

# Value Added Agro-processing Opportunities in Bangladesh

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## 1. INTRODUCTION

One of the major constraints for Bangladesh agriculture is a lack of essential linkages amongst production, processing and marketing of agricultural produce. Keeping this issue in view, the Ministry of Agriculture and FAO envisaged a strategy to provide incentives for establishing rural agribusiness, agroprocessing and agrobased labor-intensive industries in Bangladesh.

Both the Industrial Policy 1999 and the National Agriculture Policy (April 1999) have put emphasis on creating opportunities for establishing agro-processing and agro-based industries in the country. The Industrial Policy 1999 has identified agro-based industries as number one out of 16 select thrust sector industries. It envisions to raise the share of these industries in the GDP to at least 25 percent, within a decade, from a low base of ten percent prevailing over the last two decades.

Assuming the contribution of agriculture to remain constant at around 29 percent, the contribution of the industries sector is expected to more than double. In that case the contribution of services/other sectors will be reduced to below 50 percent from the previous level of above 60 percent. If the projection holds good, Bangladesh economy is expected to stand on stable and sustainable development based on both agriculture and industry.

The industrial policy also identified a vibrant and dynamic private sector as the prime actor in the industrial arena of the country to implement the policy. The primary goal of the National Agriculture Policy is to modernize and diversify the agricultural system through the initiation and implementation of a well organized and coordinated development plan. It has identified the agricultural commodities that have relative high value adding capacity when compared with non-agricultural commodities. paper are author's own.

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The global economic environment is in the process of undergoing radical changes - movement is toward a world market economy. The Uruguay Round Agreement on Agriculture (URRA) has created a new regime for growth based on liberal trade policies. There are opportunities for restructuring our economy on a sound footing. “Agroprocessing industries offer opportunities for value addition to products — both for local markets (import substitution) and export markets, The URRA has certain advantages for Bangladesh agriculture. However, the advantages would not be automatically available — they should be seriously explored and exploited within our environment. Bangladesh has to promote a better export-import balance based on the country’s comparative advantages. To be able to extract maximum benefit from our agriproduces, the country will have to stimulate processing for value addition.

The agro-climatic condition of Bangladesh is suitable for production of more than 200 crops in a year. Bangladesh is on the verge of attaining self-sufficiency in rice — the staple food crop of the country. However, due to heavy cereal based food habits and low production, other food items, such as fruits, vegetables, pulses, edible oils, eggs, meat and milk, are consumed less than what is required for physiological requirements.

There are production pockets for different food items. It is necessary to understand production trends and geographical potential for production of different food items which are suitable for processing and export. There are certain food items which are important not only from a processing point of view, but also for import substitution and/or export promotion, These activities will help farmers receive better prices for their products and will help eliminate market gluts.

The main objective of this paper is to highlight the present status and elucidate future potential of agro-processing industries in Bangladesh. In particular the paper has been designed to:

- focus on production of and requirements for different food items in Bangladesh
- identify production zones of food items for exploring processing opportunities and promoting exports
- highlight technologies related to the processing of cereals, fruits, vegetables, milk, poultry and fish under Bangladesh conditions
- focus on the investment status, constraints and opportunities in agro-processing

- identify bottlenecks and limitations to establishment or expansion of agro-processing industries in Bangladesh
- identify policy issues related to the promotion of agro-processing opportunities and suggest some policy recommendations.

## **2. CONCEPTUAL AND TECHNOLOGICAL ASPECTS OF AGRO-PROCESSING INDUSTRIES**

### **2.1 Agro-processing Industries Defined**

Agro-processing industries can be defined under the broad spectrum of agrobased industries. James Austin (Austin 1983) defined an agro-based industry as an enterprise that processes agricultural products including ground and tree crops as well as livestock.

The degree of processing can vary tremendously ranging from the cleaning and grading of fruits to the milling of cereals, to the cooking, mixing and chemical alteration that create a textured vegetable food. Agro industries are the primary method of transforming raw agricultural products into consumable products and in the process, these are adding value to the raw materials. Agro industries often constitute the base of a manufacturing sector, and their products frequently constitute the principal exports of the country. The food processing system which is a central part of agro industries, provides nutrition required by a nation's population.

Agro-processing may be defined as the processing of inputs for or outputs from agricultural production. One feature of agro-processing industries is that the processed products usually maintain high value addition and better storage and keeping quality compared to the raw materials used for the purpose. The processed agricultural products include frozen, dehydrated, pickled, canned, and bottled products.

### **2.2 Technological Aspects of Agroprocessing Industries**

Quality control is a primary consideration in any food processing industry as its product is consumed by human. Quality control is measured in terms of standard specifications, codes of practices and good manufacturing practices. The food quality should meet the expectations of the consumers within the framework of legal requirements. The taste, smell, color and consistency of food value, ie, the wholesomeness is a part of quality control. The best quality foods are prepared in strictly controlled safe and hygienic conditions during all of the stages of food processing:

- Control of quality of raw materials
- Control of critical points in the processing
- Control of finished products

Food with high moisture like fruits and vegetables, fish, milk — commonly known as perishable commodities — require proper handling and processing for their preservation. On the other hand, food items with low moisture content such as cereals, pulses and oil seeds can be stored in ambient temperatures after proper drying and be processed during off-season.

The shelf-life of fruits and vegetables can be extended by preservation. Preservation of perishable fruits and vegetables is necessary for linking rural areas, the production centers, with the urban centers, the consumers. Market demand and government regulations will determine the quality of products. Scientifically and hygienically prepared high quality products may even qualify for export.

### **3. POTENTIALS OF AND CONSTRAINTS TO VALUE ADDITION THROUGH AGRO-PROCESSING OF SELECTED PRODUCTS**

#### **a) Rice**

Production of rice increased to about 25.0 million MT in 2001-02. Nawabganj, Dinajpur and Sherpur areas are famous for production of fine and aromatic rice that have export markets.

#### **Potentials**

Rice mills of various capacities have grown throughout the country. The indigenous ‘dheki’ method of rice husking has been largely replaced by mechanized rice milling. However, mechanized rice milling in Bangladesh is itself a century old technology — known as the engel-berg huller system. The extent of processing and storage of paddy depend on locations: the farm for extended personal consumption, the village where producers and traders interact, and urban areas where storage facilities set up by public agencies are found.

There are 100.405 (100,000 engel-berg, 38 Chinese automatic and 25 large automatic) rice mills of different sizes and categories spread throughout the country. The engel-berg rice milling system is defective. About 20,000 engel-berg type rice mills are being established every year. These rice mini-mills have widely decentralized the rice milling industry. Over the years, some technological

improvements have been introduced, (a) including parboiling the paddy to conserve its vitamins, reduce the proportion of broken rices, (b) mechanical drying of paddy, (c) use of rubber roller sellers to minimize grain breakage, (d) utilization of husks as fuel for boilers and dyers and as raw materials for products such as cement and (e) evolution of mechanisms to separate rice bran from husks to extract oil from rice bran. Rice bran is also used as good feed for fish and poultry. According to one estimate, about two million MT of rice bran (at 10 percent of the weight of clean rice) could be produced from about 20 million MT of clean rice in Bangladesh annually. Most of it is used as fuel for cooking purposes and/or in boilers (mixed with husks). Through slight modification in the existing engel-berg system, 200,000 MT of quality edible oil could be produced from rice bran. The rice bran oil could meet about 50 percent of total consumption. According to one estimate, 400 MT of rice bran oils are produced in the country. Rice bran oil is a good quality edible oil having balanced fatty acid composition and valuable micro components. Bangladesh is deficit in edible oil. Locally produced oil can hardly meet 30 percent of the country's total requirement.' The country spends over Tk. 10,000 million every year to meet import bills of edible oils. Rice bran oil produced from rice mills could substitute for a huge quantity of the imported edible oil every year.

Besides extracting oil from rice bran, there exists tremendous scope to export fine quality rice from Bangladesh to the EU and USA markets. However, this will need a comprehensive collaborative approach involving producers, millers, exporters and financial institutions. A number of incentive packages would be necessary to boost export of fine quality rice on a competitive basis with the neighboring countries. Rice processing devices in Bangladesh is shown in Table-2.

### **Constraints**

- Large amount of post-harvest loss of rice and much poor quality milled rice due to the preponderance of a large number of old, traditional rice mills in the country.
- Mushroom growth of engel-berg huller rice mills (about 200,000 every year), which are not efficient in recovering bran from rice milling systems.
- Under utilization of modern rubber roll rice mills caused by short of supply of paddy due to want of working rice capital loans.
- Lack of drying facilities in the season resulting in poor quality of rice and ultimately poor quality rice bran for oil extraction.
- Frequent power interruption causing lower capacity utilization of rice

mills.

- Heterogeneous mixtures of paddy create problems in producing uniform quality and grades of rice.

#### **Steps to be Taken for Production of Rice Bran Oil**

- Installation of large number of commercial auto-rice mills (with 25 to 50 MT per day capacity). However, the investment for a large auto-rice mill is substantial at about Tk. 40 million per mill.
- Upgrading existing engel-berg huller mills by incorporating a rubber roll sheller in the system. Investment cost of such system is generally low (around Tk. 50,000 per mill).
- Setting up integrated bran oil plants near strategic rice mill areas so as to enable oil extraction from the bran within 24 hours to prevent deterioration of rice bran quality.
- Installation of “rice bran stabilizers” at strategic rice mill areas to facilitate storing of rice bran before milling. ‘Stabilizing’ is a process of heating rice bran at a temperature of 110°C for 20 minutes to keep the FFA below 10 percent for 60 days at a storage temperature of 180°C to 250°C and relative humidity (RH) of 62 to 68 percent. By adopting this method, bran from the improved rice mills could also be used for extraction of oil.
- Discourage the mushroom growth of the age-old engel-berg huller method of rice milling -as is being done in India.
- Provide institutional credit support in the form of term and working capital loans to the private rice millers.
- Provide favorable tariff, tax and VAT structure to encourage the modernization rice mills.
- Create awareness about the food value of rice bran and its use in preparation of edible oil.

#### **b) Wheat**

Production of wheat nearly doubled in 1998-99 (1.91 million MT) from about 1.0 million MT in 1990-91. Sixty four percent of all wheat in Bangladesh is grown in seven former districts: Dinajpur, Pabna, Rangpur, Rajshahi, Jessore, Kushtia and Comilla.

#### **Potentials**

Wheat flour is widely used in bread and biscuit production. Wheat processing industries are growing fast in the country. The bread and biscuit industries range from small bakeries to automated factories. Bread and biscuits are marketed throughout the country. Bread and biscuits are recognized as convenient food (fast food item). There is scope to enrich bread and biscuits through fortification with soya-protein. There is ample scope to use soybean — a protein rich food crop with breads and biscuits to substitute protein deficient food items — based on cereals. Soya fortified breads and biscuits could be served as tiffin items to the school children to improve their nutritional status. This could, on the one hand, help the development of local bread and biscuit production industries and, on the other, increase the intellectual capacity of our rural population due to intake of protein rich food as our future manpower reservoir. This would also encourage more children to attend schools and would minimize drop-outs. It is also possible to produce cereal based baby foods in the country. Locally produced baby food items could be substituted for imports and even exported. Bangladesh could earn needed forex by exporting baby food items to neighboring countries.

### **Constraints**

No accurate estimates of wheat flour based food items could be provided as the industries are scattered throughout the country. Due to lack of quality seed, suitable cropping pattern along with proper linkages between growers and buyers, production could not be maximized as per total requirement of the country. Due to lack of diversified usages growers can not get suitable market price.

### **Steps to be taken**

Wheat processing industries are growing fast in the country. The bread and biscuit industries range from small bakeries to automated factories. We are to conduct statistics/survey on actual demand for wheat made products. As to meet up the demand more wheat processing industries are to be established. It is learnt that wheat processing industries are growing fast in the country, which is a very good and positive sign.

### **c) Maize**

Production of maize is nearly 0.25 million MT in the country. Previously the total production was 3000 MT. The production has got much momentum in the recent years as the demand is growing fast.

### **Potentials**

Poultry farms are flourishing in our country very fast, which creates great demand for animal feed. Flour can be produced from maize for preparation of different kinds of food and feed items. The soil and climatic conditions are congenial for boosting up maize production in the country. By boosting up production the deficit could be mitigated which would save a lot of foreign exchanges.

### **Constraints**

With the growing need the total demand of maize is 1.0 million MT at present in the country, while total production is nearly 0.25 million MT which makes the deficit of 0.75 million MT. The deficit is mitigated by import. Due to lack of quality seed, suitable cropping pattern along with proper linkages between growers and buyers, production could not be maximized as per total requirement of the country. Due to lack of diversified usages growers cannot get suitable market price.

### **Steps to be taken**

For boosting up production, high yielding quality seed has to be devised and used. Cropping pattern should be changed which may suit to maize production to a larger scale. Backward and forward linkages should be established among growers, buyers and entrepreneurs. Required number of feed mills are to be established for meeting demand of feed meals in the wake of flourishing poultry industries in the country. Maize flour can also be used in bread and biscuit production. For this maize processing- industries can also be established ranging from small bakeries to automated factories.

### **d) Soybean**

Soybean is grown as a minor crop — production estimates vary from 600 MT to 15,000 MT annually. To feed over 52 million commercial poultry heads and the rapidly growing aquaculture and livestock industries, Bangladesh needs larger quantity of soybean.

### **Potentials**

Soybean can be processed into soy milk, soya sauce tofu (soybean curd), yoghurt, soybean sprouts, tempeh (soya sheak) soya-flour and other products. Defatted soybeans can be used for the manufacture of protein isolates and concentrates for incorporation in baby food. Soybean is considered an industrial crop. Agro-climatic conditions of Bangladesh are suitable for production of soybeans in more than one season. Concerted efforts are needed to increase the production of



soybeans for meeting huge demands of edible oil, nutrition rich human food, baby foods and also animal feeds. Soybean is an environment friendly crop as it fixes biological nitrogen into the soil. Using soybean in crop rotation will enrich the soil in nutrients and save nitrogen fertilizer, which is key element in crop production.

### **Constraints**

Unprocessed soybeans have an undesirable bitter flavor and contain the toxic proteins, haemagglutinin and antitrypsin. These substances must be destroyed or inactivated to make the beans palatable and digestible both for human and animal consumption.

### **Steps to be taken**

Soybeans can be made palatable, early digestible and nutritious, by processing into various products. The most popular of which are tempeh, tofu, soya milk, soysauce and soya spouts. Soybean can be defatted by solvent extraction with hexane. The recovery of hexane for reuse is close to 99 percent. The smallest plant for solvent extraction should be of 50 MT per day for economic viability. Extruder type, small scale machinew that have the capacity to crush small quantity of different oil crops (with adjustable screw systems) need to be introduced into the rural sector. Samples of extruder machines are located at BSCIR, Dhaka.

### **e) Potato**

Potatoes are the third staple food in the world, next to wheat and rice. The FFYP of Bangladesh had a projection to produce 2.43 million MT of potatoes in 2000-2001 from 1.85 million MT produced in the base year (1996/97). It may be mentioned here that in 1972-73 only 7.5 lac MT of potatoes were produced in the country while this figure increased to 27.62 lac MT in 1998-99 (32.15 lac MT in 2000-2001).

### **Potentials**

It produces more food in terms of dry matter or calorie per unit area, and per unit of irrigation water. It represents 56 percent of total vegetables produced in the country. According to an estimate, Bangladesh has the potential to produce 4.5 million MT of potatoes in 2010, 7.4 million MT in 2020 and 12 million MT in 2030. It is the most opportune moment to start processing of potatoes in order to exploit the full potential to produce the maximum achievable quantities of potatoes in the country. Potatoes have tremendous potential to be used as

substitute for rice and as an industrial crop for export earning as well as import substitution. Per capita and total production of potatoes in the developed world is much higher than that in Bangladesh. Per capita potato production in our country is only 23.8 kg, whereas it varies from the lowest of 68 Kg in Argentina to the highest of 963 Kg in Poland. However, the trend of per capita consumption of potatoes in our country is gradually increasing every year. Tremendous potentials exist for production of the following value added potato products:

**French Fries:** Value added potato french fries can be produced from fresh potatoes for local elite consumers as well as for export markets. Some Bangladeshi potatoes have international demand and for some other varieties in demand can be grown. There exist scope for establishment of french fries production plants by local entrepreneurs as well as joint venture companies. The ingredients for french fries preparation are relatively simple: raw potatoes and soybean oil. Both local and imported machinery may be used to establish french fries plants. The french fries need processing of special variety potatoes as well as hygienic preparation to maintain the international standards in terms of color, taste and flavor. The packaging must also be of good quality to gain markets in developed country supermarkets. One kilo of good quality french fries is sold for Tk 40 at present in the local market.

**Potato Chips:** Potato chips also have domestic and foreign markets. Many local companies produce potato chips. Potato chips have captured good markets even in remote areas of Bangladesh. However, there is ample scope to improve the quality — especially the packaging of potato chips — for local elite markets as well “as for export. One kilo of potato chips is locally sold between Tk 50 to Tk 100, depending on the quality and the packaging materials.

**Potato Flakes:** Potatoes grown in Bangladesh are suitable for production of potato flakes (BCSIR, 1998). Potato flakes are produced from raw potatoes. Usually five kg of potatoes is required to produce 1 kg of flakes. Potato flakes have wide uses like preparation of bread and medicines. Potato flakes are “ready to use”. Potato flakes have great international demand in developed countries like the UK, the USA, Germany, Switzerland and Italy. Demand for **potato** flakes in Italy alone has been projected at 25,000 MT per year. Potato flakes production technology is relatively simple and labor intensive. Generally, one kilo of potato flakes is sold for US\$ 5 to US\$ 6 in the overseas markets.

### **Constraints**

According to some reports, 10-12 percent of the total production of the potatoes in our country is spoiled every year due to lack of proper preservation facilities. Price instability, particularly seasonal fluctuation of price discourage farmers to

make increased investment in potato production.

### **Steps to be taken**

Potatoes are perishable goods. So proper and scientific methods of storage should be followed for its preservation. If we cannot store the potatoes properly, production of potatoes will be at stake. Storage facilities should be provided to the growers of the potatoes in the following manner:

**Short-term storage facility:** For day-to-day consumption the short-term storage facilities should be maintained at growers level. This type of storage facilities ought to be made and maintained at home by using local technology. Various types of indigenous system are seen in rural Bangladesh.

**Long-term storage facility (cold storage):** To sustain this type of storage facility, modern type of cold storages are required. Dhaka, Comilla, Bogra, Rangpur and part of Dinajpur are the major potato growing regions in Bangladesh. Cold storage facilities are established in the main production centers such as Munshiganj, Comilla and the northern districts. There are about 280 cold stores in Bangladesh with a capacity to store about 1.31 million MT of potatoes annually. There are 16 new cold stores under construction. Despite the large number of cold stores, a huge quantity of potatoes can not be stored due to lack of transport facilities and various socio-economic and technological problems.

### **f) Fruits**

Bangladesh produces about 1.49 million MT of fruits annually. Banana is by far the single major fruit occupying 44 percent of the total fruit production in Bangladesh. Jackfruit (18 percent) is the second largest fruit followed by mango (13 percent) and pineapple (10 percent). Rangamati, Rangpur and Barisal are the major zones where banana is grown. Dhaka, Sylhet, Tangail and Kushtia produce most of the jackfruit grown in the country. Rajshahi, Sylhet, Rangpur and Dinajpur are major mango producing regions, while Sylhet, Tangail, Rangamati Hill Tracts and Dhaka are the major pineapple growing regions.

### **Potentials**

There are ample opportunities to earn foreign exchange by exporting fruits in fresh and processed manner abroad. There are lot of scopes to establish more fruit processing plants and/or modernize the existing ones.

### **Constraints**

Fruits are perishable goods. It needs proper preservation and processing for future consumption. But there are only a few fruit processing industries in the country. The picture is quite disappointing in northern part of the country. In Rajshahi, Chapai-Nawabganj and Dinajpur area a lot of quality mangoes are grown but due to lack of proper preservation facilities, a huge quantity of mangoes are perished causing great loss to our resources. This is also happening in case of other fruits in different parts of the country.

### Steps to be taken

- Establishment of agroprocessing industries in the private sector with a focus on processing perishable commodities that have large export demands (such as pineapple, guava, mango, banana and jackfruit).
- Establishment of agroprocessing industries in the areas of raw material production (for example, Madhupur and Sylhet for pineapple; Swarupkati and Barisal for guava; Rajshahi for mango, and Dhaka and Mymensingh for jackfruit).
- Development of appropriate packaging systems for the transportation of raw materials to factory processing sites and also for transport and marketing of exportable products abroad.
- Development of adequate infrastructure for transportation of raw materials and finished goods from the production centers to processors and from there to the market –both domestic and foreign.
- Rationalization of tariff and duty to encourage export.
- Access to the institutional credit for establishment of fruit processing industries and provisions for working capital.
- Linkages with extension, research and financial institutions, and private entrepreneurs for developing appropriate types and varieties of fruits through contract growing systems.
- Exposure of the private entrepreneurs, bankers, policy makers, researchers and extension workers to the advanced production, processing and marketing systems related to fruit processing industries.

One estimate reveals that purchase and sale price of fruits and vegetables stored in the micro-cold-storages are as under:

Fruits/vegetables	Purchase price (Tk/KG)	Sale price (Tk/KG)
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Grape	30-40	100-120
Apple	20-30	55-56
Orange	20-25	50-70
Mango	15-25	50-70
Pine Apple	3-5	15-20
Litchi	20-40	100-120
Black-berry	5	25-40
Banana	3-6	12-20
Papaya	1-2	10-15
Guava	4-6	15-20
Lemon	10-15	35-40
Jack fruit	3-5	12-20
Okra	3-4	10-20
Carrot	2-4	10-15
Pumpkin	2-3	8-15
Cucumber	3-4	10-15
Cauliflower	2-3	15
Brinjal	2-3	8-15
Cabbage	2	5-10

~~Note: Some of the stored fruits and vegetables can also be processed for more value-added food items during peak season and also during off-season. Part of the fruits and vegetables can also be exported at still better prices~~

### g) Livestock

According to the 1983-84 Census, cattle population in Bangladesh stands at 21.49 million. Cattle holding is inversely related to the size of farm households-the smaller households have relatively larger number of cattle holding than the medium and large farm sizes. Important livestock products are as below:

Milk is processed on a commercial scale for production of pasteurized milk which is sold in sealed packets. Milkshake, cheese, butter, yogurt are made of milk. There are only a few milk processing plants in the country.

Necessary steps to be taken for promoting milk-processing centers:

- Linking the milk production zones with a central milk processing plant (for example, the 'Arong' milk processing plant of BRAC, Milk Vita - a plant run by milk producers' co-operative society)
- Establishment of chilling centers in milk production zones where milk is collected for transportation to processing centers through chilling vans.

Meat is the most important source of animal protein in the country. Chief sources

of meat are cows, buffaloes, goats and sheep, Hides of the slaughtered animals are one of the important export items of the country. Black Bengal goats have worldwide demand for its high quality leather.

Poultry entrepreneurs of Bangladesh can be grouped into micro and macro scale operators. The micro operators have a wide range of farm-size having 25 to 2000 birds, the average being around 1,000 birds. They include commercial layers, broilers and dual purpose birds. The micro poultry operator program is a good program. The macro operations can be classified as breeder farms, hatcheries, feed mills, commercial egg producers, large scale broiler or layer producers and poultry processing plants.

#### **h) Fish**

Fish is one of the most valuable food items of Bangladesh. Inland fisheries together occupy about 78 percent of total fish production, while the remaining 22 percent fish come from marine source. In recent years, the contribution of fish to the GDP increased to nearly five percent. Eight percent of total export earning comes from fish. Fish provides about 20 percent of the animal protein consumed by the nation. But unfortunately, though once abundant, fish has recently become a dear item. Among all the fishes, production and processing of shrimp have large potentials for expansion.

According to the World Shrimp Farming Report-1985, Bangladesh ranked 7th in shrimp production by aquaculture: Thailand (220,000 MT), Ecuador (100,000 MT), Indonesia (80,000 MT), China (70,000 MT), India (60,000 MT), Vietnam (50,000 MT) and Bangladesh (30,000 MT). The share of Bangladesh farmed shrimps constituted 4.21 percent of the total world production of farmed shrimps.

#### **Potentials**

Shrimp and prawns have been playing an important role as value addition activities in the economy of Bangladesh. In the coastal areas of Satkhira and Khulna districts, people make dykes or embankments along the banks of estuarine rivers and allow brackish waters carrying shrimp fry or juveniles to enter wherein the shrimp would grow under natural conditions without any care, supplementary feed or stocking. As a result, production output has always been very poor. Shrimp production in the area rotated with paddy cultivation in a systematic manner. Bangladesh has developed a very impressive sea food processing and freezing industry over the last 25 years. There were only nine processing plants in the country with a total freezing capacity of 58 MT daily in 1971. From 1972 to 1976, only four plants with a combined capacity of 44 MT were commissioned.

The trend in installation of freezing plants has increased since 1977 and reached its climax during 1986-1989 period when 39 plants were commissioned in a three years period. During 1992 to 1997, another 26 plants were commissioned with freezing capacity of 507 MT/day. Thus, by 1997, there were 123 freezing plants with installed capacity of 1, 187 MT of which 698 MT was plate freezing, 393 MT was blast freezing and 96 MT was LQF products. The utilization capacity of the fish freezing plants is very low due to a lack of raw materials and the unwarranted growth of the industry.

### **Constraints**

Shrimp as fish is perishable goods. This kind of fish is mainly produced for exports abroad as it is high priced. As a result, it is not commonly locally consumed. For exports, good and high quality of shrimps are to be produced for competing in the world market. But in our country some times producers/exporters cannot maintain world -class quality and standard due to lack of proper preservation and processing. Besides, there are lot of barriers in regard to transport and shipment.

### **Steps to be taken**

- Bangladesh frozen food processing is mainly dependent on traditional block freezing of shrimp and prawns. Only 10 plants have entered into value-added products in the form of IQF, semicooked products,
- Value-addition in sea foods is the current requirement of developed nations like Japan, USA and Canada. Developing nations like Thailand, Singapore, Malaysia, South Korea, Saudi Arabia and Eastern European nations have also developed interest in the consumption of value-added seafoods.
- Value addition in the frozen foods sector is quite a new development in Bangladesh. It will be considered as a right step to increase export value of the frozen foods sector. Only five processing plants exported about 1,000 MT of value added processed foods in 1997-98. The share of value addition to frozen food exports was about 4.65 percent during that year.
- Exports of frozen foods (mainly shrimp) and other fishery products have been considered a non-conventional sector. In 1972-73, the export earnings from this sector was around US\$ 3.06 million. It rose to US\$ 37.04 million in 1979-80 and to US\$ 147.75 million in 1989-90.

#### **4. Recommendations Related to Agroprocessing Industries**

- Agroprocessing units produce high quality food products using refined salt and sugar. Hence, import permission should be given for refined salt and high quality sugar for use in producing food products for export.
- A 50 percent exemption on the duty payable on imports to finished products in retail packaging from Bhutan should be either withdrawn or Bangladesh products should get a 50 percent duty exemption from the Indian and Bhutanese markets.
- One hundred percent export oriented agroprocessing industries which export the bulk of their production and use indigenous raw materials, should be allowed 100 percent tax exemption.
- To solve the problems of surplus horticultural produce, specialized storage facilities should be ensured across Bangladesh and specialized cargo facilities at different airports should be developed.
- To boost the horticulture and agroprocessing sector, VAT should be withdrawn on local production and also on processed fruits and vegetables where the main materials are home grown.
- Under EPB or some other appropriate agency, a packaging institute specially for the agroprocessing sector should be set up.
- Activities of the recently formed agribusiness development Organization of Bangladesh (ADOB) should be geared up. The association should establish liaison with the proposed Agroprocessing Cells in The Ministry of Industries and Agroprocessing Credit Committee in the Ministry of Finance to assist in the identification of suitable entrepreneurs and promotion of agro-processing business.



Table-1 Value added agro-processing opportunities in Bangladesh

Fig. in lac

Item	Total production of Bangladesh	Location (production/processing zones)	Annual production (000 IVT)	Processed products	Estimated no. of processing industries (small and medium scale: with 100 Ton capacity or more)	Project Unit Cost	Total project cost.	Credit requirement (60:40 debt equity ratio)
Rice	1905	Rangpur, Kishoregong, Sylhet, Rajshahi, Jessore	3815	Whole grain milled rice fine & aromatic, doe bran & rice cake	30000	5	15000	9000
Wheat	1908	Uinajpur, Rangpur, Pabna, Rajshahi	983	Wheat flour bran etc.	3000	3	900	5400
Maize	250	Rangamati, Rangpur, Dinajpur, Bogra, Bandarabang, Rajshahi	150	Animal feed, concentrates for feed meals, maize flake	50	8	400	240
Oil seeds	448	FaFidpur, Dinajpur, Naokhali, Khulna	74	Oil, oil cake	500	10	5000	3000
Pineapples	146	Sylhet, Tangail (Modhupur), Rangamati HT, Chittagong, Dhaka	117	Jam, marmalade, juice, sweet pungent pickles, sliced pineapples in syrup.	37	53	1962	1177
Guava	46	Dhaka, Barshal, Chittagong, Sylhet, Jessore	23	Jelly, juice and jam.	6	46	276	166
Jack fruit	267	Dhaka, Sylhet, Tangail, Kushfia, Rangpur	136	ck fruit candy and canning pods of jack fruit	19	60	1140	684
Lime and lemon	13	S-y-l-het, Chittagong, Kushiia, Rajshahi, Rangpur	5	pickles, pulp and juice	3	56	168	160
mango	187	Rajshahi, Sylhet, Rangpur, Dhaka, Dinajpur.	104	Sweet pungent pickles, jam, green mango pickles, Mango juice drink.	30	53	1575	945
Banana	562	Barisal, Rangamab Ptua khali, Faridpur, Rangpur	225	Banana chips, dried banana/other items.	19	62	1176	706

Item	Total production of Bangladesh	Location (production/processing zones)	Annual production (000 T/IT)	Processed products	Estimated no. of processing industries (small and medium scale: with 100 Ton capacity or more)	Project Unit Cost	Total project cost.	Credit require-ment (60:40 debt equity ratio)
Potatoes	2762	Dhaka, Comilla, Rangpur Bogra, Dinairpur	1766	potatoes chips, French fries, potatoes flakes	58	57	3317	1990
Cabbage cauliflower and other vegetables	195	Jessore, Khulna, Rangpur, Dhaka, Comilla, Chittagong, Bogra,	95	Dehydrated vegetables, cauliflower pickles, pasta vegetable bake (pasta, tomato and cheese), fruit & vegetable drink.	11	59	650	390
Tomato	97	Chittagong, Dhaka, Comilla, Jessore, Sylhet	49	Tomato ketchup, tomato sauce	29	56	1625	975
Shrimp	88	Cox's Bazar, Khulna coastal belts, Satkhira.	62	Frozen foods	5	1716	8930	5360
White fish		Habiganj, Sunamganj, Chandpu and Barishal.		Frozen white fish	5	920	4600	2760
Poultry meat		Dhaka, Chittagong, Sylhet, Bogra		Frozen chicken and frozen chicken food, sausages, chicken sandwich, chicken burger, chicken breads	6	47	280	170
Mutton/beef		Dhaka, Joydebpur, Chittagong, Rajshahi, Pabna Mymensingh, Sylhet, Dinairpur		Processed mutton/beef and fast foods	16	17	270	160
Milk		Barisal, Dhaka, Manikganj, Sylhet, Pabna, Seragonjij		Pasteurized milk, ghee, cottage cheese, butter, baby food item	10	50	500	300
Mini cold storage (short term)		Dhaka, Jessore, Narsingdi, Comilla, Faridpur, Mymensingh, Sylhet, Bogra, Rangpur, Rajshahi		Processing of onion, cabbage, carrot, cauliflower, tomato and other vegetables	10	88	880	530
Fruits (processing)								
Total					33914		48649	340

Source: 1999 Yearbook of Agricultural Statistics of Bangladesh

**Table 2 : Rice processing devices in Bangladesh is shown below**

Milling Capacity of Different types of Rice Mills						
Type of Mill	Total No.	Installed Capacity (MT/week)	Actual Capacity (MT/week)	Period of Operation week/year	Potential Operation week/year	Remarks
Large automatic	25	336	202	16	29	60% running capacity
Chinese automatic	380	103	16	41	30	Running at 15% of installed capacity
Sub-total (improved technology)	405	-	-	-	-	
Engel-berg	100,000	91	30	24	43	33% of installed capacity
Grand Total	100,405	-	-	-	-	

Source: Survey report. FMPHT/BRRI, 1998.

**Table 3: Production of major fruits by major producing region (1998-99)**

('000' MT)				
Fruit	Production ('000' MT)	Total production ('000' MT)	Percent of total	Major producing region
Banana	561	1,430	39	Barisal Rangamati, Patuakhali, Faridpur, Rangpur
Jackfruits	2	66	19	Dhaka, Sylhet, Tangail, Kushtia, Rangpur
Mango	187		13	Rajshahi, Sylhet, Rangpur, Dhaka, Dinajpur
Pineapple	146		10	Sylhet, Tangail, Rangamati HT, Chittagong, Dhaka
Melon	97		7	Rajshahi, Chittagong, Comilla, Barisal
Papaya	40		3	Dhaka, Jessore, Chittagong, Raishahi, Sylhet
Guava	46		3	Dhaka, Barisal, Chittagong, Sylhet, Jessore,
Total	1,343	1,430	94	

Source: 1999 Year Book of Agricultural Statistics of Bangladesh

**Table 4: Production of important vegetables by major producing region (1998-99)**

Vegetables	Production ('000' MT)	Total production ('000' MT)	Percentage of total	Major producing region
				( '000' MT)
Potato	2762	4218	65	Dhaka, Comilla, Rangpur, Bogra, Dinajpu
Radish	197		5	Comilla, Chittagong, Sylhet, Dhaka, Jessore, Rangpur
Brinjal	404		10	Jessore, Jamalpur, Rangpur, Rajshahi, Bogra, omilla
Aroid	96		2	Comilla, Barisal, Jessore, Khulna, Sylhet
Pumpkin	103		2	Comilla, Barisal, Jessore, Khulna, sylhet
Cabbage	115		3	Jessore, Khulna, Rangpur, Dhaka, Chittagong,
Tomato	98		2	Comilla, Chittagong, Dhaka, Jessore, Sylhet, Rangpur, Faridpur
Water Guard	84		2	Comilla, Noakhali, Dhaka, Barisal, Sylhet
Cauliflower	80		2	Comilla, Chittagong, Dhaka, Jessore, Rangpur, Khulna, Kushtia,
<b>Total</b>	<b>3939</b>	<b>4218</b>	<b>93</b>	

Source: 1999 Year Book of Agricultural Statistics of Bangladesh

### References

- Austin, J.E. (1983). *Agro-industrial Project Analysis*. John Hopkins University Press, Baltimore.
- BBS (1999). *Year Book of Agricultural Statistics*. Bangladesh Bureau of Statistics, Ministry of Planning, Government of Bangladesh, Dhaka.
- Ministry of Industry (1999). *Industrial Policy 1999*. Ministry of Industries, Government of Bangladesh, Dhaka.