CHAPTER III
OVERVIEW OF SUGAR INDUSTRIES IN INDIA
AND IN TAMILNADU

INTRODUCTION

About 20% of the world's supply of sugar is derived from sugar beet, the vast majority of which is produced in industrialized countries\(^1\), while the remaining 80% is derived from sugarcane, mainly produced in developing countries (Brazil, India, EU and China are the top producers and under tropical climates. Beet sugar is harvested in the autumn and early winter by digging them out of the ground. Sugar beet is a rotational crop which requires nearly 4 times the land area of the equivalent cane crop. Sugarcane is a sub-tropical and tropical crop that prefers lots of sun and lots of water - provided that its roots are not waterlogged.

Sugarcane crop typically takes about 12 to 18 months to reach maturity and it is harvested by chopping down the stems but leaving the roots so that it re-grows in time for the next crop. After the cane gets harvested, it is called plant cane. The growth of plant cane that gets left behind is called ratoon cane. The plantation of sugarcane usually starts in the beginning of June and the crushing season begins in October. Generally, the cost of producing sugar from sugarcane is lower than those in respect of processing sugar beets. Sugarcane is a hardy crop which can stand climatic extremities without a significant decline in crop yield or sugar recovery. Sugarcane crop can withstand temperature range between 3.5 degree Celsius to 45 degree Celsius and rainfall range of between 3 mm and 263 mm. However, sugarcane crop in India is largely monsoon-dependent, which cannot be entirely relied upon.

\(^1\) [www.fao/ebrd/ Agro Business Handbooks 2009 vol – iv p. 87]
It is an interesting note, when sugar was first discovered by the West, it was heavily taxed by the Government and at one point it cost US$100 per kilo at today's price and it was very much luxury to the extent that sugar was called "white gold". Sugar has played an important part in the world history and it can be linked to colonization and slavery. Brazil (38.6 million ton production in 2008-09), India and European Union are the top three producers of sugar and together account for some 40% of the annual production. The top ten producers account for around 75% of global production. Mostly sugar is consumed within the country of production and only 30% is traded internationally. In 2008-09, the five largest exporters were Brazil (23.7 million ton exports in 2008-09), Thailand, Australia, South African Development Community Countries and Guatemala, are expected to supply approximately 85% of all world free market exports.

Global sugar consumption growth increases by about 2% per annum and in 2008-09 the forecast reached 158 million tons. Global sugar production in 2008-09 is forecasted at 151 million tons and compared to the previous season, will represent an 8% production decrease, the largest annual reduction on record. Significant production declines have occurred amongst leading sugar producers, including India and the EU\(^2\). Large sugar exporters typically generate higher margins from domestic sales as compared with exports. Government interventions and regulations help to maintain high domestic prices which are a key feature of the global sugar trade.

\(^2\)www.illovosugars.co.za/libraries/ Annual Report 2009
OVER VIEW OF INDIAN SUGAR INDUSTRY

The sugar industry in India plays a vital role towards socio-economic development in the rural areas by mobilizing rural resources and generating higher income and employment opportunities. About 7.5 percent of the rural population, covering about 45 million sugarcane farmers, their dependents and a large number of agricultural laborers are involved in sugarcane cultivation, harvesting and in ancillary activities. About half a million skilled and unskilled workers, mostly from the rural areas are engaged in the sugar industry.

Sugarcane has a very long history of cultivation in the Indian sub-continent. The earliest reference to it is in the Atharvana Veda [1500-800 BC] where it is called IKSHU and mentioned as an offering in sacrificial rites. The Atharvana Veda uses it as a symbol of sweet attractiveness. The word 'sugar' is derived from the ancient Sanskrit word sharkara. A Persian account from the 6th century BC gives the first account of solid sugar and describes it as coming from the Indus Valley. This early sugar would have resembled what is known as 'raw' sugar.

Sugarcane is the raw material for the production of white sugar, jaggery [gur] and khandsari. Utilization of sugarcane for the production of white sugar is increased from 61 percent in 2001-02 to 73 percent in 2007-08 and that for gur and khandsari decreased from 28 percent to 15 percent during the same period. This could be attributed to diverse of utilization of sugarcane for manufacture of white sugar on account of changed demand pattern. Moreover, the globalization of the Indian economy started in the early nineties is bound to direct the trade of agricultural commodities in the years to come.³

³ Journal of Economic Analysis and Research Institute 2010 Vol x No. 2, p 18
Sugarcane and sugar beet are the main sources of sugar in Asia and Europe respectively. While sugarcane is grown primarily in the tropical and sub-tropical zones of the southern hemisphere, sugar beet is grown in the temperate zones of the northern hemisphere. During 1970s, sugarcane and sugar beet accounted for 60 percent and 40 percent respectively of the total sugar production in the world.

However, during 1990s, the corresponding figures were 68 percent and 32 percent. During 2005-06, sugarcane accounted for 75 percent of the total sugar production in the world and sugar beet accounted for the rest. These figures amply demonstrate the growing importance of sugarcane in sugar production. It is also used for chewing and extraction of juice for beverage purpose.

Sugarcane Breeding Institute, Coimbatore, is internationally recognized as the world leader in sugarcane breeding. It has the credit of being the first institute in the world to initiate inter-specific hybridization between, “Saccharum Officinarum” and “Saccharum Spontaneum” species in the beginning of the 20th century resulting in the development of Co 205-an epoch making hybrid distinctly superior in yield and sucrose content to the indigenous low yielding than canes belonging to S. Sinense and S. barberi species than cultivated in North India. This was the beginning of sweet revolution in the world. The most outstanding research finding of the Indian Institute of Sugarcane Research, Lucknow in seventies was the development of MHAT of seed cane which effectively controls most of the diseases, responsible for gradual decline of productivity of sugarcane particularly the ratoon crop. Based on this technology, a three-tier seed programme was developed which helped in producing disease free seed and prolonging the life span of important varieties under cultivation. This technology has proved effective in maintaining and improving the sugarcane yield as well as sugar recovery in the country. Micro-propagation of seed cane through Tissue
Culture using apical meristem tissue has been developed recently which may replace the traditional system of seed multiplication in future.

During 2005, in terms of area under sugarcane, India (3.75 million ha.) stood next to Brazil (5.77 million ha) and in terms of production of sugarcane also, India (232.32 million tonnes) stood next to Brazil (420.12 million tonnes)\(^4\). However, in terms of productivity per hectare of sugarcane, India (61.95 tonnes) stood tenth, the first nine countries being Colombia (92.29 tonnes), Australia (91.06 tonnes), Philippines (81.58 tonnes), Indonesia (72.86 tonnes), Brazil (72.85 tonnes), Mexico (70.61 tonnes), South Africa (69.63 tonnes), United States of America (66.63 tonnes) and China (65.16 tonnes). This points out to the need for taking suitable steps towards increasing the productivity of sugarcane in India.

In India, during 2008-09, the gross area under rice was the maximum (45.6 million ha.), followed by wheat (27.7 million ha), cotton (9.5 million ha.), bajra (8.7 million ha.), gram (8.2 million ha.), maize (8.0 million ha.), jowar (7.7 million ha.), groundnut (6.2 million ha.), and sugarcane (4.4 million ha.)\(^5\). Thus, in terms of cropped area, sugarcane stands ninth in the country.

In India, the sugar industry is the second largest agro-based industry, next only to textiles and contributes about Rs.1650 crores to the central exchequer as excise duty and taxes annually. Besides, the state governments realise about Rs.600 crores annually through purchase taxes, cess, etc. The total value of sugarcane produced in the country is estimated at Rs. 24000 crores per year.

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\(^4\) www.nabard.org/databank

In 1980-81, utilization of sugarcane output was maximum for the production of gur and khandisari (55 percent), followed by white sugar (33 percent) and seed, feed and chewing (12 percent). However, utilization of sugarcane for white sugar production increased from 61 percent in 2001-02 to 73 percent in 2007-08, and that for gur and khandisari decreased from 28 percent to 15 percent during the same period. Thus, utilization of sugarcane for white sugar production has been rising and that for gur and khandisari production, falling. For seed, feed and chewing, utilization of sugarcane has been stable at about 12 percent.

The production of sugar in India increased substantially from 164.53 lakhs tonnes in Sugar Year (SY) 1995-96 to 201.45 lakhs tonnes in SY 2002-03 and decreased to 135.46 lakhs tonnes in SY 2003-04 and to 126.91 lakhs tonnes in SY 2004-05 particularly due to the onslaught of drought and white woolly aphid in major sugar producing states like Maharashtra, Tamil Nadu and Karnataka resulting in a fall in sugarcane production, delayed payment of cane price and closure of some sugar mills.

However, considering the increasing price of sugar in the international market, the Indian sugar industry encouraged the sugarcane farmers to plant more sugarcane.

Accordingly, there was substantial diversion of area from other crops to sugarcane in anticipation of higher return. The area under sugarcane cultivation increased from 3.662 million hectares in 2004-05 to 4.201 million hectares and 5.134 million hectares in 2005-06 and 2006-07 respectively. Sugar production increased

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The production of gur (including khandsari) in India substantially decreased from 98.62 lakhs tonnes in 1992-93 to 56.94 lakhs tonnes in 2002-03. This could be attributed to diversion of utilization of sugarcane for manufacture of white sugar on account of changed demand pattern.

The number of sugar factories in operation in India increased from 416 in 1995-96 to 455 in 2005-06. However, due to maximum production of sugarcane, in 2006-07 followed by 2007-08, this number increased to 504 and 516 in 2006-07 and 2007-08 respectively. As against the installed sugar production capacity of 189.85 lakh tonnes in 2004-05, utilization of capacity was only 67 percent. The lower utilization of sugar production capacity during 2004-05 could be attributed to lower sugarcane production and higher installed sugar production capacity. However, in 2006-07, as against the installed sugar production capacity of 213.91 lakhs tonnes, utilization of capacity was of the order of about 133 percent. The higher utilization of sugar production capacity during 2006-07 could be attributed to maximum sugarcane production.

The sugar export from India increased substantially from 8.87 lakhs tonnes in SY 1995-96 to 49.57 lakhs tonnes in SY 2007-08. The sugar import into India increased

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substantially from 0.42 lakh tonnes in SY 1995-96 to 1.24 lakh tonnes, 5.53 lakhs tonnes and 16.00 lakhs tonnes in SY 2002-03, 2003-04 and 2004-05 respectively. Thus, during the SY 1995-96 to SY 2007-08, the quantity of sugar exported was substantially higher than what was imported.

Sugar exported from India is increased from 2000 tonnes (valued at Rs.0.91 crore) in the financial year 1990-91 to 16,62,370 tonnes (valued at Rs.1769.49 crores) in the financial year 2002-03 and decreased to 12,00,600 tonnes and 1004317 tonnes in the financial years 2003-04 and 2006-07 respectively, whereas sugar imported into India decreased from 17,65440 tonnes (valued at Rs.2245.85 crores) in the financial year 1994-95 to 320 tonnes (valued at Rs.1.11 crore) in the financial year 2006-07.

During the decade ended in 2008, sugar export from India was maximum to UAE (5.40 lakhs tonnes), followed by Bangladesh (3.74 lakhs tonnes), Pakistan (3.50 lakhs tonnes), Sri Lanka (1.62 lakh tonnes), Malaysia (1.32 lakh tonnes) and Yemen (1.17 lakh tonnes).

The Government of India, vide its notification dated July 04, 2006 had banned export of sugar purportedly to check inflation caused by rising sugar prices. International Sugar Organization (ISO) assessed the increase in sugar prices of different countries during October 2005 to April 2006 and stated that the increase in domestic price of sugar in India is "a mere tepid 10 percent in aggregate terms over the past six months" compared to 58 percent in Brazil, 50 percent in Russia and 27 percent in China". The Indian sugarcane farmers and the sugar industry which had suffered major losses during 2003-04 and 2004-05 could recoup the losses incurred, by exporting sugar. Higher world market prices make sugar export a viable proposition, particularly when excess stocks are available beyond local needs.
In India, sugar is a prime requirement in every household. Almost 75 percent of the sugar available is consumed by sugar based bulk consumers like bakeries, candy makers, sweet makers and soft drink and ice cream manufacturers. Industrial consumption of sugar is growing rapidly particularly from the food processing sector and sugar-based bulk consumers. A rising trend in usage of sugar could be attributed to greater urbanization, rising standard of living and change in food habit. While domestic consumption of sugar accounts for 98 percent of sugar production in India, export accounts for the rest (long run average).

India is the world’s largest sugar consumer. On the basis of existing trend of sugar consumption and population growth rate of 1.6 percent per annum, the estimated requirement of sugar by 2010 would be 24.3 million tonnes and the corresponding area required under cultivation would be around 5.5 million ha. The increase in area under sugarcane cultivation from the level of 4.41 million ha., in 2008-09 to 5.5 million ha. by 2010 may not be possible due to other competing crops, constant land area and water shrinkage and hence will necessitate improvement in productivity of sugarcane and sugar recovery, for which, research institutions have to play a very important role.

India is the fourth major sugar producing country in the world, the first three being Russia, Brazil and Cuba. Sugar industry occupies an important place among organized industries in India. Sugar industry, one of the major agro-based industry in India, has been instrumental in resource mobilization, employment generation, income generation and creating social infrastructure in rural areas. Indeed, sugar industry has facilitated and accelerated pace of rural industrialization. At present, there are 553 registered sugar factories having capital investment of Rs. 50,000 crores
and annual production capacity of 180 lakhs metric tonnes\(^9\). The annual turnover of industry is to the tune of Rs. 25,000 crores. The central and state governments receive annually Rs. 2500 crores as excise duty, purchase tax, and cess. More than 4.50 core farmers are engaged in sugarcane cultivation and about 5 lakhs rural people have got direct employment in the industry. Sugar industry has brought socio-economic changes in rural India by way of facilitating entrepreneurial activities such as dairies, poultries, fruits and vegetable processing, and providing educational, health and credit facilities.

There is a significant demand from South Africa, Egypt, Bangladesh and Indonesia for sugar. Sugar industry is the second largest manufacturing industry in India. About 500 thousand people are directly employed in the sugar industry, including farmers and their family members. Around 45 million people constituting 7.5% of the rural population of India, depend on sugar industry for their livelihood. The industry contributes about Rs. 16 billion ($328.5 mn) to the Central and State exchequers.\(^{10}\)

The country produced a record of 28.4 million tonnes last year, prompting mills to scout global markets for raw sugar exports.\(^{11}\) The Indian Sugar Industry is the second largest among the agro-based processing industries in India after the textile industry with around Rs.30000 crores (Rs.3000 millions) of turnover. The Sugar Industry has played a major role in integrating rural development. In India more than 550 sugar factories are now installed.\(^{12}\)

\(^{9}\) ISMA Financial Report, 2004, ISMA group consolidated accounts and auditors’ report
\(^{10}\) Indian Sugar Exim Corporation’s, “Sugar and India’s Economy” (2009 )
\(^{11}\) Sugar Diary published by Maharashtra Rajya Sahakari Sakhar Karkhana Sangh Ltd. Mumbai 2009
\(^{12}\) Vasantdada Sugar institute’s, Mission, (2009), www.visugar.com/india/organisation/mission.htm
More than 100 countries produce sugar, 78% of which is made from sugarcane grown primarily in the tropical and sub-tropical zones of the southern hemisphere, and the balance from sugar beet which is grown mainly in the temperate zones of the northern hemisphere. Generally, the cost of producing sugar from sugarcane are lower than those in respect of processing sugar beets. Currently, 69% of the world's sugar is consumed in the countries of origin, while the balance is traded on world markets. Because of the residual nature of the world market, the free market price is one of the most volatile of all commodity prices.¹³

Agriculture in India is one of the most prominent sectors in its economy. It is the pre-eminent sector of the economy, the source of livelihood of almost two thirds of the workforce in the country. The contribution of agriculture and allied activities to India's economic growth in recent years has been no less significant than that of industry and services. More than self-sufficient, India frequently exports its surpluses. India in 55 years has emerged from famine ridden colonial times, as a famine free Republic. Its population has nearly tripled in that period. More significantly, India in 1947, lost some of its most fertile lands. But she has managed to stand up and falsify many prophesies of doom. India was the greatest success story of the Green Revolution. Although today her agriculture is at cross-roads again, the Green Revolution of the sixties gained some crucial decades for India in which to rethink her way forward. The Revolution is also worth remembering for India's capacity for collective action. Pause a while therefore, before you decry India's administration for every ill in the land.¹⁴

¹³ www.illovo.co.za/worldofsugar/international SugarStats.html.
The country has now emerged as a notable exporter not only of food grains, but also of several agricultural commodities. Today, India is the world's largest producer of milk, second largest producer of rice, wheat, sugar, fruits and vegetables, and the third largest producer of cotton.

Indian agriculture continues to face internal and external challenges. While monsoon dependence, fragmented land-holding, low level of input usage, antiquated agronomic practices, lack of technology application and poor rural infrastructure are some of the key internal constraints that stimulate a healthy growth, massive agricultural subsidies and adoption of cutting edge production technologies (such as agricultural biotechnology) are seen driving global production of a number of crops up. Subsidies and barriers distort international agricultural trade, rendering agri-exports from developing nations such as India uncompetitive. In recent years, the government dismantled most of the trade related restrictions. Controls on storage, movement and credit access are applicable no more. Forward trading is allowed, so also futures trading in most commodities. For primary producers and processors, the marketing environment is free as never before. Yet, supply chain inefficiencies persist. Fragmented markets, lack of primary processing, lack of standardization of quality, fragmented nature of processing industry and continued restrictions such as small-scale industry reservation, operation of the Essential Commodities Act, compulsory marketing through designated agricultural produce markets and such others characterize agri-marketing. The Indian Sugar Industry is agro-based industry which is the second largest agro-based industry next to textiles in India.\(^{15}\)

\(^{15}\) http://coopsugar.org/history.php
Sugar is the only food item that is extracted from two different plants, sugarcane and sugar beet, and is among the most important agro-based industries in the world. Sugarcane and sugar beet grow in very diverse climatic regions and account for nearly 80 percent and 20 percent of the world's sugar supply, respectively. Sugarcane has been witnessing a metamorphosis, from that of a sweetener to an alternate fuel, which has changed the structure of the sugar sector.

India is the second largest producer of sugar in the world and the domestic sugar industry is one of the largest agro-based industries, after cotton textiles. It is a highly regulated industry, wherein the entire value chain, from the price of sugarcane to the distribution of sugar and the use of its byproducts, is under the regulatory purview.

Besides being the chief raw material for the sugar industry, sugarcane is also used extensively in two cottage industries—gur and khandsari—which account for over 30% of sugarcane usage.

Sugar production is centered on a few countries, mainly Brazil, which accounts for over 22 percent of global production, followed by India (15 percent), EU (10 percent), and China (8 percent).

While global sugar production and consumption have increased considerably since 1990s, the rise in production has been intermittent due to the cyclical nature of the sugar producing crops, which has a large bearing on global sugar prices. In 2011-12, the global sugar production was 172.12 million tonnes and the consumption was 167.7 million tonnes, a surplus for the second consecutive year.

The average annual ICE (Inter Continental Exchange) sugar prices were only 9.9% per pound in 2007 due to the global supply glut. However, a significant price
increase was witnessed from 2007 to 2010 due to a lower output in 2008-10, coupled with a rising conversion of sugarcane to ethanol in Brazil.

In 2011-12, there was again a sugar surplus of about 5.5 million tonnes on account of higher global output, except in Brazil, which saw 20 percent drop in output. This has led to a drop in the monthly average LIFFE (London International Financial Futures and Options Exchange) prices in the current year from $799 per tonne in July 2011 to $566 per tonne in May 2012.16

Though India is among the largest producers of sugarcane, the yield and the sugar recovery rate is 46 tonnes per hectare and 10.2 percent, respectively, which is much lower than the world average. Indian sugar production has grown at a CAGR of 2.4 percent over the past 12 years and was around 26 million tonnes in 2011-12. However, it has been characterized by fluctuations of surplus and shortages due to the cyclical nature of production.17

**TYPES OF SUGAR INDUSTRY IN INDIA**

The sugar industry can be divided into two sectors namely organized and unorganized sector. Sugar factories belong to the organized sector and those who produce traditional sweeteners fall into unorganized sector. Gur and khandsari are the traditional forms of sweeteners.18

There are over 162 sugar mills in the country, which are considered as sick, Minister of State for Food and Agriculture K.V. Thomas said in a response to a

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17 Naveen Mathur, Economic Times Bureau Jul 2, 2012
18 http://wwwindianmirror.com/indian-industries/sugar.html
written query in the Lok Sabha. Of these, 139 are in the co-operative sector while the rest 23 are in the private sector.

The main reasons for sickness of these sugar mills were non-availability of adequate raw material, poor recovery from sugarcane, lack of modernization, high cost of working capital, control of molasses, lack of professional management and over-staffing, Thomas said.

Besides, high level advised prices of sugarcane by some states are responsible for sickness of some sugar mills in the country. There are about 600-odd sugar mills in the country.

Sugar Industry is very important to the Indian National economy, because of its multiple contributions in the shape of employment and provision of raw materials to other industries.

Sugar is made by some plants to store energy that they don't need straight away, rather like animals make fat. People like sugar for its sweetness and its energy. So, some of these plants are grown commercially to extract the sugar.

Sugar is produced in 121 Countries and global production now exceeds 120 Million tonnes a year. Approximately 70% is produced from sugarcane, a very tall grass with big stems which is largely grown in the tropical countries. The remaining 30% is produced from sugar beet a root crop resembling a large parsnip grown mostly in the temperate zones of the north.

The industry provides employment to about 35 million cultivations and 3.6 lakhs skilled and unskilled workers. Further, it accounts for providing employment to crores of thousands in the sugar trade, in the transport of sugarcane and sugar etc. It’s by - products are used as raw materials in industries such as alcohol, plastics, synthetics, rubber, and fiberboard Pharmaceuticals, paper, etc. The sugar industry in
recent years has begun to export sugar, thus earning valuable foreign exchange. Besides it provides Rs. 300 crores in the form of taxes to the exchange consisting many facts of important of the industry, it ranks second among the major consumer industries of this country, next only to cotton and textile industry.

The sugar industry is mostly oriented to a single material, namely sugarcane that forms 60% of the total cost of production. Therefore, the availability of sugarcane and facilities of transporting raw material of the sugar mill naturally condition the industry of sugar proximity to. The raw material is essential because the sucrose content of the sugarcane begins to decrease soon after the cane is cut obtained as the factories for generating power use a byproduct during the producing. Therefore, power is not at all a dominating factor determining the location of sugar industry. In recent times, techniques feasibility and economics visibility of the sugar projects have been given importance in the location of sugar industry. In the words of Dr. M. Mehta, “The location pattern of the sugar industry is greatly influenced by the atmosphere. Local distribution depends entirely on physical and Geographical factors. Nature plays a dominant role in the location of industry”.

In India, major sugarcane growing states are Uttar Pradesh, Maharashtra, Karnataka, Gujarat, Tamil Nadu, and Andhra Pradesh. These six states contribute more than 85% of total sugar production in the country; Indian Sugar Mills Association (ISMA), is recognized as the central apex organization to voice the cause of sugar industry in the country. The appreciation of rupee coupled with other factors has reduced the margins in sugar exports, and yet these mills are happy as the exports help these to keep a cash flow sufficient to make cane payments and reduce the

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19 http://www.mbaguys.net
carrying costs of surplus sugar. “The sugar industry wants more exports to help mills keep getting cash flows and to meet the growing cash demands in this sector,” said Abinash Verma, Director General, ISMA, while interacting with Daily Post. The Central government has allowed export of one million tonne sugar in 2011-12 till now. The country had exported 1.5 million tonne sugar in 2010-11. Here are excerpts from the interaction:

The two foremost challenges for sugar industry are the rigid regulations constraining us and the cyclic fluctuations in production. These problems are interlinked. The lack of freedom in decision making on sound commercial basis is amplifying the financial distress in the industry. This leads to sharper swings in sugar production from year to year. If one looks at the reasons for cyclic fluctuations in sugarcane and sugar production, bad weather is a cause of concern. The predominant cause is the delay in payment of adequate cane price to the farmers, leading to reduction in areas under sugarcane and lack of proper care of the crop by the farmers, causing lower yields and sugar recoveries.

SUGAR INDUSTRY IN RURAL DEVELOPMENT

The agro based sugar mills play a major role in the economic development of rural areas as they generate large scale direct employment, besides providing indirect employment to rural population. Tamil Nadu which accounts for nearly 10 percent of the total output of sugar in India is also in the forefront in the per hectare production of sugarcane. A majority of sugar units in Tamil Nadu are with the co-operative sector

http://www.business-standard.com
while private players are also in the field. Unfortunately, the industry is in doldrums today like other rural industries. The industry which had a boom period in 1980s started facing crisis from 1990, especially after the economic liberalization. Increase in procurement price of sugarcane, excess production and fall in the open market sugar price have all led to heavy glut of stocks in sugar factories.

By-products of the sugar mills viz. bagasse, molasses, and press mud should be gainfully utilized for increasing the revenue of the units. At present many sugar mills have set up bagasse based co-generation units for generating electricity. After meeting their needs, the mills supply the excess power to Tamil Nadu Electricity Board. There is a scope for increasing the power production thereby adding revenue to the mills.

Again production of ethanol, a by-product of sugar mills is yet to commence on a commercial scale in Tamil Nadu. Already the Central Government had approved five percent mixing of ethanol with petrol. Due to delay in establishment of ethanol production plants and delay in finalization of terms and conditions between the distilleries and oil companies, the production could not commence in the State. Sugar mills could be run successfully if they diversify their operation without sticking to sugar production alone.

The growth and performance of the sugar mills in Tamil Nadu are impressive and they are significantly related to the government policies as well. The national and international scenario in terms of production and improvement in technology also stimulated the growth factor in Tamil Nadu. The emergence of co-operative

public sector sugar mills after Independence established good performance. As early in the Pre-Independence Period, state policy and intervention had helped in promoting sugar mills and the real growth of the sugar mills essentially began after the granting of tariff protection in 1932. This protection was itself granted because there appeared to have been no direct conflict of interest between the growth of sugar industry in India and imperial economic interests.

Following the granting of tariff protection in 1932 there was almost a four-fold increase in both the number of mills and in the output of cane sugar, coupled with a rapid decline in inputs. After Independence, under the Five Year Plans, a systematic structure of ownership, location, control and licensing had emerged. Naturally Sugar policy grows to determine every aspect of sugar industry in recent decades. The national scenario of the growth of sugar mills has far reaching impact on Tamil Nadu under the Five Year Plans. Three more private sector mills emerged in 1950, 1955 and 1957 namely Madura, Thiru Arooran and Cauvery. During 1960-61, three co-operative sector sugars mills commenced their crushing, viz, Amaravathi, Madurantakam and Ambur. From 1960 to the present day, the growth of co-operative sector sugars is impressive due to the policy of government of India. Besides, the establishment of the private sector mills have also been encouraged during that period.

Moreover public sector sugar mills under the administration of Tamil Nadu Sugar Corporation (TASCO) were started in 1976 and 1977 at Kurungulam and Perambalur respectively. The Madura Mill has been undertaken by the TASCO since in 1983. The combination of co-operative, public and private sector sugar mills contribute much to the sugar economy in terms of production and productivity. Tamil Nadu is one of the leading producers of sugar in India and its contribution is about 10
Percent of Country’s Production. The average number of crushing days is also higher than the all India level.

During the current 2010-11 season, all the sugar mills in the State have programmed to crush 178.58 Lakhs Metric Tonnes of cane and produce 16.39 Lakh Metric Tonnes of Sugar with an average recovery of 9.18%.

In the current 2010-11 season as on 31.07.2011, the Co-operative and Public Sector sugar mills have crushed 45.70 LMT of Cane and produced 4.15 LMT of sugar with an average recovery of 9.08%.

OVERVIEW OF SUGAR INDUSTRY IN TAMIL NADU

The Sugar Industry in Tamil Nadu is an important agro-based industry next to textile industry. It plays a major role in the economic development of rural areas in Tamilnadu. The Mill has been started with the objective of augmenting the sugar production of the country and generate rural employment.

The vision behind it is to develop the socio economic condition of rural populace and attaining self-sufficiency in sugar production. The hub of activities of sugar mill generate thousands of employment opportunities in the area cane cultivation, cane harvest and cane transportation etc. Being in co-operative sector, the mills strongly believe in production of quality products and dedicated service to rural people.

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\[22 \text{http://www.amaravathisugars.net.in}\]
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been on the increasing trend. The average number of crushing days is also higher than the all India level.

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India's sugar production for 2011-12 Marketing Year crossed the last year’s total of 24.3 million tons by April 15th. Country's output touched 24.63 million tonnes till now, according to Indian Sugar Mills Association (ISMA).

The global demand for sugar has gone up and with record production in India this year, the traders are demanding more exports of the commodity.

According to ISMA, sugar production in the country is expected to be around 26 million tons for 2011-12 While, consumption is estimated to be around 22 million tonnes. India has allowed exports of 3 million tons so far. India is the second largest sugar producing nation in the world. Brazil stands first with 33.1 million tons and is expected to reach the market this April.

In Inter-continental Exchange (ICE), sugar for May delivery rose 0.12 cents to 23.02 cents per bushel on Tuesday. And in India's National commodity and Derivatives Exchange (NCDEX), the commodity for April delivery traded up 0.32% to Rs 2780 per qtl on 18th April at 10:45 IST.\(^{23}\)

PROFILE OF THE SELECT SUGAR MILLS OF TAMILNADU

This part deals with the general profile of the sugar mills selected for the study. Some of the sugar mills, selected from the co-operative sectors are given below.

THE SALEM CO-OPERATIVE SUGAR MILLS LIMITED

The Salem Co-operative Sugar Mill is situated on the bank of river Cauvery at a distance of 20 kms from Namakkal, which is the nearest town. The factory and residential colony is located in a extent of 148 acres of Pettapalayam village. The SCSM was registered on 24.07.1960 and started its first crushing on 07.04.1964 with the crushing capacity of 1000 tonnes of cane per days at a plant cost as Rs. 110 lakhs. The crushing capacity of the mills was expanded to 1750 tones of cane per day during the year 1973-74 at a cost of Rs. 105.32 lakhs. The mill’s crushing capacity was further expanded to 2500 tonnes of cane per day during the year 1977-78 at a cost of Rs 144 lakhs.

This mill is established in the year 1964 at Mohanur village in Namakkal district. Its crushing capacity is 2500 Metric Tonnes. It buys ENA, molasses, rectified sprit, refined sugar, and sugar. It sells ENA, molasses, rectified sprit, refined sugar, and sugar.

THE AMARAVATHI CO-OPERATIVE SUGAR MILLS LIMITED

The Mill has been started with the objective of augmenting the sugar production of the country and generates rural employment. Its year of establishment is 1960 at Krishnapuram village of Udumalpet Taluk in Coimbatore. Its nature of business is, manufacturing of sugar. The crushing capacity of the mill is 1250 Metric Tonnes.
THE DHARMAPURI DIST CO – OPERATIVE SUGAR MILLS LTD

The Dharmapuri Dist Co-operative Sugar Mills Ltd was established in the year 1972 in Palacode Taluk of Dharmapuri. Its present sugarcane crushing capacity 2000 M.T. It is an agro based industrial undertaking in the district of Dharmapuri, established to fulfill the long felt need of the public in general and the sugarcane growers in particular. This district was traditionally jaggery manufacturing area.

Normally the bulk of the cane grown in the District was delivered to jaggery manufacturing and a small quantity to kandasari sugar before the sugar mills here established. This sugar factory is situated at Timmanahalli in Palacode Taluk in Dharmapuri District. The mill is located in a compact block of land measuring 171.73 acres including its cane farm, quarters, Dharmapuri-Hosur road (via) Rayakottai. The mill was registered under the Tamilnadu Co-operative Societies Act 1961, on 29th August 1966. The factory commenced its first crushing season on 29thFebruary 1972. The mill has expanded its crushing capacity to 2000 TCD from 28-2-1987 at a total project cost of Rs.457.19 lakhs (Rs.260 lakhs by loans from financial institutions and the balance from own fund). The mill has also availed Rs.15 lakhs as subsidy from SIPCOT

THE VELLORE CO - OPERATIVE SUGAR MILLS LTD

The mill was established during the year 1977 at Katpadi Taluk of Vellore District. Its present crushing capacity is 2500 MT. The vision behind it is to develop the socio economic condition of rural populace and attaining self sufficiency in sugar production. The hub of activities of sugar mill generate thousands of employment opportunities in the area cane cultivation, cane harvest and cane transportation etc.

Being in co-operative sector, the mills strongly believe in production of quality products and dedicated service to rural people.
THE TIRUPATTUR CO - OPERATIVE SUGAR MILLS LTD

The Tiruppattur Co-operative sector sugars Ltd. is an agro based industrial undertaking established in Vaniyampadi Taluk in Vellore District to fulfill the need of the Public in general and the sugarcane growers in particular. It plays a major role in the economic development of rural areas in Tamil Nadu. The mill has been started with the objective of augmenting the sugar production of the country and generates rural employment. The mill was installed during 1977 with a capacity of 1250 TCD. Its present sugarcane crushing capacity is 1400 MT. The vision behind it is to develop the socio economic condition of rural populace and attaining self sufficiency in sugar production. The hub of activities of sugar mills generate thousands of employment opportunities in the area cane cultivation, cane harvest and cane transportation etc.

PROFILE OF SELECT PRIVATE SECTOR SUGAR MILLS

BANNARI AMMAN SUGARS

The First Sugar Unit near Sathyamangalam of Erode District, Tamil Nadu State, started its commercial production in the year 1986 with an initial capacity of 1250 Tonnes of Cane Crush per Day. Its present capacity is 4000 TCD and has an imported facility to produce 300MT Refined Sugar per day with ICUMSA less than 20 IU. It’s an ISO 9001:2008 certified Unit.

The second sugar unit, near Nanjangud in Mysore District of Karnataka State, started the commercial production in the year 1992 with an initial cane crushing capacity of 2500 TCD and its present capacity is 7500 TCD. A sugar refinery plant with a capacity of 500 MT per day has been installed. The company has acquired its third sugar unit having a cane crushing capacity of 2500 TCD in Kunthur Village near Kollegal in Karnataka by way of amalgamation of M/s. Maheswara Sugars Ltd, with the company.
The fourth sugar unit comprises of 5000 TCD Sugar Plant and 28.8 MW Co-generation Plant at Kolundampattu Village, Thandarampattu Taluk, Tiruvannamalai District in the year 2010.

Co-generation: The company has four co-generation plants of capacities 20MW at Sugar Unit I, 16 and 20MW at Sugar Unit II and 28.8MW at Sugar Unit IV. The Total Power Generation capacity of the four plants is 84.8MW.

The sugarcane crushing capacity in all the four units of Bannari Amman Sugars Limited, now 19000 Tonnes of Cane Crush per Day, from the initial capacity of 1250 TCD of its first Sugar Unit. The total cane crushed in the financial year 2012-13 in all the four sugar units is 35.27 Lakhs Tonnes.

DHARANI SUGARS AND CHEMICALS LIMITED

This is the flagship company of the PGP Group of Companies, Chennai, established in the year 1987. DSCL has three integrated sugar plants with a total crushing capacity of 10000 TCD, co-generation power plant of 37 MWs and multi product distillery of 160 KLPD. The first sugar factory was set up in southern part of Tamilnadu, which was then an industrially backward area. The factory with an installed capacity of 2500 TCD situated at Narayanapuram Village of Sivagiri Taluk in Tirunelveli District was commissioned in March 1989. It is the first agro based industry of the district. It caters to the needs of the cane growers of 3 districts viz major parts of Tirunelveli, western part of Tuticorin and western part of Virudhunagar.

The multi product distillery adjacent to the sugar plant with an installed capacity of 30 KLPD was commissioned in August 1995. The capacity of the distillery was doubled to 60 KLPD and commissioned in December 2008. The second sugar factory was set up at Karaipondi Village, Polur Taluk, Tiruvannamalai District
with an installed capacity of 2500 TCD along with 15 MW bagasse based cogeneration power plant. This unit was the first integrated large scale sugar cogeneration plant complex in the country and the company also received USAID grant of USD. The sugar plant was commissioned in July 1996. During the season 1998-99 the plant has crushed for as high as 313 days. Apart from utilizing part of electricity generated from the co-generation power plant the for its own purpose, the unit also exports approximately 8–9 MWs / Hr to the State Electricity grid. The capacity of the sugar plant was expanded to 4000 TCD during the year 2006-07.

The third unit which has been set up at Kalayanallur Village, Sankarapuram Taluk, District Villupuram, Tamilnadu envisages installation of 3500 TCD sugar plant along with bagasse based cogeneration power plant of 22 MWs and a multi product distillery with an installed capacity of 100 KLPD. The sugar plant and cogeneration power plant have been commissioned in November 2009.

**RAJSHREE SUGARS AND CHEMICALS LIMITED**

It is a public limited company listed on National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). The company has interests across integrated fields such as Sugar, Distillery, Power and Biotechnology. RSCL with its Corporate Office in Coimbatore has three modern sugarcane based integrated biorefinery complexes located at Varadaraj Nagar in Theni District, Mundiampakkam in Villupuram District, Gingee in Thiruvannamalai District of Tamil Nadu and 1 unit at Zaheerabad in Medak District of Andhra Pradesh with easy access to Tuticorin, Chennai and Visakhapatnam ports.

Rajshree Sugars & Chemicals Limited (RSCL) is a public limited company listed on National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). The company has interests across integrated fields such as Sugar, Distillery, Power and
Biotechnology. RSCL with its Corporate Office in Coimbatore has three modern sugarcane based integrated biorefinery complexes located at Varadaraj Nagar in Theni District, Mundiamppakkam in Villupuram District, Gingee in Thiruvannamalai District of Tamil Nadu and 1 unit at Zaheerabad in Medak District of Andhra Pradesh with easy access to Tuticorin, Chennai and Visakhapatnam ports.

SAKTHI SUGARS

In 1921, Pollachi was a tiny village, way too modest compared to the bustling town it is today. But it was here, P.Nachimuthu Gounder laid the foundation for Sakthi Group. It was in this year P.Nachimuthu Gounder broke away from his traditional business of hiring bullock carts and pioneered into passenger transport service. From then on, there was no looking back. He founded the Anamallais Bus Transport (ABT), the parent organization of the Sakthi Group in 1931 with 21 buses. It eventually grew into a network covering almost all of South India.

After three decades Sakthi Sugars Limited was established in the year 1961, with commercial production of Sugar commencing in the year 1964 at its Sakthinagar Sugar plant. Today it has in its fold four Sugar plants with three of them in Tamil Nadu located at Sakthinagar, Sivaganga and Modakurichi and one plant in Orissa at Dhenkanal. With the aggregate capacity of 19,000 Tonnes of cane Crush per Day (TCD), Sakthi Sugars Limited is one of the largest producers of Sugar in the country.

Expanding its industrial presence, Sakthi Sugars Limited diversified into manufacturing of Industrial Alcohol in the year 1972 at Sakthinagar, Tamil Nadu and at Dhenkanal, Orissa in the year 1996. These two distillery plants, undisputedly the largest in their respective states, have an aggregate capacity of 46 KLPD Industrial Alcohol. Soya Products is another range of products manufactured by Sakthi Sugars Limited. It has an advanced soya processing unit with refinery complex near Pollachi,
Tamil Nadu. It handles a capacity of 90,000 Metric tonnes (MT) of soyabeanes per annum. The company has also installed three co-generation power plants at its sugar factories in Tamil Nadu. The combined capacity of power production of these plants is 92 Mega Watt. After meeting the power requirements of the sugar plants the excess power generated is exported to the power grid.

Sakthi Sugars Limited is one of the important members of the Sakthi Group contributing a large share of revenue to the group's turnover. In its pursuit for business excellence, the Sakthi Group, ever since its inception has been staunchly inclined towards fulfilling its social commitments. As a dutiful corporate, Sakthi Group has set up many educational and charitable institutions, hospitals and religious centers. It has also made significant contribution to rural development through a number of social welfare activities and initiatives. It has created ample employment opportunities for rural youth through its multi-fold agro-based institutions and other industries. Its a strong belief among us that growth and development must reach all sections of the society and businesses have a responsible role in making this a reality.

**PONNI SUGARS**

Ponni sugars (Erode) Ltd was incorporated in 1996, it is an offspring of Ponni Sugars and Chemicals (PSCL) under a demerger scheme by the Honourable High Court of Madras on September 10, 2001. In terms of the scheme, the company took over the business of Erode undertaking with concurrent transfer of major part of stakeholders’ interest in PSCL to the company. Its total income for the year ending March 2013 is Rs. 2148.9 million and its net profit is Rs 191.1 Million. Ponni Sugars is the brainchild of late S Viswanathan, a renowned industrialist of the south. The Erode sugar mill was set up with 1250 TCD capacity in 1984 in a record time of 12 months. It achieved full capacity crushing during the very first year of its commercial
operation that enabled declaration of a maiden dividend of 10% in that very first year, a record in the annals of sugar industry. It was a trendsetter in mobilising surplus cane during its infancy stage from neighbouring sugar mills and extending crushing season to well above industry average. Its capacity was expanded to 2500 TCD in 1994.

Right at its inception, Ponni was structured on the concept of total diversion of bagasse for paper. Accordingly it installed a coal fired boiler and later added a multi fuel boiler in place of conventional bagasse fired boilers. It has a bagasse tie up arrangement with Seshasayee Paper and Boards Ltd for a mutually beneficial and rewarding long term relationship.

Ponni is an efficient and quality producer of sugar, catering to both domestic and international markets. It is a venerable partner for villagers growing sugarcane in its neighbourhood. It enjoys cordial relationship with employees. It firmly believes in transparent and fair dealings with all its stakeholders by following sound corporate governance norms both in letter and spirit.

**CHALLENGES FOR SUGAR INDUSTRY**

India ranks first in sugar consumption and second in sugar production in world but its share in global sugar trade is below 3%. Indian sugar industry has been facing raw material, and resource as well as infrastructural problems. Globalization has brought a number of opportunities but at the same time posed certain challenges before sugar industry. Mounting losses and decreasing networth of sugar factories have been responsible for sickness of sugar industry. Sickness in sugar industry has reached to an alarming proportion. Indian sugar industry has been cash striven for decades.

The main concern of sugar industry in India is fluctuations in sugarcane production due to inadequate irrigation facilities, lower sugarcane yield, and frequent
droughts in tropical and sub-tropical areas where sugarcane is grown on a large scale. In addition, sugarcane yield has been lower (59 Mts per hectare). Sugar recovery is also lower in comparison with other sugar manufacturing countries. This leads to escalation of production costs and weakness competitive edge of the industry. Most of sugar mills in India are having daily sugarcane crushing capacity of 1250 tonnes. These mills cannot have economies of scale so they have to incur high production costs. Indian sugar industry is characterized by high production costs. Therefore, daily crushing capacity should be extended to 2500 tonnes. Obviously, industry has a great challenge of existence in global market. In recent years, sugarcane production in India has decelerated to a great extent due to water and power shortage. Special attention is needed to be given on water resource management. All the area under sugar cultivation should be brought under drip irrigation to conserve water as well as fertilizers. Adequate and regular power supply to sugarcane growers and sugar factories would increase production and productivity. To enhance share of Indian sugar industry in global trade, quality and quantity of sugar needs to be enhanced.

Sugar industry is the second largest agro-based industry in India. Sugar factories, particularly co-operative sugar factories in Maharashtra and other states have been instrumental in building confidence among rural people and strengthening industrial base in rural India. It needs quality management at every level of activity to enhance its performance. The need of the hour is to liberalize industry from clutches of unprofessional people. Most of the sugar units do not have byproduct utilization plants. Projects based on bagasses and molasses should be initiated. Ethanol, alcohol, and paper projects have tremendous scope for development in India. In future, 10-15% ethanol may be allowed to be blended with petrol. Bagasses based power generation projects installed adjacent to each sugar factory would fulfill need of
power. NABARD should provide adequate and timely refinance to these projects at concessional interest rates. New sugar units should be set up taking into consideration sugarcane availability. Research programme should be undertaken in area of sugarcane cultivation, enhancing sugarcane productivity, and sugar recovery. Sugarcane prices should be fixed on basis of sugar recovery. Attention is to be given on manufacturing quality sugar as per international standards at competitive prices.