvement. This Code applies to all the suppliers of agricultural raw materials, the farmers producing them and contractors working on farms. Suppliers must comply with the Code's Scheme Rules, which detail external certification standards and self-verification methods.

(iii) Sustainable Agriculture Network & Rainforest Alliance: The Sustainable Agriculture Network (SAN) is a coalition of non-profit conservation and rural development organisations in the Americas, Africa and Europe promoting the environmental and social sustainability of agricultural activities through the development of good practices standards, certification and the training of rural producers throughout the world. The Rainforest Alliance works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behaviour. Both the SAN and Rainforest Alliance are co-owners of the certification system. Compliance with the SAN Sustainable Agriculture Standard is indispensable for farm certification and the right to use the Rainforest Alliance Certified TM seal on agricultural products.

(iv) Naturland: Naturland is an independent, non-governmental, non-profit organisation which promotes organic farming with social responsibility and fair partnerships on a regional, national and global level. It supports long-term and fair business partnerships while putting a lot of efforts in developing projects with small scale farmers. Naturland is both an organic farmers' association with farmers as members, delegates and directors as well as a standard setting and certification body with its own label. Currently over 40,000 farmers manage an area of some 250,000 hectares according to the Naturland standards.

(v) Sustainability Assessment of Food and Agriculture systems: The Sustainability Assessment of Food and Agriculture systems (SAFA), developed by the UN Food and Agriculture Organisation, provides an international reference for sustainable management, monitoring and reporting in food and agriculture at all levels of the supply chain. SAFA defines what sustainable food and agriculture systems are, including environmental integrity, economic resilience, social well-being and good governance; outlines a procedure for an integrated analysis of all dimensions of sustainability, including the selection of appropriate indicators and rating of sustainability

performance (best, good, moderate, limited, unacceptable); and describes sustainability themes, sub-themes and indicators.

(vi) EU organic farming: EU organic regulations (no. 834/2007 and 889/2008) are national voluntary standards applicable in EU member states. The EU has also regulations regarding imports from third countries. In July 2007, the European Commission approved a new organic regulation to clarify the standards for organic production and labelling, including the mandatory use of the EU organic logo for European producers to be applied starting 1 July 2010. The Europe-wide promotional campaign “Organic farming: Good for nature, good for you.” was launched within the framework of the European Action Plan for Organic Food and Farming (SEC (2004) 739).

(vii) Fairtrade International: Fairtrade International is an independent, non-governmental, not-for-profit organisation that promotes sustainable development and poverty alleviation and sets the fair trade standards. Nineteen national organisations, known as Fairtrade Labelling Initiatives, promote the marketing of Fairtrade products in 24 countries in Europe, North and Central America, Australia and New Zealand. FLO-Cert is the inspection and certification body for labelled Fairtrade, and is responsible for auditing and certification of compliance against the Fairtrade standards.

(viii) FLA Workplace Code of Conduct: Fair Labour Association (FLA) is a collaborative effort of universities, civil society organisations and socially-responsible companies dedicated to protecting workers’ rights around the world. The FLA Workplace Code of Conduct defines labour standards that aim to achieve decent and humane working conditions. The Code’s standards are based on International Labour Organisation standards and internationally accepted good labour practices. It has also created an independent monitoring, remediation and verification process to achieve compliance with this Code.

(ix) Sedex Global (Supplier Ethical Data Exchange): Sedex is a not-for-profit membership organisation dedicated to bringing improvements in ethical and responsible business practices in global supply chains. Sedex was founded by a group of UK retailers in 2004 with two main goals: to ease the burden on suppliers facing multiple audits, questionnaires and certifications, and to

drive improvements in the ethical performance of global supply chains. It has developed the Sedex Members Ethical Trade Audit Best Practice Guidance (SMETA BPG), which is a compilation of social audit best practices to help auditors achieve the consistency needed for social audits to be widely accepted by retailers and brands. SMETA BPG may be used by any auditor or audit company, including those who are not Sedex members. It is also applicable to all sizes and types of employment site, including manufacturing sites, agricultural sites and service providers.

(x) Ethical Trading Initiative: The Ethical Trading Initiative (ETI) Base Code is a code of labour practice, derived from the Conventions of the ILO. The code is generic, meaning that it is applicable for any type of company and in any place in the world. The Base Code is mostly applied for managing labour practices in international supply chains. ETI does not certify companies or products against the code, and does not encourage others to do so. ETI does require, though, that members demonstrate that they continuously work towards compliance and that they report openly on their progress to ETI. The Code is internationally well recognised, and has served as a basis for other initiatives and codes to build on.

7.3.2 Requirements to meet private and voluntary standards

Five basic criteria are normally used for certification of private and voluntary standards for the export of agricultural products, which include - Environment, Social, Management, Quality and Ethics. However, exporters will have to meet several requirements to fulfil these criteria, as presented in Table 7.17. For example, in order to meet the Environmental sustainability under the Sustainable Agriculture Network (SAN), exporters will have to fulfil 84 basic requirements. Similarly, Naturland requires 69 basic requirements, SAFA needs 79 requirements, and Unilever Sustainable Agriculture Code requires 89 basic requirements.

Table 7.17: Number of requirements to be fulfilled under the 5 basic criteria.

Name of the Standards	No. of Requirements				
	Environmental	Social	Management	Quality	Ethics
SAN System	84	68	14	7	4
Naturland	69	59	10	7	3
Unilever Sustainable Agriculture Code	89	47	19	9	3
SAFA	79	75	27	7	10

Source: Compiled from ITC Standard Map

8.0 Conclusion and recommendations for policy interventions

In the preceding sections, the Study tried to provide an in-depth analysis of the export potential of the vegetables sector in Bangladesh. It attempted to do so by analysing the current status of the export readiness of the country's vegetables sector and investigating the determinants of its vegetables exports. This was done through concentrating on selected vegetable products, namely potato, tomato, eggplant (brinjal/aubergine), pointed gourd (patol), lady's finger (okra), beans or yardlong beans, cauliflower and cabbages, and citrus fruits, including lemons and satkora. This section (Section 8.0) concludes the Study report by presenting a highlight of the major findings from Section 4 through Section 7, and providing prospective recommendations relating to required policy interventions and investments with a view to enhancing export readiness of vegetables from Bangladesh.

8.1 Major observations from the Study:

The study revealed that there has been an impressive growth in the production of vegetables in Bangladesh that rose from 5,621 metric tons in FY 2003-04 to 11,632 thousand metric tons in FY 2013-14. Exports of vegetables from Bangladesh also rose from US\$41.77 million in FY 2008-09 to US\$147.55 in FY 2013-14. Products that have bright export potential are potatoes, tomatoes, pointed gourds, and beans. The Study identified the UK, Malaysia, Saudi Arabia, United Arab Emirates, Singapore, Qatar, Russia, Italy and Kuwait as our main export destinations. It also identified Japan, Canada, Indonesia, Sri Lanka, United States, Bahrain, and Australia as the promising or potential markets for Bangladeshi vegetables.

Studying the existing domestic market infrastructure of the vegetables sector, we found that a number of constraints related to that infrastructure adversely affect vegetables exports from Bangladesh. These include- (a) poor market infrastructure, evidenced from the existence of weak linkages between supply chain actors (i.e., input suppliers, producers and markets) and the lack of well-structured and organised markets; (b) poor transportation system, reflected by the absence of the Cool Supply Chain transport facility, poor and insufficient road access to the growing or production areas for large vehicles for loading and unloading etc.; (c) frequent strikes and hartals and other forms of political unrest occasionally disrupting transportation of vegetables; and (d) frequent delays and cancellation of overseas-bound flights.

Assessing the policy frameworks and strategies adopted to support and promote vegetables export from the country, the Study found that the relevant GoB organisations, such as the MoA, DAE, BARI and HF, have been playing a supportive role in areas, including market development, packaging improvement, provisioning for reefer van, and training programmes with a view to raising awareness from farmers and enhancing their knowledge on vegetables production and export. Other GoB organisations, such as the MoC, the APBPC and the EPB, play a role in areas that include forward supply side constraints, product diversification, and awareness and capacity building on market access and standards requirements. In addition, the development partners and international NGOs provide financial and technical support for the development of the sector.

Despite such supportive role, growth in exports of vegetables depends also on some other factors, such as the ability of the sector to comply with SPS requirements, traceability, and permissible pesticide residue level etc. Again, the sector faces a number of impediments and challenges in producing quality vegetables. These include scarcity in cultivable land and supply of quality inputs, lack of access to finance, lack of knowledge of appropriate use of fertilisers and pesticides, inadequate knowledge on GAP, and poor post-harvest management.

Examining the determinants for vegetables exports, the Study identified a number of them that adversely affect vegetables exports from Bangladesh. These include – (a) the twin issues of the presence of pests and harmful organisms in many consignments of fresh vegetables shipped from Bangladesh, and the use of fake phytosanitary certificates and doctoring of such documents by a section of unscrupulous exporters; (b) the lack of adequate knowledge within the industry on the importance and requirements relating to SPS measures in the export markets, and the lack of adequate monitoring and vigilance to stop export of consignments of vegetables that do not comply with buyers' requirements; (c) the near absence of direct linkage between the exporters and the primary producers forcing the exporters to buy vegetables either from the wholesale markets or from their suppliers in the producing regions; (d) the recent detections at export destinations (such as the EU) of malpractices committed by a section of the exporters, which include exporting vegetables and fruits without taking PCs or exporting additional category of products not included in the PCs.

Conducting the value chain and supply chain analysis for brinjal, a vegetable with good export potential, in Section 5, the Study found a large number of constraints and equally significant avenues of opportunities in vegetables production, and identified a number of appropriate interventions that the government should adopt in order to enhance commercial vegetables farming and promote their exports (Table 5.3).

The Study explored a number of supply side constraints, both backward and forward, that affect vegetables exports from Bangladesh. Major backward supply side constraints include– (a) poor and traditional production methods; (b) lack of knowledge about timing and dosage of pesticides use; (c) lack of awareness about proper harvesting time and technique; and (d) lack of knowledge on GAP. On the other hand, major forward supply side constraints include– (a) poor standards and testing facilities; (b) lack of modern storage facility in vegetables producing regions; (c) constraints at the HSIA, which include lack of loading and unloading facilities, lack of sufficient storage management in airport, inferior and unhygienic packaging, lack of adequate scanning facilities, and insufficient cargo space; (d) traceability; (e) ban on cargo exports via direct flights from Dhaka; and (f) lengthy cargo screening process.

Attempting to map the international market environment for export of Bangladesh vegetables, we found that Bangladeshi vegetables' penetration in the vegetables markets in Saudi Arabia, United Kingdom, the UAE, Singapore, Russia, Italy and Canada is extremely poor, as its share is less than 1% of total imports in each of those countries. The share is above 1% only in Malaysia (1.29%), Bahrain (1.12%), Kuwait (2.16%) and Sri Lanka (2.15%). This implies that Bangladesh needs to work hard to enhance its vegetables exports to these markets. Among the competitors of Bangladesh in the world vegetables market, China and India are the largest ones. Other major competitors are Jordan, Australia, Netherlands, Egypt, Myanmar, Spain and Lebanon (Table 6.4). Among these competitors, the countries from Asia, such as China, India and Myanmar merit our special attention, as these have geographic proximity and export more or less similar categories of vegetables. The study also identified the top competitors for Bangladeshi vegetables on the basis of each category of vegetables (highlighted in Table 6.5).

The study also identified that meaningful horizontal diversification has not been possible in Bangladesh, while vegetables exports have remained concentrated in one product only, that is,

potato. For the same reason, the possibility of vertical diversification has also remained elusive. Vertical diversification has not been possible even within the potato sector, as exports of processed food products made from potato, such as chips, flakes and mashed potato, have not been able to pick up at all.

Attempting to elaborate on various market entry requirements to access the export destinations for Bangladeshi vegetables, the Study found that tariff barriers are not posing any threat to our vegetables exports, as the tariff structure in our major export destinations is either non-existent or very low (Tables 7.1- 7.6). However, as highlighted in Table 7.8 through Table 7.14, there are numerous SPS and TBT requirements that are currently imposed by these export destinations. This demonstrates that market-entry requirements remain as the most serious obstacle. These NTMs have continued to hamper vegetables exports from Bangladesh, as we have seen occasional disruptions or even periodic stoppages of exports of particular categories of vegetables to those countries, more specifically in the EU market (viz., in the UK, Italy, Germany and France).

8.2 Prospective recommendations of the Study:

This sub-section provides the prospective recommendations relating to required policy interventions and investments that would enable the country to effectively tap its export potential in the vegetables sector. While the specific recommendations have been highlighted in the respective sections (viz., Section 4 - 7) of this report, some of the key recommendations are reproduced below:

- (xviii) As the supportive role played by the GoB organisations has contributed significantly to enhancing productivity of vegetables and improving their export performance, the GoB should continue allocation of funds so that research, training and other supportive activities could be continued by the DAE, BARI, HF etc. aimed at promoting production, marketing and exports of Bangladeshi vegetables.
- (xix) The MoA and MoC, in collaboration with the HF, BFVAPEA, DAE, research organisations (BARI, BAU), development partners/NGOs and other relevant private sector organisations together can play a more active role in vegetables export promotion. The tasks they may perform include- assisting quality production following GAP, postharvest

management, developing efficient market intelligence support for promoting exports, and enhancing capacity to comply with market entry requirements etc.

- (xx) The GoB also needs to take steps to ensure the timely implementation of ongoing projects, in the agricultural sector in general and the vegetables sub-sector, in particular, being implemented by the GoB with or without assistance and support from development partners.
- (xxi) The GoB policy of providing cash incentives (currently @20% of FoB value) acted as a very effective policy support in promoting vegetables export, as it contributed immensely to support the vegetables exporters to mitigate their comparative disadvantage vis-à-vis the competitors and gain competitive advantage, and to mitigate the adverse impacts they have to endure due to lack of space in aircraft and high air fare. Therefore, the policy should be continued.
- (xxii) A major implementation challenge for the GoB (viz., the DAE) is to impart training to uneducated and rural farmers on proper harvesting techniques and timing. Adequate steps will have to be taken to address this challenge effectively.
- (xxiii) To address the determinants that adversely affect exports of vegetables from Bangladesh, the GoB should undertake the following activities:
 - a. It should encourage the growth of contract farming. Contract farming effectively addresses the issue of traceability providing direct linkage between exporters and primary producers, and ensures adequate knowledge of buyer requirements.
 - b. The GoB should continue its efforts to ensure integrity and quality of the product and the reliability of certificates specifying quality. Establishment of more scanners at the HSIA, and automation of PC processing and issuance would be a welcome development.
 - c. It should establish packing houses with controlled temperature, since these help exporters maintain quality and specifications of the product as per the requirements of either the importing country or the buyer. The one being established at Shyampur is a welcome development.
 - d. The GoB should take stringent actions against those exporting firms that are accused of exporting vegetables without any PC or with doctored PCs.

- (xxiv) There are growing fear that due to compliance problems some importers of fresh vegetables may divert their imports from Bangladesh to other countries. Hence, there should be an immediate intervention, in a concerted and coordinated manner, from different ministries, Bangladeshi exporters, government agencies or departments and growers to ensure quality production of vegetables, storage and transport through cold room facility to preserve freshness and supply to export markets on time at competitive prices.
- (xxv) Bangladeshi firms will have to discontinue their current practice of serving export markets following a *market-to-market approach* (i.e. buying vegetables from domestic market and sell those to foreign markets). To ensure collection of quality vegetables to meet foreign buyers' requirements, exporters will have to reach the growers/farmers and to monitor whether or not vegetables are produced following certain procedures/standards in order to meet importers' requirements. Contract farming can be of help in this regard. This will also help in determining traceability that would be instrumental in enhancing exports and in effectively catering to the need, especially of the EU market.
- (xxvi) Adoption of modern production methods, including contract farming, will ensure quality production of vegetables for export markets. Mechanisation in necessary areas and special policies for production and export of vegetables sector will also be necessary.
- (xxvii) Efforts should be made from all concerned so that quality of the vegetables in demand has to be improved by different value addition activities like upgrading the packaging, processing, handling, grading, and transportation system.
- (xxviii) The Plant Quarantine Wing of the DAE needs to be strengthened by improving its capacity for quarantine inspection and monitoring through one-stop quarantine inspection and certification facilities.
- (xxix) The GoB must allocate more resources to enhance the capacity of the DAE and strengthen its SPS system by providing inspection tools and other necessary equipment. The GoB may also consider a separate wing within the DAE to deal with the SPS issues and other market entry requirements.
- (xxx) Implementation of a laboratory technician certification programme is necessary to build the capacity of laboratory technicians at the DAE to employ Good Laboratory Practices (GLPs) and perform analytical diagnostics. It will also be necessary to establish or identify

(with adequate facilities and infrastructure, equipment and trained personnel) at least two fee-for-service laboratories for potential vegetables exporters.

(xxxix) 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. It serves as a powerful tool for addressing pest pressure and establishing the ability to export commodities (viz., citrus to the EU). Therefore, necessary efforts may be taken to establish Areas of Low Pest Prevalence/Pest Free Areas.

(xxxix) Our export diversification strategies on vegetables should be geared keeping the Asian competitors, such as China, India and Myanmar, in view and examining the strengths and weaknesses they have. By doing so, we will be able to capture not only the ethnic market but also the mainstream market in our existing and potential export destinations.

(xl) As Bangladesh has not been able to expedite any meaningful export diversification in the vegetables sector, there should be greater intervention from the GoB in facilitating both the horizontal and vertical diversification in the vegetables sector in Bangladesh.

(xli) We must be ready to accept the reality that all countries will continue to maintain SPS measures to ensure health and food safety and to prevent the spread of pests or diseases among animals and plants. A number of private sector standards have also emerged in the developed societies. As these standards requirements are non-negotiable, our vegetables products must comply with those requirements. To that end, Bangladesh has made efforts to improve the sanitary quality of its vegetable produces exported to the developed countries so that they conform to their health and food safety standards. These efforts should be continued with active support and assistance from the GoB.

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Annotated Outline

Executive Summary (2-3 pages)

There will be an Executive Summary of the report. This will attempt to make a synthesis of the main findings regarding current status of vegetables exports, problems and prospects, global market scenario of vegetables export and policy recommendations of the study report.

Section 1: Introduction (3-4 pages)

This section will provide the context of the study by highlighting the importance of vegetables export for Bangladesh as a trade diversification step and the growing emphasis on producing insecticides-free/chemical-free vegetables to meet buyers' requirements. Interventions needed to comply with the buyers' requirements and gain competitiveness in exports will also be outlined.

Section 2: Research Approach and Methodology (2-3 pages): This section will outline the objectives of the study and organise the structure of the report with methods of data collection (research design). In particular, stakeholder interviews (using the Structured Questionnaire attached in **Annex B**) and focus group discussions will be conducted in collecting data for the study.

Section 2: Vegetables export: an overview (Literature Review) [5-7 pages]

This section will provide a brief description of the vegetables export scenario in the world market. In doing this, literature from secondary sources will be consulted and reviewed to develop a general idea on vegetables cultivation, export of vegetables, impediments cited in literature, export market requirements, and possible interventions that could enhance export readiness of vegetables from Bangladesh. Books, brochures, research reports, monographs and manuals will be consulted prior to developing the study tools.

Section 3: Status and performance of vegetables sector of Bangladesh [6-7 pages]

(i) Production performance and trend: In this sub-section, current status in vegetables production in Bangladesh, strengths in such production and trends will be highlighted.

(ii) Export performance and trend: Vegetables export performance of Bangladesh and challenges it faces will be elaborated in this sub-section. Fresh vegetables exporters have been facing stiff competition from competitors from other countries, viz., Pakistan, India and Kenya, in the Middle-East markets, including United Arab Emirates, Qatar and Kuwait. Vegetables exports, despite this, shows an increasing trend. The current status of exports of vegetables, and trend for vegetables export, both in terms of new or evolving export markets, and new vegetables items (i.e. product diversification) will also be highlighted in this section.

(III) Market infrastructure: This sub-section will highlight the current market infrastructure. This will include various problems associated with the marketing of vegetables, such as, lack of efficient transportation (road infrastructure) network, lack of proper handling, inadequate storage space etc. Poor market infrastructure contributes to significant losses for vegetables growers and traders. Interventions needed for timely marketing and export of vegetables will also be identified.

Section 4: Assessment of policy frameworks and strategies supporting vegetables sector in Bangladesh (10-12 pages)

In this section, an assessment of policy frameworks and strategies adopted by the Government of Bangladesh to support and promote vegetables export will be made under the following sub-sections:

(i) Government initiatives supporting vegetables export: A comprehensive account of government supports (including subsidies/cash incentives provided to vegetables exporters) to promote export of vegetables will be highlighted in this sub-section. It will also highlight the efforts, (if any) such as organising single country fairs, undertaken by the Export Promotion Bureau (EPB), to introduce and popularise Bangladeshi vegetables.

(ii) Institutional networks supporting vegetables export: This sub-section will explore and outline various institutional networks, such as Department of Agricultural Extension, Hortex Foundation etc., engaged in supporting vegetables producers/exporters to enhance exports of vegetables.

(iii) Development partners' initiatives supporting vegetables export: Supports and technical assistance provided by the development partners, including KATALYST, USAID, FAO, World Bank and ADB, for the Bangladesh vegetables sector through provisioning of financial and technical assistance, will be highlighted in this sub-section. This sub-section will also elaborate on the initiatives from the development partners in the promotion of vegetables sector of Bangladesh.

(iv) Policy implementation status: success and failure – This sub-section will try to examine the successes and failures in implementing the governmental policies supporting vegetables production and export. The implementation challenges, including appropriateness of the scheme, possible lack of a correct mindset, delay in decision making and project implementation, lack of awareness and training about various initiatives, will also be examined and presented in this sub-section.

(v) Determinants of vegetables export from Bangladesh: This sub-section will outline various issues that determine the export competitiveness of Bangladeshi vegetables vis-à-vis similar products from other country competitors.

(vi) Value chain and supply chain of vegetables export from Bangladesh: Under this sub-section, a complete value chain mapping of this sector, including a SWOT Analysis, will be presented to identify the extent of value added at each stage, the scope for intervention to reduce costs against value addition in each stage, and the opportunity for improving quality of produce through training on appropriate harvesting time, and usage of right dosage of fertilisers/insecticides.

Supply chain of vegetables from the production stage to the marketing in export destinations will be highlighted with a view to exploring the possible areas for improvement in terms of both time and cost.

(vii) Supply-side constraints of vegetables export from Bangladesh: Bangladeshi vegetable exporters suffer from a number of major constraints in their efforts to produce and export vegetables. The major supply side bottlenecks that constrain the growth of vegetables exports of Bangladesh will be analysed in this section.

Section 5: Mapping international market environment for Bangladesh vegetables export: global scenario (6-7 pages)

(a) Existing and potential market for vegetables export from Bangladesh: This sub-section will provide a mapping of existing export markets for Bangladesh vegetables. New export destinations for Bangladesh vegetable exports will also be explored.

(b) Competitors of Bangladesh in exporting vegetables: This sub-section will present the competitiveness scenario in the export market for vegetables, and will, in particular, identify those competitors that offer strong competition to Bangladeshi vegetables exporters.

(c) Export diversification within vegetables sub-sectors: This sub-section will explore the possibilities and scopes for horizontal diversification among different vegetables products and vertical diversification within the same vegetables category.

Section 6: Analysing specific international market entry requirements (8-9 pages)

Policy-induced measures in the competing exporting countries often constrain the growth in vegetables exports from Bangladesh. This section will elaborate on various policy/market entry requirements to access export destinations for Bangladeshi vegetables. These requirements will be outlined under the following headings:

(a) Tariff structures of potential export markets: In this sub-section, tariff structure of each potential export market will be highlighted to provide an understanding of the tariff barriers the exporters of vegetables may face.

(b) SPS requirements: In the case of food and vegetables export, there remains the very legitimate consideration of sanitary and phytosanitary (SPS) measures. This sub-section will outline those SPS measures the Bangladeshi producers and exporters of vegetables shall be

required to comply with during either the production or the export stage, or both, to gain access to export markets.

(c) TBT requirements (packaging/labeling) quality standards: This sub-section will incorporate a list of the packaging, labeling or any other technical barriers to trade (TBT) measures (if any) at the export markets.

(d) Quality standards (including private standards): This sub-section will look into the quality standards (including private standards) and report (if any) the same.

(e) Other market access barriers (if any): Any other market entry barriers (emerging barriers) will be highlighted in this sub-section.

Section 7: Conclusion and recommendations for policy interventions (2-3 pages)

This section will conclude the study report with major observations highlighted. In the light of the SWOT analysis and findings from the analysis of primary and secondary data, recommendations will be made for policy interventions and investments with a view to enhancing export readiness of vegetables from Bangladesh.

Structured Questionnaire

Name of the Interviewee:

Organisation/Company Name:

Address:

Contact Number:

Business Products:

No. of Employees:

Years in Vegetables Production and Business:

Years in Vegetables Exporting:

Educational Qualification of the Owner(s):

Age:

1. What vegetable products do you export?

:

2. What are the different stages from production to export of your product?

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3. What measures do you consider important to maintain quality, reduce wastage, and increase shelf life of vegetables?

:

4. In your view, what constrains you from producing high quality vegetables (viz., inefficiency in pest and disease control, lack of training, scarcity of quality seed, quality of soil, knowledge gap) to meet export market requirements?

:

5. In your view, do you think contract farming is viable for export business of vegetables in Bangladesh? Why?

:

6. Please describe the backward supply chain issues/ constraints that affect export of your vegetables from Bangladesh?

Please identify in order of priority:

Constraints	Rank under the 5-Point Scale
Availability of land	
Supply of quality inputs / planting materials (viz., seed, saplings)	
Access to finance	
Lack of knowledge about appropriate use of secondary inputs, including fertilisers / pesticides	
Use of modern technology	
Post-harvest management (viz., peeling, milling, sorting, grading, washing, packaging, storage)	
Knowledge on SPS measures	
Knowledge on GAP	

Note: 5= most significant problem; 4= more significant problem; 3= significant problem; 2= general problem; and 1= least significant problem

7. Please describe the forward supply chain issues/ constraints that affect export of your vegetables from Bangladesh?

Please identify in order of priority:

Constraints	Rank under the 5-Point Scale
Distorted distribution chain	
Lack of transport	
Inadequate storage system	
Cold chain supply system	
Export-friendly packaging	

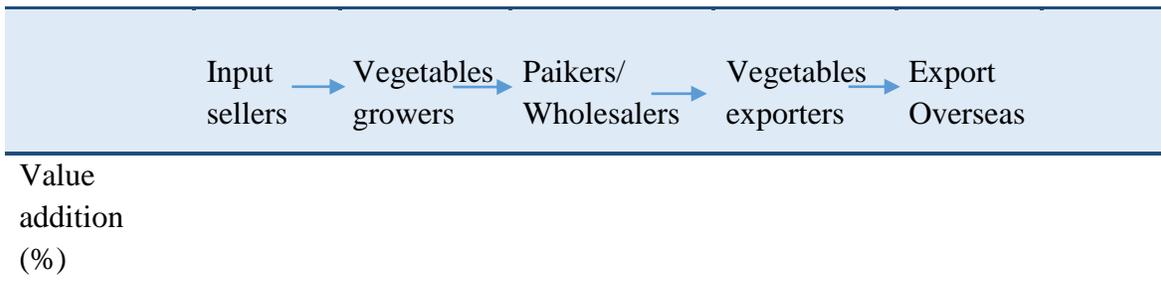
Note: 5= most significant problem; 4= more significant problem; 3= significant problem; 2= general problem; and 1= least significant problem

8. What other constraint(s) you face in exporting your vegetables products to foreign markets?
Please identify in order of priority:

Constraints	Rank under the 5-Point Scale
High tariff barrier	
Measures for SPS certification (Plant health certification)	
Private sector standards	
Fake certification for quality	
Environmental and social issues (voluntary standards viz., GLOBAL-GAP)/GLOBAL-GAP / documentation	
US FDA requirements	

Note: 5= most significant problem; 4= more significant problem; 3= significant problem; 2= general problem; and 1= least significant problem

9. Who are the main actors in the value chain of Vegetables production and export? Do you have any idea about their relative role in the vegetables value chain?



10. What are the non-tariff measures you face to export to the following markets?

Export destination	Export items	Non-tariff measures/Issues/problems
EU countries: (UK Italy Germany France Sweden)	Frozen food consignments	<p>[Hints:</p> <p>a. standards with regard to harmful organisms, virus and bacteria (vegetables carrying harmful organisms).</p> <p>b. other SPS measures/ measures for contamination-free frozen food exports</p> <p>c. lack of phytosanitary export controls</p> <p>d. Quality Standards (Including Private Standards)</p> <p>e. Additional declaration requirements on phytosanitary certificates for some vegetables]</p>
Malaysia, Sri Lanka, Singapore, Russia	Potato	
Middle-Eastern Countries (Saudi Arabia, United Arab Emirates, Qatar, Bahrain, Oman, Kuwait,)		
Canada		
Pakistan		

11. In which areas/aspects do you suffer from disadvantages/limitations vis-a-vis other exporting countries to remain competitive?

12. Would you kindly elaborate on the SWOT of Bangladesh Vegetables Export?

SWOT analysis:

<i>Strengths</i>	<i>Weaknesses</i>
<i>Opportunities</i>	<i>Threats</i>

13. **a.** Is there any GoB initiative/policy support that help export of your vegetables?

b. If so, what are those initiatives?

:

14. Have you been benefited by these GoB initiatives? Yes____; No_____;

a) If YES, How?

b) If NO, What are the reasons?

No.	Reasons
1.	
2.	
3.	
4.	
5.	

15. **a) In addition to the GoB, what are the other agencies/development partners (like, USAID, ADB, World Bank, SIDA, KOICA, etc.) that support you in your export performance?**

:

b) What supports do you get? [viz., Supply high tech machines, provide training to farmers/ employees, new methods in vegetables production, Input supply: fertiliser, seed, energy supply, etc.]

:

c) How these supports promote export of Bangladeshi vegetables?

:

16. **Do you suggest any measure/intervention to improve the dissemination of market information among vegetables growers, government agricultural office (DAE), and market participants/ traders for updated information on quality inputs, cultivation techniques, new technology, high value vegetables and high-priced markets?**

:

17. **Do you think that the new Compliance Rules (vegetables growers / exporters to register with the Department of Agricultural Extension) introduced by the GoB will help export of vegetables from Bangladesh? Will it have any impact on export competitiveness?**

:

18. In your view, what may be the major interventions to effectively address the constraints faced by the vegetables export sub-sector?

:

19. In your view, what may the major policy initiatives required to be undertaken to adequately comply with the legitimate non-tariff measures in the export market?

:

20. Do you consider it necessary to have a traceability system in place for maintaining quality of vegetables to meet export market requirements?

If yes, which measures are needed?

21. Do you follow / conduct any testing at laboratory to determine whether or not the vegetables are safe?

Date:

Interviewee's

Signature:

.....

-----*Thank you for your cordial participation*-----