
Examining the Constraints and Growth Potential of India's Agro-Based Industry

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Abstract

The agro industry is regarded as an extended arm of agriculture. The development of the agro industry can help stabilize and make agriculture more lucrative and create employment opportunities both at the production and marketing stages. The broad based development of the agro products industry will improve both the social and physical infrastructure of India. India is one of the largest producers of food, and is the second largest producer of rice, wheat, fruits, and vegetables in the world. Nearly 70% of the population of rural sector depends on agriculture and agro-based industries. The agro industry mainly comprises of the post-harvest activities of processing and preserving agricultural products for intermediate or final consumption. A research paper covering most profitable agro based industries contains profile on each industry has been presented with great efforts & care and it also to be well define problems and prospects of agro-based industries in India.

Keywords: Agriculture, Small Scale Agro-based Industry, Economic Development. Agri-business.

Introduction : Agribusiness

In agriculture, agribusiness is the business of agricultural production. It includes crop production (farming and contract farming), seed supply, agrichemicals, farm machinery, distribution, processing, marketing, and retail sales.

Within the agriculture industry, "agribusiness" is used simply as a portmanteau of agriculture and business, referring to the range of activities and disciplines encompassed by modern food production. There are academic degrees in and departments of agribusiness, agribusiness trade associations, agribusiness publications, and so forth, worldwide. In this context the term is only descriptive, and is synonymous in the broadest sense with food industry. The UN's Food and Agriculture Organization (FAO), for example, operates a section devoted to Agribusiness Development which seeks to promote food industry growth in developing nations.

In the context of agribusiness management in academia, each individual element of agriculture production and distribution may be described as agribusinesses. However, the term "agribusiness" most often emphasizes the "interdependence" of these various sectors within the production chain. Among critics of large-scale, industrialized, vertically integrated food production, the term agribusiness is used negatively, synonymous with corporate farming. As such, it is often contrasted with smaller family-owned farms.

Bhattacharya (1980). Agro-processing industries refer to those activities that transform agricultural commodities into different forms that add value to the product. "Agro-based industries are those industries which have either direct or indirect links with agriculture.

Kachru (2008). India Agro-processing industries, especially food manufacturing, tobacco and textile processing dominate the commercial industrial sector. In this sense the agro- processing could be defined as set of techno economic activities carried out for conservation and handling of agricultural produce and to make it usable as food, feed, fibre, fuel or industrial raw material. Hence, the scope of the agro-processing industry encompasses all operations from the stage of harvest till the material reaches the end users in the desired form, packaging, quantity, quality and price. Ancient Indian scriptures contain vivid account of the post-harvest and processing practices for preservation and processing of agricultural produce for food and medicinal uses. But, inadequate attention to the

agro-processing sector in the past put both the producer and the consumer at a disadvantage and it also hurt the economy of the Country.

Agro-Based Industry at a Glance

Agro-based industries play a vital role in the development of India's rural economy, which has been receiving increasing attention from the central as well as state government, in view of its importance to the national reconstruction. Some estimates suggest that in developed countries, approximately 14 percent of the total work force is engaged in agro-processing sector directly or indirectly. However, in India, only about 3 per cent of the work force finds employment in this sector revealing its underdeveloped state and vast untapped potential for employment. There is no denying that India has to live with the problem of unemployment for many years to come.

It is a well-recognized fact across the world, particularly in the context of industrial development that the importance of agro industries is relative to agriculture increases as economies develop. It should be emphasized that food is not just produce. Food also encompasses a wide variety of processed products. It is in this sense that the agro-industry is an important and vital part of the manufacturing sector in developing countries and the means for building industrial capacities.

Agriculture is the major sector of Indian economy, which determines the growth and sustainability. About 65 per cent of the population still relies on agriculture for employment and livelihood, in the past few years. Indian agriculture is benefitting huge from rising external demand and the sector's wider participation in the global economy.

Horticulture is perhaps the most profitable venture of all farming activities as it provides ample employment opportunities and scope to raise the income of the farming community. It also has tremendous potential to push the overall agriculture growth to more than the targeted 4 per cent. It is the fastest growing sector within agriculture. It contributes in poverty alleviation, nutritional security and have ample scope for farmers to increase their income and helpful in sustaining large number of agro-based industries which generate huge employment opportunities.

India is the second largest producer of food in the world. Whether it is canned food, processed food, food grains, dairy products, frozen food, fish, meat, poultry, the Indian agro industry has a huge potential, the significance and growth of which will never cease. It ranked second position in the production of fruits and vegetables in the world.

In 2008-09, India's export of fresh fruits and vegetables was estimated at US \$ 0.79 billion and processed fruits and vegetables it stood at US \$ 0.68 billion. Also India has been recognized as the land of spices contributing to about 25 percent of the world production. Likewise India is number one milk producing country in the world with an estimated production of 105 million tones in comparison to world production of 693 million tones during 2007-08. About 35 percent milk produced in India is processed. In 2008-09, export of dairy products was estimated at US \$ 0.21 billion. In terms of the grain processing, in the country accounted for 8.73 percent of the world oilseed production during the year 2007-08, On the export front, export of oil meals, oilseeds, minor oils and castor oil during the financial year 2007-08 was reported at 62.3 lakh tones.

Significance for Development of Agro-Processing Industry

The agro-processing industry in India plays a vital role in the national economic development and has potential to meet the local needs and export requirements. The supporting infrastructure for this industry in terms of electricity supply, through the government funded rural electrification programme, and road and telecommunication network, is well established. There are also well established skills training programmes in manufacturing (tool making, welding), for rural artisans and users. However, the sector currently faces many challenges emanating from the poor performance of the national economy, uncertainties that exist over access to both local and foreign finances, limited research, limited technical advice, limited marketing information and lack of reliable markets.

Research Question

- What are the basic problems in agri-business' in India?
- What is the present scenario of agro-based industry in India?
- What is the roll of agro-based in industry in agriculture trade?

Objective of The Study

This study following some specific objective based, which is defined the problems and prospects of agro-based industry in India.

- To explore the concept of Agro-based industry in Indian context.
- To examine the problems & constraint of Indian agro-based industry.
- To find out the prospects & new changes in agro-based industry in India.
- To Analyse the trends of growth and development of agro-based industry in India.

Research Methodology

The study of *problems and prospects of agro-based industry in India* is analytical and quantitative with panel and trends data analysis, it is show the various problems and new prospects for agro-based industry in India, use the methodology for the study is different.

Public Sector Outlay for Agriculture Sector - All India (₹ in crores)

Five Year Plans	1st 1951- 1956	2nd 1956- 1961	3rd 1961- 1966	4th 1969- 1974	5th 1974- 1979	6th 1980- 1985	7th 1985- 1990	'Annual 1990-1991
Agriculture including cooperation	238	275	591	2059	3356	6440	10524	3803
All Sector	2377	4800	8099	15902	39322	97500	180000	64717

Source: Agricultural Statistics at a Glance, March 1991 Directorate of E & S, Ministry Of Agriculture.

Need, namely food. The production of food-grains increased from 51 million tonnes in 1950-51 to 176.22 million tonnes in 1990-91. This has enabled the country to be, by and large, self-sufficient and to increase the per capita availability of foodgrains albeit slowly, from about 395 gm per diem in 1951 to 475 gm in 1990.

The Indian agriculture growth pattern has been highly varied at the state level. Since agriculture is a state subject, the overall performance of the agriculture sector in India largely depends on what occurs at the state level. There is a wide variation in the performance of different states. During 2000-01 to 2008-09, the growth performance of agriculture in Rajasthan (8.2%), Gujarat (7.7%) and Bihar (7.1%) was much higher than that of Uttar Pradesh (2.3%) and West Bengal (2.4%). The recent dynamics of erstwhile poor performing states like Orissa, Chhattisgarh and Himachal Pradesh showing from above Fig.

Table 1: Importance of the Agro-industry Sector in India: Some Features

Industries	Percentage Share		
	No. of Factories	Employment	Net Value Added
Agro-based Food Industries	18.35	15.27	7.52
Agro-based Non-Food Industries	22.69	27.63	11.45
Total Agro-based Industries	41.05	42.90	18.97
Other (non-agro) Industries	58.95	57.10	81.03
All Industries	100.00	100.00	100.00

Source: India, Annual Survey of Industries

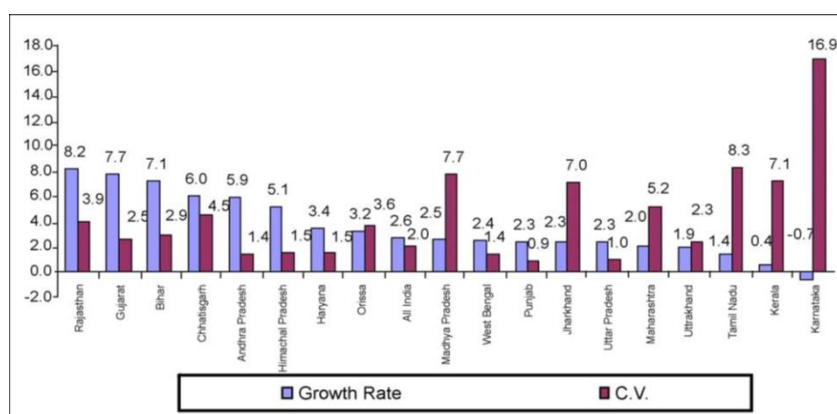
Yield Of Food Grains In Different Countries (Kg Per Hectare)

Name of the country	Rice	Wheat
US	7694	2825
China	6265	4455
India	3124	2619
	1440	1127

Source: FAO Report 2012

The food and agriculture organisation show the five countries production, so that the India's position is not good because there are above developing country show the differences between the production. Data from the Annual Survey of Industries (India, Ministry of Planning 2005/06) shows that 41 percent of all factories in India are agro-industries that contribute 19 percent of the manufacturing value added and 43 percent of manufacturing industry employment (this does not include the employment generated in the agriculture sector). These figures indicate that agro-

Average Annual Growth Rate (%) of Gross State Domestic Product from Agriculture & Allied Sector, 2000-01

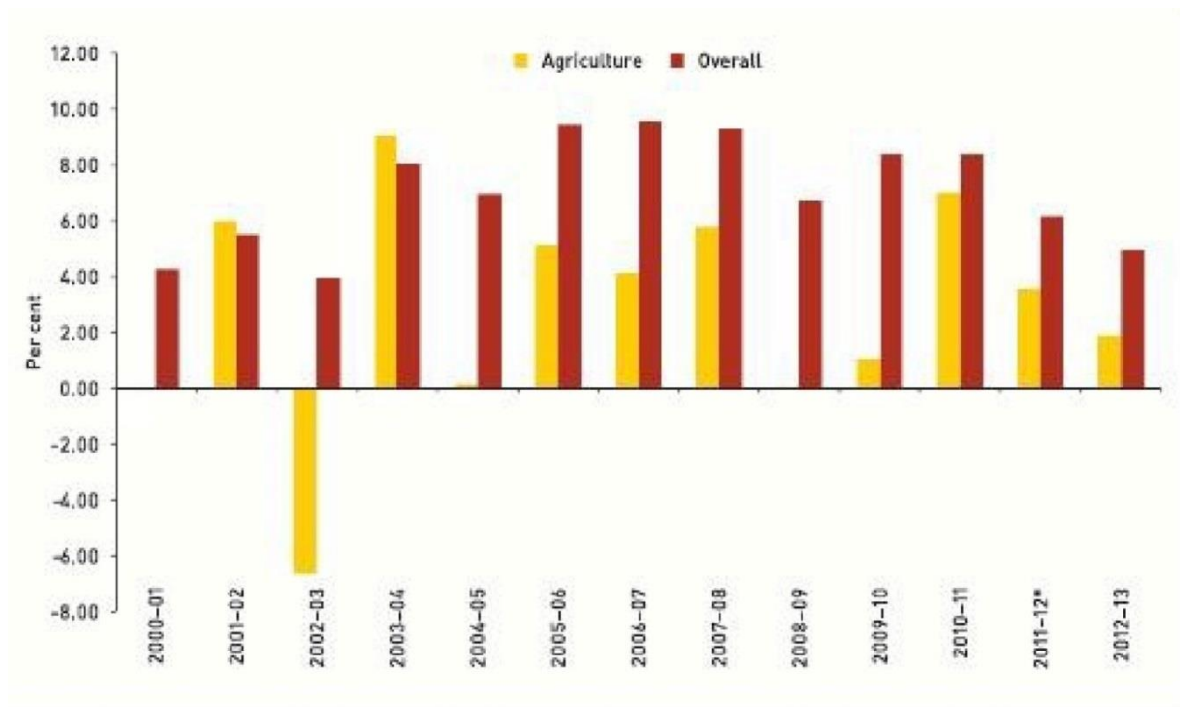


Source: CSO. Note: GSDP estimates are at 2000-01 prices

Industry contribution to both employment and manufacturing GDP is very significant, substantiating the national priority historically given to this sector in India.

Indian Council of Applied Economic Research (ICAER) annual report it is show the agrilulture production in overall GDP production, so that we can say that agri-business technological innovation and entrepreneurial skill development in more important than other business unit because indian population dependency is more in this sector and its allied sectors.

Figure I.1: GDP Growth - Agriculture vs Overall



Source: India, Annual Survey of Industries 2005/06.

Table 2: Some Structural and Financial Features of Agro-industries in India

Description	Share of Fixed Capital-Percent	Total Persons Employed Per Factory	Fixed Capital per Factory-Rs.Million	Emoluments as a % of Net Value Added	Percentage of Working Capital to Invested Capital	Net Value Added to Fixed Capital	Employment to Fixed Capital Ratio (per Rs.100 thousands)	Material Input Consumed to Value of Output
Agro-based Food industries	7.47	54.10	17.63	31.19	50.72	51.71	30.68	84.68
Agro-based Non-Food Industries	13.41	79.16	25.60	37.44	36.55	43.84	30.92	76.84
Total Agro-based industries	20.89	67.95	22.04	34.96	42.47	46.66	30.84	84 80.62
Other (non-agro) Industries	79.11	62.96	58.11	21.10	29.51	52.63	52.63	52.63
All Industries	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

To improve and maintain the quality and prevent deterioration in exports, certain processing and handling measures are stringently followed and carried out in the cold storage premises.

Deshaping: The raw mangos brought from the farm first go for deshaping. In this process, the extra length of the stem is cut uniformly (to about one inch length only) to avoid damage due to the acidic discharge.

Hot water treatment: After deshaping the mangoes are put through an automatic hot water treatment plant to remove/ destroy the fruit-fly eggs.

Fungicide treatment: After the hot water treatment, the lot goes for fungicide treatment. This treatment extends the shelf life of the product.

Grading: Then the lot goes through an automatic grading machine. Through this process the mangoes are sorted into different lots according to the weight of each fruit.

Washing/waxing: As per the requirements of the buyers washing and waxing services to selected lots.

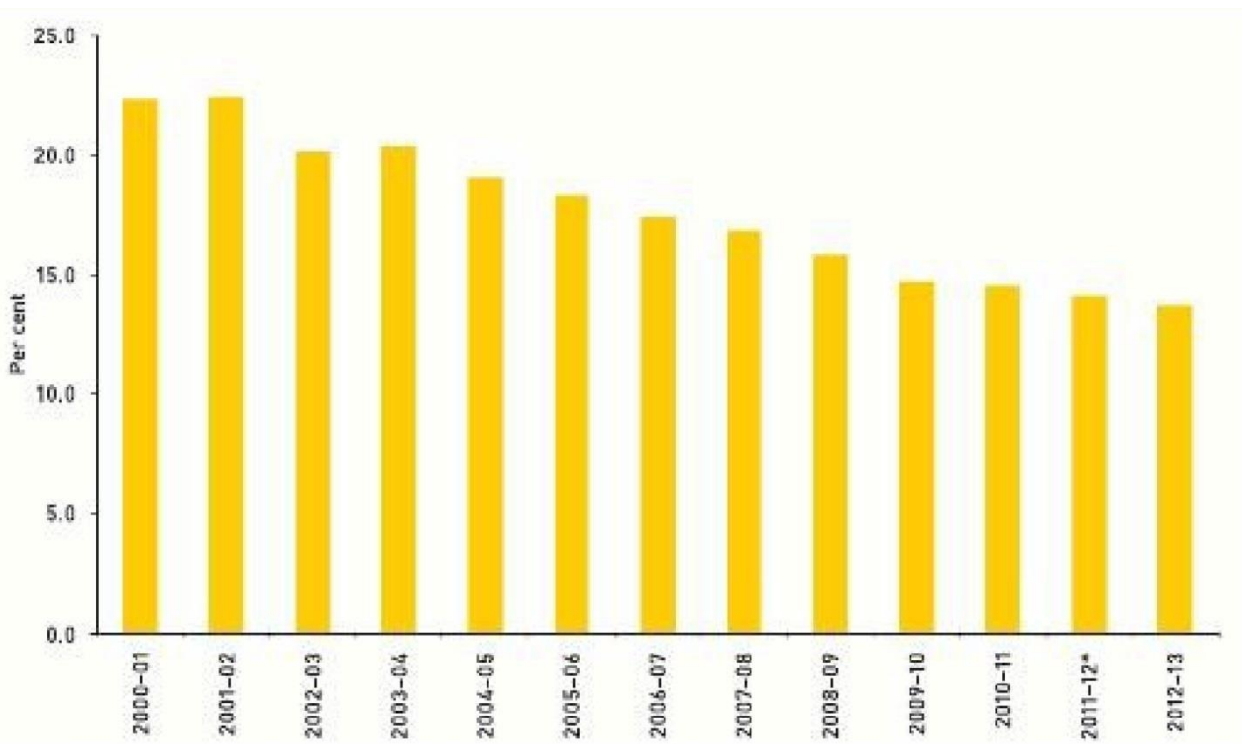
Packing: The packing is carried out according to weight of fruits, and according to the buyer requirement of the number of mangoes in a carton.

Pre-cooling: The entire lot is then moved to a pre-cooling treatment plant. Precooling brings the fruits at a uniform temperature before it goes to the cold storage shelves.

Storing: After the pre-cooling the packages are move to the specified locations in the cold storage.

Loading: Whenever required to execute an export or domestic order, particular lots of these packages are loaded into containers for transportation to their destinations.

Figure I.2: Agricultural Production Trends



Source: Indian Council of Applied Economics Research Annual Report.

Research & Development in Agro Processing Sector

Significant increase has taken place after early fifties in the number of institutions engaged in agro processing research. In the area of teaching, presently there are 18 universities/colleges offering first degree, 11 offer post graduate and 7 offers Ph.D. degree. Among R&D organizations in the area of agro-processing, ICAR has 17 Institutes with some component of Post-Harvest Technology (PHT), CSIR has 3 laboratories, State Agricultural Universities have 18 programmes, IITs have 2 programmes and 11 other organizations have similar programme. Some of the leading government funded R&D Institutes (based on their infrastructure and sanctioned scientific manpower) in 2000-2001 were: CFTRI, Mysore; CIPHET, Ludhiana; IARI, New Delhi; NDRI, Karnal; DFRL, Mysore; CIAE, Bhopal; IIT, Kharagpur; GPBUA&T, Pantnagar; IGMRI, Hapur; TNAU, Coimbatore; PAU, Ludhiana; GAU, Anand; RAU, Udaipur; BCKV, Kalyani; OTRI, Anantpur; PPRC, Thanjavur; MERADO, Ludhiana; MPKV, Rahuri; ILRI, Ranchi; IVRI, Izatnagar; NIRJAFT, Kolkata; CIRCOT, Mumbai; IISR, Lucknow; IGFR, Jhansi; KVIC Mumbai; HBTI, Kanpur and PHT Institute, Pune. The ICAR has a system of All India Coordinated Research Projects (AICRP) in various important areas. In the field of PHT, there are 4 AICRPs: (1) All India Coordinated Research Project on Post-Harvest Technology (21 centers in the country, coordinated from CIPHET, Ludhiana), (2) Processing, Handling, and Storage of Jaggery and Khandsari (5 centers, coordinated from IISR, Lucknow).

A number of Universities have programmes in the area of agro processing. Some of the state governments also have been supporting R&D activities on agro processing in a number of their laboratories/departments. Although nearly 2000 scientists were associated with agro-processing R&D in the year 2000-2001, only about 200 out of them could be considered as full time R&D workers in agro-processing. R&D Work in agro-processing carried out in India during the last 50 years categorized as follows:

- Studies on physical, biochemical, nutritional, and engineering properties/characteristics of different food, feed, fibre, and industrial raw materials.
- Response studies of different biological materials w.r.t. their storage, handling, and moisture conditioning.
- Refinement of traditional equipment and processes for production of different foods, feeds, fibres and fuel materials for better quality, higher capacity, energy efficiency, and reduced drudgery to workers.
- Development of new products and processes for better nutrition, convenience and taste.
- Enhancement of shelf life of the produces, safe storage/packaging and development of better performing materials.
- Better economic utilization of agricultural residues, by-products and recycling of wastes.
- Design and Development of instruments and equipment for post-harvest operations and their evaluation, feasibility analysis, field trials/multiplication evaluation etc.
- Design, layout planning and development of pilot plants, agricultural produce bulk handling systems and area specific agro-processing models.
- Studies and modelling/simulation of post-harvest systems and industry for the purpose of optimization, forecasting and policy analysis.
- Energy auditing and use of non-renewable sources of energy for post-harvest operations.
- Product quality analysis, sensory evaluation and consumer acceptance studies and work conditions, safety and pollution control.

The WTO Agreement and the Sector

Trade liberalisation under the World Trade Organisation (WTO) is expected to improve scope for exports for the Indian food processing industry, while smoothening import barriers on inputs and making enterprises cost competitive. Enterprises will, however, need to improve safety and quality standards to reap the benefits of the new world order and avoid being penalised for nontariff barriers. They will have to progressively follow a food quality management system called Hazard Analysis and Critical Control Points (HACCP). Many developed countries have already made this mandatory. The seafood processing enterprises have already faced the brunt of related bans from importing countries asking them to implement the costly requirements. Be it with regard to the aflatoxin content in groundnut, lead in milk or sulphur in sugar, it is safer to meet the more stringent international norms. Quality, safety and health are the buzzwords for the food enterprise of tomorrow.

Opportunities in the Food-Processing Sector

The opportunities in the food-processing sector may be classified on the basis of the following parameters:

1. **Natural Resource-Based Opportunities:** such as the ones based on cereals, cash crops, fruits and vegetables, agro-wastes, animals, marine-based, processing of food products like cereals and pulses, fruit preservation, pickles, honey, etc.
2. **Local Industry Based:** those dealing in supply of intermediary raw material, pillarization, job-work, recycling of industrial wastes, by-products, etc.

3. **Local Demand Based:** which may include products like bread, biscuits, flour, spices, etc.?

4. **Export Based:** any local product, which is being exported; or resources available locally to manufacture the items, which have good export potential.

Following the above method, will offer a large number of business opportunities. However, please remember these opportunities are location and time specific. An opportunity today may not remain an opportunity tomorrow. Or an opportunity in a forest area may not hold good in the deserts of Rajasthan, as the resource base will change. Moreover, one would also need to assess the viability and feasibility of the opportunities before pronouncing them as business opportunities. An opportunity may be absolutely viable but may not be feasible if it is mismatched. For example, although setting up a large flourmill may be a perfectly viable proposition, it may not be feasible to set up one in Sunder bans for an illiterate rural or tribal man. Therefore, one needs to consider the following facts before deciding upon an opportunity.

Plan and Strategy

The objectives of agro-processing programmes in India should be to:

- a. minimize product losses,
- b. add maximum value,
- c. achieve high quality standards,
- d. keep processing cost low,
- e. ensure that a fair share of added value goes to the producer

To achieve these objectives following strategy is suggested:

(a) National plan for improvement and extension of agro-processing technology at farm, traditional small industry and modern industry levels should be prepared. The plan should take into account the diversity in resources and needs of different regions in the Country. It should include programme details and implementation schedule for the first four or five years. The progress of plan implementation should be periodically reviewed to allow adjustments and corrective measures, and to develop programme details for the years beyond the period under review.

(b) Thrust areas for research and development should be identified and medium term research and development programme should be prepared and implemented to support the national plan for improvement and extension of agro-processing technology at different levels. Treatment and utilization of effluents from agro-processing industry should be included in the R.D. programme.

(c) Emphasis should be put on the establishment of new agro-industrial plants in the production catchments to minimize transport cost, make use lower cost land and more abundant water supply, create employment opportunity in the rural sector and utilize process waste and by-products for feed, irrigation and manure.

(d) Infrastructure in the production catchments selected for agro-industrial development should be improved. Because of uncertain grid power supply to rural areas, decentralized power generation using locally available resources may become an integral part of agro-industrial development. Similarly, if the raw materials and processed products are perishable or semi perishable in nature, cold chain will have to be established.

(e) The national plan should provide for management of agro-industrial activities in the catchment area, both by private companies and individuals as well as cooperatives.

(f) Financial incentives and support should be provided on liberal scale to promote the modernization of agro-processing industry and for establishing new such industries in production catchments.

(g) Arrangements to supply market information to the farmer and agro-processor should be put in place.

Conclusion

Agro based industry is the major sector of the Indian industrial economy in view of its large potential for growth and likely socio economic impact specifically on employment and income generation.

The economic prosperity of a developing country like India depends largely on the development of agro-based industries which in turn leads to the creation of forward and backward linkages of the development process on large scale by making mutual complementary of agriculture and industries.

Ever since the beginning of 1950s, India has been in search of an appropriate paradigm for ushering in the era of prosperity, stability, peace and happiness for her people. The idea of mixed economy was adopted in the India planning system with a great deal of enthusiasm and hope of moving towards a socialistic pattern of society.

The major focus was on rapid industrialization and economic development of the country .During our Five Year Plans it had gained momentum.

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