4.1 INTRODUCING INDIA’S FOOD PROCESSING INDUSTRY

The food industry is the complex, global collective of diverse businesses that together supply much of the food energy consumed by the world population. The food processing industry is one of the largest industries in India. It is ranked fifth in terms of production, consumption, export and expected growth. Food Processing Industry is widely recognized as a ‘sunrise industry’ in India having huge potential for uplifting agricultural economy, creation of large scale processed food manufacturing and food chain facilities, and the resultant generation of employment and export earnings. India has enormous growth potential from its current status of being the world's second largest food producer to be the world's number one producer. Food processing covers a spectrum of products from sub-sector comprising agriculture, horticulture, Plantation, animal husbandry and fisheries. Essentially, the food industry involves the commercial movement of food from field to fork.

The agriculture sector has come a long way since independence. With the advent of the green revolution, India has transformed itself from a country of shortages to a land of surpluses. With the rapid growth of the economy, a shift is also being seen in the consumption pattern, from cereals to more varied and nutritious diet of fruit and vegetables, milk, fish, meat and poultry products. This has resulted in the development of a sunrise industry namely the Food Processing Industry.

The food processing sector in the country with its vast potential has emerged as one of the major driver of economic growth. It is encouraging to note that while the country's GDP growth rate had increase from 3.5 per cent in 2002-03 to 9 per cent in 2006-07; the food processing sector has grown from 7 per cent to 13.1 per cent during the same period.

India is a country of over 1.10 billion consumers, there is a large untapped domestic market of 1,000 million consumers in the food processing sector and 200 million more consumers are expected to shift to processed food by 2010. It is the second largest producer of fruits and vegetables in the world. There is a huge wastage of perishable food items in the country due to lack of proper food processing facilities and the level of processing is only about 2.2 per cent. However, India has tremendous potential to unleash large scale process based farm activities to exploit the emerging global business opportunities.

The food processing industry of India is registering high growth with its exports taking a leap from 4.7 Billion Euros (US$ 6.7 Billion) in 2002-03 to 13.8 Billion Euros (US$ 19.65 Billion) in 2006-07. The Ministry of Food Processing Industries (MOFPI) is working to boosting India's stake in the international processed food business to 3% by 2015 from the current 1.6%, as reported by Newindpress. Thanks to its sound agricultural base, India is poised to benefit from the burgeoning food trade. There is high scope for consolidation in the fragmented market, with most businesses registering good and continued returns. In fact, companies from this sector are recording higher growth than the home and personal care segment. Middle East countries form the primary importers of Indian food stuff because of cheaper prices. Thus, they are the targeted market for 75% of India's food exports, including vegetables and fruits, confectionery, meat and dairy items.

Many countries are increasingly eying upon India for food. Even multinational companies are banking on India to meet global food needs today. Corporations and large investors, both domestic and global, are cashing in on India’s agribusiness as a promising market with dual prospects - to provide for the swelling Indian middle-class and export-oriented premium quality processed food.

Various measures like food parks, government subsidies, tax breaks, public-private partnerships in investment, increased FDI, modern retail structure, and
strengthening supply-chain infrastructure, along with worldwide road shows have thrust the industry's growth. According to a recent report "Indian Food and Beverages Forecast (2007–2011)" published by RNCOS, India’s food-processing sector has undergone significant changes over the last six to seven years (2001-2006). The types, variety, quality, and presentation of products have all improved, mainly as a result of economic liberalization. The report augurs that the Indian food processing industry would witness a CAGR growth of 15% for the period spanning from 2007 to 2011.

Food processing industry is of enormous significance for India's development because of the vital linkages and synergies that it promotes between the two pillars of our economy, industry and agriculture. Fast growth in the food processing sector and progressive improvement in the value addition chain are also of great importance for achieving favourable terms of the trade for Indian agriculture both in the domestic and international markets. Even more important is the crucial contribution that an efficient food processing industry could make in the nation's food security. The simple fact that the post-harvest losses are about 25 to 30 per cent in our country should serve as an eye opener for all of us. Even marginal reductions in these losses are bound to give us great relief on the food security front as well as improve the income level of the farmers.

In the last decade, India moved from an era of scarcity to surplus in regards to Food. The Food Processing Industry in India is on an assured track of growth and profitability over the coming decades. It is estimated that it will attract phenomenal investment, capital, human, technological and financial of over Rs 1,40,000 crores in the next decade.

India is the world's second largest producer of food next to China, and has the potential of being the biggest with the food and agricultural sector contributing around 26% of India's GDP. The total food production in India is likely to double in the next ten years and there is an opportunity for large investments in food and food processing technologies, skills and equipment, especially in areas of Canning, Dairy and Food Processing, Specialty Processing, Packaging, Frozen Food/Refrigeration and Thermo Processing. Fruits & Vegetables, Fisheries, Milk & Milk Products, Meat & Poultry, Packaged/Convenience Foods, Alcoholic Beverages & Soft Drinks and Grains are important sub-sectors of the food processing industry. Health food and health food supplements are another rapidly rising segment of this industry which is gaining vast popularity amongst the health conscious.

The Food Processing Industry sector in India has been accorded high priority by the Government of India, with a number of fiscal relief and incentives, to encourage commercialization and value addition to agricultural produce. As per a study conducted by McKinsey and Confederation of Indian Industry (CII), the turnover of the total food market is approximately Rs.250,000 crores (US $ 69.4 billion) out of which value-added food products comprise Rs.80,000 crores (US $ 22.2 billion). Since the liberalization in August, up-till February 2000 proposals for projects of over Rs.53,800 crores (US $13.4 billion) have been proposed in various segments of the food and agro-processing industry. Besides this, the Government has also approved proposals for joint ventures, foreign collaboration, industrial licenses and 100% export oriented units envisaging an investment of Rs.19,100 crores (US $ 4.80 billion) during the same period. Out of this, foreign investment is over Rs. 9100 crores (US $ 18.2 billion).

In a small way, India has been in the export market for fruits and vegetables for almost 30 years. Popular items for export include mango chutneys, pickles, fruit juices, canned and dehydrated mushrooms, frozen & canned fruit & vegetables. With a liberal government and other developmental measures being taken the future of the Industry looks bright. Multinationals entering the food industry will help us have an international marketing network and have their brand loyalties all over the world. This will enable the Indian products reaching all over the world in the form and packing required. Packaged food products have been slow in penetrating the large potential presented by India's 250 million strong middle classes. But due to growing urbanization and changing food habits, the demand has been rising at a good pace and there is enough latent market potential waiting to be exploited through developmental efforts.

From a general overview of this sector in India, it is seen that it consists of three categories: 1) Primary Food Industry; 2) Rural Industries; and 3) Organized Food Industry.
The first category comprises floor & rice millers and oil pressers.
The second category comprises bakeries and micro and traditional food processing units.
The third category, organized food industry, involves all manufacturing units which processes all types of food including juices, preserved vegetables and fruits. This category also includes dairy products and meats.

4.2 FOOD PROCESSING INDUSTRY

1. Meat Packaging Plants
This industry includes establishments primarily engaged in the slaughtering of cattle, hogs, sheep, lambs and calves for meat to be sold or to be used on the same premises in canning, cooking, curing, freezing and in making sausages, lard and other products.

2. Sausages and other Prepared Meat Products
Manufacture of sausages, cured meats, smoked meats, canned meats, frozen meats and other prepared meats and meat specialties. Products include bologna, bacon, corned beef, frankfurters, head cheese, luncheon meat, pig's feet, sandwich spreads, stew, pastrami and hams.

3. Poultry Slaughtering and Processing
Slaughtering, dressing, packing, freezing, and canning poultry and other small game and manufactured products from such meats. This industry also includes drying, freezing, and breaking eggs.
   - Automated processes with mechanized killing machines.
   - Mechanical eviscerating machines.
   - Mechanized cutting of the birds into parts.
   - Automatic deboning machines.
   - Machines for collecting meat scraps used in the processing of patties, soups, luncheon meats and other products.
   - Ultra thin high pressure water jet cutting and shaping for portioned chicken for ready to cook purposes.
   - Chemical cleansers and new dispensing techniques.

4. Natural, Processed and Imitation Cheese
Manufacturing natural cheese, cheese foods, cheese spreads and cheese imitation and substitutes and raw liquid whey.
   - New technologies for product safety, automation and quality control.
   - Sophisticated computer control system for producing cheddar cheese.

5. Dry, Condensed and Evaporated Dairy Products
   - Vacuum drying for preparing dried milk products.
   - Spray drying for preparing dried milk products.
   - Ultra high temperature processing for producing liquid soft served ice-cream and yogurt mixes.

6. Ice-cream and Frozen Desserts
Manufacturing ice-cream and other frozen desserts such as frozen yogurt, ice-milk, ices --and sherbets, frozen custard, mellorine, frozen tofu, and pops.

7. Fluid Milk
Processing fluid milk, cream, and related products such as cottage cheese, yogurt and other cultured milk products.
   - Bovine growth hormone for increased milk production.

8. Canned Specialties
Canning specialty products such as baby foods, specialty foods and soups.
   - Flexible pouch packaging for low acid foods.
   - Cans made of aluminum and of steel.
   - Low fat food development.
   - Low sodium technology.
9. **Canned Fruits and Vegetables**
Canning fruits, vegetables and fruit and vegetable juices, manufacturing ketchup and similar tomato sauces, natural and imitation preserves, jams and jellies.
- Retort processing for preservation of foods in sealed containers.
- Metal, glass and plastic packaging for retorted products.
- New stylish and sophisticated cans for packaging (as substitutes for glass containers).
- Packaging in ferrolite cans which are plastic laminated, microwaveable, recyclable, fully retortable steel cans.

10. **Dried and Dehydrated Fruits and Vegetables and Soup Mixes**
Sun drying or artificially dehydrating fruits and vegetables, manufacturing packaged soup mixes from dehydrated ingredients.

11. **Frozen Fruits, Fruit Juices, Vegetables**
Freezing fruits, fruit juices, and vegetables; production of by-products such as fresh or dried citrus pulp; frozen dinners and frozen pizzas.
- Technology for frozen, concentrated citrus juice.
- New freezing methods for optimal freezing and storage conditions.

12. **Flour and other Grain Mill Products**
Milling flour or wheat, rye, and other grains including rice.

13. **Cereal Breakfast Foods**

14. **Wet Corn Milling**
Milling corn or sorghum grain by the wet process and producing starch, syrup, oil, sugar, and by-products such as gluten feed and meal; manufacturing starch from other vegetable sources, wheat; manufacturing table syrups from corn syrups and other ingredients.

15. **Prepared Feed and Feed Ingredients for Animals and Fowls**
Manufacturing of poultry and livestock feeds and feed ingredients such as Alfalfa meal, feed supplements, feed concentrates and feed pre-mixes.

16. **Bread, Cake and Related Products**
Manufacturing of fresh or frozen breads or rolls and perishable bakery products such as cakes, pies and pastries; manufacturing of cookies and crackers; manufacturing of frozen bakery products.
- Modified Atmosphere Packaging for extending shelf-life and preserving product freshness.
- Controlled Atmosphere Packaging.

17. **Cane Sugar, Beet Sugar**
Manufacturing of raw sugar, syrup and finished sugar from sugarcane or sugar beets.

18. **Confectionery and Cocoa Products**
Manufacturing candy including chocolate candy, other confections and related products; manufacturing of chewing gum.
- Computer integrated manufacturing.
- Synthetic gum bases in manufacturing of chewing gum.
- Chewing gum that cleans and polishes teeth while being chewed.

19. **Cotton Seed Oil Milling**
Manufacturing cotton seed oil, cakes, meals and linters.

20. **Vegetable Oil Milling**
Manufacturing vegetable oils, cakes and meals.

21. **Animal and Marine Fats and Oils**
Manufacturing animal oils (including fish oil and other marine animal oil) and fish and animal meal, stearin, grease and tallow.

22. Shortening Table Oils, Margarine, Fats
Manufacturing shortening, table oils, margarine and other edible fats and oils from cotton seeds or soy bean or any other vegetable source.

23. Malt, Malt Beverages
Manufacturing malt or malt by-products from barley or other grains; manufacturing of beer.

24. Wines, Brandy and Brandy Spirits
Manufacturing wines, brandy and brandy spirits; blending of wines.

25. Distilled and Blended Liquor
Manufacturing alcoholic liquor by distillation; manufacturing cordials and alcoholic cocktails by blending process or mixing liquor and other ingredients.

26. Bottled and Canned Soft Drinks
Manufacturing soft drinks and carbonated waters
- Computerized manufacturing operations.
- Computerized vending machines.

27. Flavoring Extracts and Flavoring Syrups
Manufacturing flavoring extracts, syrups, powder and related products.
- Aromachology technology which blends aroma with flavors for influencing moods.

28. Canned and Cured Fish and Seafood
Cooking and canning seafood products such as fish, shrimps, oysters, clams, and crabs; curing seafood products by means such as smoking, salting or drying; manufacturing of seafood soups, chowders, stews, broth and juices.

29. Fresh or Frozen Fish and Seafood
Preparing fish, seafood, and other seafood preparations in fresh and raw or cooked --frozen forms; eviscerating or processing by removal of heads, fins or scales; shucking --and packing of fresh oysters.
- Aquaculture for increased production of fish and seafood.
- Processing and packing technologies for extending shelf-life of fresh and prepared fish and seafood.

30. Roasted Coffee
Roasting coffee and manufacturing coffee concentrates and extracts in powdered, liquid or frozen form, including freeze dried.
- Automated production by continuous roaster process.
- Technology for the new product - iced coffee.

31. Potato Chips, Corn Chips and similar snacks
Computer technology for inventory control in the retail market.

32. Food Production Machinery
Manufacturing machinery for use by the food products and beverage manufacturing industries and similar machinery for use in manufacturing animal foods.

33. Packaging Machinery
Manufacturing machinery for use in packaging, wrapping and bottling.

34. Refrigeration and Heating Equipment
Manufacturing commercial and industrial refrigeration equipment; domestic, commercial and industrial air-conditioning units; warm air furnaces, humidifiers and dehumidifiers, soda fountains and beer dispensing machines.

4.3 RURAL-BASED FOOD PROCESSING INDUSTRY
Poverty and unemployment in the rural areas are the two most important challenges India faces. In spite of all the industrial development in the country, agriculture still maintains about 70 percent of the population of the country. It is in the rural areas again where 75 percent of the population of the country lives and they will continue to constitute at least two-thirds of labor force. It is imperative therefore that the rural economy is improved, so the burden of poverty can be lessened and the working population overflowing from the villages can be absorbed in off-farm activities. The rural economy cannot be developed fully by improving only the productivity of agriculture, although this will go a long way in improving the rural economy; however, rural industries, subsidiary activity and food processing industry in particular, are of great importance for a rapid transformation of the rural economy, in India. According to National Sample Survey (NSS) and census data, nearly 25 percent of the rural labor force is employed in non-agricultural activity. The economic status of this population can also be improved by increasing non-farm activities, particularly rural food processing industries.

Rural food processing industries are beneficial to relieve pressure on land, establish linkages between agriculture and industry, increase employment opportunities, improve the economic well-being of rural people by increasing their income, and to prevent migration of rural population to cities, which increases slums. Some of these arguments have also been found acceptable to the policymakers of the country during various planning periods; however, in spite of this intention by the Indian Government, the growth of food processing industries has not been encouraging. Food processing is where business meets agriculture. This is an area that offers excellent opportunities for entrepreneurs, corporate- and modern-minded farmers to set up agribusiness and agro-industry. India is the second largest producer of food in the world and has the potential to become a leading producer of food in due course of time with sustained efforts. Employment generation potential is much higher in the food sector than any other sector, i.e., 54,000 persons get direct employment per Rs.100 million of investment in the food sector in comparison to 48,000 in textiles and 25,000 in paper industry. There is also scope for four-fold generation of indirect employment in the ancillary and down stream activity on account of investment in the food sector. Furthermore, 60 percent of the employment generation is in small towns and rural areas.

4.4 STATUS OF RURAL-BASED FOOD PROCESSING INDUSTRY
The food processing industry ranks fifth in size in the country and employs 19 percent of the industrial labor force. 14 percent of the industrial output is contributed by the food processing industries, which is 5.5 percent of the GDP of India. The estimated turnover of the food processing industry is Rs.1.440 billion of which about 75 percent is estimated to be in the unorganized sector and that is in the rural areas. The increase in per capita income, particularly in the middle class segment, and changing food habits of the India’s population as a whole, have opened up avenues for food processing industries. Ready-to-eat food, beverages, processed and frozen fruit and vegetable products, marine, dairy and meat products among others. Processing Industry has gained significance in the recent past. Quality and health consciousness of the consumers have forced the industry to adopt state of the art technology in the production line.

4.5 MAJOR CONSTRAINTS FACED IN THE DEVELOPMENT OF SMALL- AND MEDIUM-SCALE RURAL-BASED FOOD PROCESSING INDUSTRIES
The value addition of food fortification in India is only 7 percent in comparison to other countries like China, 23 percent; Philippines, 45 percent; and U.K., 188 percent. In various national and international forums, the need of processed and preserved food for the growing population of India is emphasized. The greater the distance between the rural producer and the urban consumer, the greater is the risk of post harvest deterioration. Although India is one of the largest producers of raw material for the food processing industry in the world, the food industry is still at a nascent stage. Less than 2 percent of fruit and vegetable production is processed compared with 30 percent in Thailand, 70 percent in Brazil, 78 percent in Philippines and 80 percent in Malaysia. In spite of
the tremendous growth potential with respect to rural-based food processing industries in the country there are many constraints, which have impeded development, which are:

- Agriculture has largely been for subsistence and has not been market-driven. This has not yielded adequate surpluses for processing, and coupled with the low yields of crops, has been a bottleneck. The lack of awareness and the non-availability of suitable, processable varieties of raw materials, in terms of type, size, color, texture, etc. has contributed to the absence of large volumes of processable varieties and therefore to economies of scale.
- The small and unorganized sector accounts for 75 percent of the total food processing industry. There are only a few organized large industrial houses that make their presence felt in the food-processing arena in India. The food processing industries were neglected during previous planning periods. The liberalized economy, poses a threat to the small and unorganized sector from a marketing point of view. When products from other countries are available in the Indian market at lower prices the local small industries are facing lot of problems in marketing their products, so that some of them had to close down in a competitive business environment.
- In India the production of food grains and other items is still dependent on the vagaries of nature, which are rather unpredictable. This also affects the small- and medium-scale rural-based food processing industries to a great extent, because of their dependence on seasonality of production.
- Poor infrastructure such as lack of integrated cold chains, roads, power, etc. has also retarded the growth of food processing industry.
- Due to seasonality, non-availability of quality raw materials in time, high inventory carrying cost due to purchases at the time of abundance, and very high cost of packaging, i.e., around 40 percent of the product price, the working capital requirement in this sector is high.
- The Ministry of Food Processing Industries was demoted to the status of a department under the Ministry of Agriculture in October 1999. This diluted the focus attached to the sector by the government.

4.6 MEASURES TO ALLEVIATE THE CONSTRAINTS
The Government of India has realized the importance of the infrastructural requirement and programs have been initiated for the creation of a number of cold storages and go-downs for storage of potatoes, onions and other horticultural produce. Steps are being taken by the government to harmonize the existing multifarious food laws framed 50 years ago, to bring about a development orientation and to facilitate faster growth for the industry. In order to provide adequate protection to small and medium industries in this sector, the large industries or corporations must become anchors to assist and nurture them. Besides these anchor industrial corporations, a number of food parks are also being prepared to provide assistance in adhering to international standards, by establishing common facilities. The chosen anchor industries will assist them to market primary and secondary items and convert them into value-added products for sale, through their distribution network including export. Attempts are being made to develop a strong database and market intelligence. Priority has been attached for the development of interconnected sealed roads to the rural areas, which will facilitate movement of raw materials and finished products. The parliamentary standing committee has already reiterated that the Department of Food Processing Industries under Ministry of Agriculture should be given its previous status of a fully fledged ministry which would help in attaching greater emphasis and priority, in terms of policy, program formulation and implementation.

4.7 TRADITIONAL AND MODERN TECHNOLOGIES IN RURAL-BASED FOOD PROCESSING INDUSTRIES
Successful rural technologies for of traditional foods fall into three categories:
(i) Agro-base technologies, comprising processing of cereals, legumes, and oil seeds;
(ii) Technology of products from locally available raw materials, which include dehydrated products and fermented foods; and
(iii) Appropriate technologies having a rural base, which are secondary and tertiary processing techniques adapted to upgrade home scale preparations, e.g., foods based on legumes, grain flours and oilseed mill. The second category includes preservation by salt, sugar and sun-drying. The
The basic principle of these methods of preservation is to reduce the water available for microbial growth. Fruit products such as jam, jelly, etc., are produced by adding sugar to fruit pulp up to a concentration of 65-70 percent. Pickles made with various fruit and vegetables are mostly produced in these unorganized rural units. Sun-drying with its inherent disadvantages like exposure to dust, insects, requirement of a large area, still finds a major place in preservation of food, as the sun is the cheapest and most abundantly available source of energy in India. Transformation of simple home-scale technology into commercial production has resulted in significant impact on the social and economic structure of the rural areas. The Central Food Technological Research Institute (CFTRI), Mysore, a premier institute in the field of technology development in food sector, is making constant endeavors to popularize and propagate traditional food technologies. Technologies such as those developed at CFTRI, which have wide acceptance by rural areas, are:

(a) Pulse mill for the production of dhal splits from red gram;
(b) Utilization of oilseed meal as a dhal substitute in traditional foods, e.g., sambar mix;
(c) Papad and vadian from legumes and cereals; and
(d) Beaten rice products.

These inexpensive technologies are gradually getting accepted in rural areas. Modern processing technologies are normally used for processing agricultural products in sophisticated industries such as thermal processing, canning and evaporation (or) concentration.

4.8 ROLE OF PRIVATE SECTOR, NGO, FARMERS ASSOCIATIONS, RURAL WOMEN IN RURAL-BASED FOOD PROCESSING INDUSTRIES

There is a need to increase food processing in India from an existing low level of 2 percent up to 10 percent by 2010. This would require an investment of Rs.14 trillion in the food processing sector. This investment would generate direct employment for about 7.7 million persons and indirect employment for about 30 million. This could also reduce food wastage worth Rs.800 billion. Apart from these advantages, the value addition to the food products will go from 7 to 35 percent, which will increase contribution of this sector to the GNP. The thrust will have to attract foreign and domestic investment, and generate internal accruals of such magnitude. Domestic investment needs to come from the private sector, NGOs and community-based organization, including farmers associations. The private sector/corporate business houses and entrepreneurs will need to increase their investment, in setting up of industries for processing and value addition, since public sector investment has been declining in the post-liberalization era. The NGOs need to continue to be active with their catalytic role, in such as activities relating to capacity building, awareness building, empowerment and people. Apart from this the NGOs have to expand their role in terms of establishment of critical infrastructure such as cold storage, grading and cleaning facilities. The farmers associations and community-based organizations will focus on production (including planning for production), and marketing. This will also be helpful for reducing cost of production because of economies of scale of operation. This will widen the market supplies and empower the producers to be able to bargain with the corporate anchor industries. Rural women continue to contribute to the extent possible in post-harvest handling and processing of produce. An effective interactive coupling, linking all these organizations (private enterprise, NGO, community organization, individual farmers) can contribute greatly towards the development of small- and medium-scale food processing industries in rural India, thereby improving the rural economy of the country.

4.9 FOOD STANDARDS, IMPLEMENTATION AND QUALITY CONTROL - REGULATORY FRAMEWORK

Different laws govern the food processing sector in India. The prevailing laws and standards adopted by the Government to verify the quality of food and drugs is one of the best in the world. Multiple laws/regulations prescribe varied standards regarding food additives, contaminants, food colours, preservatives and labelling. In order to rationalize the multiplicity of food laws, a Group of Ministers (hereinafter referred as “GoM”) was recently set up to suggest legislative and other changes to formulate a modern, integrated food law, which will be a single reference point in relation to the regulation of food products. The food laws in India are enforced by the Director General of Health Services, Ministry of Health and Family Welfare, Government of India (GOI). There are various food laws applicable to food and related products in India :-
The Prevention of Food Adulteration Act (PFA), 1954 focuses primarily on the establishment of regulatory standards for primary food products, which constitute the bulk of the Indian diet. The Central Committee for Food Standards, chaired by the Director General of Health Services, is the decision making entity. The appeals process, however, is cumbersome and time consuming. All imported products must adhere to the rules as specified in the regulation, including the labeling and marking requirements.

The Standards of Weights and Measures Act, 1976 and Standards of Weights and Measures (Packaged Commodities) Rules, 1977 are legislative measures are designed to establish fair trade practices with respect to packaged commodities. The rules prescribe that the basic rights of consumers regarding vital information about the nature of the commodity, the name and address of the manufacturer, the net quantity, date of manufacture, and sale price are provided on the label. There are additional mandatory labeling requirements for food items covered under the PFA. The Department of Consumer Affairs in the Ministry of Consumer Affairs, Food, and Public Distribution is the regulatory authority and enforcement agency.

The fruit and vegetable processing sector is regulated by the Fruit Products Order, 1955 (FPO), which is administered by the Department of Food Processing Industries. The FPO contains specifications and quality control requirements on the production and marketing of processed fruits and vegetables, sweetened aerated water, vinegar, and synthetic syrups. All such processing units are required to obtain a licence under the FPO and periodic inspections are carried out. Processed fruit and vegetable products imported into the country must meet the FPO standards.

Meat Food Products Order, 1992 administers the permissible quantity of heavy metals, preservatives, and insecticide residues for meat products. This order is equally applicable to the domestic processors and importers of meat products. However, its implementation is weak due to unorganized production in the domestic market and fewer imports.

Milk and Milk Products Order, 1992 order regulates the production, distribution, and supply of milk products; establishes sanitary requirements for dairies, machinery, premises; and sets quality control standards for milk and milk products. Standards specified in the order are also equally applicable to imported milk products.

The Destructive Insects and Pests Act, 1914, and Plants, Fruits, and Seeds (Regulation of Import in India) Order, 1989 regulate imports of planting seeds into India, and prohibit imports of seeds for sowing and planting materials without a valid permit. The implementing agency is the Directorate of Plant Protection, Quarantine, and Storage under the Department of Agriculture and Cooperation, Ministry of Agriculture.

After the enactment of the proposed Food Safety and Standards Bill, 2005 in India, the food processing sector would be governed by only one law and one regulator, instead of presently applicable 15 different laws. With the simplified mechanism growth in the food-processing sector would kick-start, which is needed to ensure higher growth for the agriculture sector.

It is very important that the food available is safe/hygiene, wholesome with right nutritional content, free from infection/bacterial contamination, intoxication, contamination and adulteration.
Changes have been brought about habits-resulting due to developments in technology and for socio economic reasons; food is in increasing demand for a range of food products. Therefore Food Regulations and standards have become a sensitive subject and the regulation of the quality of the food products the object of an increasing public interest. Quality is being the first consideration for the Consumer acceptance, which in turn is linked with recognised national and international standards, reflecting the national and international markets which are essential for the manufacturer to be able to design produce and market products embracing the Consumer's needs of quality features and using up to date technologies. Compliance with these standards is ensured through the use of regulatory standards and quality assurance systems.

4.9.1 STANDARDISATION SYSTEMS IN INDIA
In the food and agriculture sector there are number of organisations responsible for the formulation of Standards and monitoring their quality. These can be generally classified in two systems as under.
A. Compulsory Legislations
B. Voluntary Standards

A Compulsory Legislations
1. Prevention of Food Adultration Act 1954
The most important compulsory legislation in our country in the area of Food Products is the Prevention of Food Adulteration Act. (PFA-1954). The PFA-1954 Act is the basic statutory regulation is intended to protect the common Consumer against the supply of adultrated food products. The Act makes provision for prevention of adultration of food products and lays down that no person shall manufacture for sale, store, distribute any adultrated or misbranded food products not conforming to the Standards laid down under the Rules. These Standards are of minimum quality and are intended to ensure safety in the consumption of these food products and safe guarding against harmful impurities contaminations and adultration etc. Provisions of this act are mandatory and contravention to these rules leads to both fine and imprisonment.
The Central Committee for Food Standards (C.C.F.S.) and its various Subcommittees under the Directorate General of Health Services (D.G.H.S.) Ministry of Health and Family Welfare is responsible for operation and enforcement of the Act. Various interests concerned with Food Standards including consumer interests have representations in this Committee.
2. Essential Commodities Act 1954
A number of Control orders have been formulated under the provisions of the Essential Commodities Act. The main objectives of the Act are to regulate manufacture/production, Commerce/trading and distribution of the essential commodities including the food products. Some of the important orders of the act are enumerated below:-
The Fruit Products Order (F.P.O.-1955) The fruits products order regulates manufacture and distribution of fruits and vegetable products, sweetened aerated waters, ready to serve beverages, synthetic syrups, vinegars etc. The objective of the order is mainly to regulate, ensure the quality and hygiene of these products as per Standards laid down under the order.
The order is operated by the Ministry of Food Processing Industry through the Central Fruit Products Advisory Committee.
The manufacture or relabelling of the fruits and vegetable products can be carried out only after a valid licence is issued by the Food Processing Ministry, which empowers the licensee to put their standard mark on the Food Products.
Solvent Extracted Oils, De-oiled Meal and Edible Flour Control Order, Vegetable Oil Products Order, Meat and Meat Products Control Order These regulatory orders control the manufacture/production and distribution of the products enumerated __ the objective being to ensure the quality and hygiene of these products as per various standards laid down in the order.
Solvent Extracted Act, De-oiled Meal and Edible Flour Control Order, Vegetable oil Products Order are operated by the Directorate of Vanaspati, Vegetable Oils and Fats. A licence for the production/manufacturing and distribution is necessary which is granted by the Directorate after on Satisfactory conditions being full filled.
Meat Food Products order is operated by the Directorate of Marketing and Inspection.

B.VOLUNTARY STANDARDS
The Voluntary Certification Systems in the food products is mainly organised by two bodies. The Bureau of Indian Standards (B.I.S.) is looking after the processed foods and their raw materials, while the Directorate of Marketing and Inspection AGMARK is looking after the standardisation of various raw and finished agricultural produce.

1. Bureau of Indian Standards (B.I.S.)

The main functions of the Bureau of Indian Standards the national standards Organisation of India are formulation of Indian standards for food and food products and their implementation by promotion and through voluntary and third party certification systems. These standards in general cover raw materials permitted and their quality parameters, hygienic conditions of manufacturing and product safety with respect of microbial Contaminations. B.I.S. maintains and gives recognition to various laboratories for the purpose of standardisation and quality control. The B.I.S. Standard mark on the food products certifies that the product complies with a particular Indian Standard Specification and also guarantees that the manufacturer operates a quality assurance/control scheme in the production on a continued basis. The Certification Scheme is basically voluntary but for some products of mass consumption affecting the health and safety of the consumer are brought under Compulsory/Mandatory B.I.S. Certification Marking under various Act/Rules and Notification of Government of India. The various products covered for mandatory B.I.S. certification are food colours and their preparations, food additives, preservatives, vanaspati, milk Products and infant foods.

2. Directorate of Marketing and Inspection (D.M.I.)

Directorate of Marketing and Inspection formulates grade Standards known as “AGMARK” with relevant quality definitions and grade designation marks in respect of various agricultural, horticulture, live stock, dairy and forest products. The quality of the product is assessed and determined with reference to various factors like different areas of production, variety, shape, weight, colour, moisture, fat content and other relevant chemical and physical parameters. AGMARK grades are statutory grades expressed through AGMARK label/replica. These are framed under the provisions of the Agriculture Produce Grading and Marking Act and the General Grading and Marking Rules (1986 and 1988). Grading under the provision of this Act is voluntary but penalties for contravening the rules include fine, cancellation of manufacturing/production licence as well as imprisonment.

3. Eco-Mark

The Ministry of Environment and Forests have instituted on labelling of environment friendly products, on a national basis. With the consciousness of environment conservation growing day by day the adoption of ECO-MARK in different categories of food products will become necessary. The products will have to carry ECO-MARK a new standard certifying them environment friendly. The scheme provides to indentifying, accreditation and labelling of consumer products which do least damage to the environment and also meet the quality standards/requirements of the relevant Indian Standard for the product. Some of the food products identified under the ECO-MARK Certification are Tea, Coffee, Refined Vegetable oils, Vanaspati, Food Additives/Preservatives, Processed Fruits and Vegetable Products, Infant Foods and Beverages.

4. ISO Standards

With the increasing focus being given to the management of quality worldwide, the International Standards Organisation has introduced the quality system standards ISO 9000 series. These Standards provide guidelines and criteria for the formal control of products and services by the manufacturing company and assure the purchaser/consumer a consistent acceptable standard of products and services.

ISO Standards reflects a long term concepts and terminology, quality systems and supporting technologies.

4.9.2 IMPLEMENTATION OF STANDARDS/QUALITY CONTROL

For effective implementation of the regulatory standards and monitoring the quality of the graded and certified foods and food products made available by the manufacturers requires a network of Testing/Analytical Laboratories with basic modern analytical facilities and technical manpower. The functions of these laboratories will be:
To carry out/undertake the testing of the food products as per various regulatory standards and ascertain their compliance to the relevant standards. Undertake Research and Development (R&D) investigations, Collaborative Studies and generation of data for evolving new standards and revising the existent standards and quality assessment studies. To identify and take corrective actions on non-conformities observed by quality assessments.

4.10 QUALITY CONTROL
Before undertaking the testing of Food Products it is necessary to classify the Foods Products and the quality tests to be undertaken. Food and Food Products are classified as under:

Sugar and Honey Products.
Edible Starches and Starch Products.
Food Grains and their Products
Bakery and Confectionery
Protein Rich Foods.
Spices and Condiments.
Fruits and Vegetable Products.
Stimulant Foods like Tea, Coffee, Cocoa Powder.
Alcoholic Drinks and Carbonated Beverages.
Dairy Products
Meat, Fish and Poultry.
Oils Fats and Oil Seeds.
Food Colours, Preservatives, Additives.
Snacks, Fast Foods, Cooked Foods.

Physical Parameters
Specific gravity/density, Refractive Index, Butyro-refractometer leading, Polarisation/Optical Rotation Refractions like foreign matter inorganic/organic, Colour.

Chemical Analysis
The Chemical analysis can be categorised as
i) General Analysis
Moisture/solids, Total Ash, Acid insoluble Ash, Acidity, pH, Oil Content, Protein/Nitrogen Content, Crude Fibre, Sugars, Water insolubles, Alcohol insolubles, Benzene insolubles.
ii) Specific Analysis
Colouring matter, preservatives, Vitamins, Uric Acid, Volatile oil, Nicotine, Caffiene, Alcoholic Acidity, Gluten.
Metal Contaminants: Lead, Arsenic, Copper, Zinc, Tin, Iron
Specific Metal Contaminants: Nickel,
Mineral Contaminants: Sodium, Potassium, Calcium Magnesium.
Cations: Phosphorus, Chlorides, Sulphur.
Pesticide Residues

Use of Standards
The Standards protect the Consumer from the hazards of adultration and help the industry to produce safe, hygiene and healthy products. The standards in the manufacturing services promote efficiency and along with quality assurance, minimises production wastages, cuts costs, increases productivity and profitability as well as Competiveness. The Standards set the recognised level of quality, streamline production, increase productivity and enhance efficiency. A standard ensures optimum utilisation of scarce resources. The Consumer is primarily interested in his health being protected from the hazards of consuming contaminated/adulterated food than the legal action. So, in order to safeguard the consumer interest the Food Standards must be adopted and implemented.

4.11 POLICIES AND REGULATIONS
Since liberalization several policy measures have been taken with regard to regulation & control, fiscal policy, export & import laws, taxation, exchange & interest rate control, export promotion
and incentives to high priority industries. Food processing and agro industries have been accorded high priority with a number of important relief’s and incentives. At present, no industrial license is required for almost all of the food & agro processing industries except for some items like: beer, potable alcohol & wines, cane sugar, hydrogenated animal fats & oils etc. and items reserved for exclusive manufacture in the small scale sector. Items reserved for Small Scale Industry (hereinafter referred as “SSI”) include pickles & chutneys, bread, confectionery (excluding chocolate, toffees and chewing-gum etc.), rapeseed, mustard, sesame & groundnut oils (except solvent extracted), ground and processed spices other than spice oil and olio resins, sweetened cashew nut products, tapioca sago and tapioca flour. In order to boost the food processing sector, the Centre has permitted under the Income Tax Act a deduction of 100 per cent of profit for five years and 25 per cent of profit in the next five years in case of new agro processing industries set up to package and preserve fruits and vegetables. Excise Duty of 16 per cent on dairy machinery has been fully waived off and excise duty on meat, poultry and fish products has been reduced from 16 per cent to 8 per cent.

**FDI in Food Sector**

Actual FDI inflow in food processing sector in 2004-05 and 2005-06 (till November, 2005) was Rs.332.00 crore. Automatic approval is granted for foreign investment upto 51% in high priority industries which include all food processing industries (except milk food, malted foods and flour) and all items of packaging for food processing industries. Investors need to file an application with the Reserve Bank of India (RBI) in the prescribed format and approval is ordinarily granted within 15 days. For foreign investment higher than 51% and for investments in industries outside the high priority industries, clearance has to be obtained from SIA. Applications are processed on a case by case basis on merit and usually SIA takes about 2 months for the process. Applications for setting up a 100% Export Oriented Unit is also required to be filed with the SIA. For setting up a unit in an Export Processing Zone (EPZ), application has to be filed with the Development Commissioner of the concerned EPZ. Foreign equity of upto 24% of the total shareholding is also being permitted in the small scale sector. Under automatic procedures, foreign technology agreements are being permitted in respect of industries that are designated as high priority industries. The use of foreign brand names and / or trade mark of goods are also now being permitted freely. To provide access to international markets, majority foreign equity holding upto 51% equity is being permitted for international trading companies that are primarily engaged in export activities. FDI in a company engaged in “cash and carry wholesale trading” is now permitted up to 100 % under automatic route. The present policy only permit FDI up to 100 % in Cash and carry wholesale trading, which is distinct from retail trading, involving sale to individual customers through normal retail outlets. Recently Government of India has allowed retail trading in single brand items. FDI is not allowed in any other agricultural sector / activity.

**Fiscal Policy & Taxation**

Wide ranging fiscal policy changes have been introduced progressively. Excise & Import duty rates have been reduced substantially. Many processed food items are totally exempt from excise duty. Custom duty rates have been substantially reduced on plant & equipments, as well as on raw materials and intermediates, especially for export Production. Corporate taxes have been reduced and there is a shift towards market related interest rates. There are tax incentives for new manufacturing units for certain years, except for industries like: beer, wine, aerated water using flavouring concentrates, confectionery & chocolates etc. Indian currency (rupee) is now fully convertible on current account and convertibility on capital account with unified exchange rate mechanism is foreseen in coming years. Repatriation of profits is freely permitted in many industries except for some, where there is an additional requirement of balancing the dividend payments through export earnings.

**Export Promotion**

- Food processing industry is one of the thrust areas identified for exports. Free trade zones (FTZ) and export processing zones (EPZ) have been set up with all necessary infrastructure. Also, setting up of 100% Export oriented units (EOU) is encouraged in other areas. They may import free of duty all types of goods, including capital foods.
• Capital goods, including spares up to 20% of the CIF value of the Capital goods may be imported at a concessional rate of Customs duty subject to certain export obligations under the EPCG scheme. Export linked duty free imports are also allowed.
• Units in EPZ/FTZ and 100% Export oriented units can retain 50% of foreign exchange receipts in foreign currency accounts.
• 50% of the production of EPZ/FTZ and 100% EOU units are saleable in domestic tariff area.
• All profits from export sales are completely free from corporate taxes. Profits from such exports are also exempt from Minimum Alternate Tax (MAT).

Custom clearance: Food items
Customs Department in India follows certain guidelines for custom clearance of food items which includes checks on the condition of the hold in which the products were transported, ensuring whether they meet the requirement of storage as per the nature of the products, and does not in any way cause deterioration or contamination of the products. Customs Department is also required to check the physical/visual appearance of goods in terms of possible damage and its compliance with labelling requirements under the Prevention of Food Adulteration Rules and the Packaged Commodities Rules. In addition, any imported food item, at the time of its import, should have a valid shelf life of not less than 60% of original shelf life. The Customs Department ensures that the articles which do not meet this condition are not allowed clearance for home consumption. Apart from the checks on all the consignments of edible/food products imported through Ports, Inland container Depots, Air Cargo Complexes, Container Freight Stations and Land Customs Station the samples of imported food products are required to be referred to the Port Health Officer for testing. For alleviating the difficulties of importers, it has been decided that pending receipt of the test report, such consignments be allowed to be stored in warehouses under Section 49 of the Customs Act, 1962.

4.12 ACQUISITION OF DOMESTIC FOOD BUSINESS BY MNCS:
Liberalisation has brought in through the entry of large multinational and transnational corporations, foreign investment in this sector. This resulted in competition, technological upgradation and market expansion. In the face of the competition, domestic Industries are gradually losing market share and thus selling their businesses to the new entrant MNCs well before the value of the brand and businesses drops further due to ongoing onslaught of multinational brands. This is happening because MNCs have much greater resources to put behind their brand and business and also have long term vision and sustainability. Domestic industries are no comparison. The first attack came in soft beverages industry with Coke acquiring Parle brands and Pepsi acquiring Dukes and with the entry of Cadbury Schweeps in this sector entire soft drink industry is now in control of MNCs. MNCs such as Nestle, Brooke Bond and SmithKline & Beechern controlled earlier only hot beverages (both white and brown segments). But soft beverage sector was dominated by domestic industries. With Coke and Pepsi acquiring Indian businesses, total non-alcoholic beverage industry is now under control of MNCs.

Sara Lee -- a US multinational has acquired Nutrine -- a large Indian bakery and confectionery business. Britannia is already under control of Danone group of France. Only large bakery and confectionery left to be acquired in private sector is Parle Products. And with the entries of confectionery giants like Perfetti, Wriggly and Agrilimen (a Spanish confectioner in joint venture with Dabur but in the process of acquiring Dabur's equity to have 100% control) confectionery and bakery sector, will also become the domain of MNCs.

With Nestles' strong presence in Tomato Ketchup and Pickles and Hindustan Lever acquiring Kissan and Dipy brands from UB group through Brooke Bond route, fruit and vegetable sector is also dominated by multinationals. Heinz, the world's largest Tomato Ketchup manufacturer had acquired food business of Glaxo. Due to strategic restructuring of portfolio Glaxo decided to divest their dairy business with established brands like Complan, Glucon-D and Farex. Hindustan Lever, on the other hand, through a strategic alliance route, took control of Kwality Ice-cream as well as 100% Ice-cream brand of Jagatjit. Hindustan Lever with their own presence in dairy sectors and with the introduction of Baskin Robbins and Walls has emerged as a dominant player in dairy segment, in general and Ice-cream segment, in particular. Hindustan Lever (HLL) also acquired Dollop Ice-cream brand from Cadbury's. HLL, however, recently announced their intention to sell-off their Dairy unit in UP. Ice-cream industry, which is
reserved for small-scale sector, has now been in the control of multinationals through a different route. The argument that ice-cream is actually a frozen dessert -- a nomenclature that has been accepted by both food and law ministry of Govt. of India -- paved the way for Hindustan Lever for this strategic acquisition. The earlier successful domestic businesses such as Dalmia Dairy, Foremost Industry and Jagatjit Industry in dairy sector are all in deep trouble -- and MNCs have taken a control of this sector as well.

National Dairy Development Board (NDDB) with its strong brand Amul and with its deep root extended up to farmers level as a means of backward integration will of course, remains a significant force to reckon with. But nobody will deny that in branded dairy products Amul has to put up a constant fight against multinational brands. Vadilal is also a significant player in ice-cream but their presence is limited in Western India and for how long they will remain has to be seen. Kraft Foods a unit of Phillips Morris is holding a license to set up 100% owned entity and they are expected to come and set up their operation anytime.

In the convenience foods -- 'Corn Products', a US multinational is fast making progress. This is an old company, which did not make any significant contribution in the Indian food business largely because of lack of interest from their principals. CPC - International is now fast making progress with their well known Rex and Brown & Poison and Knorr soup brands. Recently they announced the acquisition of DCW Chemicals -- makers of Captain Cook brands, which ran into rough weather because of the objection taken by some miller in Haryana to whom allegedly DCW has contractual obligations. Shortly, we will also have products in joint venture with Paoma Industries, the manufacturer of Rasna soft drink mixes and Campbell a world leader in canned foods. Godrej, on the other hand, has joined hands with Pillsbury a leading player in the convenience foods business to boost their business activities. Pillsbury has already introduced instant Cake mix. In this category others including Gits brand are relatively smaller and regional players.

Apparently, first change that we have witnessed is of acquisitions of domestic brands in frontiers of food business by MNCs and along with although at a much lower scale a few joint ventures. Even the public sector undertaking, Modern Foods although making profit is up for sale in line with the Govt. policy of PSU disinvestment.

4.13 GLOBAL COMPETITION

Ten years ago Indian processed food industries were crying about high taxation, lack of infrastructural support, no availability of quality raw material at competitive price, no availability of latest packaging machinery and packing material etc. as the major reasons for poor or sluggish growth of this sector. But the industry was still growing then, albeit not at the expected level. Competition was also there amongst domestic processors with their MNC counterparts. Because, large MNC food companies like Nestle, SmithKline & Beechern, Britannia, Glaxo, Hindustan Lever etc. are there for ages. But domestic industries were not worried about their presence. There was healthy competition. In some areas domestic industries were doing even better than some of their nearest competitors in multinationals. What went wrong then? Why domestic industries are now not able to fight multinational giants? This is because the rules of the game have changed. Post liberalisation, we have now entered into an era of survival of the fittest.

Only couple of years ago we had only Amul Cheese. Britannia first successfully introduced Cheese from cow milk followed by the introduction of French cheese 'Le'-Bon' from Dabur-Le'-Bon joint venture. Philips Morris -- owner of Kraft Foods -- is sitting waiting a formal license to set up 100% owned company in India. They carried out lot of research for introduction of Kraft cheese in India. Their project now has been put in cold storage and they are still waiting and watching the market for processed food industry.

Till mid eighties Kissan was the number one brand in Tomato Ketchup and around that time the competition came from Maggie -- a Nestle's brand. With Maggie launching several varieties of Tomato Ketchup there was a growth in the market. With Kissan and Maggie fighting neck to neck other smaller but established brands like Dipy's from Herbertsons, Volfruit from Voltas, Noga of Nagpur Orange Federation and SunSip of Wimco gradually disappeared from the market. Delmonte now has joined hands with Paoma Industries, the manufacturers of Rasna Brands of soft drink concentrate and is expected to launch Tomato Ketchup shortly. The biggest global player in Tomato Ketchup Heinz is still waiting and watching. It was expected that they will launch Tomato Ketchup in Indian market soon. Some of the unknown local brands of course still existing only on price competition.
The price competition has also kept some of the other categories of food products still alive. For example, the age old Corn Flakes from Mohan Meakin under the brand name Champion still sells almost the same quantity (reportedly 500 MT per annum) against the much better quality Kellogs brand which sells around 300 MT per year with all its variants. Till today we have only Parle and Britannia as two major brands in biscuits. Kellog is entering that segment gradually. Cadbury and SmithKline Becheem have nominal presence with speciality biscuits. Shortly, we are going to see more cookies and speciality biscuits from Sara Lee, which has acquired Nutrine.

In the snack foods category we have two successful Indian players namely Uncle Chips brand of Amrit Foods and Pepi of SM Dye Chem, others were local such as Fun Flip, Crax etc. Soon entered Pepsi with their Ruffles brand and soon extended to Indian snacks by introducing bhujias which Bikanerwala makes for them to market.

In confectionery we have over half a dozen global players struggling here for brand share and fighting against Indian players like National, Norton, Parle, Parrys etc. Amongst MNCs in this field leading are Perfetti, Wriggley, Agrilimen, Park Davis (with their chicklet brand).

Competition is also seen in organised food retail chains. Couple of years ago we had only Narula running such an organised retail food chain. Today we have everybody namely. McDonald, Kentucky's Fried Chicken, Dorninos, Pizza Hut of Pepsi's and many more.

In some of these categories domestic brands are still a leader - for example, Uncle Chips, Frooty, Rasna etc. But how long they will be able to retain their leadership is a big question mark? If, potato price continues to remain at the present level possibly Pepsi's Raffle will still continue even after incurring losses but Uncle Chip will have to close its shutters. As others are doing -- for example Billy's Ltd. -- an Indian company in technical assistance with Florigo of Netherlands had successfully introduced potato chips in Eastern India and was reportedly doing well. As potato price started shooting up the company could not afford to sell its brand at a competitive price and is now in the process of closing down. With highly fluctuating input price, domestic industries will be all the more vulnerable like the one we have seen in case of Billy's. It is concluded that in each category now we have global competition with more players expected to jump into the fray. Domestic processors will have to learn to survive competition. But consumers are the real beneficiaries; they have now a wide choice.

4.14 TECHNOLOGICAL UPGRADATION LEADING TO SUPERIOR QUALITY

Food processing industry in India has undergone a total metamorphosis over the last six to seven years, in terms of types, variety, quality and presentation which is a result of liberalisation leading to foreign direct investment in frontiers of processed food sectors. Multinational and transnational corporations made significant contribution. This was possible due to market significant technological upgradation in this sector. It is not that the latest state-of-the-art technologies in this sector were not known to us. On the contrary, we had the fullest capability and technical know-how. In seventies and eighties we used to talk about in seminars and conferences the new types of packaging, products and processes but industries never felt the necessity to upgrade or invest in new technology. Nor did they have the resources to support such programme. Reason was is the apprehension all around that there would be no market for such products. And we continued to produce products that are of traditional nature using age-old technologies. Besides, there would were licensing restrictions, reservation of many categories under small-scale sectors etc., resulting of into poor or negligible upgradation of the industry. Things have changed since then. With the technological upgradation we now see an all round improvement in processed food products quality. The competition has forced the processors to improve and the upgrade the quality. Earlier we had limited categories, for example, jam, jellies, marmalades, squashes, cordials, ketchup and sauces in fruit and vegetable sector, ice cream, spray dried milk powder, condensed milk, butter and ghee in dairy sector, bread, biscuits and pancakes in bakery sector, hard boiled confectioneries, one brand and type of chewing gum and limited variety of chocolate in confectionery sector. Today we have not only better quality of these but also a lot of variants and product types and choices. There is also a significant improvement in packaging quality. In seventies we had only glass and cans as packaging materials. In eighties we had seen laminates and other plastic materials coming in. Today we have the host of packaging types being used to market processed food products. Earlier we used to get fruit juices and ready-to-service (RTS)
beverages only in glass bottles. Today we have tetra pack and also asceptic carton pack. Similarly, tomato paste earlier used to be sold in metal cans and the market for this was also very small. Today tomato paste is sold by Godrej Foods in asceptic consumer pack. In packaging of cheese and other dairy products considerable improvement in the product and packaging quality are evidenced. Cheese, as a product was not known to the Indian consumer in seventies and eighties. Only cheese that we had was cottage cheese. Processed cheese was not there, not to speak of varieties of cheese as they are found and consumed in other countries. Britannia and La-bon cheese are definitely gaining ground. And we expect that when Kraft will enter this market there will be a revolution in processed cheese sector in India. Kraft International has done considerable research on the possibility of producing world class Kraft cheese for Indian market and they came to the conclusion that the milk quality in India is not good enough to produce cheese of Kraft grade. Besides, Kraft cheese is produced from cow milk where as in India bulk of our milk is from buffalo. Britannia subsequently introduced cheese and their sole claim is "Cheese from cow milk" and has done very well if initial responses are any indication. And it is everybody's knowledge that Britannia is not manufacturing it themselves but it is being manufactured in a local plant near Pune under a subcontract manufacturing arrangement. Britannia is only marketing it. Although process technology support might come from their respective French collaborators namely BSN and LA-BON, but this only proves my contention that technology is known to us but we did not put it to application to tap new and emerging market. Competition is forcing the marketeers to look for better products and new products, which is a direct outcome of the liberalisation policy.

4.15 PROLIFERATION AND EXTENSION OF FOOD BRANDS

Food items are primarily processed to extend its shelf life and to preserve its nutritional value. The secondary purpose of processing of food is to deliver convenience, taste and appeal to the target consumers. Depending upon what consumer segments are targeted the processing methods, type of food and its taste and packaging and total presentation varies widely. In a country like India where local taste preferences differ from region to region it poses a much bigger problem to produce food products which can have a much larger acceptance and hence a bigger market potential. But there are some food categories and types for which there is a universal acceptance and hitherto Indian processed food industry only were processing that generic category of foods for all India market. Even new entrants in the processed food industry were only adding brands in the traditional sectors. India has witnessed this phenomenon before liberalisation in different categories. And as a result, mortality rate of processed food brands were quite high. For example, when Amul came into the market with their Amul Butter - Polsons butter disappeared from the scene. Having tasted success, Amul brand has been extended across a range of items including cheese, cheese spread, shrikhand, chocolate and ice-cream.

Creativity in food industry was, to say the least, very low. There were of course small local companies who attempted to create products for catering to the local taste preferences but the market was so small that the products did not survive the test of time. For example Kissan launched "Bisebelle Bhath" a South Indian delicacy in Southern market in mid eighties only to withdraw a year later. Kissans did considerable work and developed instant rice but market research indicated that the market for instant rice would be insignificant and thus had to drop the idea. The same instant rice was used to formulate "Bisebelle bhath". Phillips Morris who got clearance for setting up 100% owned entities in India has announced their plans to introduce the instant rice under their global and popular brand "Minute Rice". And still there are others who tried to create universal appeal and introduced mass market product and have demonstrated big success stories. The example is Rasna from Pioma Industries. But how they did it is a different story. Yet others have failed in such attempt. In mid eighties steel merchant of Mumbai Mr. Ravi Kiran Agarwal in a joint venture with Kwality Frozen Foods had set up Tasty Bite Eatables Ltd. - a company to get into frozen foods and North Indian and South Indian vegetarian and non-vegetarian ready-to-serve foods. The concept was - warm and serve. A modern plant was set up near Pune. The products including Mutton curry etc. in restorable pouch were introduced but it did not click. A couple of years later they faced serious financial problems and subsequently the company was sold to Hindustan Lever - who tried hard to establish "Green Valley" frozen foods. It was also later on withdrawn. Welga Foods in Badaun near Bareilly similarly had to close down their frozen foods plant. Tarai Foods who were also contract
manufacturers for Hindustan Lever is still struggling to exist. The only long term player in frozen foods particularly frozen vegetables is "Mafco" -- a co-operative in Maharashtra. Food products that were in the high price range and were well ahead of their time did not succeed in India. And thus casualties in certain category were very high. Before nineties the food industry in India was struggling to establish only the traditional food brands and there was very little or no effort to introduce new foods. In post liberalisation era we have host of new MNCs with superior marketing skill and bigger resource to their command have extended their brands to a wide variety of local foods and their variants including the areas which were protected niches of small local players. For example, Indian traditional snacks were only local brands even a couple of years ago. But there we have now even global brands. Kissan under UB-group used to sell and market only fruit and vegetable products. Today Kissan brand has been extended to even branded grocery items which were earlier the domain of small local players. Pepsi's primary business is in soft drinks but in India they have gone into branding of traditional snack foods. Similarly Nestle - a swiss Food major - has introduced pickles in Indian market. In the traditional food items local companies should be able to add better value and hence can score higher in the market place. In seventies, 'Bisleri' was the only mineral water which had national presence and the sale was to the tune of approximately one hundred thousand cases valued at about Rs.60 lacs. Today mineral water market is said to be of Rs.200 crores and over hundred brands of mineral water are there. Earlier we did not have any fruit juice in the market. Only canned juice and ready-to-serve beverages in bottles were available. Today we have number of brands in carton and tetrapack. Such as 'Onjus' of Enkay Texofood, 'Real juice' of Dabur, 'Jumpy' of Godrej etc. all packed in convenient aseptic cartons. We will be shortly getting more brands of fruit juice including 'Tropicana' from Seagram. The proliferations of brands are also seen in branded Grocery products. A few years ago we had 'Tata-salt' as the only refined iodised salt selling in the market and today we have 'Captain Cook' from DCW, 'Kissan Annapurna' from Kissan Products and Catch (with dispenser) from Hi-Tech Foods and more brands to come in. In some areas such as meat and poultry products branding, packaging, processing and distribution on a national scale has yet to be witnessed. But in many of the processed food categories, as we can see that the existing brand is either extended to a wide variety of foods such as Britannia to Cheese and Long Life Milk in tetrapack etc. or there are proliferation of brands. In this process, ultimate beneficiary is the consumer as they can expect to get the best value for their money. Competitive pressure will make that possible.

4.16 MNCS' ENTERING TRADITIONAL FOODS SECTORS

Mckensey did a study on the opportunity in India for food and agri business at the behest of Confederation of Indian Industries (CII). And as expected they projected a huge potential in food sectors and said that the real potential lies in traditional, local food and grocery items -- but not so much in westernised processed food. Some of our big multinationals seem to have swallowed the Mckensey advise-pill and got into this sunrise sectors. Historically, traditional food items were the domain of small local players. Grocery items earlier were sold loose and unbranded. Then some progressive traders tarted the cleaning, grading and primary packaging. And the next stage of development was branding of primary foods such as Atta (wheat flour), Rice etc. but those were mainly regional brands. Popular among these were "Rose" and "Shakti Bhog" brands in northern India. Whereas in traditional food items such as spice and pickles there were host of local brands with regional strong-holds such as 'Cookme' spice powder in East, 'Bedekar' pickles in West, 'MDH-masala' in North etc., to name a few. And the food ingredients -- nobody thought of. Only food ingredient that was there was tomato puree and paste in cans which in the recent times Godrej introduced in tetrapack. Edible oil in tin pack and later on in polyester jar and tetrapack were the first major step in branding grocery items. "Postman" -- peanut oil from Ahmed Mills was one of the oldest popular brands. Today we get variety of edible oils and NDB and Marico are the leading players in this sector. Amongst MNCs we have "Mazola" corn oil from CPC and "Sundrop" from ITC Agro -- a sunflower oil which subsequently has been acquired by CONAGRA - the fastest growing food company in America. With CPC and CONAGRA being involved in edible oil market this sector is going to be soon dominated by MNCs. The next major attempt to market a branded grocery item was done about a decade ago by Tatas by introducing the first refined iodised salt in poly bag by brand name "Tata Salt" and that was a success. The next big brand in this category is "Captain Cook" from DCW Chemicals who had
plans in branded grocery items and thus the company introduced other items including wheat flour under the same brand name. But that was shortlived. During 1997 DCW Chemicals suffered a major setback and the company decided to divest this food business. The acquirer is Corn Products Co. (India) Ltd. -- a wholly owned subsidiary of CPC-International a nine billion US dollar American multinational in food and grocery business. The company has recently changed its name to Best Foods Ltd. CPC was a sleepy company operating in India for over fifty years and their performance was lacklustre. With their limited range of Rex and Brown and Polson brands of convenience foods, the parent company, although doing well globally did not have any commitment in India. In post liberalisation era, this apparently sleepy company seems to have become active. The third brand of salt is "Kissan Annapurna" which is making a sustained effort to get market share. This brand which is now in Hindustan Lever's fold through Brook Bond acquisition who in turn acquired Kissan in early nineties have reportedly spent Rs.18 crores in advertising and got 14% market share in a Rs.200 crore branded salt category in a span of one year. Tata Salt still holds 26 percent market share and Captain Cook's share is about 20 percent and balance forty percent is still with the smaller players. With the acquisition of "Captain Cook" in branded salt market MNCs are the dominant players controlling sixty percent of the market. The value addition in branded salt and pepper was really done successfully by a Delhi based local company Hi-Tech Foods belonging to Dharampal Satyapal of premium "Baba Zarda" (chewing tobacco) fame. Hi-Tech Food's "Catch" brand of salt and pepper in dispenser pack is a success story with upper middle class household and restaurant segments as the main customers. The sale of "Catch" is said to be around Rs.12 crores. The first MNC to get into the branded spice business was Brook Bond who introduced the select premium priced spice range by name "Sona" in late eighties. The products were priced and packaged for higher income group. They struggled for couple of years to establish "Sona" brand but failed and was forced to withdraw in later years. Apparently we don't see any major MNC in branded spice but world leader in exotic spices "Macomac" seems to have plan to enter Indian market. The first MNC to introduce Indian pickles was Nestle with their Maggie brand. The products are still in the market. And as mentioned earlier, the first MNC to introduce traditional snacks (bujjias) is Pepsi under the umbrella of "Leher Namkins". It can be concluded that in traditional Indian foods MNCs cannot add much value through the involvement of their principals abroad. On the contrary, they will have to learn from the locals to derive advantage of their brand and resource muscle.

Hindustan Lever is expected to enter branded grocery items though Kissan route in a big way. The company does significant export of branded rice particularly in Middle East market and therefore expected to introduce the branded rice shortly in domestic market as well. Otherwise, in India so far branded packaged rice is limited to Basmati rice and there are many brands in this category and leading among them is "Kohinoor" -- but all are from small manufacturers. The grocery business is basically low margins and high volume business and thus it required multiple supply sources to be strategically located to reduce the cost of freight and excellent distribution infrastructure and logistics management capability. Big houses like HLL, therefore are expected to do much better in this sector.

In the food ingredients business MNCs have not yet traded. The only big player in this area is Dabur with their range of pastes such as onion, garlic, ginger and also mix of these for particular application. Current sales of these items which are sold under the umbrella brand "Homemade" is said to be Rs.5 crores and going by that standard it can be considered as a reasonable success. "Cookme" curry paste has been launched in Calcutta. The market indicators point towards growth in the branded food ingredients business in coming years. Pepsi is expected to get into this category and with their backward linkages with farmers whom they support with the high yielding variety of seeds for better crop yield, it stands to have an edge over others in this sector. One could have expected that Nestle would also jump into the fray in this sunrise food business. Price and quality are expected to be the major determinant in the success of grocery items and basic foods. Consumers in India would not be willing to pay much as the price of convenience. Big global brands to MNCs' in that context are therefore not much of significance.

4.17 APPROACH TO GOOD MANUFACTURING PRACTICES
Since ages food is an area of commercial interest to mankind. Food Safety was discussed in various ways in various societies. In India, Good Manufacturing Practices were integral part of our cultural and social practices and were designed to take care of basic food safety requirements.
Traditionally, Indian Society is hygiene conscious. In recent years because of increased commercialisation and adoption of unhygienic habits for undue commercial gains and lack of resources available to the people in the food trade coupled with environmental pollution, food hygiene has become a major issue of concern in international trade.

Food safety has become a issue of great interest to everybody in food trade when the United States FSIS Pathogen Reduction/HACCP rule published in July 1996 combines the concepts of Hazard Analysis and Critical Control Point (HACCP) systems with the FSIS requirement for written Sanitation Standard Operating Procedures (SSOPs). However HACCP and SSOPs are only part of a total food safety system. Good Manufacturing Practices provide the foundation for SSOPs and HACCP. It is important to have a clear understanding of the relationship between the GMPs, SSOPs and HACCP plans for compliance of various food safety regulations.

GMPs' pre-requisite programmes comprise the basic, universal steps and procedures that control operating conditions within establishments and ensure favourable conditions for the production of safe food. These differ from HACCP systems which focus on the critical points in a manufacturing process that affects food safety. GMPs are the control factors that relate to the entire operation and are not process-specific. GMPs include programmes such as facilities/grounds, equipments/utensils, pest control, receiving and storage, process control, product recall and personnel training. Prior to the development and implementation of HACCP plans, an establishment should first review existing programmes and verifies that all GMPs are in place and effective. Effective GMP programmes ensure that HACCP plans focus specifically on the critical control points (COPs) necessary for product safety. If any portion of the GMPs is not adequately controlled, there is possibility for a HACCP plan to be less effective in ensuring product safety. GMPs are like any policy programme any manufacturer has implemented. They require a written programme, an appropriate training programme and schedule, a maintenance schedule and most importantly management commitment. Management commitment is the vital component of any programmes the company implements. Management's role takes on many forms from providing funds, guidance, and human resources, to following the rules themselves. Once management has committed to the implementation of a programme other components will fall in place. Without this no amount of investment or external assistance will deliver results.

4.18 THE TOP TRENDS IN FOOD PROCESSING INDUSTRY

When it comes to food and beverage products, one rule of thumb defines a true trend: Real trends don’t come and go; they grow – over years, decades or even longer. For processors, fads can still bring in big money, but the risk is high. In between fads and trends are trendlets. These are the bubbles that pop up within a trend and are worth noting because they can provide a hook for food and beverage processors to hang their R&D hats on.

In simple terms, although the Health & Wellness category has a larger footprint than Organic – and the two often are lumped together erroneously – the fact is, any food product can be formulated to sport an organic label. However, not all products can wear the “healthy” tag.

Example: A rapidly growing niche in the beverage world is that of organic beer, wine and spirits. Discounting the studies showing possible benefits of moderate alcohol intake, organic vodka won’t likely get a health claim.

Health & Wellness is the second and broadest of the hot trends. It encompasses such huge components as diabetes and obesity, kids’ health, food safety, women’s health, allergies and immunity as well as the fringe issues of “well-being” and “energy.” As a trend, Age Awareness certainly overlaps with Health & Wellness, especially as the latter concerns our aging population. But there are numerous non-health aspects for processors to consider as they help our baby boomers segue into their dotage.

1. Organic = healthy
That equation is not necessarily true, but the message is so ingrained in the minds of millions of consumers that the math cannot be ignored. Organic everything is hot, and it’s not just produce. Most of the top retailers in the country offer organic products in their stores, and many foodservice establishments have taken notice, offering organic foods and ingredients more often on the menu. One of the largest distributors of variety organic produce, Melissa’s offers more than 350 organic produce items. Gearing up for a larger-than-normal increase in demand It’s not just the patchouli set that sees the advantages to organic foods. Surveys show the majority of Americans are concerned about what’s in their foods, where those foods come from and potential health risks from pesticides and chemicals in the food chain.

David Johnson, president-North America commercial at Kraft Foods Inc., has been quoted describing the organic food trend as “a freight train that’s going to pick up steam.” As the second largest food company in North America, the company is in the position to help make this a self-fulfilling prophecy.

According to a recent study by ACNielsen, organic products topped the list of “best performing” items in the “good-for-you” product segments. But organic is its own trend, extending beyond foods, beverages and pet foods. The category has acquired such trendlets as environmental consciousness and sustainability, Fair Trade, local production, energy conservation and “natural,” minimally processed or stripped-down formulations. Although not making an organic claim, Cadbury Schweppes PLC, Plano, Tex., recently reformulated and remarked its 7Up beverage as a five-ingredient, “natural” product.

2. Get well soon

The twin epidemics of obesity and diabetes dominate the health and wellness category. No day passes without the mention of one, the other or both on television, radio or in newspapers. But in general, between one-fourth and one-third of consumers make food choices based on health for some reason. This is a trend that plays directly to our desire to ingest specific foods or beverages for the purpose of preventing or palliating a disease or condition. The reason antioxidants, botanical extracts and the whole foods (berries, teas, soy) that contain them are critical underpinnings of this trend is because of the promise such items hold to improve how you feel and perform. From an ingredient standpoint, health and wellness concerns offer the best variety of options for processors. A manufacturer developing a product in this market has literally thousands of botanical extracts, antioxidants, phytochemicals, carbohydrate compounds (such as sugars, starches and fibers), protein compounds or fractions and healthy oils from which to choose. The trend to address health reached its mainstream “tipping point” in food processing with the decision in 2004 by America’s second largest cereal maker, General Mills Inc., to reformulate all of its breakfast cereals to be based on whole grains. There certainly were defining moments along the way – fortification of flour and breads with folate, calcium enrichment of juice and other “health-value added” movements all are good examples. But the Minneapolis- based company was the first processing giant to change its entire line of products in such a manner. From a food and beverage manufacturing point of view, all these wellness areas are showing some of the strongest growth potential.

3. Age awareness

Health is still the biggest part of the aging trend. For every age group there’s a health concern some processor is targeting. Attention is split mostly among concerns of children teens and seniors. By sheer numbers, the last group is headed for steady growth as a trend. But the aging trend involves more than ingredients and formulations. The doubling of the over-65 population by 2030 means increased need for easier-to-open containers. The logistics involved can include everything from packaging machinery redesigns to food safety concerns based on conflicting needs to creating tamper-resistant and sanitary packaging that doesn’t require sophisticated kitchen tools or a magician’s touch to open. Then there’s labeling. Larger print on labels for presbyopic eyes means less room for those marketing blurbs, images, slogans and serving suggestions that go so far to separate one product from its competitors.
4. Eat global, buy local

As consumer interest in new flavors and products continues to grow, so does the specialty food market. As immigrants continue to acculturate, their food traditions are becoming more mainstream. More Vietnamese, Thai and Indian flavors will continue to flourish within this category. “Globalization can be a volatile category. One example is the healthy fruit açai. Before 2000, the fruit was enjoyed primarily on its South American home turf, usually at small juice stands. Globalization’s real heft as a trend, though, comes through such mega issues as the drive to enter the China market. And as the sleeping tiger that is India awakens, another billion potential customers wait in the wings.

5. Control yourself

We’re controlling portions not just for health but convenience. As a trend, convenience has been high on the list of movements to follow for years. But the two aspects merged in 2004 when Kraft Foods Inc.’s Nabisco brand launched 100-Calorie Packs of some of its most popular cookies and crackers. Those aren’t exactly health foods. But it was a clever move, because dietitians and other nutrition experts had been clamoring about portion control for years. Although aimed largely at the restaurant industry, it was a pleasant surprise when the cry for sensible portions finally was heard by the packaged food industry. The trend took off with such gusto Kellogg Co. brought out its 90-calorie packs of Special K Snack Bites and 130-calorie Granola Munch’ems. Frito-Lay North America, joined in with 100 Calorie Mini Bites versions of its Cheetos and Doritos snacks. In the space of two short years, sales of such portioned packets passed the quarter-billion dollar mark.

6. Make room kosher, halal is here

Kosher broke away from ethnic as a trend of its own with the first wave of fear over mad cow disease. Halal certification, the Muslim equivalent of kosher, is finally grabbing at the same brass ring. The religious oversight of food encompasses food safety, health and wellness, ethnicity and spiritualism with one stamp. Or two. In the past year or so, the growth of religious adherence among boomers is seeing the combining of kosher and organic. This trendlet (“trendmerge?”) is still too new to show reliable growth figures. However, companies such as Wise Kosher Natural Poultry are literally betting the farm on it. Kosher/halal isn’t just about meat, although the timing couldn’t be better with meat sales jumping. The number of products with some sort of kosher certification is nearing six figures. Estimates are that three-fourths of manufactured foods and beverages have, are in the process of, or are seeking some sort of religious oversight certification. In addition to vegetarians, Hindus, Muslims, Seventh-Day Adventists and just generally watchful consumers go for kosher. Sales of these certified products top $100 billion annually and are projected to increase 14 percent in 2007. The half-trillion-dollar food and beverage business is trend-driven, make no mistake. The value to processors is in growing product lines not only to serve but to steer these trends. This doesn’t mean every new product needs to be an organic, whole-grain, 100-calorie, ethnic-oriented and kosher snack loaded with omega 3s and anthocyanins with an easy-open top and large-print labels. But indications are such a product would sell well. As long as we remember that at the end of the game, taste trumps all trends.

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<th>Top trends in food processing (and their trendlets)</th>
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4.19 MARKET OPPORTUNITIES

India’s humungous market size ravenous appetite for food, with growing incomes and changing life styles create incredible market opportunities for food producers, machinery makers, and food technology and service providers. Fruit and vegetables is an area of farming with great export and employment potential. The policies are investor-friendly and more importantly technological and human resources are available aplenty in the country. Recent initiatives taken to give a special focus to this industry in a bid to provide logistics management and technology for increasing exports of fruits, vegetables and processed foods as the next areas of growth for exports. The proposed food parks would be equipped with facilities to sort and grade agriculture produce for export.

The recent announcements of supplements to the Foreign Trade Policy has given a service of measures to boost exports of agro product. The scope of VKGUY (Vishesh Krishi and Gram Udyog Yojana) has been expanded to include exports of value added variants of several agro and forest products, including coconut oil, soyabean oil, potato flakes, meals & flours, cardamom, food preparation like soup, and sauces and forest produce. To strengthen, cold chain infrastructure, a scheme for incentivising agro processing has also been launched with stakeholders being rewarded with duty credit scrip equal to 10% of the value of agro exports. The Government is considering a Rs. 1,500 crore subsidy scheme for the development of mega food parks in select cities of the country. These food parks would be developed by a special purpose vehicle (SPV) on PPP (Private Public Partnership) model. The Indian food sector estimated to be worth over $200 billion is expected to grow to $310 billion by 2015. It also contributes to a major part of the retail basket. The $6.1-billion Indian food retail chain is also growing at a hefty 9% and has invited FDI to the tune of over $3 billion. Developing countries like India who are emerging as major players in global food trade not only need to develop their own technologies based on local conditions life styles but also need to assert its relevance in the global foray.

4.20 EXPORT SCENARIO

Export of processed fruits and vegetables is another thrust area for encouraging export of value added products. A number of large national and multinational companies have now entered processed food industries with a thrust on exports.
## 4.1 EXPORT STATEMENT (1995-96 To 2006-07)

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<td>Milled Products</td>
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<td>140666</td>
<td>50901</td>
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<td><strong>Total for Other Processed Foods</strong></td>
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<td>1324073</td>
<td>523719</td>
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*Source: APEDA*
There has been significant increase in the export of fresh fruits and vegetables during the past few years. Exports increased from Rs. 433 crore in 1994-95 to Rs. 2,012.16 crore in 2005-06. The major fruits exported are mangoes, grapes, citrus fruits pomegranates, lychees, dried nuts etc. To increase the volume and price competitiveness, APEDA (Agricultural Processed Food Export Development Authority) proposes to the reefer technology to transport mangoes to Europe. China has opened its market for Indian mango, grapes and bitter gourd. Efforts are on to secure market access for the fruits in Japan, USA and Australia. The long awaited access to the Japanese market for Indian mangoes was achieved in June 2006. The first consignment of mangoes left the Indian shores for USA recently. The promotional programme for mangoes was organized in leading super markets in Dubai and Germany during the year. Wet sampling and free distribution of major varieties of mangoes was carried out during the promotion programmes.

To boost exports of Indian horticultural products APEDA is providing support in the form of infrastructure, packaging, quality, commercializing research for purpose of export as well as providing transport subsidy. As a result of the assistance extended by APEDA, integrated pack houses have come up in the major production areas of grapes, mango, pomegranate and gherkins. Products like vegetable curries, dals, sweets, etc., in improved packaging have been introduced for reaching the new markets. The growth in this group is contributed by pulses, processed fruits and juices and processed vegetables.

4.21 EXPORT OF PROCESSED FRUITS AND VEGETABLES AND OTHER PROCESSED FOOD

4.21.1 PROCESSED FRUITS & VEGETABLES

India can become one of the largest fruit and vegetable exporters in the world and can equally be a large importer given its demographic diversity. This strong footing in agriculture provides a large and varied raw material base for food processing.

There should be technology up gradation, quality management, firm adherence to export commitments and acquisition of appropriate negotiation skills. Many non-traditional vegetables mainly processed & gherkins and others like asparagus, celery, bell pepper, sweet corn, green and lime beans and organically grown vegetables are also being increasingly exported.

India’s exports of Processed Fruit and Vegetable has increased from Rs. 2454.61 Crores (USD Million 554.46) in 2005-06 to Rs. 2502.28 Crores (USD Million 555.07) in 2006-07. Which including the share of products like Mango Pulp (Rs. 505.83 Crores) (USD Million 112.21), Dried and Preserved Vegetable (Rs. 424.06 Crores) (USD Million 94.07), Pickles and Chutneys (Rs. 293.59 Crores) (USD Million 65.03), Other Processed Fruit and Vegetable (Rs. 508.15 Crores) (USD Million 112.72), and Pulses (Rs. 770.65 Crores) (USD Million 170.95).

The Indian food –processing industry is primarily export oriented. India’s geographical situation gives it the unique advantage of connectivity to Europe, the Middle East, Japan, Singapore, Thiland, Malaysia and Korea. One such example indicating India’s location advantage is the value of trade in agriculture and processed food between India and Gulf region.

DRIED AND PRESERVED VEGETABLES

India is the major producer of dried & Preserved Vegetable Like Preserved Onions, Cucumber & Gherkins, provisionally preserved, Mushrooms of the genus agaricus, Other mushrooms and truffles, Green Pepper in Brine, Dried Truffles, Asparagus Dried, Dehydrated Garlic Powder,
Dehydrated Garlic Flakes, Garlic Dried, Potatoes Dried, Grams, Grams Dal, Onion Prepared/Preserved etc. India’s Export of Dried & Preserved Vegetables has increased from Rs. 364.11 Crores (USD Million 82.25) in 2005-06 to Rs. 424.06 Crores (USD Million 94.07) in 2006-07. The major Importer of Indian Dried & Preserved Vegetables are Russia, France, U.S.A, Germany and Spain.

**MANGO PULP**

India is the largest mango producer in the world, and has the range of varieties in (*talle) Mango and Processing Mangoes of this fruit. Export of mango pulp is significant. Two main clusters of Mango Pulp are there in the country which has around 65 processing units with a good backward linkage of Alphanso and Totapuri variety of mangoes. These clusters are Chittoor in the state of Andhra Pradesh and Krishnagiri in the state of Tamilnadu. Most of these processing units are HACCP certified and conforms to required standard. India’s Export of Mango Pulp has increased from Rs. 364.24 Crores (USD Million 82.28) to Rs. 505.82 Crores (USD Million 112.21) in 2006-07. Saudi Arabia, Netherlands, UAE, Yemen and Kuwait are the major market of Mango Pulp.

**PICKLE & CHUTNEY**

Pickles & chutney are the traditional specialties product of India and has gained an important position in the Indian cuisine. They are eaten along with main course and provide tempting tastes. Pickles are prepared from Fruits and Vegetables and they supplement the food with vitamins and minerals. There are many types of pickles available in India like Chilly Pickles, Green Pickles, Lemon Chutney, Mango chutney, Gherkins, Mango Pickles, Onion Prpd/Prsvd and Tomato chutney etc. India’s Export of Pickles & chutney has increased from Rs. 260.98 Crores (USD Million 58.95) in 2005-06 to Rs. 293.59 Crores (USD Million 65.13) in 2006-07. The major market for Indian Pickles & chutney are Russia, U.S.A, Belgium, Netherlands and France.

**OTHER PROCESSED FRUITS AND VEGETABLES**

The Processed Fruits & Vegetables industry in India is one of the largest in term of production, domestic consumption, export has tremendous growth potential. Important products in Processed Fruits and Vegetables are Apple Juice, Asparagus, Beans Shelled, Cashew nuts/Roasted and Salted, Cherries, Chips Fried, Dried Apples, Dried Apricots, Fruit & Nuts, Uncooked or Cooked, Grape Juice, Grapefruit Juice, Jam Jellies of Apple, Jam Jellies of Other Fruits, Mango Juice, Lemon Juice, Olives, Pineapple Juice, Sweet corn, Tomato Juice, tomato Prepared of Preserved etc. India’s Export of other processed Fruits & Vegetables has increased from Rs. 370.21 Crores (USD Million 83.63) in 2005-06 to Rs. 508.14 Crores (USD Million 112.72) in 2006-07. The major destination of export for Indian processed fruit and vegetable products are U.S.A, Netherlands, U.K, U.A.E and Saudi Arabia.

**PULSES**

Pulses are one of the important food crops globally due to higher protein content. Pulses are 20 to 25 per cent protein by weight which is double the protein content of wheat and three times that of rice. For this reason, pulses are sometimes called "poor man’s meat". Major Pulses grown in India are Dry Beans, Dry Peas, Chick pea, Lentil etc. The total area covered under Pulses cultivation is 22.39 Million Ha with a production of 13.38 Million tones. India’s Export of Pulses has increased from Rs. 589.85 Crores (USD Million 131.46) in 2004-05 to Rs. 770.64 Crores (USD Million 170.95) in 2006-07. The importing countries in India are Bangladesh, Sri Lanka, Pakistan, U.A.E and Nepal.

**4.21.2 OTHER PROCESSED FOODS**

The Indian food processing industry has seen signify-cant growth and changes over the past few years. The sector include in the other food processing industry
are Groundnuts, Guargum, Jaggery & Confectionery, cocoa products, cereal preparations and alcoholic & Non Alcoholic Beverages. Export of other processed foods like groundnuts, jaggery & confectionery, cocoa product, cereal preparations, miscellaneous preparation etc has increased from Rs. 2629.94 Crores (USD Million 594.07) in 2005-06 to Rs. 3635.77 Crores (USD Million 806.51) in 2006-07.

Groundnut is the 13th most important food crop of the world. It is the world's 4th most important source of edible oil and 3rd most important source of vegetable protein. Groundnut seeds contain high quality edible oil (~ 50%), easily digestible protein (~ 25%) and carbohydrates (~ 20%). In India, groundnut is grown on 6.74 million ha with a production of 7.99 million tons, with an average productivity of 1.18 metric tons hectare during the year 2005-06.

India is the major producer of Guar Seed followed by Pakistan and US. In India, Guar seed is grown on 6.93 million ha with a production of 5.60 million tons, with an average productivity of 0.81 metric tons per hectare during the year 2005-06. India’s accounts for 80% of the total guar produced in the world. 70% of India’s production comes from Rajasthan. The other producers are Gujarat, haryana, Uttar Pradesh and Madhya Pradesh.

India is the third largest market for alcoholic beverages in the world. The demand for spirits and beer is estimated to be around 373 million cases. There are 12 joint venture companies having a licensed capacity of 33919 kilo litres per annum for production of grain based alcoholic beverages. About 56 units are manufacturing beer under license from Government of India. The wine industry in India provides considerable opportunities for value addition and employment generation in the agro processing sector.

GROUNDNUTS

Groundnut is the 13th most important food crop of the world. It is the world's 4th most important source of edible oil and 3rd most important source of vegetable protein. Groundnut seeds contain high quality edible oil (~ 50%), easily digestible protein (~ 25%) and carbohydrates (~ 20%). Groundnut is grown in nearly 100 countries. India is one of the major exporting country of groundnuts after china and its export has increased from Rs. 513.68 Crores (USD Million 116.03) in 2005-06 to Rs. 798.46 Crores (USD Million 177.12) in 2006-07. The Major Market for Indian groundnuts are Indonesia, Malaysia, Philippines, U.K and Singapore.

GUAR GUM

India is the single largest producer of Guar in the world, having 85% of global market share. India produces around 1.1 to 1.2 million tones of Guar Gum annually. It exports various forms of Guar products to a large number of countries. Pakistan is the competition to India, but it has only 10% market share. Other countries like Australia, South Africa, Sudan, Brazil and Malawi are growing Guar in small quantities. China at present is a major importer from India. But it is reportedly increasing the area under this crop in a big way. India’s export of Guar Gum was Rs.1125.79 Crores (USD Million 249.73) with the Quantity of 189304.36 MT in 2006-07. The international
demand is increasing even in Europe and America, which are traditional importers of this valuable product.

**JAGGERY AND CONFECTIONERY**

India’s export of Jaggery & confectionery product like Chewing Gum, Other Cane Jaggery, Palmyra Jaggery, Raw Cane Jaggery, Sugar Confectioner and Sweet Meat has increased from Rs. 264.97 Crores (USD Million 59.85) in 2005-06 to Rs 873.46 Crores (USD Million 193.76) in 2006-07. The major destinations for export of Indian Jaggery & confectionery products are Portugal, U.S.A, Bangladesh, Pakistan and Nepal.

**COCOA PRODUCTS**

Cocoa being a tropical crop, India offers considerable scope for the development. Cocoa is mainly grown in state of Kerala, Karnataka, Andhra Pradesh and Tamil Nadu. Internationally it is an item largely consumed in developed countries. India’s Export of Cocoa products has increased from Rs. 21.83 Crores (USD Million 4.93) in 2005-06 to Rs. 35.07 Crores (USD Million 7.78) in 2006-07. The global market for Indian cocoa products are Nepal, Netherlands, Malaysia, Yemen Arab Repu. and U.A.E.

**CEREAL PREPARATIONS**

India has increased it’s share in the cereal and cereal preparation products in the international market. India’s export of Cereal Preparation products has increased from Rs. 393.95 Crores (USD Million 88.99) in 2005-06 to Rs. 462.71 Crores (USD Million 102.64) in 2006-07. The major destinations for Indian Cereal Preparations are U.S.A, U.K, Nepal, Sri Lanka and U.A.E.

**ALCOHOLIC BEVERAGES**

An alcoholic beverage is a drink containing ethanol, commonly known as alcohol. Alcoholic beverages are divided into three general classes: beers, wines and spirits. Today, Indian beer is brewed at various places in the country and is mainly top-fermented. Indian rums have developed a reputation for smoothness and flavors. The demand of India’s Alcoholic Beverages products like Beer Made From Malt, Wine, White Wine, Other Wine Included Grapes, Other Alcoholic Beverages, Brandy, Whiskies, Rum, gin and other Gin etc. has increased in global market. The international market for Indian alcoholic Beverages products is Jamaica, Thailand, U.A.E, Angola and Bhutan.

**MISCELLANEOUS PREPARATIONS**

Miscellaneous Preparations products in Processed Food includes Bakers Wares, biscuits, corn Flakes, Couscous, Crisp Bread, Ginger Bread, Malted Milk Food, Other Bakery products, Other Pasta, Papads, Stuffed Paste cooked and Uncooked Paste etc. India’s export of Miscellaneous Preparations products has increased from 49606.69 MT in 2005-06 to 57696.80 MT in 2006-07. The major destination for Indian Miscellaneous Preparations products of processed food are U.A.E, Iran, U.S.A, U.K, Indonesia.

**MILLED PRODUCTS**

Indian milled products include the products like Wheat/Meslin Flour, Rya Flour, Maize (corn) Flour, Rice Flour, Cereal Flour other than of Wheat (Meslin, Rye, Maize, Rice), Groats of Wheat, Meal of Wheat, Pellets of wheat etc. India’s Export of milled products has increased from Rs. 64.68 Crores (USD Million 14.61) in 2005-06 to Rs. 95.89 Crores (USD Million 21.27) in 2006-07. The major destination for Indian Milled Products is U.S.A, U.K, Indonesia, Maldives and U.A.E.

**4.22 ROLE OF TECHNOLOGY**

Advancement in food technology can play an important role in not only harmonizing quality norms, but also by developing good manufacturing practices, including conformity to traceability norms hazard analysis at critical control points (HACCP). The area where the technology can help is the fixation of the rational maximum residue limit (MRL) for pesticides and veterinary drugs in food, which can be acceptable for implementation by member countries of Codex. Codex has also incorporated HACCP system for identifying risk and their control. HACCP also covers pathogenic bacteria also. In HACCP system critical points are identified for control through appropriate
technologies. International bodies like Codex Alimentarius Commission and International Standards Organisation (ISO) set quality norms for food; Office International des Epizooties (OIE) addresses issues relating to animal health; International Plant Protection Convention (IPPC) sets norms for plant quarantine. Though the quality norms of these global bodies are accepted as base for reference, countries are allowed to set more stringent norms. The developed countries, which are technologically advanced, are in a more advantageous position to set stringent norms, which many feel, could act as non-tariff barriers in trade. In India, the contact point for Codex Alimentarius Commission is the Union Health Ministry, while that for OIE is the animal husbandry department and that for IPPC is the Union Agriculture Ministry. The Bureau of Indian Standards is the affiliate member of ISO. The Union Health Ministry has notified that from August 2007 onwards, all packaged food should carry labels stating nutritional value and trans-fat content. The ministry is also finalising the procedures for labelling of genetically modified (GM) food. Already, there are labelling norms for distinguishing packaged vegetarian and non-vegetarian food. These measures are necessary for giving the consumers an informed choice and to caution against any possible hazards. OIE has played a pioneering role during the past outbreaks of Avian Flu and foot-and-mouth disease in cattle across the world. As a result of globalisation and climate change, we are currently facing an unprecedented impact of emerging and reemerging animal diseases and zoonoses (animal diseases transmissible to humans). Improving the governance of animal health system in both the public and private sector is the most effective response to this alarming situation. A fund has to be set up to assist member countries in control of animal disease, promotion of animal welfare and animal production for food safety. OIE’s crucial role in helping the veterinary services meets their new challenges, through the development and use of the performance, vision and strategy tool.

4.23 ELEVENTH PLAN PROPOSALS
Many of the schemes under Tenth Plan are to be continued during the Eleventh Five Year Plan. Proposals submitted by the Ministry of Food Processing Industries (MFPI) for the Eleventh Plan, however, are to be restructured with appropriate management/implementation arrangements in Public Private Partnership mode with strong project implementation capabilities. The new integrated approach not only addresses issue of financial assistance but also issues such as skill development, entrepreneurship, institutional development, providing a policy environment which stimulates growth.

Core Elements of the Proposed Strategy are:
- Better project selection, development and implementation.
- Decentralized cluster based development, particularly for creation of infrastructure and fostering linkages to retail outlets.
- Industry-led capacity building and upgradation of standards.
- An integrated food law and science based food standards.
- Strategic intervention with redesigned schemes and efficient implementation arrangements.
- Importantly, the Ministry has to be strengthened appropriately, to meet the challenges in implementing various new initiatives proposed for energizing the food processing sector in the country.

The Priority Areas identified for Intervention are:
- Infrastructure development
- The food park scheme is proposed to be modified into a scheme for a Mega Food Park
- Modernization of Abattoirs.
- Cold Chain, Value Addition and Preservation infrastructure (Cold storages, Reefer vans )
- Irradiation Centres
- Research and development – Products, Technology, Quality and Skills
- Capacity Building – Human Resource Development, Research & Development, Quality, Safety, Related Infrastructure
- Establishment of NIFTEM
- Upgradation of PPRC, Thanjavur into a National Crop Processing Centre
- Upgrading safety and quality of street food and establishing food streets in identified cities
- Setting up of National Meat Board.
- Wine Sector Development---establishment of Wine Board
4.23.1 Salient Features of Proposed Schemes

Based on the review of Tenth Plan schemes, it is proposed that all existing schemes be continued under the Eleventh Plan with or without modifications. However, certain components under some of the schemes are proposed to be merged or discontinued as follows:

- The components of Packaging Centre, Cold Chain Facilities, Value Added Centres and Irradiation Facilities under the Scheme of Infrastructure Development may be merged into a single component.
- The component of Bar Coding under scheme for Quality Assurance, Codex Standards and R&D not to be continued under the Eleventh Five Year Plan.
- The component of Strengthening of Codex Cell under Scheme for Quality Assurance, Codex Standards and R&D to be merged with the scheme for Setting up/ Upgradation of Quality Control/ Food Testing Laboratory.
- Scheme for Backward and Forward Integration not to be continued under the Eleventh Five Year Plan.

A new scheme for upgrading the safety and quality of street foods is proposed under the Eleventh Plan. It will have two components of ‘Safe Food Towns’ and ‘Food Corner/ Food Court’.

Decentralisation of plan scheme for technology upgradation / expansion / modernization of food processing industries

The food processing industry in India occupies a unique position in the Indian economy in terms of its potential for employment generation, increasing the farmers’ income and export growth. With a view to provide for improvement of processing capabilities the scheme for technology upgradation/expansion/modernization/establishment being implemented by the MFPI is proposed to be decentralized during the Eleventh Plan period by way of implementation through Banks and financial institutions to provide a thrust and wider coverage for food processing industries in the country and simultaneously decentralise the procedures for appraisal, grant of assistance and monitoring.

4.24 GOVERNMENT OF INDIA MINISTRY OF FOOD PROCESSING INDUSTRIES

PLAN OF ACTION

The Ministry of Food Processing Industries is celebrating the year 2008-09 as “Food Safety & Quality year”. Food safety is a growing concern across the world. There is an increasing need to provide greater assurance about the safety and quality of food to consumers. Food standards are expected to acquire greater importance, given increasing concerns on food safety on the one hand, and growing consumer demand for products which are healthy on the other. You will agree with me that the concept of food safety and quality is important for all stakeholders starting from the farmers to the processors, to the retailers and to the consumers. The present initiative of the Ministry aims to meet certain requirements of the sector. This initiative was primarily to bring together the proposed initiatives of this Ministry as well as related Schemes proposed by other Ministries such as Ministry of Agriculture, Department of Commerce, Ministry of Health, and Department of Consumer Affairs all which are directly involved in the implementation of the Food Safety and Standards Act, 2006. The close cooperation of various State Governments would also be required for the implementation. All the concerned Ministries/ Organisations will identify such initiatives relating to food quality & safety either in the form of existing schemes or which are proposed to be taken up by them during the course of the year. This will give us an opportunity to focus on the thrust areas of Food Safety and Food Quality to be achieved through a clearly defined set of steps, with timelines for each.

The following are the components of a Food Safety and Quality Year 2008-09:

4.24.1 IMPLEMENTATION OF FOOD SAFETY AND QUALITY YEAR UNDER 11 TH PLAN SCHEMES

(i) Under the new scheme of upgradation of hygiene and quality of street food of the Ministry, 10,000 street vendors across the nation would be identified, profiled and steps taken up to upgrade the safety and quality of food. They would also be granted quality certification on the basis of standards which have already been worked out by the Ministry. Under this programme, 10 food
streets with ethnic cuisine will also be identified under which the majority of stakeholders would be upgraded in terms of quality and hygiene and support given for creation of infrastructure such as drainage, water supply, lighting, etc., so that these efforts result in more hygienic and safe conditions of food preparations.

(ii) National and regional industry associations would be involved in identifying units and launching a programme for capacity building through HACCP or ISO 22000 for the food processing units who are members of their Organisations. 10,000 units could be targeted who would be taken up; profiled and detailed programmes drawn up for upgradation and follow up steps launched. Certification would be achieved within a period of 18 months.

(iii) Preparation of a protocol based on best international and trade standards and conducting checks against the prepared protocol in HACCP certified units. The field protocol will be evaluated and companies graded into Platinum, Gold and Silver categories.

(iv) 50 food safety laboratories will be identified who would be benchmarked against industry best practices and a plan of action drawn up for their upgradation. Steps will be initiated to bring them up to best practice levels within the next 2 years.

(v) Good Agricultural Practices (GAP) have already been identified as a thrust area for improving traceability, hygiene and safety of food items. Over the country as a whole, 10,000 farmers would be identified (approximately 500 in each State) who would be taken in a step by step process to achieve certification of GAP or for organic food. Viable projects would be created so that the agri-horticultural produce from these farms are marketed and the returns accrue to the farmers.

(vi) 10 abattoirs would be taken up either by modernization of existing abattoirs or setting up new abattoirs in a public private partnership mode. The programmes for their upgradation would be approved and worked out. These would also be linked through cold chain, to a retail network so that there is discernible impact on the quality and safety of processed meat.

(vii) Fruit Products Order and Meat & Meat Food Products Order would be reviewed in consultation with stakeholders and modern forward linking and internationally benchmark marked regulatory systems prepared for consideration of the Central Food Authority.

(viii) The Ministry will undertake a Gender Sensitivity Programme by developing a standard for gender sensitivity for food processing units. The minimum facilities to be provided and the certification process in this regard would be developed and compliance rewarded.

(ix) The current Food Safety Standards under the Prevention of Food Adulteration Act would be reviewed in consultation with stakeholders and the revised proposals drawn up for consideration of the Central Food Authority.

(x) The Ministry will draw up a programme to identify innovative food products and practices by a process of rigorous selection. The winners will be identified who would be rewarded in an event to be organized at the end of the year.

(xi) A micro level study and survey to be commissioned to estimate the level of wastages under various crops and the steps which are required to eliminate them.

(xii) State level studies to be initiated to estimate the level of pesticide and other residues in food products as well as estimate the nutritional contents of diet in various parts of the country.

(xiii) APEDA has already initiated preparation of a directory of exporters of agricultural processed food. This will be completed and distributed.

(xiv) A study to be commissioned to prepare an action plan for a rapid response system for identification and responding to safety issues in the food processing sector.
(xv) FICCI has already prepared the details of an international portal to assist investors in the food processing sector. This will be expanded to cover the sub sects of investor interest and made more informative and operational.

(xvi) Bureau of Indian Standards has been working on developing standards for the street food sector. This will be finalised and used as an input of the street food sector programmes of the Ministry.

(xvii) A study will be commissioned to identify the standards prescribed under Codex Alimentarius which are relevant to Indian markets, the gap with existing local standards and action points.

(xviii) A brochure will be brought out on the food safety issues faced by a housewife and safe practices required in the kitchen. This will be widely disseminated.

(xix) Food safety issues need to be introduced into the school curriculum. Proper teaching material will be drawn up through an expert group.

(xx) A book on Indian cuisine and its relation to cultural aspects will be brought out in collaboration with private corporate. Alternatively, the best few books in the area of cuisine and food will be identified and rewarded.

(xxi) Food clusters will be identified which will be taken up for HACCP and quality upgradation through CII and FICCI. At least 3 organic food clusters will be identified and the farmers linked to sustainable market outlets.

(xxii) A year long programme for holding short duration workshops and seminars at various places in the country on topical issues relating to food safety and quality will be organized.

(xxiii) A postage stamp to commemorate the Food Safety and Quality Year 2008-09 will is launched.

4.25 NEW OPPORTUNITIES FOR FOOD PROCESSING INDUSTRY IN INDIA

India’s homogeneous market size endowed with growing incomes and changing life styles has created incredible market opportunities for food producers, machinery makers, and food technology and service providers. The food processing industry has great export and employment potential. The policies are investor-friendly and more importantly technological and human resources are available aplenty in the country. The competitive edge enjoyed in terms of raw material and labour offers lucrative opportunities. However poor perception of quality and the indifferent image of Indian products are preventing Indian food products to penetrate global markets in a big way. While developing countries like Thailand have exploited the global markets in a big way by fine-tuning quality management aspects of their food processing industry, India are yet to make headway on this front. Production of high quality processed foods meeting international quality standards & regulations may very well open new frontiers for Indian food products. This will not only create a dynamic and competitive domestic food processing industry but will also enable India to become a major player in the global food market. An attitudinal change towards quality is essential. Several thousand crore worth of farm produce is lost every year due to inefficient post-harvest practices for storage and processing. On one hand is the growing demand for food products, which are difficult to meet due to limited resources and on the other, there exists abnormally high wastage in the farm sector due to inefficient technology in storage, processing and handling. It is, therefore, imperative to introduce state-of-the-art technology in the food-processing sector to minimise post-harvest losses. It also calls for a concerted attention to a few selected food products where India has or can develop a competitive edge over other countries.

FDI
The sector has been attracting substantial FDI also and is among the top ten sectors getting FDI equity. FDI up to 100 per cent equity is permitted under the automatic route in food and infrastructure like food parks and cold chains. There are many areas for investment in this sector which include mega food parks, agri-infrastructure, supply chain aggregation, logistics and cold chain infrastructure, fruit and vegetable products, animal products, meat and dairy, fisheries and seafood cereals, consumer foods/ready to eat foods, wine and beer, machinery/packaging.

Productivity and progress
It is essential to understand the dynamic relationship that exists between productivity and progress. The basic fact is that until both the farmers as well as the processors are convinced of benefits that accrue through productivity, the productivity campaigns will remain ineffective. So the main challenge is to introduce the concepts of productivity and make it work under a variety of constraints for the sustainable growth of the industry. In the process of globalisation, the Indian food processing industry will be facing increased competition, particularly in domestic markets in addition to the uncertainties prevailing in the international markets. It is in this context that emphasis must be given to improve productivity and quality. Undoubtedly, better performing firms will have a competitive edge over others. In order to maintain the tempo of productivity and quality, the National Productivity Awards have thus assumed much greater significance. The ministry of food processing industries on its part, is leaving no stone unturned to achieve the multiple objectives of stepping up the growth, higher farmer income, reduction in wastage, providing nutritious and safe food and enhancing employment opportunities. It has initiated measures to deal with the major constraints being faced by the industry such as affordability and cost of processed foods, linking of farmers and processors, supply chain and post harvest technology, infrastructure, finance, food safety, hygiene and taxes. With the active support and cooperation of all the stakeholders the ministry is confident of providing the necessary momentum for the rapid growth of the food processing sector and usher in a new era in the Indian economy.

Vision 2015
Given the strengths and opportunities of the food processing sector, a Vision 2015 has been developed by the ministry of food processing industries, together with an appropriate strategy and implementable action plan so as to enhance farmer income, generate employment opportunities, provide choice to consumers at affordable price and contribute to overall national growth by increasing: the level of processing of perishables from six per cent to 20 per cent, value addition from 20 per cent to 35 per cent and share in global food trade from 1.5 per cent to three per cent. Vision 2015 aims at enhancing and stabilising the income level of the farmers by assuring wider and better choice by enhancing dynamism, competitiveness, by ensuring safety and quality of food by introducing a transparent and scientific system of standards. To achieve these aims a transparent and industry friendly regulatory regime is proposed to be established:

* Making the sector attractive for both domestic and foreign investors.
* Achieving integration of the food processing infrastructure from farm to market.
* Having a transparent and industry friendly regulatory regime. Putting in place a transparent system of standards based on science.

To achieve the stated Vision, the ministry has prepared an Action Plan for energising the food processing sector during the 11th Plan.

Main initiatives

**Cold chain:** To address the situation and with a view to create a modern cold chain for preservation and value addition of perishables, during the 11th Plan, the ministry is launching a revamped comprehensive Cold Chain Infrastructure Scheme for creating integrated cold chain infrastructure at different levels - farm level primary processing center-cum-cold chain, collection/aggregation centres and Strategic Distribution Centres (SDC). The SDCs will have integrated infrastructure facilities like material handling equipment, refrigeration, IQF/Blast freezing facility, Frozen/CA/MA Storage, modern packaging facilities, ancillary equipment like X-ray, weigh bridge etc. The SDCs will be linked to retail supermarkets.
**Mega food parks:** A new scheme of Mega Food Parks in the country is proposed which is envisaged to be a well defined agri/horticultural processing zone containing state-of-the-art processing facilities with support infrastructure and well established supply chain. The proposed scheme aims to provide a mechanism to bring together farmers, processors and retailers and link agricultural production to the market so as to ensure maximisation of value addition, minimise wastages and improve farmers' income. The Mega Food Park is designed ultimately to link the farmers with the retail markets with minimising of the intermediaries. These food parks will function as sourcing hubs for the retail outlets.

**Abattoirs:** Hygienic and scientific slaughtering as well as optimum utilisation of by-products are issues of grave concern of the Indian meat industry. It results in tremendous waste, contamination and avoidable cruelty to animals. The ministry is launching a comprehensive scheme for modernisation of existing abattoirs/establishment of modern abattoirs at 100 locations across the country on a PPP mode.

**Capacity building:** The ministry has also taken up quality assurance, R&D, HACCP, Human Resource Development and establishment of laboratories to support the Food Safety and Standards Act. The ministry of food processing industries has taken many steps to give impetus to this sector which include virtual delicensing of the sector, inclusion in the priority sector for lending, allowing 100 per cent FDI except in alcoholic beverages and retail, several duty and tax reliefs, financial assistance for infrastructure building, setting up of food processing units etc. In case of export-oriented units, foreign investment is permitted even in case of items reserved for small scale sector. In addition, the export oriented units are given a number of incentives and concessions under the export-import policy, such as, duty free import of capital goods, raw materials and intermediates, export income being exempt from corporate tax etc. FDI inflow in food processing is becoming stronger.

**Food Parks**

In a bid to boost the food sector, the Government is working on agrizones and the concept of mega food parks. Twenty such mega parks will come up across the country in various cities to attract Foreign Direct Investment (FDI) in the food processing sector. The Government approved 105 proposals between January 2002 and May 2005 from foreign industrialists to set up food processing industries in India involving Rs.643.47 crore (US$ 144 million). The ministry has released a total assistance of Rs.105.22 crore (US$ 23 million) to implement the Food Parks Scheme. It has so far approved 50 food parks for assistance across the country. The Centre also plans Rs.100 crore (US$ 22 billion) subsidy for mega food processing parks.

**4.26 SUMMARY**

The Food Processing Industry is an important sector of the Indian economy. The food processing industry sector, which leap-frogged during the period 1990-95 has slowed its pace in the past half decade as, the manufacturers have realized that the consumer is yet to familiarize himself with the products available in the market. The food industry contributes about 18% of India’s manufacturing output and around 5% of total industrial investment. The estimated turnover of this highly heterogeneous food and beverage industry exceeds Rs. 570 billion. Niche segments comprising packaged and branded food products have recently witnessed rapid growth accompanied by intense competition. Nearly 52% of the Indian household budget is spent on food items and the share of processed food entering the market is expected to rise rapidly. Both in terms of foreign investment and number of joint ventures / foreign collaborations, the consumer food segment has top priority. By last year, foreign investment of Rs. 20.870 Million had been proposed. Deep sea fishing and aquaculture, milk and milk products, meat and poultry segments attracted attention of foreign investors, interest is also growing in fruit and vegetables and grain / cereal based products. Maharashtra has been one of the major producers of fruits and vegetables, milk and meat products. Maharashtra has 10 to 15% production share of agro produce related to processed industry. Maharashtra and Gujarat will continue to dominate this industry with more than half the nation’s output and value addition.
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