

# Exploring The Sugarcane Sector: Analyzing Challenges And Opportunities In Haryana's Sugar Industry, With A Spotlight On Shahabad District, Kurukshetra

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## Abstract

*Sugarcane stands as one of India's foremost commercial crops. India ranks as the second-largest consumer of sugar globally and holds the title for the highest sugarcane production, trailing only behind Brazil. The nation boasts a total of 566 sugar factories, with the cooperative sector claiming a significant share of 315, constituting 56% of the total establishments. Consequently, India's economic and social progress is deeply intertwined with the cooperative sugar industry's vitality. Moreover, sugarcane has increasingly become a preferred crop <sup>1</sup>for generating environmentally sustainable and renewable energy in recent years. Despite witnessing an uptick in energy consumption and economic advantages, sugarcane cultivation confronts a plethora of challenges. This article delineates the potential opportunities and obstacles confronting cooperative sugar industries, with a particular focus on those situated in Shahabad, within the Kurukshetra district of Haryana, India. Furthermore, the article accentuates the imperative need for addressing pivotal challenges and ensuring sustained and robust growth within the industry.*

**Keywords:** Sugarcane industry, Challenges, Opportunities, Shahabad, Kurukshetra, India.

## 1. Background Information

In India, agriculture stands as the cornerstone of the economy, providing not just sustenance but also critical raw materials for industries such as sugarcane, cotton, oilseeds, and various other sectors. With roots tracing back to ancient times, agriculture directly or indirectly supports nearly two-thirds of the population. The trajectory of industrial development is intricately linked with the progress of agriculture.

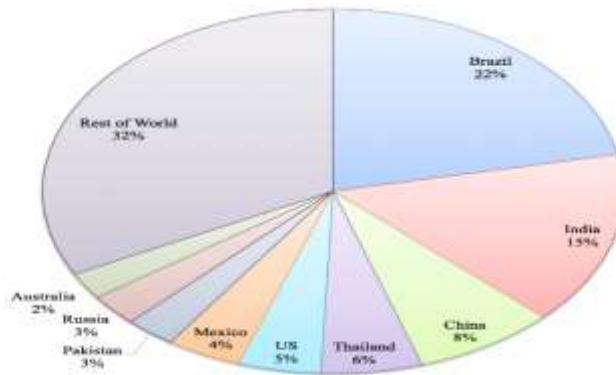
Industries and agriculture form a symbiotic relationship, where advancements in agricultural productivity propel industrial growth, and vice versa. This concept underscores the inherent synergy and interdependence between sectors that supply farming inputs and those that utilize agricultural products. These sectors are categorized as processing or agro-based industries and agriculture-based industries, respectively [1].

Among the drivers of the nation's gross domestic product (GDP), the sugar sector emerges prominently as a significant agro-based industry [2].

Over time, the sugar industry has garnered considerable public attention, subject to meticulous scrutiny and often overly cautious regulations. Despite periods of deregulation, the sugar industry remains heavily regulated, lacking the adaptability required to respond to evolving circumstances. Here, we delve into the global and Indian perspectives on the landscape of the sugar industry.

**1.1 Sugar Industry: Worldwide View**

Over the past two decades, sugar trade liberalization has been witnessed in various nations. The sugar trade caters to approximately 25% of global demand, surpassing grains, the primary agricultural product, which holds only a 10% to 20% market share. Projections indicate that sugar exports are expected to double to over 20 million tonnes by 2050 [3]. Liberalized sugar trade regulations significantly influence the global sugar industry's development and intensify international competition among sugar refiners. Presently, The major sugar producer countries in the world have been shown in figure 1.



**Figure 1:** Country wise sugar production [4]

Over the upcoming decade, forecasts indicate a 1.3% annual expansion in global sugar trade, with shipments comprising approximately 35% of worldwide sugar production. Sugarcane, predominantly in the form of raw sugar, will remain the primary source of traded sugar globally, supplemented by sugar beet and processed sugarcane into white sugar. Brazil will maintain its dominance in the market, accounting for up to 49% of global sugar exports, followed by Thailand, Australia, and India. The data (Mt) anticipating sugar production and consumption up to 2030 has been shown in Figure 2.



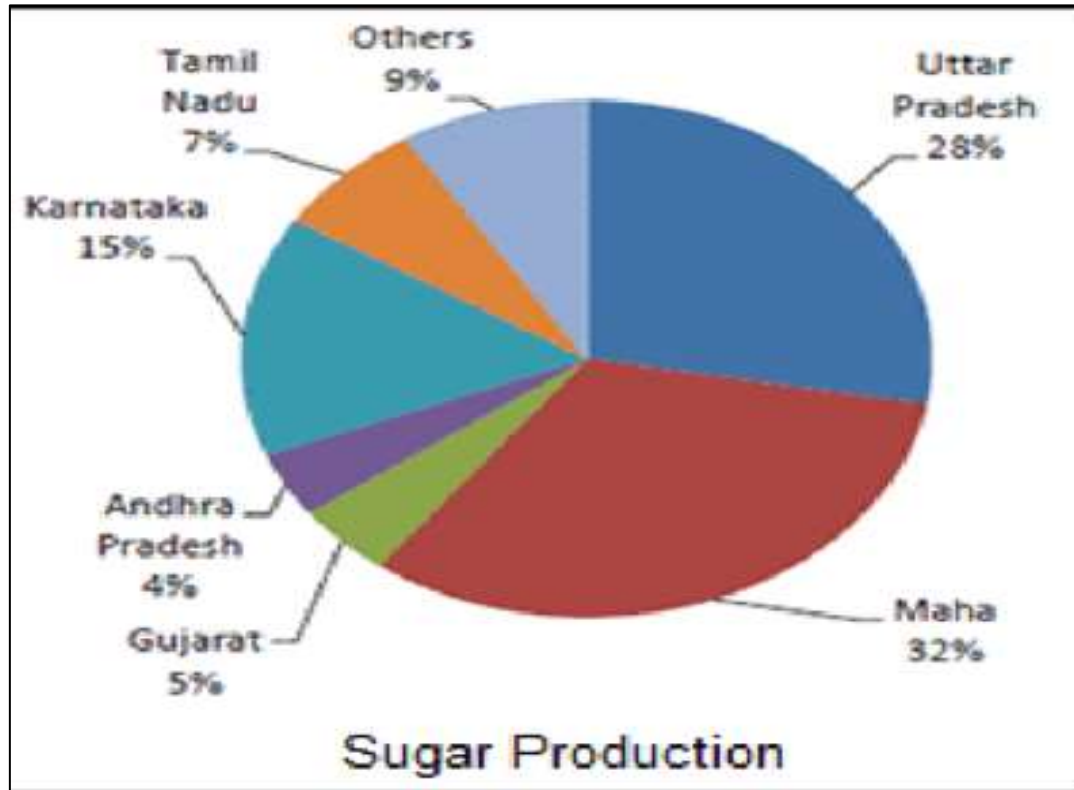
**Figure 2:** Worldwide sugar production and consumption (2030) [5]

## 1.2 Sugar Industry: Indian Overview

Given sugarcane's efficient conversion of solar energy into biomass and its multifaceted utility as a source of fertilizer, food, fuel, and fiber, sugarcane farming holds paramount importance in India. The establishment of an interconnected network of industries centered around byproducts and ancillary businesses supporting the sugar industry further amplifies its significance. This ecosystem fosters various socioeconomic activities, including banking, employment, education, healthcare, and numerous other ventures, contributing significantly to revenue generation [6].

With a total revenue exceeding 55,000 crore, the sugar industry currently constitutes a substantial segment of the Indian economy. It stands as one of the largest tax contributors to the federal exchequer, providing approximately 2600 crore in annual contributions. Additionally, the sector plays a pivotal role in bolstering state revenues. The cultivation, harvesting, and associated operations of sugarcane provide employment to a vast number of agricultural laborers, benefiting over 50 million dependents and individuals engaged in sugarcane production. Notably, a majority of these skilled and unskilled laborers hail from rural areas, indicating that the sugar industry directly or indirectly employs more than 7.5 percent of India's rural population.

According to the Indian Sugar Mills Association (ISMA), as of March 15, 2023, 530 mills were operational in the ongoing season, compared to 516 mills in the preceding year. Among these, 336 sugar processing plants remained operational nationwide, while 194 mills had ceased operations for the current crushing season [7]. However, during the equivalent period in the 2021–22 season, 438 mills were operational, with 78 mills having halted their crushing activities. The following table provides a summary of sugar production for the seasons 2022-23 and 2021-22:



**Figure 3:** State wise sugar production in India [7]

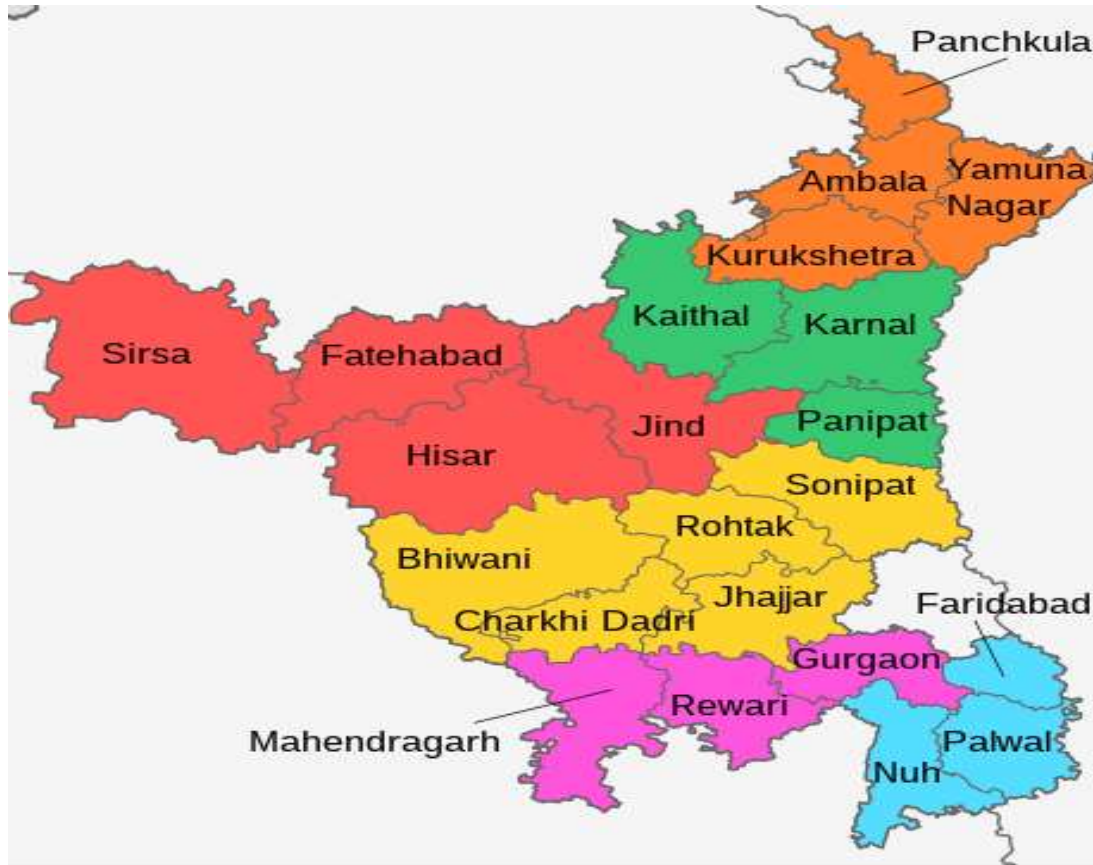
As per figure 3, the maximum numbers of factories that are producing sugar are from Maharashtra in India, and Uttar Pradesh and Karnataka are the following states in terms of the number of sugar-producing factories. Other states that produce a huge amount of sugar include Tamil Nadu, Gujarat, Bihar, Punjab, Haryana, etc. Out of all these other state, a great attention has been given to agriculture in Haryana state of India. The government worked together to build the fundamental infrastructure needed for the State's overall agriculture development. The detailed description of sugar production in Haryana has been given below.

## 2: Population Size and Growth of Haryana

Renowned for its agricultural heritage, Haryana emerged as an independent state on the Indian geopolitical landscape on November 1, 1966, following the reorganization of Punjab. Initially comprising only seven districts—Ambala, Karnal, Rohtak, Gurgaon, Mohendragarh, Hisar, and Jind—the state was administratively divided into four sections (Ambala, Hisar, Rohtak, and Gurgaon), encompassing 54 subdivisions, 21 districts, 74 tehsils, 44 subtehsils, 119 developmental blocks, 106 villages, and 6955 populated villages [8].

As of March 31, 0DUFK, Haryana was home to a population of [210,82,989] inhabiting an area spanning 44,212 square kilometers. Characterized by arid to semi-arid weather conditions, Haryana typically receives an average rainfall of 455 mm annually. Situated in the northwest region of the country, the state experiences the bulk of its rainfall, approximately 70%, during the months of July through September, with the remaining 30% occurring between December and February. Haryana shares its borders with Punjab to the west, Himachal Pradesh to the

north, Rajasthan to the south, and Uttar Pradesh and Delhi to the east. A gmap of Haryana on India is shown in figure 4.



**Figure 4:** Gmap of Haryana State of India

### 3. Forecasting Haryana's Sugar Industry Growth

According to a report from the Ministry of Agriculture, the total area of Haryana spans 44.21 lakh hectares (hect.), accounting for 1.4 percent of the nation's total land area. Of this, 38.09 lakh hectares, or 86% of the state's total area, is dedicated to agriculture. Among this agricultural land, 35.94 lakh hectares, or 96.2 percent, are under cultivation. There are a total of 15.28 lakh agricultural holdings in the state, with marginal farmers owning 7.04 lakh, small-scale farmers owning 2.94 lakh, and the rest owned by other farmers. The total cultivated area amounts to 35.49 lakh hectares, with marginal producers occupying 3.17 lakh hectares (9%), small farmers occupying 4.22 lakh hectares (12%), and the remaining land utilized by other farmers.

Agriculture forms the backbone of Haryana's economy. Formerly perceived as a state with a food deficit, it now annually produces over 15 million tons of food grains, ranking among the top producers of food grains for the Central Government. The primary industrial crops include

**Figure 5:** Sugar mills in Haryana



oilseeds, sugarcane, and cotton, paving the way for the growth of numerous agro-based industries. Since its inception, Haryana has made significant progress in various sectors, particularly in sugar and cotton industries. Prior to 1966, the state had only three sugar mills—two in the cooperative sector and one in the commercial sector. However, by 2010–11, the number had surged to a total of 15 sugar mills. A district-wise overview of sugar mills in Haryana is presented in Figure 5.

Before 1933–1934, all sugarcane harvested in Haryana was either used to produce "Gur" or "Desi Khandsari" using traditional methods. In the early 1930s, a few private entrepreneurs established "The Saraswati Sugar Mills Ltd." in Yamunanagar, the state's first sugar factory. Initially, it had a daily crushing capacity of 400 tons when it commenced operations in 1933. However, by 2010–11, its crushing capacity had expanded to 13,000 TCD, making it one of the largest sugar plants in the country. Two additional sugar mills were established in the state in 1956: "The Panipat Co-operative Sugar Mills Ltd., Panipat" and "The Haryana Co-operative Sugar Mills Ltd., Rohtak."

At the time, sugarcane production stood at a mere 150 thousand metric tonnes, but it grew to 501 thousand metric tonnes in 1985–1986 and 7.14 million quintals in 2009–2010. The number of sugar mills also increased to fifteen by 2010–11, with eleven in the cooperative sector and the remaining four in the private sector. Haryana does not have any public-sector sugar mills.

Despite this, the state boasts eleven cooperative sugar mills. However, since the Assandh mill has only recently become operational, the study focuses on major sugar mills.

### 3.1 Panipat's Sugar Sector: Challenges and Opportunities

In December of 1955, the Panipat sugar mill was granted a license under the Punjab Cooperative Societies Act, 1954. In the second month of 1956, the mill placed an order with M/s SKODA India Ltd. for the entire sugar plant, capable of producing 1250 TCD (tons crushed per day). On the twentieth of March 1957, the mill commenced trial crushing after investing approximately 107 lacs. Subsequently, in 1960, the factory's capacity was expanded to 1400 TCD, and again in 1975–1976 to 1800 TCD. The mill remained profitable until 1976–1977. Except for a small profit in 1989–1990, the facility has continuously incurred losses, which amounted to almost 68.01 crores as of March 31, 2001.

Due to ongoing deficits, little funds were available for additional capital investments in equipment and machinery. Only essential maintenance and repairs were carried out, as all available funds were prioritized for paying workers' salaries, servicing interest, and clearing sugar dues. This lack of investment further exacerbated the plant's declining productivity. The mill's own distillery plant has helped mitigate some of its financial difficulties. Nevertheless, the mill secured second place in the 2010–11 sugarcane development sector [9].

### **3.2 Rohtak's Sugar Sector: Challenges and Potential**

The state government established a sugar mill in Rohtak, renowned for its superior sugarcane agriculture, and incorporated it under the Punjab Co-operative Societies Act of 1912. In 1954, the state government acquired an area of approximately 100 acres for over 72,000. In 1955, the factory, featuring a 1000-ton TCD crushing capability and employing a double carbonated and double sulphitation manufacturing process, was purchased from M/s. A.F. Craig & Co. Ltd., located in Paisley, United Kingdom. With an initial investment of approximately 1.5 crores, the mill conducted its first trial crush on January 1, 1957. Its capacity was increased to 1250 metric tonnes in 1967–1968 at a cost of about 16 lacs, and further raised to 1750 metric tonnes TCD in 1977–1978 at an approximate cost of one crore [10].

### **3.3 Karnal's Sugar Industry: A Comprehensive Review**

Established in 1976, the Karnal Cooperative Sugar Mill has a licensed production capacity of 1250 TCD. The mill employs double sulphitation and double carbonation processes. In 1994–1995, the factory was expanded to 2500 TCD. Currently operating at 2200 TCD, the mill secured first place for overall productivity in the 2010–11 year [11].

### **3.4 The Prospects of Sugar in Sonapat**

Located outside of Sonapat city, the Sonapat sugar mill was established in 1977. It is a modern sugar mill with a crushing capacity of 1250 TCD. The mill utilizes double sulphitation and double carbonation processes. Additionally, the mill encompasses 125 acres of land and includes a 25-acre agricultural farm. There are approximately 7154 acres of sugarcane cultivation in the vicinity of the mill [12].

### **3.5 Assessing the Outlook for Sugar in Jind**

On August 1, 1980, a cooperative organization was established under the Punjab Cooperative Society Act, 1961, with the objective of producing white sugar from sugarcane provided by its producers. On December 31, 1981, a regular license was granted to a commercial sugar factory with a capacity of 1250 TCD to produce commercial white crystal sugar using the double sulphitation method. The plant commenced operations on February 16, 1985, crushing 34522 Qtls of sugarcane. Situated 5 km from Jind town, the mill occupies 123 acres of land, with 112 acres near the village of Jhanj Khurd and 11 acres near the village of Ahirka [13].

### **3.6 Palwal's Sugar Sector: Challenges and Potential**

Palwal is home to the Palwal sugar factory, which was registered with a capacity of 1250 TCD on August 02, 1985. The mill occupies 160 acres of land, with an operational area spanning 32 km. There are 24 sugarcane buying centers at the facility, and the project is estimated to cost about 960.00 Lacs. Additionally, adjacent to the Meham sugar mill, there is another mill employing 789 workers [14].

### **3.7 Meham's Sugar Industry Prospects**

The Meham sugar factory is situated in Meham. It commenced crushing operations on April 4, 1991, and was registered on September 10, 1987, with a capacity of 2500 TCD. The mill occupies approximately 209 acres, 5 kanals, and 6 marlas of space. It encompasses seven sugarcane purchasing centers, and its operational area spans 24 kilometers. Adjacent to the Shahabad mill, which employs 885 people, the Meham sugar factory has a workforce of 841 individuals.

### **3.8 Kaithal's Sugar Sector: Challenges and Potential**

Situated in Kaithal is the sugar mill. The facility was commissioned on February 4, 1991, but it became operational on March 6, 1970, with a capacity of 2500 TCD. The mill was estimated to cost approximately 2994.32 lacs. Covering an area of 32 km, the mill occupies 148.60 acres of land. There are thirteen sugar selling agents and one buying center at the facility [15].

### **3.9 Sonapat's Sugar Industry: A Comprehensive Review**

The sugar directory assigns CDLSM to the mill, located in a zone known for low recovery. On February 17, 2002, the mill commenced commercial-scale sugar production using a capacity of 2,500 TCD. The distance between Gohana Mill and the nearest train station is approximately 6 km, while Delhi is approximately 100 km away. The mill enjoys a serene and tranquil environment in its surroundings. Covering a radius of 28 kilometers, the mill occupies 81 acres of land. Despite operating profitably, the mill did not receive any awards until 2010 [16].

### **3.10 Sirsa's Sugar Industry Prospects**

The mill in Sirsa commenced operations with a capacity of 1750 TCD on February 1, 2002, but was shortly compelled to close due to a shortage of sugarcane. Subsequently, the equipment, with a capacity of 2500 TCD, was relocated to the Assandh sugar mill and put into operation in 2008–09.

### **3.11 Shahabad's Sugar Sector: Challenges and Potential**

The Shahabad sugar factory is situated three kilometers away from the Delhi-Chandigarh route, which serves as the national highway leading to Ladwa. After registering as a cooperative society on September 1, 1976, the mill commenced profitable manufacturing operations with a capacity of 1250 TCD on June 2, 1985. Subsequently, starting on July 11, 1995, the factory was expanded to 3500 TCD with an investment of approximately ~ 33 crores. The mill's operational area spans 32 km, extending 16 km towards Yamunanagar and 25 km in various directions. Approximately 60% of the sugarcane utilized in the mill is directly sourced from Shahabad, Mustfabad, and Radaur sugarcane growers. Within its designated territory, the mill has established 27 sugarcane purchasing centers and eight sugar godowns capable of storing its sugar produce [17].



Additionally, the mill has erected a bagasse-based cogeneration plant with a total generation capacity of 24 MW. Beginning with the crushing season in 2009–2010, the mill started exporting power to HVPN. Furthermore, the government has approved the construction of a distillery on the mill's premises.

- Panipat Co-operative Sugar Mills Ltd. was established in 1955 in Panipat. The total area of its location is not provided, with a capacity of 1800 TCD (Tons of Cane Crushed per Day). The total investments made in this sugar mill amount to 107 Lacs.
- Haryana Co-Operative Sugar Mills Ltd., founded in 1912, is located in Rohtak on a 100-acre area. It has a capacity of 3500 TCD and has received investments of one crore.
- Karnal Co-Operative Sugar Mills Ltd., established in 1926 in Karnal, does not specify its total area. It operates with a capacity of 2200 TCD, and the total investments made are not provided.
- Sonapat Co-Operative Sugar Mills Ltd. was founded in 1977 in Sonapat, occupying an area of 7154 acres. It has a capacity of 1250 TCD, and the total investments made are not specified.
- Shahabad Co-Operative Sugar Mills Ltd., established in 1976 in Shahabad, does not disclose its total area. It operates with a capacity of 3500 TCD, with total investments amounting to 33 crores.
- Jind Co-Operative Sugar Mills Ltd., founded in 1980 in Jind, covers an area of 123 acres. It has a capacity of 1250 TCD, and the total investments made are not provided.
- Palwal Co-Operative Sugar Mills Ltd., established in 1985 in Palwal, does not specify its total area. It operates with a capacity of 1250 TCD, with total investments amounting to 960.00 Lacs.
- Meham Co-Operative Sugar Mills Ltd., founded in 1987 in Meham, occupies an area of 209 acres. It operates with a capacity of 2500 TCD, and the total investments made are not provided.
- Kaithal Co-Operative Sugar Mills Ltd., established in 1970 in Kaithal, covers an area of 148.60 acres. It has a capacity of 2500 TCD, and the total investments made are not provided.
- CH. Devi Lal Co-Operative Sugar Mills Ltd., founded in 2002 in Sonapat, operates on an 81-acre area. It has a capacity of 2500 TCD, and the total investments made are not provided.
- Ch. Devi Lal Co-Operative Sugar Mills Ltd., established in 2002 in Sirsa, does not specify its total area. It operates with a capacity of 2500 TCD, and the total investments made are not provided.

#### **4. Shahabad Sugar Mills: Problems and Prospects**

Among all the sugarcane mills in Haryana, the Shahabad sugar mill stands out for its exceptional performance, having broken numerous national records and set exemplary standards. The mill has received awards for effectiveness in 1988–89 and 1989–90, sugarcane growth in 1988–89, 1991–92, and 2005–06, technical effectiveness in 1994–95, and the best cooperative sugar plant award in 2003–04, 2007–08, and 2008–09. Additionally, it has been honored as the best cooperative plant in 2004–05, secured second place for sugarcane growth in 2003–04, first place for financial management in 2003–04, and second place for the best cooperative sugar factory award in 2009–10. However, despite these achievements, the mill has also faced various challenges, which are discussed below.

##### **4.1 Mitigating the Limitations on Mills and Improving Farmers' Liquidity**

One of the primary challenges currently facing the sugar and sugarcane industries is the inability of sugar factories to generate sufficient liquidity at the prevailing wholesale costs of sugar and FRP/SAP of sugarcane. This makes it challenging for them to pay producers upfront for their crop and then recover their expenses through sugar sales. Industry sources argue that the market price of sugar does not align with FRP/SAP in a manner that enables sugar mills to generate adequate revenue to fully pay FRP/SAP. According to the stipulated criteria, mills are required to compensate producers within 15 days following the sale of sugar by farmers, while the mills realize their revenue at varying times throughout the year.

#### **4.2 Temporary Adjustment of the Sugar's MSP: Implications and Considerations**

In addition to posing a challenge for mills in terms of liquidity, the MSP of Sugar at ₹31/kg, even after an earlier hike of ₹2, barely covers the cost of manufacturing given the price of FRP, which is set at a reasonably high floor of ₹275/quintal. In 2017–18, the cost of producing a kilogram of sugar was ₹3,580/quintal, while simultaneously, the average comparable worldwide prices were ₹2,080/quintal. Consequently, there is limited potential for exports. The Ministry of Food and Public Distribution has already devised a plan to provide subsidized sugar through the PDS mechanism. Nonetheless, a minor increase in price is unlikely to impact the sugar market significantly due to its low price elasticity, but it could considerably alleviate the strain on sugar mills. Elevating the Recommended Minimum Selling Price of sugar to ₹33 per kg is a potential approach to ameliorate the availability situation of mills. The average household's monthly sugar consumption is approximately 3.5 kg, thus the monthly impact on a household budget would be marginal and easily absorbable.

#### **4.3 Mitigating Water Supply Stress with Crop Rotation: Strategies and Implications**

Countless millions of individuals in India are grappling with severe water shortages; presently, 600 million people endure high to severe water stress, and approximately 2,000 individuals succumb annually due to a lack of access to clean water. By 2030, India's demand for water is projected to outstrip the available supply, resulting in serious water shortages for a billion people and a potential 6% decline in GDP. A panel of experts believes that policy tools, such as procuring the sugarcane plant at FRP along with other crops at MSP, could be employed to incentivize sugarcane growers to diversify into other crops, especially in water-constrained regions. Farmers may qualify for an additional incentive of ₹6,000 per hectare per year for a period of three years, provided they reduce their cultivation of sugarcane and transition to a crop that consumes less water.

#### **4.4 Promoting Ethanol Blending: Opportunities and Challenges**

The sugar sector has been advocating for a postponement of the 20% ethanol blending target and higher goals (beyond 10%) for the upcoming years. Conversely, the auto sector has raised concerns about escalating blending without necessitating vehicle re-engineering. Consequently, a balance between the interests of the two industries has not been achieved.

#### **4.5 Managing Buffer Stocks: Strategies and Impact**

Initiating measures to counteract the repercussions of excessive sugar production on pricing, the Government of India has devised a buffer stock strategy. This strategic move aims to bolster the liquidity available to sugar mills while alleviating concerns related to supply and demand. Authorized by the authorities, an additional buffer stock of 40 LMT was constructed from August 1, 2019, to July 31, 2020, catering to the sugar crop of 2018–19, incurring an expenditure of Rs 1674 crores. Preceding this, a buffer stock of thirty LMT was established by

the government from July 1, 2018, to June 30, 2019, with upkeep costs amounting to Rs 1175 crores. Moreover, the maintenance fees disbursed to mills represent an additional burden on government finances as these stocks are typically resold by mills in the following year's market. To sustain this program, a comprehensive approach to managing these stocks and processes is imperative. While subsidies to sugar mills for maintaining sugar stockpiles help diminish cane arrears, they inadvertently incentivize overproduction.

#### **4.6 Challenges in Labour Arrangement: Issues and Solutions**

Commencing with a discussion on labor-related challenges, the sugarcane industry grapples with significant hurdles in managing its workforce. Harvesting sugarcane demands considerable manpower, encompassing various tasks from planting to harvesting, including seeding, movement, application of fertilizers and pesticides, harvesting, as well as loading and transportation.

However, a notable portion of the sugarcane crop undergoes harvesting during a period of labor scarcity, coinciding with other time-sensitive agricultural activities, particularly the harvesting of wheat. This scarcity of labor exacerbates the challenge of managing the sugarcane crop, especially beyond the month of April.

The issue of labor scarcity rings particularly concerning for farmers, especially those situated in the lower regions of the study area. The local workforce is often preoccupied with other economic activities, rendering the management of various tasks associated with cane growing increasingly challenging.

While the availability of migrant labor and the mechanization of sugarcane harvesting operations have somewhat alleviated this situation, enhancing the appropriate mechanization of sugarcane harvesting remains imperative to effectively address this issue. Collaborative efforts between farmers unions and sugar mills, including the organized recruitment of workers from nearby states and areas, can help ensure a steady supply of labor.

#### **4.7 Challenges in Roads and Transportation: Addressing Issues and Improving Connectivity**

The efficient cultivation of sugarcane and the smooth operation of sugar refineries rely heavily on well-managed and effective transportation systems. In the study area, where a majority of land holdings belong to medium-sized and small farmers, inadequate transportation infrastructure presents significant challenges. This leads to difficulties for farmers when transporting their cane products to manufacturers or gathering locations. Despite some improvements in road networks over the past two decades, many villages, especially in the upper part of the study area, still lack connections to sugar mill road networks. Moreover, numerous connecting roads are in poor condition, resulting in occasional significant losses for farmers due to limited transportation options.

Hence, it is imperative to maintain and upgrade the mill road networks and construct link roads to connect isolated communities. This step is crucial to safeguard the interests of sugarcane growers. Additionally, the respective mills should explore opportunities to expand their transportation services to cater to medium-sized and small farmers within a reasonable distance.

#### **4.8 Delayed Payments: Implications and Remedies**

Cane growers face numerous hurdles when payments for their crop are delayed, despite the legal obligation for sugar manufacturers to settle within 14 days of delivery. However, the processing of cane products by mills often drags on, stretching to periods of at least six months in some cases. This prolonged delay forces farmers to scale back the land dedicated to sugarcane cultivation in subsequent seasons. Consequently, many small landowners opt for cultivating more lucrative crops instead of sugarcane.

Ensuring prompt payment of the full amount is imperative to retain farmers in cane farming. Payments should be swiftly processed through banks within seven to ten days following the delivery of cane, guaranteeing timely and equitable compensation for growers.

#### **4.9 Challenges in Indent Distribution: Assessing Problems and Solutions**

Difficulties in sugarcane marketing frequently arise during the issuance of cane indent slips by the relevant sugar mill or cane agency. Acquiring these slips can prove cumbersome and distressing for farmers, especially those with smaller land holdings. Instances of irregularities, biased treatment, and other unethical conduct are often linked to the authorities responsible for dispensing cane indents.

Moreover, situations such as "No Cane" or sudden rushes at sugar mills compound the challenges. Farmers may find themselves spending extended periods at the mill due to administrative oversights and the uneven allocation of cane indents by mill officials. Given the perishable nature of cane, prompt delivery to sugar mills post-harvest is imperative. However, delays frequently occur between harvesting and delivery, resulting in financial setbacks for farmers due to time and weight loss, among other factors.

To address these issues, farmers must be provided with clear and timely information ahead of the crushing season, outlining the requisite dates and quantities of indent slips needed. Adherence to this schedule is crucial to ensuring the efficient and equitable allocation of cane indents.

#### **4.10 Addressing Insufficient Market Data: Strategies and Implications**

A robust market system not only facilitates the efficient sale of agricultural products but also plays a crucial role in disseminating timely information. However, many sugarcane farmers, who often have small land holdings, lack access to effective marketing channels and may not stay updated on the latest developments in agricultural marketing. Additionally, they may not receive accurate information on government policies, market prices, and crop economics in a timely manner. Consequently, farmers may make decisions based on incomplete or inaccurate information from middlemen and vendors.

To ensure that farmers can make informed decisions and maximize their profits, it is essential to provide them with accurate and timely information through various communication channels. Strengthening existing initiatives like the sugarcane market information network to include these aspects is crucial. Sugarcane growers face numerous challenges in marketing their products, and encountering obstacles in the marketing process could significantly impact their crop yield and overall income. Therefore, addressing these challenges is vital to supporting sugarcane growers and ensuring the sustainability of the industry.

### **5. Conclusion**

The sugar industry in Haryana stands as a cornerstone of the state's economic framework, its impact resonating not only locally but also across the broader Indian landscape. Through a

blend of private enterprises and cooperative initiatives, the sugar mills in Haryana play a pivotal role in shaping the trajectory of the industry. This article delves into the intricate workings of India's sugarcane sector, with a particular spotlight on the operational dynamics of Haryana's sugar mills. Among these establishments, Shahabad Sugar Mill emerges as a symbol of excellence, marking milestones on the national stage. Yet, beneath its accolades lie narratives of resilience and adaptation, which form the core of this insightful exploration.

## References

1. Agrawal, R.N., 1976. Sugar Industry of India, My Recollection, Popular Prakashan Pvt. Ltd., Bombay.
2. Pittie, S.V.M., 2004. Problems and prospects of the sugar industry. *Indian Sugar*, 54(9), pp.661-667.
3. Serraj, R. and Pingali, P. eds., 2018. *Agriculture & Food Systems to 2050: Global Trends, Challenges and Opportunities*.
4. OECD. Available at: <https://www.oecd-ilibrary.org/sites/363f8d84-en/index.html?itemId=%2Fcontent%2Fcomponent%2F363f8d84-en> (Accessed: 03 March 2020).
5. Hitchman, J. H. (1970). US Control Over Cuban Sugar Production, 1898-1902. *Journal of Interamerican Studies and World Affairs*, 12(1), 90-106.
6. Desai, V., 1987. *Indian industry: profile & related issues*.
7. Singh, S., & Dewan, J. (2020). Reviewing Indian indigenous sugar industry in post covid global scenario. *PalArch's Journal of Archaeology of Egypt/Egyptology*, 17(7), 13370-13382.
8. *Economic Survey of Haryana, 2010-11*, Department of Economic and Statistical Analysis, Haryana, Yojana Bhawan, Sector 4, Panchkula, 2011.
9. Panipat ||. Available at: <https://haryanasugarfed.org.in/MemberFactories/Panipat> (Accessed: 02 March 2020).
10. Rohtak ||. Available at: <https://haryanasugarfed.org.in/MemberFactories/Rohtak> (Accessed: 02 March 2020).
11. Karnal ||. Available at: <https://haryanasugarfed.org.in/MemberFactories/Karnal> (Accessed: 02 March 2018).
12. Sonapat ||. Available at: <https://haryanasugarfed.org.in/MemberFactories/Sonapat> (Accessed: 02 March 2017).
13. Jind ||. Available at: <https://haryanasugarfed.org.in/MemberFactories/Jind> (Accessed: 02 March 2017).
14. Palwal ||. Available at: <https://haryanasugarfed.org.in/MemberFactories/Palwal> (Accessed: 02 March 2017).
15. Kaithal ||. Available at: <https://haryanasugarfed.org.in/MemberFactories/Kaithal> (Accessed: 02 March 2020).
16. Sonapat ||. Available at: <https://haryanasugarfed.org.in/MemberFactories/Sonapat> (Accessed: 02 March 2018).
17. Shahabad ||. Available at: <https://haryanasugarfed.org.in/MemberFactories/Shahabad> (Accessed: 02 March 2018).