CHAPTER-I

SUGAR MANUFACTURING INDUSTRIES: A GEOGRAPHICAL PROFILE

1.1 Introduction
1.2 Antiquity of Sugar
1.3 Sugar Co-Operatives In Belgaum District
1.4 Spatial Dimensions of Sugar Industries
1.5 Historical Perspective of the MSSK Ltd. M.K.Hubli
1.6 Location of Other Infrastructure Facility
1.7 Management as Industry
1.8 Favorable and Non Favorable Locations
1.9 Suitable Agro-Climatic Conditions
1.10 Availability if Irrigation Facilities
1.11 Liberal Government Policy
1.12 Local Leadership
1.13 Adequate Transport Facilities
CHAPTER-I

SUGAR MANUFACTURING INDUSTRIES:
A GEOGRAPHICAL PROFILE

1.1 Introduction:

Sugar industry is an agro-based industry. The industry has number of byproducts resulting from sugarcane agriculture and the sugar industry. Its main byproducts are molasses used in the production of power, alcohol, biogases cellulose material used mainly as fuel and in the manufacture of guards and crude paper as also cattle feed mixed with molasses and press mud useful as manure. The cone tops afford valuable fodder for the cattle and the root system and trash as good organic manure.

Sugarcane is in cultivation between the latitudes from 35° N 35° S under widely varying soil and climatic conditions. The more important sugar cane growing countries are Australia, Britain, West Indies, Cuba, India, Indonesia, Mauritius, South Africa and USA (Ocean Land and Hawai)

1.2 Antiquity, Of Sugar:

Cultivation of Sugarcane in India is known from very early times. The earliest mention of sugarcane is in the Atherva veda
Noel Derr (1950) has given an excellent account of the position of India in the history of sugar. Mention has been made of sugar in the Pratimoksha, the earliest record of the Buddhist role of life in Maha Bhashya of Patanjali (350 BC), in Lalita Vistara and the Jatakas. The law book of Manu the Manava Dharma Sastra (200 BC and 200 AD) contains references to sugar.

Coming to recent times the Chinese Buddhist Pilgrim Fa Hie mentions about sugarcane in India (3999 AD) and later Hieum-Tsang (629 AD) The first mention of sugar in Southern India and the West Coast is by Ibn Battuta during the period (1325-54) Abul Fazl in Ain-i-Akbari (1990 AD) provides information about sugarcane and draws the well known distinction between pounda and ganna canes.

The first sugar factory in India was started in 1784 by a civilian. India was exporting sugar during the 18th and 19th Centuries. Renaissance of the sugar industry in India dates from the end of the 19th Century. The first whole sugar factory was established in Bihar and the production of white sugar began in 1923.
1.3 Sugar Co-Operatives In Belgaum District:

The district of Belgaum is known as the sugar district mainly because of rapid strides made by the district in the growth of sugar industry during last 40 years. There are seventeen sugar factories in Belgaum district of which some of them are under Co-operative management. Among the sugar co-operatives Shri. Hiranyakeshi Sahakari Sakkare Kharkhane Niyamit at Sankeseyhwar was the earliest sugar co-operative factory started in the year 1955, with a crushing capacity of 5800 tones per day. The second sugar co-operative started in the district is Shri Malaprabha Co-operative Sugar Factory at M.K. Hubli 1968 with a crushing capacity by 3250 tonnes per day. The third and fourth sugar Co-operative Started in Belgaum district in 1970 are the Ghataprabha Sahakari Sakkare Kharkhane Ltd., Gokak with a crushing capacity of 1250 tonnes per day and Shri Doodhaganga Sahakari Sakkare Kharkhane, Chikkodi with a crushing capacity of 2000 tonnes per day. Then the Raibag Shakari Sakkare Kharkhane Niyamit at Raibag is the fifth Sugar Co-operative factory started in Belgaum district in the year 1971 with a crushing capacity of 1250 tones per day. The Sixth Co-operative sugar factory started in the district in the year
1981 is Sri.Holasidhanath Sahakari Sakkare Kharkhane Ltd., Nippani with a crushing capacity of 1250 tonnes per day.

Information about the crushing capacity of sugar cooperatives in Belgaum district is provided by the Joint Registrar of Co-operative Societies of Belgaum. The latest dated crushing capacity of these factories was 14250 M.T.

The area under sugar cane in different talukas is indicated in the following table. (Table No.1.1)

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Name of the talukas</th>
<th>Sugarcane area in Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Athani</td>
<td>18010 Hectares</td>
</tr>
<tr>
<td>2</td>
<td>Bailhongal</td>
<td>10115 Hectares</td>
</tr>
<tr>
<td>3</td>
<td>Gokak</td>
<td>15757 Hectares</td>
</tr>
<tr>
<td>4</td>
<td>Raibag</td>
<td>15290 Hectares</td>
</tr>
<tr>
<td>5</td>
<td>Belgaum</td>
<td>6961 Hectares</td>
</tr>
<tr>
<td>6</td>
<td>Hukkeri</td>
<td>7132 Hectares</td>
</tr>
<tr>
<td>7</td>
<td>Khanapur</td>
<td>8474 Hectares</td>
</tr>
<tr>
<td>8</td>
<td>Chikkodi</td>
<td>9240 Hectares</td>
</tr>
<tr>
<td>9</td>
<td>Ramdurg</td>
<td>3250 Hectares</td>
</tr>
<tr>
<td>10</td>
<td>Soundatti</td>
<td>603 Hectares</td>
</tr>
</tbody>
</table>

Source: Sugarcane Research Bulletin, UAS-Dharwad-2004
Belgaum district is situated in the tropical belt with reasonably good irrigation facilities suitable temperature, humidity, and duration of sunshine in addition to suitable said conditions for the cultivation of sugarcane. The irrigation facilities provided by the rivers like the Krishna and the Ghataprabha and their tributaries like Vedaganga, Doodhganga, Hiranyakeshi and Markandeya, have opened up opportunities for growing of commercial crop like sugarcane. Sugar Industry is the one of the major industries in the Belgaum district.

The average membership of a sugar factory in Belgaum district ranges between 3500 to 12,000 cane growers. The average area of operation of an individual sugar unit ranges between 50 to 600 villages. Each sugar factory crushes 25,000 tonnes to 50,000 tonnes of sugarcane annually during the season counting about six months. The employment of labour generated by an individual sugar unit in the district ranges between 800 to 10,000 persons directly and 2000 to 3000 persons indirectly. The annual turnover of each factory in the district is more than Rs.10 crores.

The impact of the establishment of sugar co-operative units in the district has been felt in the areas of agricultural development,
educational awakening cultural and economic progress in the areas around these factories.

1.4 Spatial Dimensions of sugar industries:

The spatial or geographical dimensions of sugar industries include the following aspects.

**Location Of Various Sugar Industries:**

The Malaprabha sugar is located between Dastikoppa and Dadrolli in Bailhongal Taluka near Itagi cross on National Highway No.4 at a distance of 32 Km. from Belgaum towards South. Similarly Dudhaganga sugar is located at Nandi in Chikkodi Taluka, at a distance of 85 Km. from Belgaum towards North. Raya Sugar is placed at Budhihal about 6 Km. from Raibag and situated at a distance of 110 Km. from Belgaum towards North-East likewise Ghataprabha sugar is located between Arabhavi Singalapur villages near Gokak at a distance of 75 Km. from Belgaum towards North-East Hira Sugar Co-operative is located between Sankeshwar and Belgaum on National Highway No.4 (Poona-Bangalore) a little away from Sankeshwar town at a distance of 45 Km. from Belgaum towards North.
It may be noted that on average a radius of about 20 Km. to 25 Km. depending upon the cane yield per hectare is an ideal area for a sugar mill. The Reserve Bank of India recommended that the distance between two sugar mills should be 60 Km. implying a radius of 30 Km. from each mill likewise the sugar industry Enquiry Commission, Government of India (1974) suggested a distance of 50 Km. and the Study Group recently set up by Government of India also recommended a distance of 40 Km. (Table No.1.2)

**Table No.1.2**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Factory</th>
<th>Area of operation</th>
<th>No. of villages covered</th>
<th>Averages Radius of area covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malaprabha Sugar</td>
<td>Bailhongal, Khanapur, Belgaum, Gokak, Soundatti, Dharwad and Haliyal</td>
<td>585</td>
<td>48 Km</td>
</tr>
<tr>
<td>2</td>
<td>Dudhganga Sugar</td>
<td>Chikkodi Athani and Raibag</td>
<td>111</td>
<td>48 Km</td>
</tr>
<tr>
<td>3</td>
<td>Raya Sugar</td>
<td>Raibag and Chikkodi</td>
<td>49</td>
<td>40 Km</td>
</tr>
<tr>
<td>4</td>
<td>Ghataprabha Sugar</td>
<td>Gokak, Soundatti, Ramdurg and Chikkodi</td>
<td>104</td>
<td>32 Km</td>
</tr>
<tr>
<td>5</td>
<td>Hira Sugar</td>
<td>Hukkeri, Chikkodi, Belgaum, Gokak and Gadhilinglaj</td>
<td>270</td>
<td>35 Km</td>
</tr>
</tbody>
</table>

**Note:-**
- 10 Talukas of Belgaum District
- 1 Taluk of Dharwad District
- 1 Taluka of North Canara District
- 1 Taluka of Kollapur District

Source: Records of Five Sugar Co-operatives-Belgaum
1.5 **Historical perspective of the M.S.S.K Ltd., M.K.Hubli:**

This sugar co-operative is situated at Mugatkhan Hubli in Bailhongal taluka of Belgaum district. The factory is located on the right side of National Highway No.4 at a distance of 7 Km. from the Historic Town of Kittur and the district city of Belgaum is 33 Km. away from this factory. The river Malaprabha whose name this factory bears is one Km. from the factory site and village Mugatkhan Hubli is about 3 Km away from the sugar factory. The site for the factory was at first chosen within the borders of Kharakoppa village near Itagi. The Government of India finally selected and approved 110 acres of land at Kawalikumpi near Dastikoppa village. This was done by taking into consideration the facilities like transport facilities on the national highway, adequate water supply from Malaprabha river and the soil conditions of the area which could stand the weight of the factory plant and structure and availability of adequate sugarcane.

The operational area of this sugar co-operative covers five talukas of Belgaum district and one taluka each of Dharwad and Uttar Kannada district. The details are given below (Table No.1.3)
### TABLE 1.3
The Operational area of Sugar Co-operatives

<table>
<thead>
<tr>
<th>Name of the district</th>
<th>Taluka</th>
<th>No. Villages covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgaum</td>
<td>Bailhongal</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>Belgaum</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td>Khanapur</td>
<td>203</td>
</tr>
<tr>
<td></td>
<td>Gokak</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Soundatti</td>
<td>61</td>
</tr>
<tr>
<td>Dharwad</td>
<td>Dharwad</td>
<td>36</td>
</tr>
<tr>
<td>Uttar Kannada</td>
<td>Haliyal</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>578</strong></td>
<td></td>
</tr>
</tbody>
</table>


It is clear from the above that the factory covers the largest number of villages in Khanapur taluka, though the factory is located in Bailhongal taluka from which the number of villages is only 125 compared to 203 villages in Khanapur taluka. It is also interesting to note the numbers of villages of Belgaum taluka covered are less than those from Khanapur, though Belgaum city and taluka are nearer than Khanapur due to geographical distance a smaller number of villages of Gokak and Soundatti talukas are
covered by this factory. Similarly, the number of villages covered from Dharwad and Haliyal talukas are given due to geographical distance.

The factory was started in the year 1971 by farmer members in 578 villages of Belgaum, Bailhongal, Khanapur, Dharwad, Saundatti, Haliyal and Gokak Taluk.

The talukas covered by this factory have their own geographical characteristics. The region has heavy rainfall. The eastern part of the area covers fertile black soil of the plains. The Southern part of the area has typical soil suitable for the non-sugarcane crop. However, the greater part of this area also is used for cultivation of sugarcane.

1.6 Location of other infrastructure facility:

The premises of factory have the following structure and other facilities for its operational purposes.

a. The main factory building, this houses the plant and machinery for crushing of sugarcane and processing and final manufacture of sugar.

b. Storage building for the final product i.e. sugar.
c. Storage building for chemicals, spare parts etc.,

d. The factory has a fleet of trucks-tractors and other vehicles for the movement of raw materials and finished product.

e. The factory premises have the facility of a bank, a branch of the district central co-operative Bank, Belgaum.

f. A laboratory for chemical analysis is set up at the factory premises.

g. The factory is well served by transport and communication facilities, quarters and electricity facilities etc.,

h. Adequate housing facilities are provided for different categories officials, workers, etc.,

j. Labour welfare facilities like hospital ambulance, canteen and shopping facilities.

1.7 Management of industry:

By and large the members of the sugar industry are happy with the various facilities and incentive schemes introduced by the management of the sugar factory. This is learnt from the fact there has not been any situation of conflict between the two. The only grouse of the farmer members of the factory is that the factory has
 stipulated that each member is entitled to sell only 40 tonnes as sugarcane grown on his farms. This results in some amount of excess sugarcane seeking outlet for Sales elsewhere. This has been a perennial problem for the most as the farmer members who have more than 40 tonnes as sugarcane to sell every season. All the while these farmer members have been approaching sugar factories in the neighboring areas and even in neighboring states. The interviews with the farmer – members by the researcher revealed this major problem confronted by them. This calls for some concrete measures on the part as the factory management to increase the crushing capacity of the factory; and to absorb all the sugarcane grown by these farmer members. This solution alone will solve the problem as these members who have to incur excess transport cost and uneconomic prices offered by the factories outside. The situation becomes still worse when outside factories refuse to buy the excess sugarcane from these farmer-members. This can be on technical or even political grounds, as it happened recently when the Government of Maharashatra banned the purchase of sugarcane from Karnataka by the sugar factories in Maharashtra.
There is also the problem as political affiliation as members to different political parties affecting the developmental and other promotional activities as the factory. This is a problem which is inescapable in a democratic set-up. However the enlightened members should close their political affiliations in the interest of this co-operative venture for the common benefit of all farmer-members.

1.8 Favorable and Non-Favorable Locations:

The location of an industry is a vital policy decision which refers to, where an industrial unit has to be located. The industrial efficiency depends upon its location. For each industry there are specific locational factors. The basic factors that determine the location of an industry are money, material, man, market, machinery, motive power, management, means of transport and momentum of early start. These factors make the manufacture of a commodity; like white sugar in case of sugar industry possible. The sugar industry is a raw material localized industry and its location is entirely governed by the availability of sugarcane in sufficient quantities within a reasonable distance. The locational pattern of the sugar industry is greatly influenced by the character of local distribution of sugar cane area within a
country and since such distribution depends entirely on physical and geographical factors specially climate and rain fall. Thus nature plays a dominant rule in determining the location of sugar industry.

The concentration of large number of co-operative sugar factories particularly in Belgaum district of Karnataka deserves a word of explanation. The establishment of sugar co-operatives in this district a proper preliminary investigation was carried out by the Government of Karnataka with respect to the availability of sugarcane and future prospects for the development of cane area. Permanent sources of water, assured power supply availability of local skilled and unskilled labour adequate transport provision, existence of basic infrastructural facilities etc in the area concerned only by fulfilling these preliminary conditions in the region. The state Government encouraged the local cane growers to start their own sugar co-operatives. The main factors which contributed to the successful establishment of the sugar co-operatives in Belgaum district may be summarized as follows;
1.9 Suitable Agro-Climatic Conditions:

The location of the sugar industry is purely decided on the basis of availability of sugarcane in an adequate quantity within the vicinity of a compact area. Sugarcane is a tropical crop and needs hot and humid climate. Fortunately Karnataka lies under the tropical belt and its hot climate and humid atmosphere are suitable for growth of sugarcane. The quality of sugarcane grown in Karnataka is much superior with more sucrose contents as compared to sub tropical belt consisting of Uttar Pradesh and Bihar.

Among the six sugarcane growing regions of Karnataka, Belgaum and Mandya regions contribute major share in the production of cane and sugar in the State. Belgaum region accounted for more that seven percent of the total acreage under sugarcane in Karnataka, sugarcane is grown in transitional belt of the district covering Belgaum, Khanapur and plants of Bailhongal talukas. All the 10 talukas of Belgaum district were traditionally well known for the cultivation of sugarcane in Karnataka.

During March, April and May temperature, heats upto 36°C in Belgaum region. The canal closure associated with high
temperature during this period leads to drying of the cane crop with varying age groups ranging from fourth month to seventh month at growth phase and at the time of harvest. The sugar recovery during November is as low as 9.20 percent; picks up slowly to reach its peak during January-March and it shows a steep fall drying of the crop rather than the high temperature as it could be noted that, a higher sugar recovery was obtained even when the temperature was more than 36° C in the district. The increase in fiber content during this period confirms the fact that the cane is subject to a high degree of said moisture stress through climatic and agronomic conditions play a part, sugar recovery in the district fluctuate so violently. The sails in the area of operation of all sugar factories in the district are quite suitable for cane cultivation.

The sugar co-operatives have been organized essentially as growers of the factory and their share holding has been linked to their acreage under sugarcane within a definite area, which is known as the area of operation. The area of operation of each sugar co-operative has been generally indicated by a certain number of villages. The average of the area of operation of all sugar factories was 39 Km. The maximum radius of the area of operation
was found to be 40Km. (Malaprabha sugar) and the minimum radius was 32 Km. (Ghataprabha Sugar)

1.10 Availability of Irrigation Facilities:

Sugarcane is a highly water intensive crop, water by itself enhances cane yield by 30 to 40 percent. As an irrigated crop, it needs heavy doses and year round supply of water. Even the Indian Sugarcane committee had recommended in 1920 that, sugarcane should be grown on the canal tract in order to take the maximum benefit of canal water. After the grant of fiscal protection to sugar industry in 1932, both cane area and number of sugar mills have increased considerably. The constriction of river projects, lift-irrigation schemes, digging of bore well and open wells facilitated expansion of the acreage under sugarcane in Belgaum region. The establishment of sugar-co-operative opened up ample opportunities of commercial crop cultivation and brought about vast areas, under sugarcane in the areas of sugar co-operatives.

1.11 Liberal Government Policy:

The favorable policy of Central Government regarding the prices of sugarcane of sugar etc was also an important contributory factor for the smooth growth of sugar industry in this area. The
State Government contributing its share by way of providing certain incentives and facilities to the growth of sugar co-operatives in the districts.

1.12 Local Leadership:

The role played by the local leaders in initiating and encouraging the cane growers for establishing their own co-operative sugar factories in their own areas, cannot be ignored. The local participation assumed the corners tone in the establishment and expansion of sugar co-operatives in this region.

1.13 Adequate transport Facilities:

Railroad facilities are quite adequate in the district for the movement of raw-materials and output early. Almost all the sugar industries in the district are well connected with railroad facilities. The factories are not facing any transport bottle-necks in the region under study.