
UNIT 2 FOOD PROCESSING INDUSTRIES

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2.0 OBJECTIVES

After reading this unit, you should be able to:

- know scenario of food processing industries in India and world;
- explain trends of consumption of processed food;
- describe problems, prospects and status of food processing industries;
- learn about livestock and aquacultural processing industries; and
- explain national food processing policy.

2.1 INTRODUCTION

Food processing industries are major industries in developed countries. In developing countries, it is in growing stage. The food processing industries include cereals, pulses, oilseeds, bakery, horticultural crops, livestock and aquacultural produce etc. Now food is a global commodity and hence its processing industries will play important role in economy of any country. Type of food is now governed by consumers. The food processing in India is mainly done by unorganized sectors. So, there is a need to know the status of food processing industries in India. The present unit covers the status of food processing industries in India, trends of food consumption, major processing industries of India and National Food Processing Policy.

2.2 FOOD PRODUCTION IN INDIA AND WORLD, PROCESSING AND VALUE ADDITION

The global food industry, with a value of US\$ 2.2 trillion annually, is the single most important industry in the world economy. Food industry is expected to be worth \$ 10 trillion by 2028 and most of this growth will come from developing world. The direct impact of the sub sector on growth and indirect stimulus to other type of economic activity carry important implications for employment, exports, food security and living standards. The development of food industries mainly depends upon the raw material coming from agriculture. The production of food grains of the world and percent share of India is given in Table 2.1.

Table 2.1: Production of major agricultural commodities and India' share in 2001

S.No.	Commodity	World production ('000 tons)	% Share of India
1.	Paddy	601128	21.9
2.	Maize	602814	1.9
3.	Wheat	585421	12.3
4.	Groundnut (in shell)	33802	17.7
5.	Sugarcane	1259906	23.3

On an average, agro-industries accounts for about 2% of GDP in developing countries but 9% in developed countries. The value of agro-processing is about three to four times that of agriculture in developed world, while it is typically a fraction of the value of agriculture in developing world. In developed countries, the share of total value added products in agro industries is 20-30%, whereas in developing world it is 30-45%.

The distribution of agro-processing industries within the developing world is relatively unequal. In 1997, 40% of agro-processing value added products in developing countries were concentrated in South and East Asia and Latin America. Among the developing countries, India ranked fourth with 9% value added products of the contribution from developing world. Trade in food products is increasing with a growth rate of 9.4% each year compared with an annual growth of 2.1% for agricultural commodities. Growth has been concentrated among developed countries. About 85% of European Union food exports are processed food while 60% of African export are primary commodities.

Now food is a global commodity. Food is traded and shipped around the world. The modern grocery store sells food from all over the world. These food might include cheese from Europe, beef from Australia, strawberries from Mexico, and apple from Argentina. The food processing industries are opening subsidiaries in other countries and fast food companies are opening outlets all over the world. Globalization and WTO will affect the world food processing industries to a great extent with the new global standards and food safety regulations.

2.3 PARTS OF THE FOOD INDUSTRY

The food industry is divided into four major segments:

- i) Production
- ii) Manufacturing/processing
- iii) Distribution
- iv) Marketing

Production: Production includes such activities as farming, ranching, orchard management, fishing and aquaculture. Technologies involved in production of the raw materials include the selection of plant and animal varieties, cultivation, growth, harvest, slaughter, and the storage and handling of the raw materials.

Manufacturing/processing: Manufacturing converts raw agricultural products to more refined or finished products. Manufacturing requires many unit operations and processes that are at the core of food sector.

Distribution: Distribution deals with those aspects conducive to product sales, including: product form, weight and bulk, transportation, storage requirements and storage stability.

Marketing: Marketing is the selling of foods in raw and processed form and involves wholesale, retail, institutions and restaurants

These four divisions are rather artificial as these actually overlap one another. Nevertheless, the food industry requires planning and synchronization in all its divisions to be successful. Another way of dividing the food industry is along major product lines:

- Cereals and bakery products
- Meats, fish and poultry
- Dairy products
- Fruits and vegetables
- Sugars and other sweets
- Fats and oils
- Non alcoholic beverages/alcoholic beverages

These divisions are typically where consumer consumption is measured and reported. Each segment can be divided into number of sub-segments. For example cereal processing may include wheat processing, pulse processing, bakery industries, weaning foods industries, fast food manufacturing etc.

Allied industries: Many companies do not sell food directly but they are deeply involved in the food industry. These are called allied industries. Allied industries produce non-food items that are necessary for marketing food. The packaging industry is a good example. Some specific examples include cans, food colour and flavour, paper products, and plastic products. Chemical manufacturers represent another group of allied industries. They supply the acidulants, preservatives, enzymes, stabilizers, and other chemicals used in foods. Monitoring and regulatory agencies such as the BIS, APEDA, FPO, Food & Drug Administration (FDA), lawyers, consumer action and information agencies, and other regulatory agencies are also part of allied industries.

2.4 TRENDS IN CONSUMPTION OF PROCESSED FOOD

Although expenditure on food has increased considerably over the years, the increase has not matched the gain in disposable income and hence percentage of income spent on food has declined. As income rises, the proportion spent for food declines.

Americans spent only about 8 percent of their personal consumption expenditures for food to be eaten at home. This compares with 10 percent for Canada and 11 percent for the United Kingdom. In less developed countries, such as India and the Philippines, at home food expenditures often account for more than 50 percent of a household's budget. In India, the percent total personal consumption expenditures spent on food consumed at home is 51.3%.

Consumption trends change over the years, and this influences what the food industry does. However, demand for individual foods is more responsive to prices as consumers substitute among alternative food commodities. Rising incomes increase expenditures on more expensive foods, as consumers demand more convenience and quality. Demographic factors, such as changes in household size and the age distribution of the population, can bring about changes in consumption.

Away-from-home meals and snacks now capture almost half (45 percent) of the U.S. food dollar. This is up from 34 percent in 1970. Fast food accounts for the largest and fastest rising share of sales in the food industry. Sales in fast-food industries now outpace the sales in full-service restaurants. People want quick and convenient meals. They do not want to spend too much time in preparing meals, travelling to pick up meals, or waiting for meals in a restaurant. Consumers want to combine mealtime with time engaged in other activities such as shopping, work, or travel. For example, McDonald's, Pizza hut, KFC, Burger King, Taco Bell, and others are now located in convenient outlets.

2.5 STATUS OF FOOD PROCESSING IN INDIA

India is the world's second largest producer of fruits & vegetables, but hardly 2% of the produce is processed. India is the land of spices producing all varieties worth over Rs. 3500 crores (US \$ 900 million) amounting to 25-30% of world production, which is processed for value-addition and export. It grows 22 million tonnes of oilseeds covering most of the varieties. Other important plantation products include tea, coffee, cocoa and cashew.

India's livestock population is largest in the world with 50% of world's buffaloes and 20% of cattle, but only about 1% of total meat production is converted to value added products. India is the largest milk producer in the world but only about 15% of the total milk production is processed through the organized sector. Size of the semi-processed and ready to eat packaged food industry is over Rs. 4000 crores (US \$ 1 billion) and is growing at over 20%.

India has become a surplus producer of food from being an importer of food grains. However, India does not figure significantly in the world trade of food and food products. Food processing industry in India has been stagnant for a long time, although consumers in India spend more than half their expendable income on food, beverages and tobacco totalling almost Rs. 4000 billion.

There are a large number of small and medium size processing units and only a few large process houses. There are more than 800 flour mills, almost 600 fish processing units with about 4500 cold storages, over 5000 fruit and vegetable processing units, 170 meat processing units, about 650 soft drink units, more than 400 sugar mills and 700 solvent extraction units. With bigger units run by multi national companies, the number may not change significantly but there might be a qualitative change in the character of the industry.

Processed food industry ranks 5th in size in India accounting for about 5.5% of GDP, employing more than 1.5 million workers in the industry with a size of about US\$ 30 billion. More than 75% of the industry is in unorganized sector in terms of turnover with value added foods account for US\$ 17 billion. The size of semi-processed and ready-to-eat/package food industry is about US\$ 1 billion.

Processed foods worth over US\$ 4 billion were exported in 2002-03, of which rice is about 46% and marine products about 34%. Major exports besides rice and fish products, have been fruits and vegetable products, meat and poultry products both fresh and frozen, egg products and tea. There are good prospects of having grains and grain products as well as milk and milk products also among the major export items.

Check Your Progress Exercise 1



- Note:** a) Use the space below for your answer.
b) Compare your answers with those given at the end of the unit.

1. How the food industries are segmented?

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2. What is the status of food processing in India?

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2.6 MAJOR FOOD PROCESSING SECTORS THEIR STATUS, PROBLEMS AND PROSPECTS

Food processing industry in India can be segmented as follows:

1. Cereal/ pulse milling
2. Fruit & vegetable processing
3. Milk & milk products
4. Beverages like coffee, tea & cocoa
5. Fish, poultry, eggs & products
6. Meat & meat products
7. Aerated waters/soft drinks
8. Beer/alcoholic beverages
9. Bread, biscuits & other bakery products
10. Edible oil/fats.
11. Confectioneries
12. Breakfast cereals, malt protein, weaning, extruded food products

2.6.1 Problems in Food Processing Industries

At present most of the industries are in unorganized sectors. So, numbers of problems are arising from different sections of the industries. Some of the basic problems encountered by Indian food industries at different levels are given below.

Farm level problems

- Poor yield of farm produce and therefore low returns
- Lack of material resources necessary for development
- Primitive methods of farming
- No control on quality of inputs and lack of finance to manage.
- Vagaries of weather
- Unavailability of reliable handling and transportation system
- Lack of storage facilities at farm

Distributors problems

- Lack of modern transportation facilities and high cost
- Inadequate cold storage facilities
- Irregular quality of farm produce

Processing industries problem

- Financing
- Higher import duties
- Higher cost of raw material and packaging
- Inadequate transport and cold storage facilities
- Infrequent availability of refrigerated containers
- Staggering advertising costs
- Limited domestic market

Consumer discontent

- Does not get value for money
- The price variation is a day to day affair
- Continued dependence on seasonal products
- Lack of variety of semi processed or prepared convenience food at affordable prices.

The reasons for slow growth of processed foods in India in past are many. Majority of the population has low-income levels and cannot afford processed foods. Indians traditionally prefer fresh foods that are cooked rather than use preserved foods. There is also no national character for food habits and these keep changing from region to region. However, the scenario is changing with some foods especially the fast foods acquiring the national character. Also some foods such as idli, dosa, some Punjabi foods like chhole, alu mutter etc., some Chinese foods and now the western foods like burgers and pizza are fast gaining national popularity.

There are some factors that impede growth in this industry. Transport (both road and railways) and communication are poor. This causes special problems for perishable products. There are no reliable cold chains, which are necessary for temperature sensitive foods like fruits & vegetables, ice creams etc. Modernization is unaffordable for small-scale manufacturer but the large companies do not find investment justifiable due to small size of market. Packaging costs are high. Even the retail business in small stores so large that an inventory needed to display various brands and that is lacking. Supermarkets are not yet popular although a few are making appearance.

2.6.2 Prospects

Indian government is now making an effort to promote better growth of this industry by giving it a priority sector status for lending by banks, most of the industry (except in alcoholic beverages and those products reserved for small scale), have been exempted from licensing, have relaxation in small scale reservation, foreign technology agreements, agro-based export oriented units, assistance in research and development etc. Government is also trying to improve infrastructure support such as cold chain facilities, transport, storage warehouses, etc. Governments are setting up Food Parks, 10-year tax holiday, and replacement of PFA Act with a new more rational act. The bill for Integrated Food Law is likely to be introduced in the Parliament.

Because of liberalization and other developmental measures being taken, future of the industry looks very bright. To some extent cold chain is being provided, which will help in retaining quality, freshness and reduce post-harvest losses. With the new hybrid varieties being added the production season is also being extended. These developments shall result in the greater availability of quality raw materials to the industry thus resulting in better capacity utilization and producing a wider range of products and of international quality. The quality is now the watchword for success. The multinationals now entering the food industry 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.

With the rise in the per capita income particularly of the middle classes a drastic change in the food habits has been noticed. This will lead to an increased domestic consumption of processed foodstuffs.

2.7 CEREAL PROCESSING

India produces about 200 million tonnes of different food grains every year. All major grains like paddy, wheat, maize, barley, and millets like jowar (great millet), bajra (pearl millet) & ragi (finger millet) are produced in the country.

The country is self sufficient in grain production and is the second largest wheat and rice producer in world, with a 20% share in total world production.

Primary milling of rice, wheat and pulses is the most important activity in food grains. There are over 91,000 rice hullers and 2,60,000 small flourmills engaged in primary milling. Further there are about 43,000 modernized rice mills/huller-cum sheller and the quantity of rice bran processed for bran-oil extraction stood at 3.4 million tonnes in 1999-2000.

Around 820 large flourmills in the country convert about 10.5 million tonnes of wheat into wheat products. Branded rice is becoming popular in the country and significant corporate presence is there in the domestic as well as export markets. Some quantity of wheat and wheat products is also exported.

The total market of bakery product, bread and biscuit is 1.5 million tonne and 1.1 million tonne respectively in year 1998. The cake market alone is estimated at 0.4 million tonne. The organized segment of the biscuit market is estimated to be 0.44 million tonnes whereas the unorganized sector accounts for the balance 0.66 million tonnes. Bread market is estimated to be growing at around 7% per annum in volume terms, whereas the biscuit market in the recent years has witnessed a little higher growth at around 8-10% per year.

Besides the industrial areas in leading metropolis, the bakery products and confectionery are carried on small-scale basis also at household level. Whereas, the confectionery industry has developed remarkably with the international brands mingling with the domestic market toffees, chocolates etc. produced at large scale in important industrial regions of the country. During the last 2 decades, small and unorganized players shared the growth in the industry. Currently, there are an estimated 2 million bakeries across the country engaged in production of bread, biscuits and other products. The estimated annual production of bakery products in India is in excess of 3 million tonnes, of which bread accounts for nearly 50% and biscuits 37% in volume terms in the organized sector. Sugar-boiled confectionery, consisting of hard-boiled candy, toffees and other sugar-based candies, is the largest confectionary segments and valued at around Rs 2,000 crore. The confectionery industry has a current capacity of 85,000 tons; the market is growing at the rate of 10-15% per annum.

2.8 PULSE PROCESSING

In India, around 75% of pulses produced is consumed after having been milled for removal of the husk and splitting or after some processing. Losses take place at various stages after harvest viz. during storage, loosening of husk, at the time of processing, etc. Among post harvest operations, storage causes the maximum loss of 7.5%, processing, threshing and transport causes 1%, 0.5% losses respectively, aggregating 9.5% total loss. Though the main cause of low per capita availability is considered to be poor productivity and production but reduction in post harvest losses can enhance the availability to a considerable extent. However, most of the commercial technologies available for this purpose are either obsolete or inadequate and result in heavy losses due to breakage and powdering of the grain. Successful efforts have been made to develop improved technologies to reduce milling losses and improve product quality. Similarly there is a need for development and utilization of improved technologies for the manufacture of products based on grain legumes.

Conversion of pulses to dhal is the third largest food processing industry in the country after rice and wheat milling industries. It is estimated that about 75% of the pulses produced in the country are converted to dhal. Milling of pulses has been practiced as a small-scale rural operation from time immemorial and more recently as large commercial operation. About 30% of the production of pulses is retained by the farmers and is processed in rural sector using traditional techniques. Presently the dhal available in the market comes almost entirely from the large-scale mills. There are about 10,000 dhal mills working in various parts of the country processing different pulses throughout the year.

A majority of the 5500 mills, reported in the country are big and semi-automatic/ automatic. They process more than 80% of the pulses produced in the country. However, there is a good scope for new entrants in this field is of particular significance as pulses are the main suppliers of proteins and nutritious food to the poor masses.

Depending upon the scope for processing pulses, dhal-milling plants can be setup in rural areas so that the waste material available from this industry could be beneficially used for cattle feed and other purposes.

Many pulse milling machines, technology and process have been developed by different research organizations of the country to overcome most of the anomalies of the traditional methods. Some of these methods have better milling efficiency, more yield in lesser time and at lesser processing costs compared to the traditional process.

2.9 OILSEED PROCESSING

The vegetable oil processing and extraction industry also plays a vital role in our edible oil economy. It comprises the orthodox bullock driven crushers and the modern expander/extruder units. In recent times the processing sector has passed through a transitional phase, attempting to cope with the rapidly changing processing methods the world over.

Over the years the demand for both edible and inedible oils in India has been on the rise. The gap between demand and supply has been largely bridged by using innovative technologies and unconventional oil sources from forest based oilseeds. In recent years per capita consumption of edible oil has also been rising. It was estimated that edible oil demand would be about 7.1 million tonnes or 26 million tonnes of oilseeds. Although India produces about 7 million tones of edible oils annually, a gap may still arise as the industry sources are expecting an increase in our annual per capita consumption of edible oil to 9 kg. The domestic demand for edible oils has been growing at about 6.7 percent per annum whereas production only at 4.5 percent per annum.

The processing by the solvent extraction industry declined to 10.4 million tonnes in 1996 compared to 11.2 million tonnes in the previous year. Exports of oil meal, oilseeds and minor oils have reached 4.55 million tones) valued at Rs. 3766 crores (\$ 1067 million) during the year 1996-97 at against 4.54 million tonnes (valued at Rs. 2873 crore equivalent to \$ 820 million) in 1995-96, i.e. a quantum jump of 35 per cent over the previous year.

India has about 2.5 lakhs ghanis and kolhus and around 50.000 oil mills of different capacities. While most of the former categories have low

productivity, majority of the oil mills have only the capacity of 1 to 5 tonnes per day and about 150 are having that of 50 tonnes per day.

Vanaspati production has been growing at an annual rate of 1.6 per cent during 1990-91 to 1995-96. Yet of its 161 units, 49 have put down the shutter during 1996. The vanaspati producer's are pressing for decontrolling the use of mustard oil in vanaspati production. Now the Vegetable Oils Products (VOP) industry is permitted to use only certain specified varieties of mustard. High input cost is a major constraint faced by the manufacturers. The vanaspati industry's capacity utilization went down to 36 per cent in 1994-95 from a high of 66 per cent in 1987-88. The industry has also added substantial capacities in complete disregard to the market demand, 26.6 lakh tones in 1994-95 compared to 15 lakh tones in 1986-87.

For increasing domestic production potential for vegetable oil (edible & industrial) from non-conventional sources, and integrated approach is necessary for exploitation of non-traditional oilseeds. Soybean and oil palm are two promising oil bearing materials for achieving self-sufficiency for India.



Check Your Progress Exercise 2

- Note:** a) Use the space below for your answer.
b) Compare your answers with those given at the end of the unit.

1. What are the major problems and prospects of processing industries?

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2. What is the status of grain and oilseed milling in India?

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2.10 HORTICULTURAL CROP PROCESSING

The commercial processing of fruit & vegetables is less than 2%. The main reason being that domestic consumption of processed items is quite meagre

because of economic reasons and also as a matter of habit as consumers prefer fresh fruits & vegetables. The high cost of packaging pushes up the cost of the processed items and thereby makes them out of reach of the common man. Because of the varied agro-climatic conditions some fresh fruit & vegetable are available throughout the year.

Presently there are a little over 5198 units registered under the FPO distributed all over the country. Most of the units fall in the cottage and or small-scale sector. A few modern processing plants have, now come up and many more are in the pipeline. The installed capacity, which was 11.08 lakh tonnes, in 1993, increased to 21.00 lakh tonnes at the end of the year 1999. After the liberalization of the economic policies in the country, a few very modern plants produce mango pulp, tomato paste etc. in aseptic packing, freeze drying of many fruit & vegetables including mushroom is being taken up. It is expected that in the years to come, many modern state of the art plants shall come up.

The important items manufactured in the country are fruit pulps particularly of tomatoes & mangoes, ready to serve juices, canned fruits, jam, pickles, squashes, etc. Recently, items like frozen fruits, pulps, dehydrated & freeze-dried vegetables, canned mushrooms etc. are also being produced. In the coming years, new industries like carbonated fruit drinks, dehydrated and freeze dried fruits, fruit juice concentrates are expected to come up.

India in a small way has been in the export market for almost 30 years. Among the popular items in export are mango chutneys, pickles. Fruit juices, canned and dehydrated mushrooms, frozen & canned fruit & vegetables. In the year 1997-98 the exports of processed fruit and vegetables were in the order of 299 thousand tonnes valued at Rs. 761 crores (US \$ 200 million).

Due to the WTO Agreement, all the exporting units will have to follow the Codex Alimentarius standards. This makes the compliance easier as one does not have to try to comply with several different legal requirements of different countries. There are many processors who export their products to several countries. Codex Alimentarius also has another requirement and that is Hazard Analysis and Critical Control Points (HACCP). This has been incorporated to ensure safety of food products. Although this is new to most Indian manufacturers, several processing units have already incorporated these requirements in their units.

The future looks quite promising for food processing industry. It is bound to grow at much more healthy rate as many plans are implemented. Government has a big role to play in its development and has already given its willingness to help the industry.

2.11 LIVESTOCK AND AQUACULTURAL PRODUCE PROCESSING

2.11.1 Fish Processing

With over 8000 km. of coastline, 3 million hectares of reservoirs and 1.4 million hectares of brackish water, India has vast potential for fishes from both inland and marine resources. Units mostly exist in the small-scale sector as proprietary or partnership firms or fishermen co-operatives. Over the last decade, the organized corporate sector has become increasingly involved in preservation, processing and export of coastal fish. But the wide variety of fish

resources found in Indian inland waters, coastal areas and deep seas comprising India's Exclusive Economic Zone, still remain grossly under utilized

Processing of produce into canned and frozen forms is carried out almost entirely for the export market. In all, there are about 393 freezing units, 13 canning units, 160 ice-making units, 12 fishmeal units and also about 476 cold storage units. Processed fish products for export include: conventional block frozen products, individual quick frozen products (IQF), minced fish products like fish sausage, cakes, cutlets, pastes, surimi, texturised products and dry fish etc.

2.11.2 Meat Processing

India has a livestock population of 470 million that includes 205 million cattle and 90 million buffaloes. The country produces about 450 million broilers and 30 billion eggs annually. Animals, which are generally used for production of meat, are cattle, buffalos, sheep and goat, pigs and poultry. Mithun is also slaughtered for meat in North East and Sikkim. Rabbit meat is also used as a specialty in Kerala and some other states.

Consumption per head of both fresh and processed meat in India is very low at 1.5 kilograms. This compares with the world average of 35.5 kilograms. The production of meat and meat products has shown an impressive growth. The details of production of meat and meat products from 1994 to 1998 are as given Table 2.2.

Table 2.2: Production of meat and meat products (in thousand tonnes)

S. No	Meat product	1994	1995	1996	1997	1998
1.	Mutton and Goat Meat	637	647	669	670	675
2.	Pork Meat	366	420	420	420	420
3.	Poultry Meat	422	578	480	580	600
4.	Cattle Meat (Beef)	1290	1292	1202	1292	1295
5.	Buffalo Meat	1200	1204	1204	1205	1210

The total meat production in the country is 4 million tonnes, which includes beef, buffalo meat, mutton, goat meat, pork and poultry meat. However, only about 1% of the total meat is converted into value added products like sausages, ham, bacon, luncheon meat, kebabs, meatballs etc. The total meat export during 1999-2000 was Rs.845.00 crores consisting mostly of mutton and buffalo meat out of which 70% was contributed by export of buffalo meat.

The country has 3600 slaughterhouses, 9 modern abattoirs and 171 meat-processing units licensed under MPO. A few modern pork-processing plants are also coming up in the country. These are primary meat processing houses and are administered by local authorities. Most of them are outdated and use primitive technologies for the production of meat. There are very few modern facilities, although a few such units do exist for pork and bacon processing, for the integrated slaughter and processing of buffalo, sheep and goat meat and for

the processing of poultry meat. In addition to this, a large proportion of meat production is slaughtered in houses or small-unlicensed establishments.

Poultry processing is still in its infancy. There are only seven modern integrated poultry processing plants. However, there are a good number of small poultry processing units engaged in production of poultry meat products. There are five egg-processing units engaged in exporting egg products.

The level of processing in the Indian market is very small and the potential for rapid growth is therefore substantial. With the advent of fast food outlets in all the metropolitan centers, the impact on meat processing industry is immense. As per capita incomes rises and urban families live in smaller units, the demand for processed meat products, which can be rapidly cooked, will rise.

2.12 NATIONAL FOOD PROCESSING POLICY

The Government has come out with a draft national food processing policy with a vision to motivate farmers and food processors and to provide interactive coupling between technology, economy, environment and society for steady development of food processing activities to build up a substantial base for production of value added agro food products for domestic and export markets with a strong emphasis on food safety and quality enabling the farmers especially to realize direct benefits of new technology and marketing network and to ensure adequate availability of quality food products for the consumers at affordable prices.

The policy will seek to create an appropriate environment for the entrepreneurs to set up food processing industries through rationalization of tax structure, harmonization & simplification of food laws, promotion campaign to create market for processed foods by providing financial assistance to Industry Associations, NGOs/cooperatives, private sector units, State Government organizations. It also includes infrastructural development programs like establishment of cold chain, low cost pre-cooling facilities near farms, cold stores and grading, sorting, packaging facilities, application of biotechnology, remote sensing technologies, energy saving technologies and technologies for environmental protection, building up a strong infrastructural base for production of value added products with special emphasis on food safety and quality matching international standards etc. The policy has many backward and forward linkages between farmers, market, processors and consumers.

Check Your Progress Exercise 3

- Note:** a) Use the space below for your answer.
b) Compare your answers with those given at the end of the unit.

1. What is the status and prospects of meat processing industries?

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2. What is National Food Processing Policy?



2.13 LET US SUM UP

The food industry is divided into production manufacturing distribution and marketing. The industry is highly responsive to change and interrelated with others. Consumers drive the food industry and to some extent the food industry drives the consumer, making changes in food consumption, types and meals. Food is now a global commodity with changing trend scenario in the world.

The food processing industry in India is in its growing stage. It contributes 5.5% of GDP. Most of the foods processing industries are in unorganized sector. There are number of problems which are responsible for slow growth of food Industry. But the prospects of food industry are very good, as changes in the food habits have been observed in the recent past.

Cereal processing is the major food-processing sector in India. Numbers of bakery products are also produced in the India and the market is growing fast rate 7.5% of pulses produced in India is processed for preparation of dall. There are about 5500 processing mills in India. There are about 2.5 lakh *ghanis* in India. Vanaspati production sector is slow. The commercial processing of fruits and vegetables is only 2% in India. There are 5198 food processing units which are registered under food product order.

In fish processing the organized sectors are now coming up. There are about 393 freezing units in the country. Meat is one of the important export commodity in food processing export sector. Only 0.2% of total meat production is further processed at commercial scale. The poultry processing is in the starting phase.

The government has come out with a draft national food processing policy with a vision to motivate and provide interactive compiling between all stakeholders. The policy will seek to create an appropriate environment for the entrepreneurs to set up food processing industries through creating enabling environment, infrastructure development with backward and forward linkages.

2.14 KEY WORDS

National food processing policy : Draft of government on food processing policy of India.

- Food processing industries** : The industries engaged in commercial processing of foods.
- Allied industries** : The industries indirectly associated with food processing industries.
- Cereal processing** : The processing of cereals like wheat, paddy etc.
- Primary processing** : It includes cleaning/grading of raw material and dehusking.
- Pulse processing** : The processing of pulses to get the dall or any other product.
- Oilseed processing** : Processing of oilseeds to extract oil from oil-bearing seeds.
- Horticultural crop Processing** : Processing of fruits and vegetables to increase their shelf life and prepare other products.
- HACCP** : Hazard analysis and critical control points.
- Fish processing** : Processing of fish includes, freezing, canning, deboning etc.

Meat Processing: The processing of animal carcass for human consumption.

2.15 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress Exercise 1

1. Your answer should include following points:

- Classification based on units of industry
- Classification on food products

2. Your answer should include following points:

- Past and present status
- Future prospects and scope

Check Your Progress Exercise 2

1. Your answer should include following points:

- Problems of farmers, market, processor and consumers
- Future scope, government policies

2. Your answer should include following points:

- Cereal, pulses, oilseeds
- Processing industries, potential

Check Your Progress Exercise 3

1. Your answer should include following points:

- Meat, fish, poultry processing
- Present status
- Future scenario

2. Your answer should include following points:

- Vision of policy
- Linkages, creation of enabling environment, infrastructure

2.16 SOME USEFUL BOOKS

1. Economic Survey 2001-2002. Economic Division, Ministry of Finance, Government of India.
2. Fellows, P.J. (1998) Food Processing Technology, Principles and Practices. Woodhead Publishing Limited. Cambridge, England.
3. Parker, R. (2003) Introduction to Food Science. Thomson Learning Inc. New York.
4. Potter, N.N. and Hotchkiss, J.H. (1995) Food Science, 5th Edition. Chapman & Hall Publishing Inc, New York.