CHAPTER-II AGRO BASED INDUSTRIES IN INDIA

Introduction

Agriculture and industry have traditionally been viewed as two separate sectors both in terms of their characteristics and their role in economic growth. Agriculture has been considered the hallmark of the first stage of development, while the degree of industrialization has been taken to be the most relevant indicator of a country’s progress along the development path. Moreover, the proper strategy for growth has often been conceived as one of a more or less gradual shift from agriculture to industry, with the onus on agriculture to finance the shift in the first stage.

This view, however, no longer appears to be appropriate. On the one hand, the role of agriculture in the process of development has been reappraised and re-valued from the point of view of its contribution to industrialization and its importance for harmonious development and political and economic stability. On the other hand, agriculture itself has become a form of industry, as technology, vertical integration, marketing and consumer preferences have evolved along lines that closely follow the profile of comparable industrial sectors, often of notable complexity and richness of variety and scope. This has meant that the deployment of resources in agriculture has become increasingly responsive to market forces and increasingly integrated in the network of industrial interdependencies. Agricultural products are shaped by technologies of growing complexity, and they incorporate the results of major research and development efforts as well as increasingly sophisticated individual and collective preferences regarding nutrition, health and the environment. While one can still distinguish the phase of production of raw materials from the processing and transformation phase, often this distinction is blurred by the complexity of technology and the extent of vertical integration: the industrialization of agriculture and development of agro processing industries is thus a joint process which is generating an entirely new type of industrial sector.

Agro-industry, i.e. the processing, preservation and preparation of agricultural production for intermediate and final consumption, performs a number of crucial functions that support development and poverty alleviation. Agriculture in connection with industry needs to be recognised by senior-level policy makers and industry leaders as a competitive, value-adding business sector that has a positive
development impact and contributes to economic growth. Rather than focusing on agricultural productivity only, policy makers must consider the competitiveness of the entire agro-value chain. A comprehensive approach could include e.g. supporting small agro-producers and SMEs, enabling market access and developing a supportive institutional environment.

This chapter attempts to review some of these issues and assess the actual and potential role of the agro-processing industry in economic development. It starts by discussing the definition of the agro-processing sector along with the types of agro-processing industry and reviewing some of the statistical evidence of its economic importance worldwide. It then moves on to a discussion of the role that the agro-processing industry can play in economic development in the developing countries, before reviewing how conditions for agro-industrial development are currently changing worldwide as a result of changing trade policies and regimes and the evolution of both technology and food consumption patterns. The chapter then underlines the growing internationalization of agro-processing activities, in particular through the increasing importance of international capital activities, and the role played by multinational corporations in this process. Finally, it discusses elements of a conducive policy environment for promoting the agro-processing industry and for ensuring that the sector can provide the optimum contribution to economic development.

**Definition, Nature and Scope of Agro-based industries**

“Agro-based industry” is an omnibus expression. It could cover a variety of industrial, manufacturing and processing activities based on agricultural raw materials as also activities and services that go as inputs to agriculture. Some of the definitions are given below:

"Agro-based industries are those, which are involved in supplying the farm with agricultural inputs besides handling the products of the farm." -- INDIA, Famine Enquiry Commission, 1944;

"Agro-based industries are those industries which have either direct or indirect links with agriculture." -- S N Bhattacharya, Rural Industrialization in India, BR Publishing Corporation, Delhi, 1980, p 192;
“Village industry means any industry located in rural area, which produces any goods or renders services with or without use of power and in which the fixed capital investment per head of an artisan or worker does not exceed Rs 15,000/”- -- INDIA (Planning Commission) Village and Small Industries Sector Framework, New Delhi, July 1988, p 7; and

"An agro-industry is an enterprise that processes raw materials, including ground and tree crops as well as livestock. The degree of processing can vary tremendously, ranging from the cleaning and grading of apples to the milling of rice, to the cooking, mixing, and chemical alteration that create a texturized vegetable food. ... agro-industries can be roughly categorized according to the degree the raw material is transformed. In general, capital investment, technological complexity, and managerial requirements increase in proportion with the degree of transformation."

According to the traditional UN International Standard Industrial Classification of All Economic Activities (ISIC), which is quite rigid but useful for statistical purposes, agro-industrial production is present in many manufacturing sectors: 3.1 Manufacture of Food, Beverages and Tobacco; 3.2 Textile, Wearing Apparel and Leather Industries; 3.3 Manufacture of Wood and Wood Products, Including Furniture; 3.4 Manufacture of Paper and Paper products, Printing and Publishing; 3.5.5 Manufacture of rubber products.

A common and traditional definition of agro-based industry refers to the subset of manufacturing that processes raw materials and intermediate products derived from the agricultural sector. Agro-based industry thus means transforming products originating from agriculture, forestry and fisheries.

Indeed, a very large part of agricultural production undergoes some degree of transformation between harvesting and final use. The industries that use agricultural, fishery and forest products as raw materials comprise a very varied group. They range from simple preservation (such as sun drying) and operations closely related to harvesting to the production, by modern, capital-intensive methods, of such articles as textiles, pulp and paper.
Today, however, it is becoming even more difficult to provide a precise demarcation of what should be considered an agro-industrial activity: the impact of innovation processes and new technologies suggests a widening of the range of agro-industry inputs that could be considered, including biotechnological and synthetic products, for example. This implies that agro-industry today continues to process simple agricultural goods while also transforming highly sophisticated industrial inputs that are often the result of considerable investments in research, technology and innovation. Corresponding to this growing complexity of inputs is an increasing range of transformation processes, characterized by physical and chemical alteration and aimed at improving the marketability of raw materials according to the final end use.

All these factors – the growing complexity of inputs, the impact of innovation processes and new technologies, the sophistication and the growing range of the transformation processes – makes it increasingly difficult to draw a clear distinction between what should be considered strictly industry and what can be classified as agro-industry.

**Types of Agro based Industries**

There are a number of ways of classifying agro-based industries. Broadly these are classified as food and non-food industries. The food industries are much more homogeneous and are easier to classify than the non-food industries since their products all have the same end use. Most preservation techniques, for example, are basically similar over a whole range of perishable food products, whether they are fruit, vegetables, milk, meat or fish. In fact, the processing of the more perishable food products is to a large extent for the purpose of preservation.

Non-food industries, in contrast to the food industries, have a wide variety of end-uses. Almost all non-food agricultural products require a high degree of processing. Much more markedly than with the food industries, there is usually a definite sequence of operations, leading through various intermediate products before reaching the final product. Because of the value added at each of these successive stages of processing, the proportion of the total cost represented by the original raw material diminishes steadily. A further feature of the non-food industries is that many
of them now increasingly use synthetics and other artificial substitutes (especially fibres) in combination with natural raw materials.

Another useful classification of agro-based industry is in upstream and downstream industries. Upstream industries are engaged in the initial processing of agricultural commodities. Examples are rice and flour milling, leather tanning, cotton ginning, oil pressing, saw milling and fish canning. Downstream industries undertake further manufacturing operations on intermediate products made from agricultural materials. Examples are bread, biscuit and noodle making, textile spinning and weaving; paper production; clothing and footwear manufacturing; and rubber manufactures.

A further classification is related to the nature of the production process which, in many cases, can range from craft to industrial organization. For example, in some developing countries the same good may be produced both by handloom weavers working in their own home and by large textile factories that have sophisticated machinery and complex systems of organization and that produce a range of industrial products for the domestic and external markets. In such cases, it can be misleading to define agro-based industry just on the basis of the goods produced because only the second method of production mentioned has industrial characteristics.

<table>
<thead>
<tr>
<th>Items</th>
<th>Level of Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy products</td>
<td>37.00%</td>
</tr>
<tr>
<td>Meat</td>
<td>21.00%</td>
</tr>
<tr>
<td>Marine Fish</td>
<td>10.70%</td>
</tr>
<tr>
<td>Poultry</td>
<td>6.00%</td>
</tr>
<tr>
<td>Fruits &amp; Veg.</td>
<td>1.80%</td>
</tr>
</tbody>
</table>

(Source: Ministry of Food Processing Industries (MoFPI))

According to the International Standard Industrial Classification (ISIC) agro-industry consists of:-

- Food and beverages;
- Tobacco products;
- Paper and wood products;
- Textiles, footwear and apparel;
- Lather products; and
- Rubber products.

The Agro-processing industry can be classified based on raw material or final product. Classification of Agro-Processing industry based on raw material is shown in the Exhibit given below:

**Table 14: Categories of Agro-processing Industry**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Category (Based on Raw Material)</th>
<th>Finished Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cereals Based Industry</td>
<td>a) Wheat Flour&lt;br&gt;b) Biscuit Manufacturing&lt;br&gt;c) Confectionary and Bakery Items&lt;br&gt;d) Rice (puffed and flaked)&lt;br&gt;e) Rice Bran and Rice Bran Oil&lt;br&gt;f) Corn flakes&lt;br&gt;g) Canned Baby Corn&lt;br&gt;h) Starch Material</td>
</tr>
<tr>
<td>2</td>
<td>Pulses Based Industry</td>
<td>a) Gram Flour (Basen)&lt;br&gt;b) Namkeens (ready to eat snacks)&lt;br&gt;c) Papad&lt;br&gt;d) Whole or Split Dal</td>
</tr>
<tr>
<td>3</td>
<td>Oilseed Based Industry</td>
<td>a) Edible Oil&lt;br&gt;b) Animal Feed&lt;br&gt;c) Processed Seed (Sesame)</td>
</tr>
<tr>
<td>4</td>
<td>Fruits &amp; Vegetables Based Industry</td>
<td>a) Frozen fruits &amp; Vegetables&lt;br&gt;b) Chips &amp; Wafers (Ready to Eat snacks)&lt;br&gt;c) French Fries (Ready to eat snacks)&lt;br&gt;d) Dehydrated Vegetables&lt;br&gt;e) Ketchups, Purees &amp; Concentrates&lt;br&gt;f) Juices&lt;br&gt;g) Pickles</td>
</tr>
<tr>
<td>5</td>
<td>Spices Based Industry</td>
<td>a) Pastes &amp; Powders&lt;br&gt;b) Oleoresins&lt;br&gt;c) Aromatic Extractions</td>
</tr>
<tr>
<td>6</td>
<td>Dairy Based Industry</td>
<td>a) Skimmed Milk Powder, Ghee, Curd ,etc</td>
</tr>
<tr>
<td>7</td>
<td>Floriculture Based Industry</td>
<td>a) Fresh &amp; Dried Flowers</td>
</tr>
<tr>
<td>8</td>
<td>Fisheries Industry</td>
<td>a) Fish Processing&lt;br&gt;b) Fish meal&lt;br&gt;c) Fish / Prawn Pickle</td>
</tr>
<tr>
<td>9</td>
<td>Livestock &amp; Poultry</td>
<td>a) Processed Poultry Products&lt;br&gt;b) Meat Gravy Concentrates&lt;br&gt;c) Mutton &amp; Lamb Processing</td>
</tr>
<tr>
<td>10</td>
<td>Medicinal Herbs Based Industry</td>
<td>a) Medicinal Products</td>
</tr>
<tr>
<td>11</td>
<td>Cotton &amp; Jute Based Industry</td>
<td>a) Jaggery&lt;br&gt;b) Confectionary &amp; Bakery Products</td>
</tr>
<tr>
<td>12</td>
<td>Sugarcane Based Industry</td>
<td>a) Tea Powder&lt;br&gt;b) Coffee Powder</td>
</tr>
<tr>
<td>13</td>
<td>Plantation Crops based Industry</td>
<td>a) Honey&lt;br&gt;b) Mushrooms</td>
</tr>
<tr>
<td>14</td>
<td>Others</td>
<td>a) Honey&lt;br&gt;b) Mushrooms</td>
</tr>
</tbody>
</table>
### Swot Analysis of Agro Processing Industry in India

#### Table 15: Indian Agri-Business Facts and Figures

<table>
<thead>
<tr>
<th><strong>Points</strong></th>
<th><strong>Details</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Varied agro climate zone</td>
<td></td>
</tr>
<tr>
<td>2nd largest arable land (184 million hectares) in the world</td>
<td></td>
</tr>
<tr>
<td>Largest irrigated land (55 million hectares) in the world</td>
<td></td>
</tr>
<tr>
<td>Largest producer of wheat (72 million tonnes), accounting for nearly 15% of global wheat production</td>
<td></td>
</tr>
<tr>
<td>Largest producer of pulses (15 million tonnes), accounting for nearly 21% of global pulse production</td>
<td></td>
</tr>
<tr>
<td>Largest producer of milk (90 million tonnes)</td>
<td></td>
</tr>
<tr>
<td>Largest producer and exporter of spices</td>
<td></td>
</tr>
<tr>
<td>Largest producer of tea, accounting for nearly 28% of the global tea production</td>
<td></td>
</tr>
<tr>
<td>2nd largest producer of rice (92 million tonnes), accounting for nearly 22% of the global rice production</td>
<td></td>
</tr>
<tr>
<td>Largest producer of the world’s best basmati rice</td>
<td></td>
</tr>
<tr>
<td>2nd largest producer of fruits (50 million tonnes) and vegetables (100 million tones)</td>
<td></td>
</tr>
<tr>
<td>2nd largest producer of sugarcane (296 million tonnes), accounting for nearly 21% of global sugarcane production</td>
<td></td>
</tr>
<tr>
<td>3rd largest producer of coarse grains (31 million tonnes), including maize, accounting formerly 4% of global coarse grain production</td>
<td></td>
</tr>
<tr>
<td>3rd largest producer of edible oilseeds (25 million tonnes), accounting for nearly 7% of global oil seeds production</td>
<td></td>
</tr>
<tr>
<td>Largest livestock population</td>
<td></td>
</tr>
<tr>
<td>India produces 6.3 million tonnes of fish (3rd largest in the world)</td>
<td></td>
</tr>
</tbody>
</table>

The Exhibit below shows the highlights of the SWOT analysis of Agro-processing industry in India.
**Importance of Agro-Based Industries**

Agriculture is an important sector in the Indian economy. Worldwide India ranks second in farm output. Agriculture and allied sectors like forestry and logging accounts for nearly 1/5th of the GDP. The sector employs 60% of the total workforce. Although the share of agriculture in GDP has been declining, it is still an important economic sector and plays a significant role in the economic development of India.

Theoretical and empirical studies of the structural changes that accompany the development process have revealed a number of constant patterns. The most basic is a secular decline in the relative weight of the agricultural sector vis-à-vis non-agriculture as per capita income increases. This relative decline is observed as a fall in the share of agriculture in value added, employment, trade and per capita consumption. This goes together with a drop in the share of primary agricultural production in the value of the final product, and with a parallel increase in the agro-processing industry value added.
These observations have emanated the popular prescription that development necessarily involves a transfer of resources out of agriculture and that this is largely coterminous with industrial development. More recently, however, the development debate has increasingly focused on the far more relevant issue of whether and how the agricultural sector can be expected to make an optimum contribution to the overall process of economic growth. This question can be asked both regarding the size and functioning of the agricultural sector itself and regarding its links with the rest of the economy. More specifically, it can be argued that the development of agro-industry, for those countries with a comparative advantage in this sector, may contribute to achieving the proper balance between agriculture and industry.

A precise theoretical rationale for emphasizing the role of agro-industry during the process of development is provided by Hirschman’s linkage hypothesis, which postulates that the best development path lies in selecting those activities where progress will induce further progress elsewhere. Thus, an activity that shows a high degree of interdependence, as measured by the proportion of output sold to or purchased from other industries, can provide a strong stimulus to economic growth. While the issue of linkages will be discussed in some detail later, the general observation can be made here that, because of its high degree of interdependence with forward and backward activities, agro-industry can play a very important role in accelerating economic activity.
Employment and income generation

Agro-industry plays a fundamental role in employment creation and income generation. Particularly the food and beverages processing sector remains important at all levels of economic development. This sector is a leading employer in many developed and developing countries. Taking only into account countries where data is available the ILO calculates global employment in the formal food and beverages sector at 22 million. However, one should bear in mind that in developing countries an estimated average of 60% of workers in food and beverages are employed in the informal economy. In addition to the direct employment effect, vibrant agro-industry is found to generate employment in downstream and upstream sectors such as agriculture, commerce and services.

Agro-industry can play a strategic role in pro-poor growth strategies, particularly in developing countries where 75% of the poor live in rural areas. As possibilities for income generation are restricted in rural areas, rural non-farm earnings from trading, agro-processing, manufacturing, commercial, and service activities constitute a significant part of household income. For developing countries as a whole, non-farm earnings account for 30 to 45% of rural household income. They complement agricultural wages and serve household risk diversification and the evening out of consumption patterns. With low capital requirements and undemanding local marketing channels the rural non-farm economy offers opportunities for poor households particularly women, small-scale farmers and other smallholders, representing an important instrument for rural poverty alleviation. The development of agro-industry can also have an important impact on the local agricultural sector as well as the livelihoods of small holder farmers, provided they can produce on a stable basis, supplying regular quantity and quality.

In terms of employment composition, rural industries (manufacturing) account for approximately one fifth of rural non-farm employment, consisting mostly of occupations in agro-industries. Indirectly, however, other activities such as commerce and retailing, construction, equipment manufacture, transport, logistics and trade are typically associated with agro-related manufactures and agribusiness.
Table 16: Composition of Rural Non-Farm Employment by World Regions

<table>
<thead>
<tr>
<th>Nonfarm Share of Rural Workforce</th>
<th>Women's Share of Rural Nonfarm Employment</th>
<th>Manufacturing</th>
<th>Trade &amp; Transport (1)</th>
<th>Financial and Personal Services(2)</th>
<th>Construction, Utilities, Mining and Other(3)</th>
<th>Total Rural Nonfarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>10.9</td>
<td>25.3</td>
<td>23.1</td>
<td>21.9</td>
<td>24.5</td>
<td>30.4</td>
</tr>
<tr>
<td>Asia</td>
<td>24.8</td>
<td>20.1</td>
<td>27.7</td>
<td>26.3</td>
<td>31.5</td>
<td>14.4</td>
</tr>
<tr>
<td>Latin America</td>
<td>35.9</td>
<td>27.5</td>
<td>19.5</td>
<td>19.6</td>
<td>27.3</td>
<td>33.5</td>
</tr>
<tr>
<td>West Asia and North Africa</td>
<td>22.4</td>
<td>11.3</td>
<td>22.9</td>
<td>21.7</td>
<td>32</td>
<td>23.2</td>
</tr>
</tbody>
</table>

Notes:
1. Trade and transport includes wholesale and retail trade, transport and storage.
2. Other services includes finance, insurance and community and social services.
3. Other includes mining and quarrying, utilities, construction and other non-classified activity.
4. Country data weighted by size of total primary workforce.

Source: Haggblade, Hazell and Reardon (2005).

The importance of agro industry for employment is further emphasised by high and increasing levels of female involvement, especially in the non-traditional, high-value agro-chains (i.e. horticulture, fruits and fish products). Female employment in such sectors can range between 50 and 90% in different countries. However, strong gender segmentation in production and processing tends to consign women to more vulnerable forms of work (casual, temporary and seasonal), lower paid and more labour-intensive preparation and/or processing.

**Contribution to GDP and manufacturing**

An extended definition of the agro-processing sector which includes not only agro-industries but also distribution and trading activities, would roughly account for more than a third of the GDP in Indonesia, Chile, Brazil and Thailand, and between 20 and 25% in Sub-Saharan countries. The entire food system, including the production of primary goods and commodities, marketing and retailing, would account for more than 50% of developing countries GDP (based on World Bank, FAO and UNIDO databases).

Trends illustrate that there are large value-adding opportunities in agro-industry relative to agriculture. In low and middle income countries (see World Bank classification of developing countries according to income) the food processing sector is typically one of the largest industrial activities in terms of value-adding. Using the UNIDO Industrial Statistics Database 2005, agro-processing value added
as a share of GDP amounts to 4.3% for low income countries and 5% for lower middle and upper middle income countries. This, however, neglects artisan production and the informal sector, which are particularly important in low income countries. We can therefore safely assume that the figures heavily underestimate the true extent of agro-industry’s contribution to GDP in those countries.

Within manufacturing, the agro-processing sector occupies a significant position in overall turnover and value added in developing countries – though huge heterogeneity may exist among them. On average, productivity levels in food processing are above the manufacturing average, making it one of the more efficient economic sectors in least developed countries (classified according to the Human Development Index). Incremental investment here could benefit the overall competitive position of the countries in question (based on UNIDO Industrial Statistics Database 2005).

The agro-processing sector contributes more than 50% of total manufacturing value added in low income countries, 36% lower middle and 32% upper middle income countries. Or, put differently, agro-industry contributes a share of 61% to total manufacturing in agriculture based countries, 42% in countries in transformation and 37% in urbanised developing countries (WDR 2008). The source for above facts is Wilkinson and Rocha (2008).

**Promotion of Socio-Economic Development**

Strong synergies can exist between agro-industry, agriculture and poverty alleviation. Agro-industry provides capital and services to farmers (e.g. seeds and equipment, training, production and market information), promotes entrepreneurship, raises demand for agricultural products and connects farmers with markets through the handling, processing, marketing and distribution of agricultural products. As a result, productivity and quality of agricultural production, farm returns, and economic stability for rural households; food security and innovation throughout the value chain can be enhanced. Efficient agro-industry can therefore spur agricultural growth, and – accompanied by a strong link with smallholders – reduce rural poverty.

As economies become more sophisticated, economic structures are transformed and capital and labour are transferred from agriculture to the expanding agro-industrial
and related service sectors. Accordingly, the agribusiness-to-agriculture ratio increases. In the U.S. agribusiness contributes 13 times more to GDP than agricultural activities; in urbanized developing, countries the ratio remains at 3.3; in transforming countries it falls below 2 and in agriculture-based countries it reaches merely 0.6 (Wilkinson and Rocha, 2008).

Crucially, the contribution of activities which define an increasing agribusiness-to-agriculture ratio (e.g. agro-related industries and distribution services) is highly correlated with basic measures of socioeconomic development. Although such relationship can be expected, it is particularly strong for countries at low levels of human development, mostly agriculture-based countries. (The ultimate allocation of wealth produced by the value chain, however, will depend, amongst others, on the bargaining powers of intermediaries, agro-food processors and farmers).

**Figure 7: Correlation between Human Development and the Agribusiness-to-Agriculture Ratio**

![Graph showing correlation between human development index and agribusiness-to-agriculture ratio.](image)

*Source of data: Jaffee et al (2003) and Human Development Statistics (UN)*

**Stabilization and Regeneration**

The development of rural agro-industries can play a major strategic role in stabilising and regenerating countries and in consolidating rural and regional development. It can do this by providing employment and supporting wealth creation and economic growth in a decentralised manner in areas that have been affected by internal conflicts, natural catastrophes or out-migration resulting from uneven regional development.
Developing agro-industry in such areas promotes a more balanced, decentralised growth within the country by generating productive employment alternatives. It thus not only reduces migration, especially of young unskilled labour into crowded cities, but it can even reverse migration trends by offering new employment opportunities in those affected areas, thereby alleviating social pressures and demands on public services within the city.

**Integration with Global Markets**

By introducing and accelerating technical innovations, promoting entrepreneurship and improving business practices along the agro value chain, agro-based SMEs not only provide access to new domestic market outlets, but can essentially act as a launching pad for the integration of developing countries into global markets.

Developing countries have a natural comparative advantage in global markets in many agro-industry sectors. They have shown that they can be competitive in traditional tropical crops, but also in non-traditional exports and in components of the animal protein complex. Non-traditional food exports such as fruits, horticulture and fish products, as well as livestock products, have already become an important part of exports. However, due to protective trade regimes and distorted tariffs in developed countries, developing countries have been unable to increase their overall market share in world agricultural trade (including agricultural raw materials, fisheries, processed food, beverages and high-value products) since the 1980s.

Despite continuing barriers to trade, it is believed that developing countries can identify and explore export market opportunities by developing their agro-industry. The markets for organic, fair trade and origin products, for instance, are high-value outlets for agricultural products and demand from developed and some middle-income developing countries has been growing strongly over recent years. With the help of a competitive agro-industry that increases value-added and improves product safety and quality, the efficiency of technical processes and business practices, access to such potentially lucrative speciality markets would be facilitated. Crucial for successful integration into global agro-markets, however, are also issues such as adherence to standards, quality consistency, volume requirements and timely delivery.
New Growth Opportunities for Agro-Industry

Markets in Developing Countries

Already around 80% of global food and beverage sales consist of processed products, with 60% being consumed in high income countries (Wilkinson and Rocha, 2008). Although households in developing countries spend a large share of total expenditures on food, most is on non-processed products. In 2002, per capita retail sales of packaged food in high income countries were more than 15 times the value found for low income countries. But growth in consumption of packaged food is fastest in the developing countries: 7% in upper middle, 28% in lower middle and 13% in low income countries, compared to just 2 to 3% per year in high income countries.

Figure 8: Food Share of Total Expenditure by Group of Countries

Source: Regmi and Gehlhar (2005), based on Euromonitor.

Such high growth can be expected to continue because of following reasons:

- On-going population growth and growth in per capita consumption (changing diet and increasing variety and quality of products with rising incomes) drive demand for processed foods and services embodied within the products.
- Increased ownership of refrigerators and microwave ovens promote greater household purchases of perishable and frozen foodstuffs, and higher consumption of prepared foods and ready meals.
• Urbanisation (population growth in developing countries is increasingly an urban phenomenon) increases the importance of food preservation and convenience.

• Further demographic changes (e.g. increasing participation of women in the labour market, ageing of the population and rising importance of single-person households) will drive sales of ready meals, convenience food and food services.

Niche and Speciality Export Markets
Although a major share of agro-industrial output in developing countries is consumed domestically, various niche and speciality export markets can provide further opportunity for an agro-industry expansion in developing countries:

Organic food and drink world market was estimated at US$24 billion in 2005, the EU accounting for 52% and the U.S. for 42%. Together they accounted for almost 95% of global sales, of which approximately 40% were imported. Despite a slow-down since the 1990s, the sector’s current growth rate is still estimated at between 8-12% per year in Europe and 14-20% in the U.S (Wilkinson and Rocha, 2008).

Fair trade, which evolved from the coffee sector, is much smaller with approximately €1.6 billion in 2006 (Wilkinson and Rocha, 2008). Fair trade standards exist for food products such as tea, coffee, cocoa, honey, juices, wine grapes, fruit and vegetables, nuts and spices, and non-food products such as flowers, plants and seed cotton.

“Origin-based” products associate quality with social and cultural values relating to collective local development. Many new features are incorporated, such as indigenous products, non-food products and products associated with the values of sustainability.

“Functional” or nutritionally enhanced foods are expected to be a major source of market opportunities in the long-term. They respond to increasing preoccupations with health issues and food safety, which have generated such modified products and acted as a major innovation driver in the food industry.

These various niche markets certainly provide important export opportunities and development stimuli for agro-industry in developing countries. It may, however, be questioned whether they can provide a viable perspective for an entire sector.
**New Technologies**

As competition in markets for traditional products increases and pressures to meet the growing demand for food rise, agro-industries will need to increase the application of existing technologies and develop new ones which maximise the use of raw material inputs. A number of practical technologies, which are already widely used in the agro industries of high income countries, can be transferred and adapted in developing regions: e.g. packaging, pre-processing at farm levels, traceability technologies, cold stores and chains, as well as the information and communication technologies underlying inter-firm logistics and business planning.

In terms of new technologies, biotechnology, for instance, has the potential to produce crops better suited for changing climate, soil, as well as processing conditions (e.g. higher starch content, better quality proteins, or modified oils and fats). New industrial materials will be derived from biomass (plants and bacteria), which may, as economies of production change, replace part of today’s fossil-based, synthetic materials and plastics. Similarly, numerous other energy efficient, environmentally friendly technologies, including bio-processing, non-thermal, and drying technologies, will be increasingly important in preserving scarce natural resources, improving food availability and promoting social and economic sustainability.

The transition to a knowledge-based bio-economy is already underway in many parts of the world, fuelled by massive investments and new policy measures to sustain the new industries. The development of global agro-industrial complexes will dictate additional changes in technological patterns. Developing countries must consider introducing innovative technologies, including the manufacture of high value bio-related products such as speciality chemicals, tailor made enzymes, vaccines, drugs and bio-pesticides, if consistent with the overall development strategy. But this will require new levels of international cooperation to bring about the technological competencies, environmental, energy and processing improvements needed to compete. Otherwise, both domestic and foreign markets will risk being closed to the developing world.
**Government of India and Agro Industries**

The potential for agro-industrial development in India is largely linked to the relative abundance of agricultural raw materials and availability of low-cost labour. The most suitable industries in such conditions are indeed those that make relatively intensive use of these abundant raw materials and unskilled labour and relatively less intensive use of presumably scarce capital and skilled labour.

Many of the industries using agricultural raw materials have in fact those characteristics that make them particularly suitable for Indian circumstances. Where the raw material represents a large proportion of total costs, its ready availability at a reasonable cost can often offset such disadvantages as a lack of infrastructure or skilled labour. Furthermore, for many agro-industries, a small plant may be economically efficient, which is another important factor in developing countries where the domestic market is limited by low purchasing power and sometimes by the small size of the market itself.

**Government Policy for Agro based Industries**

In food processing sector the MFPI has been implementing several schemes for the development of food processing in the country which are as follows:

- Scheme for Infrastructure Development
- Scheme for Technology Upgradation /Establishment /Modernization of Food Processing Industries
- Scheme for Quality Assurance, Codex Standards and Research & Development
- Scheme for Human Resource Development
- Scheme for Strengthening of Nodal Agencies
- Scheme for Backward and Forward Integration and other Promotional Activities

During the Eleventh Five Year Plan, programmes started earlier have been restructured with appropriate management/implementation arrangements in Public Private Partnership mode, with strong Project Implementation capabilities. Also the Scheme for Technology Up-gradation has been decentralised and now it operate
through Nodal Banks in place of State Nodal Agencies to provide back-ended credit linked subsidy.

The new integrated approach not only addresses issue of financial assistance but also the following issues:-

- Skill development,
- Entrepreneurship
- Investment
- Institutional Development
- Providing a policy environment which stimulates growth

Core elements of the eleventh plan 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 up-gradation of standards.
- An integrated food law and science based food standards.
- Strategic intervention with redesigned schemes and strong implementation arrangements at the following points:-
  o Food Parks- carefully planned, cluster based, privately driven.
  o Abattoirs- publicly owned and privately managed.
  o Cold chains- integrated cold chain facilities and strategic distribution centres.
  o Street Food- upgrading quality and hygiene in the cities/towns.
  o Wine Policy- liberalized, leveraging the agri/horticultural surpluses.
  o Testing & certification labs- both public and private.

**Agro based Industries in Uttar Pradesh.**

Located in the Northern region of India, Uttar Pradesh has a population of 166 million, making it India’s most populous state. It consists of 16% of total population of India. Uttar Pradesh occupies an area of 240,928 sq km which is 9% of total area of India and is fourth largest state of the country. Uttar Pradesh is the second biggest state economy in the country, with a share of 10.7 per cent in aggregate domestic product. Uttar Pradesh has two major rivers, viz., the Ganges, and the Yamuna. Other
rivers in the state are the Gomti and the Ramganga. The State covers a large part of the highly fertile and densely populated upper Gangetic plain growing a large variety of agricultural and forestry produce. It shares an international border with Nepal and is bounded by the Indian states of Uttarakhand, Himachal Pradesh, Haryana, Delhi, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand and Bihar. The state is divided into 74 districts, 300 tehsils, and 813 community blocks. Administrative and Legislative capital is of the State of Uttar Pradesh is Lucknow, and the Financial and Industrial capital is Kanpur and Ghaziabad along with the newly carved districts of Gautambudha Nagar.

Major crops grown in the State are Food Grains, Sugarcane and Oilseeds. It is the largest producer of wheat, pulses, sugarcane, tobacco, potato and milk in the country. It also has the highest yield in the country of pulses and tobacco. The state has a well-developed agro-based and food processing industry. The total investment in the food processing industry was reported to be more than US$ 42.55 million in 2004-05. The state is one of the leading producers of dairy and horticulture. The state, better known as the sugar bowl of the country is one of the largest producers of sugar cane. The state recorded total production of 5.4 million tonnes of sugar in 2001-02. The state ranks second in total number of sugar factories in the country at 101 in 2002-03.

The availability of good natural resources and abundant manpower spurred the growth of the industry in the state. About 389,000 Small Scale Industries like hand-knitted woollen carpets, woodcarving, brass metal industries, terracotta, etc. provide large employment opportunities. Major industries of the State are Cement, Vegetable Oils, Jute, Brassware, Sugar Production, Carpet, Handloom, Cotton & Woolen Textiles, Leather & Footwear, Distilleries & Breweries, Glassware & Bangles. Uttar Pradesh (UP) is the second largest economy in India after Maharashtra, contributing 8.17% to India’s total GDP. Gross State Domestic Product (GSDP) at current prices in 2004-2005 was US$ 55 billion. Net State Domestic Product (NSDP) of the state at current prices (2004-05) was US$ 48 billion. UP has a predominantly agrarian economy, agriculture being the highest contributor to the GSDP.

Uttar Pradesh provides several advantages for setting up agro-based industries.
Policy and fiscal incentives
Uttar Pradesh is a leading agricultural state in the country and is amongst the top producers of major agricultural items including wheat, rice and sugarcane. The state offers a wide range of subsidies, fiscal and policy incentives as well as assistance for businesses under the Industrial and Service Sector Investment Policy, 2003. Additionally, the state has well drafted sector-specific policies for IT, biotech and tourism.

Rich labour pool
The state has a large base of skilled labour, making it an ideal destination for knowledge-based sectors. The state also has a large pool of semi-skilled and unskilled labour.

Facilitating infrastructure
The state has a well-developed social, physical and industrial infrastructure. It also has good connectivity via four National Highways, six airports and rail links to all major cities.

High infrastructural growth
The state has witnessed high infrastructural growth in the past few years. Recently, there has been a considerable increase in the number of industrial clusters/hubs and public private partnerships in the infrastructural domain.

Stable political environment
There is political stability with a single-party government. The State Government has been committed towards creating a rich business climate through several policies and incentives.

The resources, policy incentives, infrastructure and climate in the state are ideally suited for investments in sectors, such as, IT, agro-based and food processing, light engineering goods, sports goods, textiles, leather-based, tourism and biotechnology. The Uttar Pradesh State Industrial Development Corporation (UPSIDC) and the Department of Infrastructure and Industrial Development are jointly responsible for the development of industrial infrastructure in the state.

The State Government has set up the “Udyog Bandhu” to facilitate investment in industrial and service sectors. The organisation has a three-tier structure with its
The Government of Uttar Pradesh is promoting the development of several special economic zones (SEZ) across the state, such as, IT and ITeS, electronic hardware and software, handicrafts and agro-based industries.

**Figure 9: Performance of Major Crops**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Annual production(million tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potato</td>
<td>9.99</td>
</tr>
<tr>
<td>Rice</td>
<td>11.78</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>124.67</td>
</tr>
<tr>
<td>Wheat</td>
<td>25.68</td>
</tr>
<tr>
<td>Maize</td>
<td>11.67</td>
</tr>
<tr>
<td>Bajra</td>
<td>13.36</td>
</tr>
<tr>
<td>Pulses</td>
<td>15.77</td>
</tr>
<tr>
<td>Total food grains</td>
<td>42.09</td>
</tr>
<tr>
<td>Rape seed and mustard</td>
<td>1</td>
</tr>
</tbody>
</table>

*Source: Government of Uttar Pradesh as of 2007-08*
Uttar Pradesh ranks among the top states in terms of agricultural production in India. Uttar Pradesh is the largest producer of wheat in India, contributing 21.3 per cent to the country’s total production. It is also the largest producer of food grains and sugarcane, with a share of 20.4 per cent and 42.0 per cent, respectively, in the country’s total production. The major food grains produced in the state include rice, wheat, maize, bajra, gram, pea and lentils.

The state has a robust industrial infrastructure, including 15 industrial areas, 12 specialised parks, three growth centres and four industrial infrastructure development centres (IIDC). The state has 18 notified and functional special economic zones (SEZ). The state has proposed 40 IT/ITeS parks (apart from IT SEZs), two biotech zones and a knowledge park. Development of integrated agro/food processing zones has been proposed at Hapur, about 200 km from Delhi. Integrated logistics hubs (free-trade warehousing zones) have been proposed in collaboration between IL&FS, Mineral and Mining Trading Corporation and Mitsui (Japan). The Greater Noida Phase-II has 19 per cent land reserved for industrial use.

### Table 18: Industrial Clusters in Uttar Pradesh

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Location</th>
<th>Area (acres)</th>
<th>Manufacturing units</th>
<th>Investments (US$ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth centres</td>
<td>Bijoli, Jhansi</td>
<td>385.04</td>
<td>15/6</td>
<td>0.024/41.1</td>
</tr>
<tr>
<td></td>
<td>Shajahanpur</td>
<td>311</td>
<td>29/1</td>
<td>-/-</td>
</tr>
<tr>
<td></td>
<td>Dibiyapur</td>
<td>346</td>
<td>-/-</td>
<td>125/-</td>
</tr>
<tr>
<td></td>
<td>Jainpur</td>
<td>357</td>
<td>458 plots/4 plots</td>
<td>7.49/20.62</td>
</tr>
<tr>
<td>Agro parks</td>
<td>Barabanki</td>
<td>180</td>
<td>7/12</td>
<td>3.11/3.73</td>
</tr>
<tr>
<td></td>
<td>Varanasi</td>
<td>261</td>
<td>2/2</td>
<td>3.63/5.44</td>
</tr>
<tr>
<td>Apparel parks</td>
<td>TronicaCity</td>
<td>145</td>
<td>35/102</td>
<td>12.23/5.44 (total)</td>
</tr>
<tr>
<td>Textile and hosiery parks</td>
<td>Kanpur</td>
<td>174</td>
<td>5/37</td>
<td>6</td>
</tr>
<tr>
<td>Leather technology parks</td>
<td>Banther, Unnao</td>
<td>233</td>
<td>24/31</td>
<td>5.51</td>
</tr>
<tr>
<td>Export promotion industrial parks</td>
<td>Greater Noida</td>
<td>200</td>
<td>14/11</td>
<td>4.59</td>
</tr>
<tr>
<td></td>
<td>Shastripuram, Agra</td>
<td>102</td>
<td>-/-</td>
<td>4.82</td>
</tr>
<tr>
<td>Software Technology Parks of India (STPI)</td>
<td>13,000 sq ft, of which 9,296 sq ft of area is being utilised by 15 units.</td>
<td>The park is fully operational.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources: Annual Plan 2008-09 (Planning Commission of Uttar Pradesh), UP State Industrial Development Corporation, [www.upsidc.com](http://www.upsidc.com)
### Table 19: Functional SEZs In UP

<table>
<thead>
<tr>
<th>Name/developer</th>
<th>Area</th>
<th>Primary industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>NoidaSpecial Economic Zone</td>
<td>Noida</td>
<td>Multi-product</td>
</tr>
<tr>
<td>HCLTechnologies</td>
<td>Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>MoserBaer SEZ</td>
<td>Grater Noida</td>
<td>Non-conventional energy</td>
</tr>
<tr>
<td>WiproLimited</td>
<td>Greater Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>Moradabad Special Economic Zone</td>
<td>Moradabad</td>
<td>Handicrafts</td>
</tr>
<tr>
<td>SeaviewDevelopers Limited</td>
<td>Greater Noida</td>
<td>IT/ITeS</td>
</tr>
</tbody>
</table>

### Table 20: Other Notified SEZs

<table>
<thead>
<tr>
<th>Name/developer</th>
<th>Area</th>
<th>Primary industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>AnsalIT City and Parks</td>
<td>Grater Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>OSEInfrastructure Limited</td>
<td>Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>NIITTechnologies</td>
<td>Greater Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>UnitechInfraconLimited</td>
<td>Greater Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>AachvisSoftech</td>
<td>Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>Perfect IT SEZ</td>
<td>Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>UnitechHightechProjects Private Limited</td>
<td>Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>Gallant InfrastructurePrivate Limited</td>
<td>Greater Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>Jubilant InfraconLimited</td>
<td>Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>SarvMangalRealtechPrivate Limited</td>
<td>Noida</td>
<td>Electronic hardware and software</td>
</tr>
<tr>
<td>IVR Prime IT SEZ Private Limited</td>
<td>Noida</td>
<td>IT/ITeS</td>
</tr>
<tr>
<td>Golden Tower InfratechPrivate Limited</td>
<td>Noida</td>
<td>IT/ITeS</td>
</tr>
</tbody>
</table>

### Importance of Agro based Industries in Uttar Pradesh

The Agro based industries provides livelihood, checks rural–urban migration, generates export earnings, and touches upon the lives of the remotest and most marginalized people. The needs, problems, and potential of this sector differ not just with the nature of activity (agro processing, forestry, weaving, building components for big industries, etc.), but also with size, geographical location, and structure (organized/unorganized). The importance of this sector has been outlined in the paragraphs below.
The agro industries are, more than just GDP earners; they are instruments of inclusive growth which touch upon the lives of the most vulnerable, the most marginalized—women, Muslims, SCs, and STs—and the most skilled. Being the largest source of employment after agriculture, the sector in India enables 650 lakh men, women, and children living in, upcoming towns, remote villages and isolated hamlets to use indigenous knowledge, cultural wisdom, dexterous hands, and entrepreneurial skills for the sustenance of their lives and livelihoods.

It is well accepted that for the creation of employment, much weight has to be given to agro industries. Within this itself, emphasis on decentralized rural industries has several advantages. They are:-

- To generate large scale employment to both, skilled and unskilled.
- They can slow down urban migration and thereby ease the problems of urbanisation.
- They lead to environmental improvements by lessening the concentration of industrial units in big cities.
- They can increase rural incomes and generate nonfarm employment to farmers.
- To ensure balanced development and to avoid excessive industrial concentration.
- They can meet the demand arising from the local consumption needs.
- To sustain economic growth and increase exports.
- They are effective instruments for inclusive growth. They benefit most to marginalized groups of Indian society like women, SC/STs, minorities etc.

**Generate Employment**

With economic development the share of agriculture in providing employment and in GDP decreases. Many economists and planners believe that the agro industry sector is the most effective way to create employment on the other hands the large industries tend to be job destroyers.

In the state of Uttar Pradesh a large number of people are employed in this sector. As the data segregated on the basis required is not available but still it is this sector that
provides to maximum number of employment outside agricultural sector be it processing of food or other agro outputs.

Not only do these sectors generate the highest employment per capita investment, they also go a long way in checking rural–urban migration by providing villagers and people living in isolated areas with a sustainable source of employment. Among agro industries, the dispersed food processing sector generates maximum employment.

**To Sustain Economic Growth and Increase Exports**

Estimates say that in order to achieve the target of 10% growth in the Eleventh Plan, the sector needs to grow at 12%. Non-traditional products account for more than 95% of the SSI exports. The performance of garments, leather, and gems and jewellery units has been remarkable in the last decade. The SSI sector dominates in export of sports goods, readymade garments, woollen garments and knitwear, plastic products, processed food, and leather products.

There is tremendous potential to expand the quantum of exports from traditional MSEs because they are handcrafted and hence eco-friendly and exclusive. Further, while MSEs are unable to take advantage of economies of scale, they are ideal for meeting small order quantities—a bonus in industries such as readymade garments, home furnishings, etc.

MSEs often act as ancillary industries for LSIs providing them with raw materials, vital components, and backward linkages. For instance, large cycle manufacturers of Ludhiana rely heavily on the small MSEs of Maler Kotla which produce cycle parts. MSEs also promote eco-friendly growth, especially in difficult terrains and the ecologically sensitive areas. In large tracts of barren desert land in Barmer and Kutch, in the scattered dhanis of Udaipur, in the hilly hamlets of J&K, Ladakh, Himachal, and the North East, in the tribal hinterlands of central India, they are the only source of livelihood.

**For Making Growth Inclusive**

The MSE sector is a microcosm of all vulnerabilities— it touches upon the lives of women, children, minorities, SCs, and STs in the villages, in the urban slums, and in the deprived pockets of flourishing towns and cities. For many families, it is the only source of livelihood. For others, it supplements the family income. Thus, instead of
taking a welfare approach, this sector seeks to empower people to break the cycle of poverty and deprivation. It focuses on people’s skills and agency.

Different segments of the MSE sector are dominated by different social groups. Women are mostly found in the unregistered sector—food processing enterprises, manufacturing enterprises, and weaving—and often work part time in the family enterprises. Women and small children roll bidis, make agarbattis, do zari and sequin work for meagre wages.

Large numbers of Muslims are found in the unorganized weaving sector and in power-looms. Schedule Tribes produce wonderful handcrafted articles and are involved in sericulture. In the North East, most women weave and produce handicraft items. In States like Tripura, 50% of rural men and 35% rural women are engaged in MSEs. In Nagaland and Mizoram over 68% of urban men are with MSEs.

The above facts make it clear that decentralised rural agro-industrialisation is one of the best possible development strategies in thickly populated countries like India and States like Uttar Pradesh.

**Location of Agro based Industries**

A large amount of industrialisation in Uttar Pradesh has taken place in an organic manner, particularly in the small-scale sector. The major industries in the state include sugar, cement, vanaspati, and cotton cloth and cotton yarn. Hand-knitted woollen carpets from Bhadohi and Mirzapur, ‘chikan’ work from Lucknow, terracotta from Gorakhpur, wood carvings from Saharanpur, brassware from Moradabad, glassware from Firozabad and hand printing from Farrukhabad, are all instances of the high levels craftsmanship that can be found in the state.

A wide range of products are manufactured in Uttar Pradesh. This demonstrates the potential for higher levels of industrialisation in the state, if properly developed. More importantly, although the levels of industrialisation in most parts of the states are low, industries are wide spread and have developed organically.
Figure 10: Industrial Map of Uttar Pradesh

![Industrial Map of Uttar Pradesh](image-url)
The data in Table above also shows that the state has high comparative advantage in several products where its share in all-India production is more than 20 per cent. This includes manufacturing of sugar; distilling, rectifying and blending of spirit; manufacture of electric lamps and lighting equipment; and other manufactures, mainly produced in Moradabad. Uttar Pradesh has attained near leadership in manufacturing and exporting processed food products.

There are 42 identified clusters, which is next only to Maharashtra (66) and Gujarat (46). Thirty-seven of them are natural and 28 are considered to be export oriented. Several of these clusters compete with large producers. However, the clusters need to be modernised and their operations increased in scale. The important clusters in Uttar Pradesh are NOIDA for electronics, Moradabad for brassware, Meerut for sports goods, Bhadoi, Varanasi and Pratapgarh for carpets, Kanpur and Agra for leather, Aligarh for locks, Khurja for ceramics, Kannauj for essential oil and Agra for foundries. The state’s numerous clusters give it a definite edge over competing
states. Figure below indicates a pattern of industrial corridors that is possible to develop in Uttar Pradesh in order to facilitate growth of the existing clusters.

**Figure 11: Industrial Corridors in UP**

![Industrial Corridors in UP](image)

*Source (Basic Data): NCAER Survey.*

**Role of UP Government in the development of Agro based Industries**

Uttar Pradesh is one of the largest producers of farm commodities in the country and the largest producer of vegetables, wheat, maize, sugarcane, potato and milk. Some of the most delicious varieties of fruits are grown in the state. Thus there is an immense inherent potential in this sector. The state also has diverse agro climate conditions which are conducive for a variety of crops round the year.

Despite the inherent potential, it has so far been untapped. Large quantities of vegetables and fruits are wasted as only around 2% of the production is commercially processed. Though considerable success has been achieved in evolving appropriate pre harvest practices, the issue relating to post harvest management, which includes grading, sorting, packaging, processing, transportation and marketing, are still not adequately addressed. It is believed that agriculture in the state can turn into a lucrative venture, if there is a proper linkage from end to end among various components of agri business, i.e. from the stage of sowing to final
sale and consumption, which can develop synergy and dynamic efficiency in the system.

Government of UP has a policy for Agro Industrialisation. The details are presented below:-

**Policy Objectives**
This policy aims at achieving the following objectives:-

- Better returns to the farmer for his produce.
- Encourage investment in the sector and employment generation.
- Promote value addition and quality consciousness.
- Minimize wastage of agriculture and horticulture produce.
- Provision of appropriate linkages between the agricultural and industrial sectors.
- Provide a ‘market’ focus to the entire range of activities involved in food processing.

**Strategy**
The strategy would centre around identification of potential areas for value addition, keeping in view both the international and domestic market demand and addressing issues relating to the entire value chain, right farm to the palate, for achieving the objectives outlined in the policy. Apart from evolving new and more effective instruments for overcoming the constraints in this sector & for promoting food processing, emphasis will be on:

- “Convergence” of all fiscal and financial incentives provided by Central and State Government agencies;
- “Partnership” between the farmer, private sector processors, Central and State Government; and
- “Focus” on such issues which are critical to the growth of this sector This policy would be effective for the next five years i.e. up to 31st March 2009.
Food Processing Sector – ‘Definition’
The food processing sector will include the following:-

- Fruits and vegetables processing.
- Food grain milling/processing.
- Dairy products.
- Processing of poultry, eggs, meat and meat products.
- Fish processing.
- Bread, oil-seed meals, breakfast foods, biscuits, jaggery and confectionery, oil expellers and refining, malt extracts, protein isolates, high protein foods, weaning foods, extruded / other ready to eat food products and all other processed foods.
- Fruit based ready to eat beverages.
- Floriculture and honey.
- Spices, herbs and mushrooms.
- Fermented food products, including alcoholic and non-alcoholic beverages.

Facilitative Interventions Financial
Recognizing the need for market promotion, funds will be earmarked out of ‘Krishi Vikas Nidhi’ for evolving and executing marketing strategies after due market analysis. This fund will supplement those that are available under various central and state government schemes.

State Government will also consider setting up joint sector ventures in identified areas with a view to encouraging investment and for this purpose land available with Department of Agriculture, Horticulture, Animal Husbandry, Fisheries etc. will be leveraged for attracting such investment as Government will consider participating by way of equity to the extent of value of this land for setting up marketing centres and processing plants.

Land will also be considered for giving on lease for backward integration. PICUP will undertake this task of asset management for the purpose of documenting and evaluating these assets and for evolving projects to attract private sector investment.
To offset the disadvantage on account of being land-locked, State Government may consider assistance for transporting goods to the ports for the purpose of exports from time to time.

**Fiscal**

To encourage export of processed food, no tax/cess/duty will be levied on any input used in a product that is exported.

To encourage value addition within the state, Sales Tax on certain identified processed food products will be rationalized to make these affordable and in turn boost consumption.

Electricity duty will be exempted for 05 years.

Certain identified sectors in the food processing industry will be treated as a seasonal industry and, hence, would be eligible for relief from payment of minimum charges of electricity during the closure period.

State will consider provision for interest free loan for facilitating availability of working capital where cumulative capital investment during the policy period is Rs 5.00 crore or more.

To promote direct farmer-processor linkages, the payment of Mandi Fee will be made optional – to be paid only by farmers who wish to use the Mandi facilities.

**Rationalization of Procedures**

Food processing sector is beset with complications emerging out of various laws, rules and regulations. These provisions are in turn administered by different agencies of the Government. A task force will be set up to examine these provisions and submit recommendations within six months to rationalize them. In addition, there are certain crops which are critical for the state and where a boost in processing activity will lead to a direct improvement in farmer incomes.

It is proposed that a special task force will be constituted to provide end to end solutions for such crops/products to provide a fillip to processing and improvement in farmer incomes.
Development of Database & Dissemination of Information

IT tools will be used to collect, collate, analyze and disseminate data with regard to production and markets. Mandi Parishad will be adequately equipped to undertake this task for ensuring online availability of such information.

Setting up Development Zones

To facilitate end to end development of horticulture and agricultural produce which has ‘market potential’? a policy has already been announced for Agriculture / Horticulture Development Zones for identified produce grown in geographically contiguous areas. The objective is to identify the bottlenecks at each stage of the value chain and suggest interventions, in a project mode, to remove these bottlenecks. This would be achieved through ‘convergence’ of various schemes administered by central and state government agencies and in ‘partnership’ with all the parties. viz. farmer, processor, exporter, government-agencies, involved in the process. The existing and proposed food parks will be integrated as a part of these zones so as to address issues relating to the entire value chain.

Encouraging Services by Private Sector

Private sector agencies are getting increasingly involved in providing a complete package of services in the field of agriculture. This will be encouraged further through removal of bottlenecks in increasing their network for the purpose of providing inputs including credit, extension facilities and in past harvest management. This

Contractual Arrangement

With a view to ensuring remunerative return on the produce for the farmers and in order to ensure consistent supply of quality produce to the processors, the Government will soon come out with a policy to encourage an arrangement between the farmers and the processing unit. This would facilitate recognition of mutual interest and would lead to a long term understanding between them. This would also
enable direct supply of agriculture produce for processing without going through the Mandi route.

Necessary facilitating mechanism would be put in place to enable the users of agri/horti produce for processing to supply inputs, like fertilizers and pesticides, to the farmers directly.

**Institutional Strengthening and Effective Use of Existing Institutions**

The role of Horticulture Federation has been redefined and the focus will now be on value addition. The Federation has also been designated as the secretariat for Agri Export Zones as well as Horticulture / Agri Development Zones. Increasing attention will be paid towards understanding of the markets and market promotion. Horticulture Federation will also be equipped to assist the entrepreneurs in securing benefits under various Central Government schemes and Central Government Agencies like APEDA, NHB, MFPI.

The resources available with Agriculture Universities and Central Government Institutions like NBRI, ITRC, CIMAP etc. will be utilized for promoting research to find solutions to the problems arising at various stages of the value chain. Priority will be given to issues relating to food processing by “Udyog Bandhu”.

In all the tripartite discussions, the problems relating to food processing will be taken up first.

Efforts will be made to co-ordinate with the Central Government for setting up of National Centre for Food Technology and Management.

**Setting Up Alternative Marketing Structures**

To maximize realizations to farmers, it is critical to provide an alternative marketing mechanism which will bring the farmer face to face with the consumer. This will enable the farmer to realize the value which is currently lost out of intermediaries. To facilitate this, government would encourage setting up of integrated auction/marketing facilities in consumption hubs, such as NOIDA. Allocation of land as equity will also be considered and the private sector would be encouraged to set up such markets.
Ware Housing Receipt System

To prevent distress selling and to provide liquidity to the farmers, warehousing receipt system would be evolved, which will involve development of the requisite legal and policy framework. A suitable agency will also be identified for implementation of the same.

Optimum Utilisation of Human Resources

Apart from upgrading the skills of the personnel in the government, they would be permitted to work on deputation with the private sector.

Focus On Quality and Brand Building

Recognizing the need for evolving quality consciousness in the food processing sector, quality parameters will be worked out for as many products as possible. Wherever these parameters already exist, they will be used for establishing and promoting brands. The Horticulture Federation will play a pivotal role in undertaking such an exercise. Quality testing laboratories will be encouraged in the private sector and efforts will be made to get them accredited by recognized agencies like APEDA, so that certification from these laboratories can add value to the product.

General

All concessions and incentives outlined in the Industrial Policy for setting up an industrial unit will also be available to food processing industry. The provisions of this policy would be over and above those indicated in the Industrial Policy.