

Introduction to Food Science and Engineering

Food Industry in Bangladesh

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Food Industry in Bangladesh

Scope of Food Industry in Bangladesh: Food industry of a country is basically established based on the availability of raw food materials and demand of the processed foods. Both are present in Bangladesh. Besides cost of food production and food processing is also very low in Bangladesh because of its cheap available manpower. In addition, processed food can be export to other countries. So, there is a potential scope of food industry in Bangladesh and it is, in fact, growing faster.

- In Bangladesh Food industry is a rapid growing sector and between 2004 and 2010 it grew at an average rate of 7.7 per cent per annum.
- According to BBS, there are 246 medium sized food processing industries employing 19% of the industrial manufacturing workforce in Bangladesh (2.45% of the country's total labour forces) and its share in GDP was 2.01% in 2010.
- There are also numerous small scale factories and domestic units engaged in food processing throughout the country.
- According to some industry analysts, the food processing sector is a 4.5 billion US dollar industry in Bangladesh.

Food Industry in Bangladesh

- In 2010 Bangladesh exported over \$700 million worth of processed food and beverages, over 60% of them were shrimp and fish products.
- In 2005-06, the food processing industry contribute over 13 per cent to total industrial value in Bangladesh and ranks third after the ready-made garment (RMG) and gas industries.
- The major food processing sub-sectors in Bangladesh include:
 1. Dairy
 2. Edible oil
 3. Sugar
 4. Tea
 5. Rice
 6. Wheat
 7. Fruits and vegetables
 8. Poultry/beef
 9. Pulses and spices, and
 10. Fish processing industries

Food Industry in Bangladesh

Subsector : 1. Dairy processing Industry

- The average daily consumption of milk and dairy products in Bangladesh is merely 109 ml per person per day against the WHO recommended requirement of 250 ml per person per day.
- The average Bangladeshi dairy farm has 3.5 head of cattle, with very poor average yields of 200-250 litres per 305 day lactation.
- Against an annual demand of about 14.02 million metric tons of milk, Bangladesh produced 6.09 million tons in 2013-14, with the balance imported in dry milk powder from Australia, New Zealand, Denmark, China etc.

Year	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Milk	2.286	2.365	2.950	3.46	5.067	6.09

- Milk power imported in Bangladesh were 74,000 metric tons, 48,000 metric tons and estimated 72,0000 metric tons in FY 2009, 2010 and 2011, respectively.
- Approximately 32% milk is consumed directly as fluid milk and the remaining is processed to make milk based confections and other products such as Ghee (butter oil), Cheese, butter and curd.
- One publicly managed cooperative, Milk Vita (in operation since 1965) and Some private-sector companies (Aarong (BRAC), Pran, RD (Rangpur Dairy), Amo Milk, Bikrompur Dairy, Akij Dairy, Savar Dairy, Aftab Dairy, etc.) are currently operating in the collection, transportation, pasteurization and marketing of fluid milk for consumers in urban markets.

World total milk production in 2009 (including cow/buffalo/goat/sheep/camel milk) FAO.

Rank	Country	Production (M kg/y)
oo	World	696,554
1	India	110,859
2	United State	85,859
3	China	40,553
4	Pakistan	34,362
5	Russia	32,562
6	Germany	28,691
7	Brazil	27,716
8	France	24,218
9	New Zealand	15,217
10	United Kingdom	13,237
11	Italy	12,836
12	Turkey	12,542
13	Poland	12,467
14	Ukraine	11,610
15	Netherland	11,469
16	Mexico	10,931
17	Argentina	10,500
18	Australia	9,388
19	Canada	8,213
20	Japan	7,909

Table 6: Requirement, production and deficit of milk

	Per day	Per year
Requirements	250 ml/h/d	14.02 MMT
Production/Availability	109 ml/h/d	6.09 MMT (43.5%)
Deficiency	141 ml/h/d	7.93 MMT (56.6%)

Source: DLS (2013)

Table 7: Comparative milk consumption rate in SAARC countries

Countries	Milk Consumption
Bangladesh	109ml/h/day
India	227ml/h/day
Nepal	140ml/h/day
Pakistan	520ml/h/day
SriLanka	142ml/h/day
Maldives	188ml/h/day

Source: Khan (2014); DLS 2013)

Food processing Industry in Bangladesh

Sub-sector : Rice Processing Industry

- Rice production in Bangladesh is about 34 million tons which has made the country self sufficient in rice.
- There are huge rice mills in Bangladesh of which some are automatic high capacity and others are medium and small size mill to process rice.
- Average conversion rate from paddy to rice is 66-67% (72% in Auto)

Rice processing in Bangladesh includes:

1. Parboiling
2. Dehusking
3. Debranning
4. Sorting
5. Polishing (this is ready to cook rice)

The most value added rice products include:

1. Puffed rice
2. Flaked rice
3. Snacks and
4. Bakery items

Food processing Industry in Bangladesh

Subsector : **Wheat Processing Industry**

- Wheat is the **2nd cereals** crop produced in Bangladesh.
- Wheat processing industry is growing in Bangladesh at an annual rate of over **15 per cent**.
- Market size of the automated bread and cookie processing industry is estimated at approximately **\$56.5 million**, excluding traditional bakery products.
- **The main products from wheat processing industry are:**
 1. Bread and cookies
 2. Noodles, pasta and vermicelli
 3. Chapatti, Luchi and Somocho

Food processing Industry in Bangladesh

Sub-sector : **Wheat Processing Industry**

- Concurrent to the growth in the domestic wheat processing industry, the export market is also growing.
- Some **12 factories** in Bangladesh are producing **high energy biscuits**.
- The following table shows the market share in this sub-sector by company:

Firm	Market Share
Olympic	16
Al-Amin	10.1
Pran	6
Nabisco	5
Globe	>5
Danish	>5
Romania	>5
New Olympia	>5

Food processing Industry in Bangladesh

Sub-sector : Oilseed Processing and Edible Oil Refining Industry

- Bangladesh consumes approximately 1.5 million metric tons of edible oil of which 80% is imported.
- Until 1970s Bangladesh consumers rapeseed and mustard oil which were crushed in traditional animal driven 'ghanies' or a limited number of mechanical oil expellers.
- As demand increased, Consumers shifted to soybean and palm oil and some companies established soybean oil and palm oil refining plants. Capacity of these refineries are between 300 and 1000 metric tons per day. In 2003, City group established a large oilseed extraction plant with 1000 metric ton capacity per day and crushing 50% soybean, 35% mustard and 15 sunflower seeds.
- Bangladesh imports roughly 200,000 MT of rapeseed in addition to 250,000 MT domestically produced mustard seed for crushing. And also 200,000 MT of Soybean annually from Argentina, Brazil and US.

Oil Seed processing companies: Square, Pran, shorsh, S Alam, City group

Food processing Industry in Bangladesh

Sub-sector : **Fruit and vegetables Processing Industry**

Production: In 2013-14 Bangladesh produced **3.45 MMT of fruits** (mainly **banana, mangoes, jackfruits, and guava**) and **10.5 MMT of fresh vegetables** (mainly **potatoes, eggplant, water gourds, pumpkins and assorted leafy vegetables**).

Wasted: As much as **30-35% fruits and vegetables are wasted** due to lack of processing and preservation facilities in Bangladesh

Processed: About **2% fruits and negligible percentage of vegetables are processed** into value added products.

Processed products are: Mango bar, juice and concentrates, Pulp, jams and jellies, pickles and chutney, potato chips, tomato catchup, etc.

Growth: Industrial sector claimed that Fruits and vegetables processing industry has grown at an annual rate of 12% with significant development of modern facilities.

Food processing Industry in Bangladesh

Sub-sector: Sugarcane processing and Raw sugar refineries

- Bangladesh sugarcane crushing comprises (BSFIC): **15 government-owned sugar mills** with estimated annual production **capacity of about 0.250 MMT per year.**
- In 2010 -11, **sugarcane produced 8.1 MMT, sugar mills crushed only 3 MMT.** Remaining was crushed by small-scale **molasses producers.**
- Sugarcane and sugar recovery are lowest in the world (**15 MT/ha and 7.4%**)
- Against an **annual consumption of 1.3 MMT of sugar**, **Bangladesh produced 0.227 MMT (in 2010-11) and 1.1 MMT of raw and refined sugar was imported.**
- Raw sugar refineries have been established in Bangladesh which have capable to refine over **20 MMT of raw sugar.**
- **Refineries are: (Imported raw sugar from Brazil, India, Thailand).**
 1. Deshbandhu sugar refinery (Deshbandhu Group), Capacity 1.5 lakh tons
 2. United Sugar Refinery (Meghna Group), capacity is 7 lakh tones/yr
 3. City Sugar Industries (City Group), Capacity 10 lakh tons/ year
 4. S Alam Refined Sugar Industries (S. Alam Group) ,
 5. Abdul Momen Sugar Refiniery (Abdul Momen group),

Food processing Industry in Bangladesh

Sub-sector : Tea

- The first commercial tea plantation in Bangladesh was established in **1857 in Sylhet**.
- During 1947 there was **103 tea** plantation covering **26,734 ha** and **producing 18.36 million kg annually**.
- In 1970 tea area stood at 42,658 ha and production increased to **31.38 million kg**.
- In 2010-11 Bangladesh produces **62.50 million kg of tea** on **163 tea** plantations, with **116 tea processing factories in operation**.
- In 2012, Bangladesh recorded its highest production of tea, at **63.85 million kilograms**
- **Domestic tea consumption** in Bangladesh has been increasing at an annual rate of about **13%** while **production** has been increasing at about **1% during the last decade (2010s)**.
- Export drastically declined from **33% in 2000-01** to the **9% of total production in 2010-11**. However, once a major world exporter, Bangladesh is now a **net importer of tea (in 2015)**.
- Other tea producing countries such as India, Sri Lanka, Indonesia, Vietnam and Kenya hold advantages over Bangladesh.

Food processing Industry in Bangladesh

Sub-sector :Tea

Tea Producing Location: The tea industry accounts for 1% of national GDP. Tea-producing districts include Sylhet, Moulvi Bazar, Habiganj, Brahmanbaria, Rangamati, Chittagong and Panchagarh.

• Bangladeshi conglomerates (Tea producers) including:

1. M. M. Ispahani Limitd,
2. Kazi & Kazi,
3. The Transcom Group,
4. James Finlay Bangladesh,
5. The Orion Group,
6. The Abul khair Group, and
7. Duncan Brothers Bangladesh Limited.



Fig. A tea garden in Sylhet district

Food processing Industry in Bangladesh

Sub-sector : Poultry, Meat and Fish Processing

- **Meat:** Bangladesh produced approximately **4.52 million metric tons** of meat including poultry and livestock in 2013-14 (77.4 gm/person day) while it was **1.08 MMT in 2008-09**.
- Egg production increased from **4,692 million in 2008-09** to **10,168 million (0.17/person day, 65/person year)** in 2013-14, which are mainly used in bakery and local consumption.



Food processing Industry in Bangladesh

Sub-sector : Poultry, Meat and Fish Processing

Market: In Bangladesh, livestock and poultry are brought live to markets and slaughtered on the spot. The meat is sold fresh and cooked at home prior to consumption.

- Slaughter in open air markets result in extremely unhygienic practices for disposal of blood, viscera and other wastes.

Processing: Only 1 modern beef processing facility and 10 poultry processing facilities are in operation in Bangladesh that process <1% of total meat.

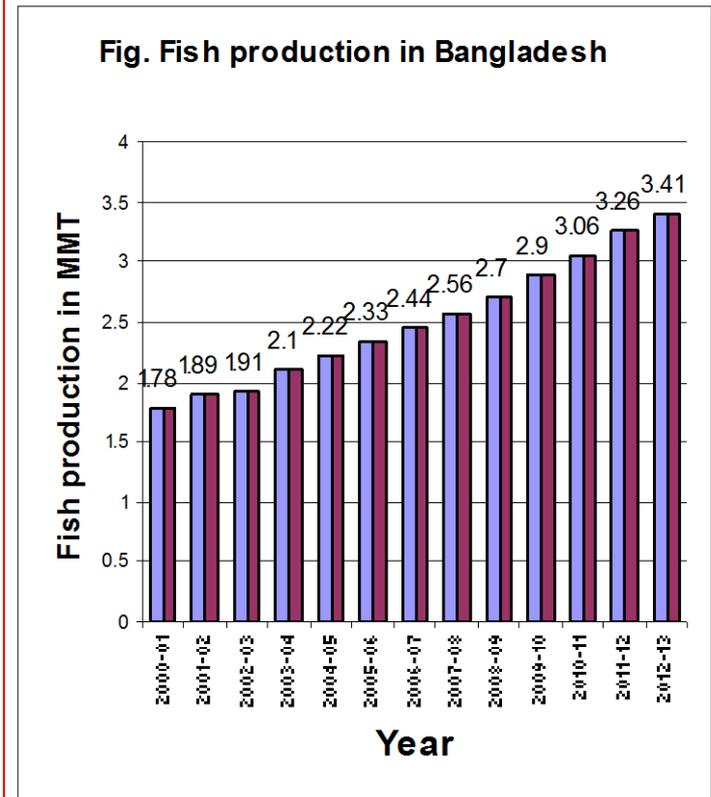
- They process meat into ready to cook nuggets, sausages and prepared products that are sold through fast food shops, superstores and other convenience stores.

Food processing Industry in Bangladesh

Sub-sector : Poultry, Meat and Fish Processing

Fish: In 2012-13, around 3.42 MMT of fish was caught in the country of which 2.82 MMT from freshwater and 0.6 MMT from saltwater.

- In 2014-15 total fish production was 3.68 MMT against 3.765 MMT of annual demand for fish in Bangladesh
- River catch reduced from 0.150 MMT in 2000-01 to 0.147 MMT in 2012-13
- Pond production increased from 0.616 MMT in 2000-01 to 1.45 MMT in 2012-13
- Shrimp production increased from 93.0 thousand MT in 2000-01 to 206.24 thousand MT in 2012-13.
- A person needs 60 g of fish per day and the annual demand is 19.71 kg (according to fisheries department.)



Food processing Industry in Bangladesh

Sub-sector : Poultry, Meat and Fish Processing

Fish production hindrances in Bangladesh: The Daily Star (20.7.2016).

- 32 species of fish disappeared in the last 50 years.
- Production of 66 species has dropped alarmingly
- 16 species protected through artificial breeding
- Hilsa production increased to 0.387 MMT tones, which is one-tenth of total fish production in 2014-15.
- Climate change, use of chemical fertilizers, excessive fishing, siltation and blockage of migratory routes are key reasons of fish disappearance

Food processing Industry in Bangladesh

Sub-sector : Poultry, Meat and Fish Processing

- **Fish marketing and Processing:**
- Usually live fishes are sold in the open markets
- Open air sun drying of fish are practiced for dry fish and fish meal in Bangladesh
- Modern fish processing is done almost entirely for export market where **shrimp processing holding almost 80% of that segment.**
- There are about **150 modern shrimp processing facilities** in Bangladesh of which 70 are under regular surveillance by EU member state and U.S. Food and Drug Administration (FDA) officials to ensure safety requirement are met.
- In 2011-12 Bangladesh exported \$598 million worth of fish and seafood with shrimp contributing \$472 million of the total (44%).
- Frozen fish is exported to mainly Middle East countries.

Food processing Industry in Bangladesh

Sub-sector :Pulse and spices Processing

- **Pulses:** Locally Produced pulses (lentil, mung bean and chickpeas) and spices (turmeric, coriander and chili) are now processed by some industrial groups (e.i. Square, Pran-RFL) in semi-automatic and automatic mills and marketed in attractive consumer packages.
- About 60% of pulses processed are imported while raw spices are collected from local market.
- In 2010-11 Pulses produced 224 thousand MT and imported 490 thousand MT (68.62%).
- Other spices like Ginger, Coriander (Dhania), Cinnamon, (Cassia Bark, darochini), Coves (labong), black paper, Cardamom (elach), Cumin (jira), Nutmeg are imported from India, Iran, china and Africa.

Challenges in Food Processing Industry In Bangladesh

- **Problems:**

- Use of obsolescence machinery in food processing industry.
- Lack of efficient technologies and trained manpower.
- Poor quality of finished product due to high fluctuation in raw material quality.
- Poor quality of raw materials due to pesticide and chemical contamination.
- High cost of energy, and interrupted power supply.
- Uncertainty in the availability of adequate quantity of raw products.
- Inadequate and expensive cold chain facilities.
- Lack of organized and systematic effort from the industry itself or from government regulatory bodies to maintain food safety standard and hygiene throughout the entire process (from production to marketing the finished product).
- Lack of research and development (R&D) support to overcome technical difficulties and develop more efficient processes and new products.

Challenges in Food Processing Industry In Bangladesh

Standard and Quality Control Measures:

- Because of the problems mentioned before, the bulk of the food processing industry in Bangladesh is unable to meet the food standard and safety requirements of the international market.
- So, an effective quality control system for ensuring the food standard and safety is absolutely necessary in Bangladesh.

Bangladesh Standard and Testing Institute (BSTI):

- BSTI is responsible for formulating standards and ensuring quality of all processed food produced and imported into Bangladesh.

BSTI's standards cover:

- 1. Quality parameters of raw materials
- 2. Hygienic conditions under which foods are processed.
- 3. Quality of final processed foods.
- 4. Hygienic requirements of packaging, leveling and storage.

Challenges in Food Processing Industry In Bangladesh

Implementation of BSTI's Regulation:

1. Implementation of the standard and quality control measures in food processing industry in Bangladesh is inadequate and slow because of insufficient manpower and other facilities.
2. In addition, there are as many as 13 government ministries and department responsible for ensuring food safety which create confusion over regulation and authority.