FAIR LABOR ASSOCIATION

Improving Workers' Lives Worldwide

TASK AND RISK MAPPING OF SUGARCANE PRODUCTION IN INDIA

Prepared by Fair Labor Association

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I. EXECUTIVE SUMMARY

Given the Fair Labor Association's expertise in task and risk mapping in the agriculture sector and the interests of many FLA stakeholders, FLA conducted this study to: (1) map the upstream sugarcane supply chain from the sugar processing units (sugar mills) to sugarcane farms; (2) map the various activities and tasks involved in the production of sugarcane; (3) conduct a risk assessment of labor issues with respect to the various activities and production process of sugarcane; and (4) map the stakeholders involved in the sugarcane supply chain.

For the purpose of this mapping, a fact-finding approach was taken involving visits to five sugarcane-producing states in India – Uttarakhand, Uttar Pradesh, Gujarat, Maharashtra and Karnataka. A total of 91 interviews were conducted during the study, including management of 10 sugar mills (34 factory management staff; staff at seven civil society organizations; 13 government officials; 11 contractors; 18 farmers; and eight workers. Twenty-one farms were visited during the course of the study. The questions were mostly open-ended, keeping in mind the supply chain review and the various FLA Code of Conduct elements that required observation.

India is currently the second-largest producer of sugarcane and of sugar in the world, after Brazil. In 2011-2012, it is estimated that India produced 380 million tons of cane and 26–26.5 million tons of sugar on an estimated 5.5 million hectares of land. Sugarcane is one of India's most important cash crops, accounting for about 7.5% of the gross value of national agricultural production.

The Government of India regulates closely the sugarcane sector and sugar mills. The Central Government sets out the Fair Remunerative Price (FRP) for sugarcane at the start of each season. Some of the states set out their Statutory Advisory Price (SAP), which is above the FRP. As per the Supreme Court ruling[1], it is mandatory for mills to procure sugarcane at these prices. There are currently 566 sugar mills operating in India, and most mills are located in the vicinity of sugarcane production areas to reduce transportation costs and to retain quality. The "command area" of each sugar mill is also defined by the government and consists of many thousands of farms – including very small farms – located in a 25-50 kilometer radius. It is mandatory for every factory to supply 10% of its sugar production to the government at the Levy Price established by the Central Government. The remaining production is sold in the open market against the release of quota by the government.

Sugarcane production in India supports 50 million farmers and their families. The principal sugarcane growing areas are North India, especially the state of Uttar Pradesh, and South India, particularly the states of Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu and Gujarat. Sugarcane growing practices in North and South of India varies. Sugarcane is sown from February-March in the North and from July-October in the South. Sugarcane yield and sugar recovery from the cane in the South is considerably higher than the North. In the North, sugarcane is harvested by growers and supplied to sugar mills/centers. In the South there is a growing trend of sugar mills (also of farmers) utilizing third-party contractors who engage migrant workers to harvest the crop to ensure mills receive the sugarcane in a timely manner. The laborers (usually married couples) arrive at the farms with their families and work for eight months (October-May). Children often accompany their parents and usually work on

1 The Essential Commodities (Amendment) Bill, 2010 www.prsindia.org/print.php?bill_id=1236&category=41

the farms alongside their mothers, carrying seedlings from trolleys to furrows, sowing, cleaning, and harvesting. Sowing, harvesting, loading/unloading and transportation is mostly done by contract workers.

Farmers prefer to harvest sugarcane a day before it is to be delivered to the mills so that it does not lose its moisture content and weighs more, thus maximizing profits, with workers typically harvesting around the clock. There is hardly any documentation at the farm level. Workers do not have contracts; wages are often below minimum wages and are paid to workers at the end of the harvest. There are many health and safety concerns with regards to sugarcane production, including the use of machetes to cut sugarcane for preparation of seedlings and for harvesting. Chemical are often applied on the farms without proper protective equipment for workers. Workers and their families reside in temporary shelters made out of bamboo and tarpaulin, sometimes without access to water and sanitation facilities. Some factories in the South provide schools for the children of migrant workers, but this is not a statutory requirement. The monitoring and enforcement of local labor laws is generally weak in the sugarcane farms.

Generally, the sugarcane supply chain in India is transparent. Farmers' details can be tracked from the data available from sugar mills. The association between farms and the sugar mills provides a great opportunity to drive compliance with labor standards through the mills within their "command areas." Training and capacity building of "muqaddam" (factory staff who arrange for labor contractors and pay them advances on behalf of the sugar mill) could have a positive impact on the recruitment process and on the living and working conditions of migrant laborers. Various farmer associations, civil society organizations and sugar cane societies are connected to the network of sugarcane growers and are involved in extending soft loans, awareness building, irrigation facilities, etc. These could prove to be good delivery mechanisms for labor standards and awareness of agronomical practices. Furthermore, the presence of various Government bodies and officials working in the sugarcane sector could be leveraged to bring about sustainable change.

II. INTRODUCTION

The Fair Labor Association (FLA) conducted this study to gather knowledge about the sugarcane supply chain in India. The study was designed considering FLA's process for the agriculture sector that starts with a mapping exercise, followed by task and risk analysis of the agricultural commodity.

The objectives of this study were to:

- map the upstream sugarcane supply chain from the sugarcane processing units (sugar mills) to sugarcane farms;
- map the various activities and tasks involved in the production and supply of sugarcane from farms to sugar mills;
- conduct a risk assessment of labor issues with respect to the various activities and production process of sugarcane; and
- map the stakeholders involved in the sugarcane supply chain.

This report represents an initial step towards mapping the vast sugarcane production regions in India, and identifying associated risks and relevant stakeholders in the field. It is intended to form the basis for future mappings and assessments.

III. BACKGROUND

3.1 AGRICULTURE IN INDIA

Agriculture is the mainstay of the Indian economy and provides the principal means of livelihood for about 60 percent of India's population. It contributed about 14.5 percent of the country's gross domestic product (GDP) for 2010-2011. For decades, Indian agricultural policy has focused on self-sufficiency and self-reliance in food-grain production. Considerable progress has been made on this front, with food-grain production rising from 52 million tons from 1951-52, to 244.78 million tons from 2010-2011, and an estimated 250 million tons in 2012.

India has a geographic area of 328.73 million hectares[2], of which the reported area for land use is 306.04 million hectares. Arable land is diminishing under strain from rapid urbanization and an ever-increasing population of over 1.2 billion people. The net area cultivated in 2011-12 is about 125.49 million hectares, or about 41 percent of the total reported area. Only about 30 percent of the total cropped area is irrigated and the remaining area is rain-fed. Sugarcane occupies 4.7- 5.1 million hectares of cultivable land. Currently, India is the second-largest producer of sugarcane in the world, after Brazil.[3]

Agricultural productivity (measured by kilogram produced per hectare) in India has

2 1 hectare = 2.47 acres

3 Sugarcane production from FAO statistical database, faostat.fao.org. Global centrifugal sugar production in 2011-2012 was 171.0 million tons raw value; Brazil's production was 36.2 million tons and India's 28.8 million tons; see USDA, Foreign Agricultural Service, *Sugar: World Markets and Trade*, May 2012.

TABLE 1. AGRICULTURE IN INDIA VS. REST OF THE WORLD, TWENTY TOP CROPS BY ECONOMIC VALUE

RANK	PRODUCE	VALUE (2009 PRICES, US$ BILLION)	UNIT PRICE (US$ / KG)	AVERAGE YIELD INDIA 2010 (TONS PER HECTARE)	AVERAGE YIELD OF WORLD'S MOST PRODUCTIVE FARMS 2010 (TONS PER HECTARE)	COUNTRY OF WORLD'S MOST PRODUCTIVE FARMS
1	Rice	$35.74	0.27	3.3	10.8	Australia
2	Buffalo milk	$25.07	0.4	1.7	1.9	Pakistan
3	Cow milk	$14.09	0.31	1.2	10.3	Israel
4	Wheat	$12.13	0.15	2.8	8.9	Netherlands
5	Sugarcane	$8.61	0.03	66	125	Peru
6	Mangoes	$8.12	0.6	6.3	40.6	Cape Verde
7	Bananas	$7.60	0.28	37.8	59.3	Indonesia
8	Cotton	$5.81	1.43	1.6	4.6	Israel
9	Potatoes	$5.31	0.15	19.9	44.3	USA
10	Fresh Veg.	$5.28	0.19	13.4	76.8	USA
11	Tomatoes	$4.12	0.37	19.3	524.9	Belgium
12	Beef	$3.84	2.69	0.138	0.424	Thailand
13	Onions	$2.92	0.21	16.6	67.3	Ireland
14	Okra	$2.90	0.64	10.6	20.2	Cyprus
15	Chick peas	$2.83	0.4	0.9	2.8	China
16	Fresh fruits	$2.79	0.35	7.6	23.9	Israel
17	Eggs	$2.65	0.83	13.8	24.7	Jordan
18	Soybean	$2.61	0.26	1.1	3.7	Turkey
19	Cattle meat	$2.39	2.7	0.1	0.42	Japan
20	Groundnuts	$2.33	0.42	1.1	5.5	Nicaragua

shown a steady nationwide annual increase over the past six decades. These gains have come mainly from India's Green Revolution,[4] increasing public awareness, education and reforms,[5] and improved connectivity between rural and urban areas through link-roads. Advances have also been made in the development of infrastructure such as agriculture universities, research centers, procurement centers at district and sub-division level and provision of electricity and irrigation facilities in villages. Despite these accomplishments, agriculture in India still has the potential for major productivity enhancements and total output gains, because crop yields are still about 30-60 percent of the best sustainable crop yields achieved in farms in other countries. Table 1 presents the 20 most important agricultural commodities in India, by economic value in 2010. Included in the table is the average productivity of Indian farms for each product as well as the average of the most productive farms in the world the country where the most productive farms were located in 2010.[6]

3.2 SUGARCANE PRODUCTION

Sugarcane refers to any of the 6-37 species of tall perennial grasses of the genus saccharum. Native to the warm climate of the tropical regions of South Asia, it has stout jointed fibrous stalks that are rich in sugar, and measure two to six meters high. The main product of sugarcane is sucrose, which accumulates in the stalk internodes. Sucrose, extracted and purified in specialized mills/ factories, is used as raw material in the food industry or is fermented to produce ethanol, a low-pollution fuel. In 2010, the United Nation's Food and Agriculture Organization (FAO) estimated that sugarcane was cultivated on about 23.8 million hectares of land, in more than 90 countries, with a worldwide harvest of 1.69 billion tons. Brazil is the largest producer of sugarcane in the world. Figure 1 shows worldwide production of sugarcane in 2010.

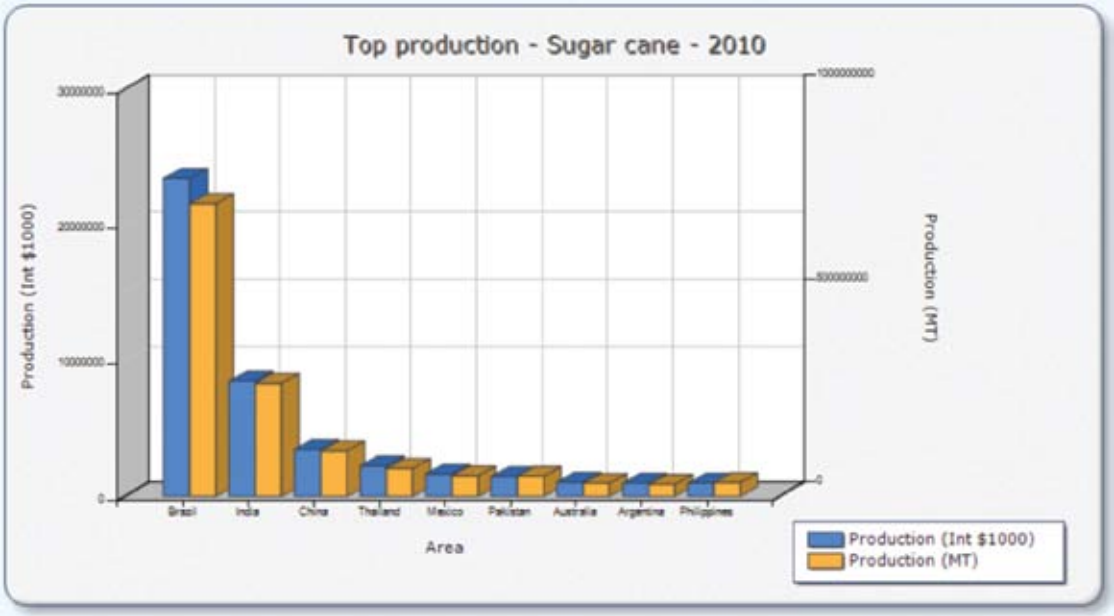

Figure 1: Worldwide Sugarcane Production - 2010[7]

4 www.indiaonestop.com/Greenrevolution.htm

5 http://countrystudies.us/india/102.htm

6 Food and Agriculture Organization of the United Nations - http://faostat.fao.org/ (FAOSTAT, 2009)

7 Food And Agricultural Organization of United Nations: Economic And Social Department: The Statistical Division

3.3 SUGARCANE DERIVATIVES

Sugarcane and its components are used as raw materials for a variety of products as described below.

Crystallized Sugar

The main product of sugarcane is crystallized sugar, or common white sugar. The stalks of the sugarcane brought to the mills are washed, cut into smaller pieces, or shredded. Sucrose (in the form of sugarcane juice) is extracted from the sugarcane by pressing it under rollers. The juice undergoes a series of processes to form white sugar. The sugarcane juice is boiled with carbon dioxide and milk of lime to remove impurities. The clear juice is filtered and undergoes the process of evaporation. During evaporation, the clarified sugarcane juice is boiled until it is made into a thick syrup. The syrup is boiled at low temperatures under partial vacuum to create sugar crystals. The sugar crystals and molasses are separated in centrifuges and filters.

Cane Ethanol

Ethanol is a byproduct of sugar production. The sugar content in the juice is fermented to form ethanol. Ethanol can be used as a bio-fuel alternative to gasoline; it is widely used to power cars in Brazil, where gasoline is required to contain at least 22 percent bio-ethanol. The production of ethanol from sugarcane is more energy efficient than from corn or sugar beets or palm/vegetable oils, particularly if sugarcane bagasse (the leftover husk from juice extraction) is used to produce heat and power for the process. Furthermore, if bio-fuels are used for crop production and transport, the fossil energy input needed for each ethanol energy unit can be very low.

Bagasse Applications

Sugarcane is one of the plants with the highest bioconversion efficiency. The plant is able to efficiently utilize solar energy, yielding some 55 tons of dry matter per hectare of land annually. After the harvest, the crop produces sugar juice and bagasse – the fibrous dry matter that remains after the juice is extracted from the sugarcane. This dry matter is biomass with potential as fuel for energy production. With the use of latest technologies, bagasse produced annually in Brazil has the potential to meet 20 percent of Brazil's energy consumption by 2020.[8]

Electricity Production

A number of countries, in particular those lacking fossil fuels, have implemented energy conservation and efficiency measures to minimize the use of cogenerated energy (steam and electricity) in sugarcane processing and to export excess electricity to the grid. Current technologies, such as those in use in Mauritius, produce over 100 KWh per ton[9] of bagasse. More recent cogeneration technology plants are being designed to produce from 200 to over 300 KWh per ton of bagasse. As the sugarcane crop is seasonal, power plants relying on bagasse would need to manage storage throughout the year.

IV. STUDY METHODOLOGY

For the purpose of the task and risk mapping, a fact-finding approach involving visits to various sugarcane producing regions, mills and farms was undertaken. Relevant local people and officials were interviewed (Annex II). The questions posed were mostly open-ended, keeping in mind the supply chain review and the various FLA Code of Conduct elements that needed to be observed.

8 www.businesswire.com/news/home/20091214005749/en/Cetrel-Novozymes-Biogas-Electricity-Bagasse

9 This could meet a significant portion of rural electricity needs in India.

Certain challenges arose during the mapping study, as described below. The approach to data collection was adapted accordingly.

- Sugarcane being a long-duration crop, different processes are carried out throughout the year. As the field visits occurred during two months (February-March), only certain aspects of the production were observed. In North India, the process of sowing could be observed as it was occurring at the time of the visit; in the South, however, sowing is done from July-October and therefore could not be observed during the field visits. The observations made in the task and risk mapping section are therefore based on a combination of actual observations and information collected during interviews.
- In spite of confirmed appointments, some interviewees were not available at the scheduled time and considerable time was spent waiting for them. This was mostly the case in sugar mills as staff were unwilling to engage in discussions until senior management (Chairman or Managing Director) arrived.
- In some areas, farms were located 2-3 hours from the sugar mills. Due to high daytime temperatures in South India, most farm work is carried out early in the morning or late in the afternoon. Therefore, interviews conducted during the day with farmers, workers, and village-level stakeholders were conducted in the village and not necessarily at the farms while they were working.
- Due to Assembly Elections in Uttar Pradesh on March 4, 2012, some of the farmers who confirmed their availability for interviews could not be contacted on the day of the visit. The activities on the farms were also postponed. Hence neighboring farms were visited and workers were interviewed.

4.1 ASSESSMENT TEAM

The assessment team was commissioned by FLA and included an independent external expert with more than 20 years of experience in the agriculture sector (mainly sugarcane) and various persons from local civil society organizations (listed in Annex II). Representatives were selected from the respective states visited during the study. The regional experts were selected based on their knowledge of the region, sugarcane cultivation, relationships with local farmers and sugar mill officials, and language capabilities. The regional experts were briefed about the study goals and interview techniques before data collection. The FLA Director of Agriculture and Strategic Projects supervised the study and report writing.

4.2 ASSESSMENT STAGES

Due to differences in climatic conditions between North and South India, sugarcane cultivation practices differ in the two regions. Sugarcane is a long-duration crop, with a 12-14 month cycle in the North and a 14-18 month cycle in the South. While sowing in the North is done in February-March, in the South the sowing period lasts from July-October. However, the harvesting in both regions starts at the end of October and continues until April-May. Therefore, it was important to schedule the visits in February-March in order to cover the main processes of cultivation, i.e. sowing and harvesting. The entire assessment took place from February to April 2012, and was divided into the following stages (Table 2):

TABLE 2: ASSESSMENT STAGES

STAGES	TIME PERIOD (2012)	ASSESSMENT TEAM MEMBER(S)	CONTENT AND OBJECTIVES
Desktop research	February 1 – 15	FLA- commissioned expert	Research on sugarcane sowing and harvesting in North and South India. Based on this research, five sugarcane-producing regions (states) were selected for mapping. A work-plan was submitted to the FLA Director of Agriculture for approval.
Preparation	February- March	FLA-commissioned expert	Collection of data from the Ministry of Agriculture and procurement of relevant research material. Online research conducted to locate local CSOs in the sugarcane growing regions of the five states. The selected CSOs were contacted to schedule the visits to coincide with the harvesting and/or sowing season of sugarcane in the respective districts of selected states.
Making contact with local CSOs	February-March	FLA-commissioned expert	Communications held with several district-level CSOs in order to understand their experience in the field and finalize a suitable time for field visits.
Interviews with stake-holders for information gathering	February – March	FLA-commissioned expert and local CSO member	Interviews held with small, medium and large farm owners, contractors, local and migrant labor, sugar factory management, staff and Govt. officials to understand the supply chain, the risks involved, the challenges faced by the stakeholders, and government policies. Researchers developed a better understanding of strategies used by sugarcane suppliers and existing sugar procurement policies.
Assessment field visits and data collection	February- March	FLA-commissioned expert and local CSO members	Interviews held with stakeholders, governmental institutions and related organizations in the states of Uttarakhand, Uttar Pradesh, Gujarat, Maharashtra and Karnataka, accompanied by local CSOs of the selected districts of each state. The visits to sugar factories and some farms were announced, while visits to some farmers and workers were unannounced. Given the relationship between the accompanying CSOs, all stakeholders extended full support and cooperation.
Debriefing	February-March	FLA-commissioned experts and local CSO	A debriefing session was held with the accompanying CSO members to review, analyze and finalize the findings.
Report Writing	April-May	FLA-commissioned expert	Analysis of all the documents and collected data and compilation of the report.
Draft Report Submission	May	FLA-commissioned expert	Submission of the draft report with relevant information, references, maps, tables and photographs to the FLA for feedback and further refinement.

4.3 AREAS COVERED AND INFORMATION GATHERING

Information was collected mainly through interviews with stakeholders involved at various stages of the supply chain. Data was collected by visiting five prominent sugarcane producing states in India: Uttarakhand, Uttar Pradesh, Gujarat, Maharashtra and Karnataka. In those five states, 11 sugarcane or sugar-producing regions were visited. The regions (Udham Singh Nagar, Pilibhit, Lakhimpur Kheri, Tapi, Surat, Satara, Sangli, Belgaum, Bhuinj, Pune and Mysore) are depicted in Figure 2, along with the major cities near those regions (New Delhi, Bengaluru).

A total of 91 interviews were conducted during the study, which included interviews with 34 factory managers and staff at 10 sugar mills; staff from 7 national and regional civil society organizations; 13 national and regional Government officials; 11 labor contractors; 18 sugarcane farmers; and 8 workers from sugarcane farms. A total of 21 sugarcane farms were visited during the course of the study. Annex II provides details of the interviews conducted with the various stakeholders involved in the sugarcane supply chain in all five states.

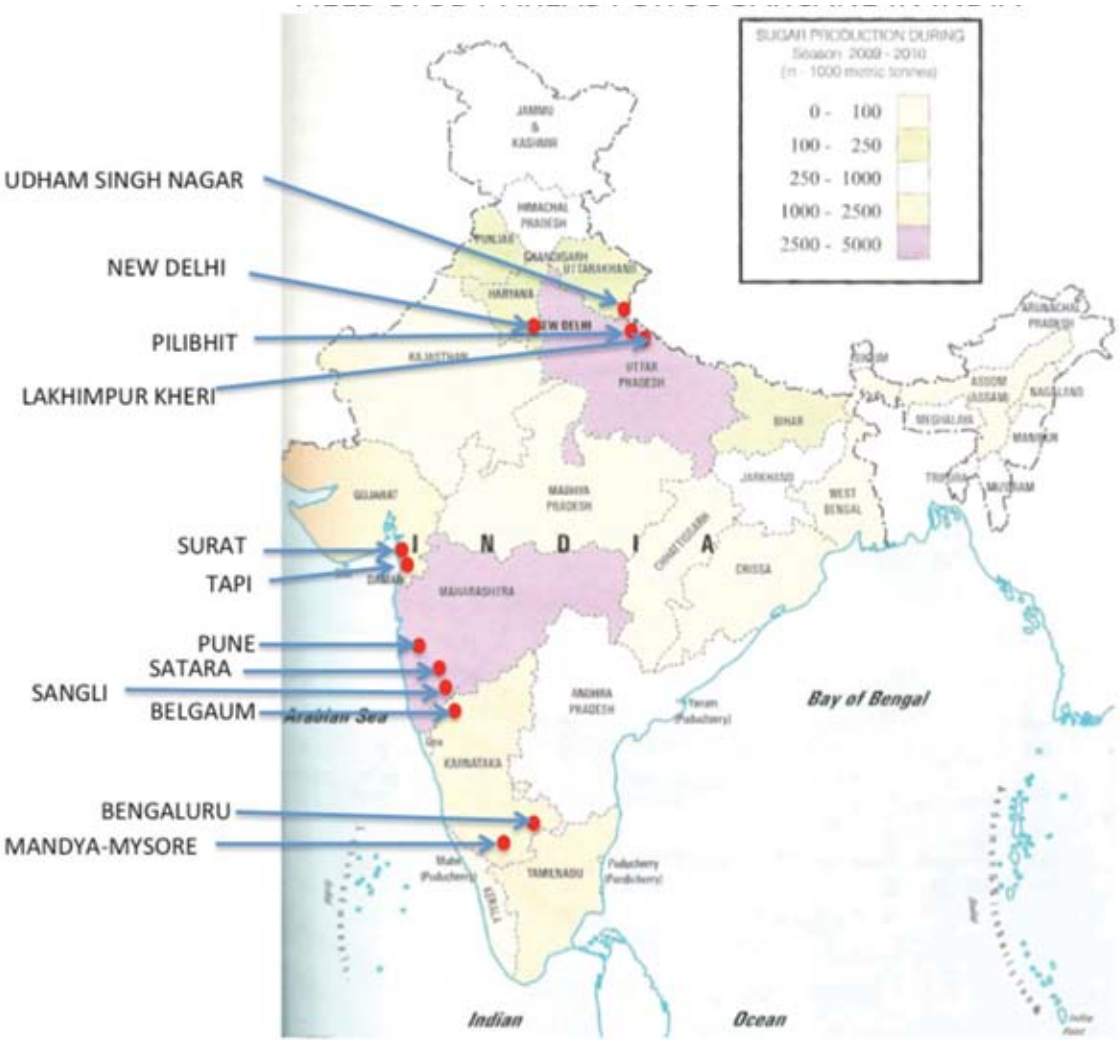

Figure 2: Field Study Areas and Sugar Producing Regions in India[10]

10 Atlas of Sugar Mills in India, August 2011, ISMA.

V. FINDINGS

5.1 SUGARCANE CULTIVATION IN INDIA

Sugarcane occupies about 3 percent of the total cultivated area in India and it is one of the most important cash crops, contributing about 7.5 percent of the gross value of agricultural production in the country. It is the primary raw material for all major sweeteners produced in the country. At present, sugarcane is cultivated throughout the country except in certain hilly tracts in Kashmir and Himachal Pradesh (Figure 2). The sugarcane growing areas may be broadly classified into two agro-climatic regions: sub-tropical (North India) and tropical (South India). Major portions of sugarcane cultivation in India occur in the sub-tropical belt. Uttar Pradesh, Uttaranchal and Bihar are important cane growing states in this region. The farmers in Punjab and Haryana are shifting from sugarcane to shorter duration crops. As a result, the area utilized for sugarcane has decreased in the last five years. Sugarcane is also grown in a few pockets in Madhya Pradesh, West Bengal, Rajasthan and Assam, but productivity in these states is quite low.

Sugarcane is grown extensively in the tropical belt, including the states of Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu and Gujarat. Since sugarcane is a tropical crop, these states have favorable agro-climatic conditions for its growth. Sugarcane yields are substantially higher in the tropical belt compared to the sub-tropical regions, and the sugar recovery is also higher than in the other regions. Higher yields are attributed to a longer-duration crop; a high-yielding, disease-resistant variety of seeds; favorable climatic conditions; better irrigation facilities[11]; and good soil quality, which is ideal for sugarcane cultivation. Higher recovery of sugar is attributed to a longer-duration crop and sowing of varieties containing high levels of sucrose. Another major factor for higher recovery is the quicker transportation of harvested sugarcane to the factories in the South, as compared to the North. The availability of a sufficient quantity of good quality sugarcane is an important pre-requisite for a sugar mill to be economically viable. The cost of transportation and deterioration in quality increases significantly with the distance of the mills from where sugarcane is procured.

Sugarcane and sugar production in India is shown in Table 3[12]. Sugarcane production in 2010-2011 has been estimated at over 340 million metric tons, with most of the sugarcane destined for sugar production at one or the other of the country's mills.[13]

TABLE 3: SUGARCANE AND SUGAR PRODUCTION IN INDIA 2010-2011

TITLE	2010-2011	2011-2012*
Area (million hectares)	4.98	5.47
Cane production (million tons)	346.00	380.00
Sugar production (million tons)	24.20-24.50	26.00-26.50

** Figures for 2011-2012 are unofficial estimates as the crop is still in planting stage*
Source: Trade and Industry Sources

11 According to the interviewed civil society organizations, scarcity of freshwater is affecting the productivity and profitability of sugarcane growers and millers in India. Approximately 25,000 liters of water is needed to produce 100 kilograms of sugarcane. Unless sugarcane farmers are introduced to new methods for producing higher yields using much less water (e.g., by using drip irrigation) the country will find it difficult to meet the growing demand for sugar. The water table is depleting every year. In the future, these challenges will become even more complex with climate change inducing direct and indirect effects on crops, water, pests and diseases, and volatility in the international market.

12 Trade and Industry Sources

13 Around 30 percent of the sugarcane produced in India is for making "gur" (also called jaggery) and "khandsari," two local sugar products eaten by the rural population and for fresh juice sold to consumers. The manufacture of Gur and Khandsari is predominant in Karnataka, Tamil Nadu and Uttar Pradesh; significant quantities are also produced in Andhra Pradesh, Haryana and Punjab. These items are produced in small village-level set-ups called "crushers" and not in sugar mills.

Of the estimated 24 million tons of sugar produced in 2010[14] - 2011, India exported about 3.61 million tons[15] (around 14 percent of its production). India[16] is the second-largest producer of sugar in the world and is the biggest consumer of sugar domestically (22 million tons in 2011). In 2012, it is estimated that India will produce about 26-26.5 million tons of sugar. Table 4 provides details of the total area cultivated and output of sugar by state.

Data in Table 4 show that sugarcane yields vary significantly across states. The variety of sugarcane that is cultivated affects yields. Various experiments conducted under the All India Coordinated Research Project (AICRP)[18] have developed high-yield varieties of sugarcane suitable to be grown under specific climatic conditions. There is an urgent need for replacement of existing varieties with more productive ones.[19]

TABLE 4: TOTAL AREA CULTIVATED AND OUTPUT OF SUGAR, BY STATES[13]
INDIAN SUGAR INDUSTRY- HIGHLIGHTS (SEASON 2009-10)

STATE	CANE AREA (000 HA)[14]	CANE PRODUCTION (LAKH[15] MT [16])	CANE YIELD YON/HA	NO. OF WORKING MILLS	CANE CRUSHED (LAKH MT)	SUGAR PRODUCTION (LAKH MT)	SUGAR RECOVERY %	AVERAGE SEASON DAYS
Andhra Pradesh	158	117	74	35	55.47	5.15	9.28	63
Assam	27	11	39	See other states	See other states	See other states	See other states	See other states
Bihar	116	50	43	9	27.24	2.58	9.49	66
Gujarat	154	124	81	18	112.95	11.89	10.53	151
Haryana	74	53	72	14	26.48	2.48	9.37	59
Karnataka	337	304	90	54	239.77	25.58	10.67	127
Kerala	3	3	95	See other states				
Madhya Pradesh & Chhatisgarh	62	25	41	14	9.63	0.8	9.22	47
Maharashtra	756	642	85	143	613.9	70.67	11.51	143
Orissa	8	5	61	See other states	See other states	See other states	See other states	See other states
Punjab	60	37	62	15	21.12	1.81	8.59	54
Rajasthan	6	3	57	1	0.48	0.04	7.8	60
Tamil Nadu & Puducherry	293	297	101	42	145.52	12.99	8.93	145
Uttar Pradesh	1,977	1,171	59	128	567.34	51.79	9.13	84
Uttarakhand	96	58	61	10	31.74	2.92	9.19	86
Other states*	48	23	36	7	3.84	0.42	8.8	40
Total	**4,175**	**2,923**	**70**	**490**	**1,855.48**	**189.12**	**10.19**	**109**

**Other states include Assam, Goa, Kerela, Nagaland, Orrisa, West Bengal and the Union Territories of Dadar and Nagar Haveli*

14Ha = Hectare

15 Lakh = 100,000

16 Mt = Metric Ton

17 Atlas of Sugar Mills in India, August 2011, ISMA.

18 www.iisr.nic.in/aicrp.htm

19 Ministry of Consumer Affairs, Food and Public Distribution http://dfpd.nic.in/?q=node/254

Despite industry efforts, sugarcane yield and sugar content have not improved significantly in the past three years. Therefore, the government and industry are debating whether the sugar industry should continue to depend on one input crop (sugarcane) or explore the use of other alternate raw materials, such as sugar beets. Recent studies have shown that it is possible to cultivate sugar beet in tropical conditions and that using sugar beets as raw materials can affect industry economics. According to the Ministry of Consumer Affairs and Food Distribution, sugar beets can complement sugarcane to extend the duration of the crushing season and also to enhance sugar yields. Another input crop could be sweet sorghum; sweet sorghum can be processed alongside sugarcane or sugar beet to produce ethanol. Therefore, a combination of sugarcane, sugar beet and sweet sorghum inputs could help the sugar industry develop the right product mix and achieve commercial sustainability.

Sugarcane production in India involves many stakeholders along the supply chain from the government, industry and NGOs. Figure 3 illustrates the stakeholder map and the relationships between different actors.

The activities of the different stakeholders are explained in detail in the following sections.

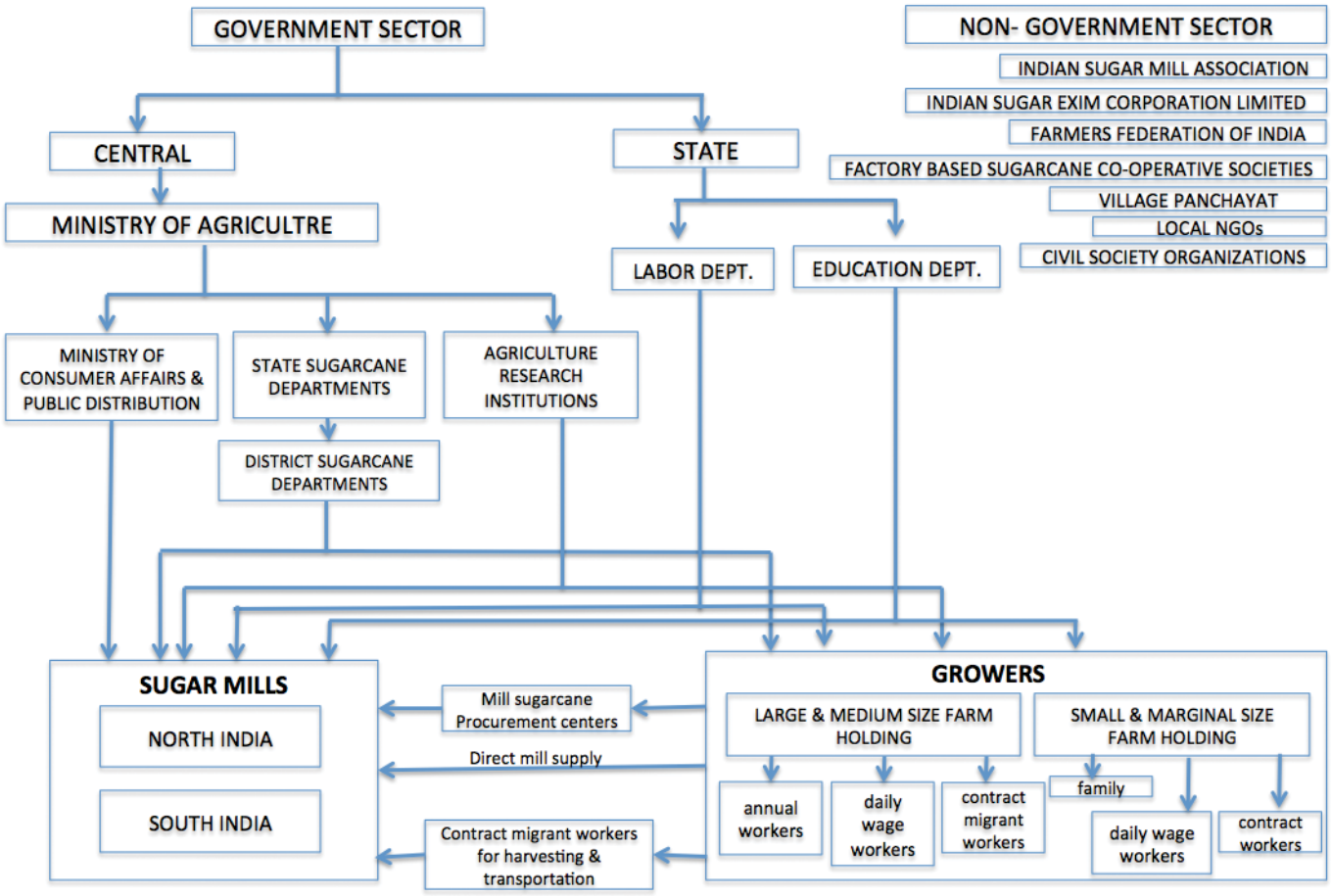

Figure 3: Stakeholder Map of Sugarcane Supply Chain in India

5.2 GOVERNMENT REGULATIONS FOR THE SUGARCANE INDUSTRY

Sugar is one of the commodities listed in the Essential Commodities Act 1955.[20] The Indian government comprehensively regulates the purchase of sugarcane and sale of sugar. Regulations are applied along the entire value chain, including land demarcation, sugarcane procurement, sugarcane price, sugar production and sugar sales by mills in domestic and international markets.[21] The Central Government sets out the Fair Remunerative Price (FRP) for sugarcane at the beginning of each season. Some of the states set out their Statutory Advisory Price (SAP), which is above the FRP. The Supreme Court has ruled that it is mandatory for sugar mills to procure sugar cane at these prices.[22] SAP is prescribed in five states in India.

The Ministry of Consumer Affairs, Food and Public Distribution sets out the FRP. For the sugar season 2011-12, the FRP is set at Rs.1450 per ton, linked to a 9.5 percent recovery level, with an increase of INR1.53 for every 0.1 percentage point increase in the recovery above 9.5 percent. In the current season, while the states of Uttarakhand and Uttar Pradesh are paying INR 2400-2450 per ton for general sugarcane varieties and INR 2500-2550 per ton for early varieties (which mature earlier in the season), the rates in South India are lower by INR100-150 per ton. Low sugarcane prices and pending arrears payments[23] - estimated at INR 2270 million for the year 2010-11 - are major reasons for farmers' agitation.

The State Sugarcane Department demarcates the sugarcane supply area for each sugar mill; mills are required to procure sugarcane from the "command area" at the government-declared rates. The factories cannot procure from areas outside their "command area" without prior approval of the State Government. There are currently 566 sugar mills operating in India, most of which are located in the vicinity of sugarcane production areas to reduce transportation costs and to retain quality. The catchment area of each sugar mill consists of many thousands of farms – including very small farms – located in a 25-50 kilometers radius (sometimes extending up to 80 kms based on the number of farms and number of sugar mills present in the area).

The Government regulates sugar supplies in all private, public or co-operative sugar mills. It is mandatory for every factory to supply 10 percent of its production to the government at the Levy Price[24] set by the Central Government. The remaining production is sold in the open market against the release of quota by the government. The sugar mill can sell a fixed quantity of sugar, or "quota," in the market. This quantity is based on the production capacity of the sugar mill and is released periodically by the government. The main purpose behind this regulation is to keep control of the sugar stocks and to regulate its Market Retail Price (MRP).

5.3 SUGARCANE FARMS IN INDIA

Sugarcane production in India supports 50 million farmers and their families.[25] Sugar factories are considered to be welfare centers in rural areas, as they give scope for establishment of educational institutions,

20 seednet.gov.in/.../Essential_Commodity_Act_1955(No_10_of_1955).

21 ISMA India Sugar Year Book 2004-05.

22 http://articles.economictimes.indiatimes.com/keyword/sugarcane/featured/2

23 Arrears payments are payments that need to be paid by sugar mills to farmers against sugarcane procured in the previous season or in previous months of the current season.

24 www.livemint.com/2012/01/30211021/Govt-hikes-levy-sugar-prices-b.html

25 ISMA India Sugar Year Book 2004-05.

hospitals, communication, transportation facilities, etc. Three types of farmers grow sugarcane in India. Marginal and small farmers grow sugarcane on less then 2 hectares of land and mostly employ family members for production processes. Medium-size farmers grow sugarcane on about 2-10 hectares of land and employ hired labor for production processes such as tilling, land preparation, weeding, sowing and harvesting. Large farmers grow sugarcane on more than 50 hectares of land.[26] Most of the farming is mechanized on the large farms due to the volume of work. Medium and large farms generally have some (1-10) permanent workers, depending upon the size of the farms. During the peak production period, additional workers are hired on a daily or piece rate basis. In North India, most farms are small to medium-size; large farms are located in the Terai belt of Uttarakhand. Farms of all sizes are present in South India (mainly Maharashtra).

5.4 LABOR PROFILE AND RECRUITMENT

Medium and large-size farmers employ hired labor for sugarcane production. The labor is typically hired through a third-party contractor who sources workers from adjoining districts and even neighboring states. This contractor is generally a member of the village community back home. One person in one village acts as the contractor of the workers. The laborers arrive at the farms with their families and work for eight months. The children who come with their families also work on the farms. They usually work alongside in sowing, carrying the seedlings from the trolley to the furrows, weeding and harvesting activities. Other tasks in sugarcane production require an adult, as the sugarcane is a bulky and heavy crop to handle. There is no specialized production processes (such as hybridization for seed crops) with high labor requirements. The wages paid to workers are generally below the minimum wage as prescribed by the government for the agriculture sector. Payments to the workers are usually made after the harvest is over, the sugarcane has been supplied to the mills, and the farmers have received their payments. The workers usually reside at the farms, where a member of the group cooks for the other workers while they work. There is no documentation of any kind at the farms for either the workers or contractors. During the rainy season (July–September), when there is limited work, the workers go back to their native places.

5.5 INDIAN LAWS AND LEGISLATION FOR THE AGRICULTURE SECTOR

Although Indian labor laws are comprehensive, there is general lack of implementation and proper labor inspection across unorganized sectors, especially in the agricultural farms. The majority of the farmers are small landowners with a very small hired workforce; therefore, in many cases local labor laws do not apply. In recent years, the government has made some efforts to develop specific legislation for the agriculture sector, e.g., prescribing minimum wages and minimum age of work. Overall, implementation of labor laws and monitoring by the government or by the private sector is weak. A description and list of applicable laws can be found in Annex 1.

26 ftp://ftp.fao.org/docrep/fao/005/ac484e/ac484e00.pdf

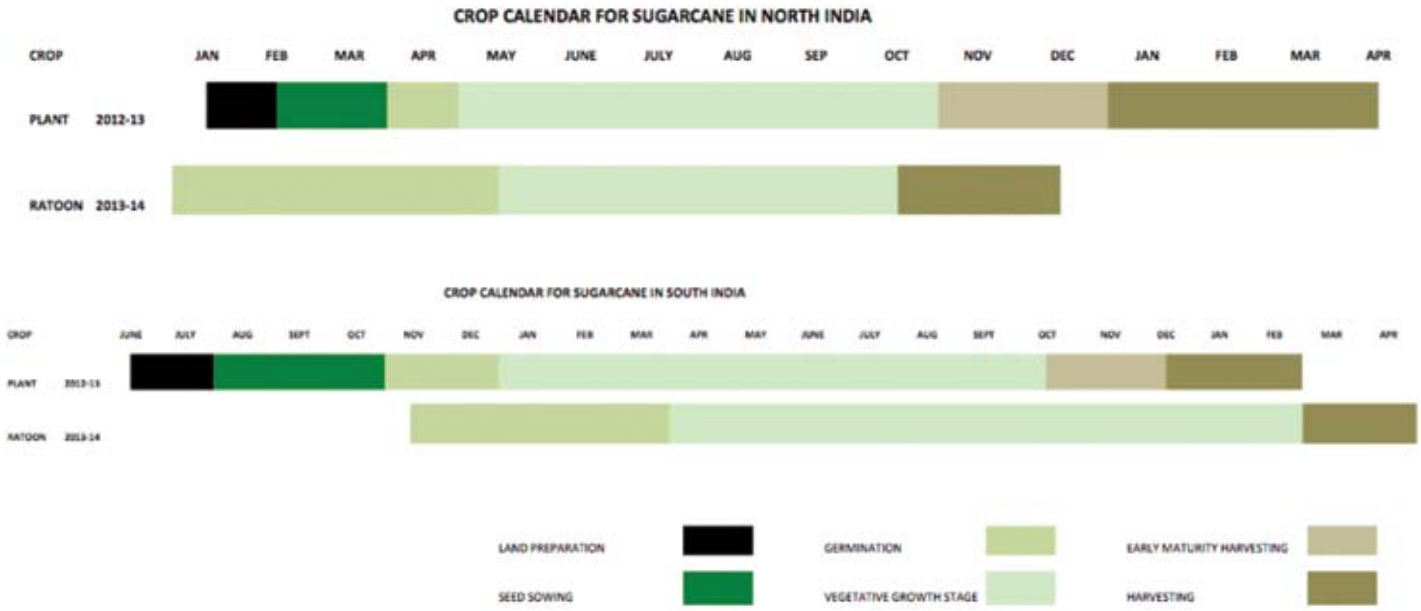

Figure 4: Crop Calendar of Sugarcane in India

5.6 SUGARCANE PRODUCTION AND SUPPLY PROCESS

The planting of a new crop takes place in February-March in North India and July-October in South India. The season lasts about 14-18 months, wherein two crops of sugarcane are harvested. The second harvest of the crop (Ratua/Ratoo) has a smaller yield compared to the first harvest. The yields are approximately 50 tons per hectare for the first harvest, and 45 tons per hectare for the second harvest. Figure 4 presents the crop calendar of sugarcane in India.

The various processes involved in the production of sugarcane are listed below.

5.6.1 Sowing

Sugarcane sowing in North India starts from the second week of February and continues until the end of March. Small farmers hire a tractor or use their own ox for ploughing and preparing the land for sowing. Sowing is done manually and mostly involves family members. The farmers' families work on the farm, as hiring of contractors/ labor is expensive. During the sowing period, which may last 1-2 days, the children of the family do not attend school. Instead, they assist their parents in the various operations of sowing.

The medium and large-sized farmers hire contractors from their own or near-by villages, who bring workers (perhaps their own families and relatives) who stay at the farm until the sowing is completed. The farmers pay the contractors INR 2000-2200 per acre; payable after the sowing is completed. During field visits it was observed that child labor is often used by the contractors for light work, such as transportation of sugarcane setts to the furrows, and in some cases also for dangerous tasks such as cutting sugarcane into setts with the use of machetes. Older children are engaged for dropping the sugarcane from the trolleys to the fields. While the setts are being dropped in the furrows, a basal dose of fertilizers and pesticides is applied manually by a person walking behind the tractor. The

task of applying fertilizers is dangerous; it is risky to walk on uneven soil behind the sharp-edged agricultural implements and hazardous because no personal protective equipment (PPE) is used while mixing and applying pesticides and fertilizers. The majority of the farmers are uninformed about the proper use of PPE. During interviews with the farmers, it was observed that even educated farmers do not use PPE because they consider it an additional cost.

5.6.2 Irrigation

Germination of sugarcane begins 2-3 weeks after sowing. On small farms, family members are usually involved in irrigation of the fields, while medium and large farmers use their permanent workers or hire daily-wage workers. Depending on the weather and the soil condition, watering is done every 40-45 days until harvest. It was observed during interviews that neither the permanent workers nor the daily-wage workers are paid minimum wages during irrigation. No children were seen participating in irrigation during farm visits. Often, watering during the summer is done at night in rural areas due to the availability of electricity used to run water pumps. There are risks posed by a lack of adequate lighting on the farms; working in the fields at night exposes the workers to snakes and wild animals.

5.6.3 Fertilizer and Pesticide Application

A few days after the first irrigation, the first top dressing of fertilizer is applied, generally through broadcasting. Weedicides are simultaneously mixed with pesticides and sprayed throughout the entire field. The process is repeated after two months. Spraying pesticides and weedicides without using PPE is hazardous, and the workers are mostly unaware of potential harms and proper use of PPE. Children typically are not engaged in chemical application.

5.6.4 Harvesting, Bundling, Loading and Transportation to Sugarcane Centers

Sugar factories become operational in mid-October and continue to operate until March or April, depending upon the availability of sugarcane. In July-August, the sugar factories conduct a survey of the sugarcane area allotted to them by the State Sugarcane Commissioner. They then prepare a plan (quota) of sugarcane to be supplied by each grower. The quantity of sugarcane supplied by each grower is distributed over the entire crushing season and supply tokens are issued accordingly. The sugar mills operate through collection centers that they open at various places within their command area. These centers issue a slip (parchi) to the farmers that prescribe the dates when their sugarcane will be weighed. The sugarcane is usually harvested a day before it is to be supplied to the centers so that it does not lose its moisture content and weighs more so as to maximize profits. To accomplish this, workers work round the clock to harvest the sugarcane from the farms.

While small farmers involve their family in harvesting and transporting the sugarcane to the collection centers, the medium and large farmers hire contractors who bring labor either from the nearby villages or arrange migrant workers. The migrants' families, including children, are involved in harvesting, bundling and loading. It was noticed during interviews that the workers are paid between INR 150-180 per ton of sugarcane harvested. Harvesting is a hazardous task, as it involves the use of machetes without any protection. Moreover, workers often work without shoes in the fields, exposing them to risks of snake and scorpion bites. The farmer and/or his driver attaches the loaded trolley behind the tractor and ferries it to the designated sugarcane center.

The administrator at the sugarcane production center weighs the sugarcane and issues a slip recording the total net weight supplied by the farmer. The sugarcane is then loaded onto trucks by the contracted labor of the sugar mill. The loading contractor is paid INR 20 per ton. Loading is a dangerous task, and accidents are frequent. Chopping loaded sugarcane so that it fits better on the trolleys or trucks has its own risks. The transporter, who is paid INR 100-150 per ton, depending upon the distance, transports sugarcane from the center to the sugar mill. The drivers of the trucks are always at risk, as most of the trucks are over-loaded and often topple due to poor road conditions. Payment to the farmer is generally made a month after the sugarcane has been supplied. The farmer produces his supply slip at the payment counter of the mill and, after verification, payment is made at the declared rate.

5.6.5 Unloading Sugarcane at Sugar Mill

Sugarcane arrives at a sugar factory in bullock-carts, tractor-driven trolleys or trucks. After the gate-entry is completed, the sugarcane is weighed at the weighbridge and placed near the loading conveyor under the "punja," a mechanical device controlled by a manually operated over-head crane that grips the sugarcane and releases it onto the conveyor. Another method for unloading the sugarcane is by manually tying a steel rope around the bundles of sugarcane and hauling the bundles by the over-head crane onto the conveyor.

5.7 TASK AND RISK MAPPING OF SUGARCANE PRODUCTION IN NORTH INDIA 27

PHASE OF PRODUCTION	TASKS/ACTIVITIES	SKILLS REQUIRED	ROLE OF CHILDREN, YOUTH AND ADULTS AND ASSOCIATED RISKS
1. Land preparation (January – February)	• Ploughing to loosen the soil to a depth of 18-24 inches and destroy weeds, grasses and roots of the recently harvested crop. • Use of tractors by medium and large farmers, and ox or buffalo by small farmers. • After proper ploughing, planking (leveling) is done to close the field and retain its moisture untill the time of sowing. • Sowing is normally done two-three weeks after ploughing, depending on the weather conditions, and availability of seeds, fertilizers, equipment and labor. Hoes are used for manual sowing.	• Knowledge of handling, maintenance and repair of tractors, and agricultural equipment. • Knowledge of harnessing draught animals. • Knowledge of contouring of land for proper drainage and to prevent waterlogging and soil erosion. • Knowledge of good seeds, correct use of fertilizer and knowledge of weather patterns.	• Children and women do not generally play a role in the preparation of land. The small farmers prepare the land themselves with the help of ox or buffalo. Handling animals is dangerous at times as they are quite unpredictable. • Small and medium-size farmers can also hire tractors, driven by skilled drivers, to prepare the land and pay the established rate per acre. Chances of accident and injury are common while handling machinery or tractor equipment. • Marginal farmers often drive their own tractors to prepare land for sowing. • Some medium and large farmers employ drivers to operate their tractors. High possibility of accident while driving the tractor. Absenteeism of driver could cause delay in land preparation.

PHASE OF PRODUCTION	TASKS/ACTIVITIES	SKILLS REQUIRED	ROLE OF CHILDREN, YOUTH AND ADULTS AND ASSOCIATED RISKS
2. Planting seeds (February – March)	• Harrowing the field with tractor, buffalo or ox and making furrows. • Dropping setts (sugar-cane seeds) through seed drill or manually in single or double rows.	• An experienced person who can make furrows in proper rows with the ridger attached behind the tractor. • A skillful person who can harness the draught animal to make furrows. • Knowledge of good quality seeds. • Skill in cutting setts of proper size for seed planting.	• Families of smallholdings are involved in complete sowing activities. Sowing is given to a contractor on an established rate per acre. He engages his family members and relatives/ neighbors. Hiring women and children is very common. • Children are exposed to great risks while cutting seeds with machetes. • Risk of heat, dehydration and exposure to sun.
3. Fertilizer application (February– March) Basal Dose (May-June) Top Dressing (August-September) Second Dose (November December) Third Dose (optional)	• Basal dose of fertilizers and chemicals applied through a seed-drill or manually. • Different kinds of fertilizers are mixed on the field and filled in individual bags for broadcasting. • Planking is done immediately to prevent seed damage due to exposure to heat or cold. • Fertilizers for top dressings are also prepared similarly.	• Knowledge of fertilizers, pesticides and insecticides is very important. • Skill in operating a seed-drill attached to the tractor. • Fertilizer mixing and broadcasting requires proper technique.	• Children and women are not engaged in broadcasting fertilizers or operating seed-drills; however, young workers are at times engaged in the operations, Their age cannot be ascertained as there are no documents available to substantiate. • Operators get injured while handling seed-drills • Mixing and broadcasting fertilizers without using PPE is hazardous to health. • Exposure to sun is a health hazard. • Weight of bags causes strain on shoulders and back.
4. Irrigation 1st watering (April-May) 2nd watering (July- August) (rains supplement) 3rd watering (September-October) (Monsoon supplement partially) (December-January) 4th watering for late harvesting	• Irrigating either through canal or tube-well bore. • Monitoring availability of canal water. • Repairing tube-well motor and pump. • Arranging diesel for the running of fuel-run tube-wells. • Repairing tractors. • Requesting rural electricity department for supply of electricity for electrically operated pumps. • Making temporary drains and check-walls for channelizing water using hoes.	• Knowledge of operating tube-well. • Knowledge of plumbing. • Knowledge of electrical repairs. • Knowledge of repairs and maintenance of pumps. • Knowledge of operating tractors. • Draining excess water.	• Children and women generally are not involved in these activities. However, young workers are at times engaged in the operations; their age cannot be ascertained, as there are no documents available to substantiate. • Risk of electric shocks when working around water and electricity. • Drinking ground water without treatment. • Watering the fields, especially at night, exposes workers to the risk of snake and scorpion bites and wild animals. • Risk of heat, dehydration and exposure to sun. • Risk of getting injured while working with a hoe. • Blisters on palms as a result of continuous use of hoe. • Strain on back and shoulders from using hoe.

PHASE OF PRODUCTION	TASKS/ACTIVITIES	SKILLS REQUIRED	ROLE OF CHILDREN, YOUTH AND ADULTS AND ASSOCIATED RISKS
5. Roughing/ Hand-weeding (June-August)	• Removal of grass and weeds by hand. • Cutting unwanted weeds and grasses with sickles. • Peeling-off unwanted weeds and grasses with hoes.	• Knowledge of unwanted grasses and weeds. • Using sickles and hoes.	• Children, women, and young workers are generally engaged in this operation, but their age cannot be ascertained as there are no documents available to substantiate. • Using sickles and hoes can cause injuries. • Walking bare-feet exposes workers to snake and scorpion bites. • Exposure to heat and sun.
6. Tying peripheral rows of sugarcane (July-September)	• As sugarcane gains height, the peripheral rows are tied; otherwise in waterlogged areas, sugarcane topples even with a gentle breeze.	• Tying the sugarcane at the appropriate height. • Deciding the number of canes that need to be tied together.	• Only adult workers are engaged. • Often stools and ladders are used for tying at higher levels. • Danger of falling off the stools or ladders. • Hands and legs get cut by razor-sharp leaves of sugarcane. • Exposure to snakebites, scorpion bites and insects in the fields. • Exposure to heat and sun.
7. Harvesting Ratua[23] (October-November) Plant (December-March)	• Harvesting in small land holdings done manually by family members. • Harvesting in medium and large land holdings done generally by contract labor. • Daily-wage workers do harvesting in some cases. • Sugarcane is first cut with the machete just above the surface of the soil. • Sugarcane is then cleaned with sickles. • Cleaned sugarcane is tied in bundles. • Green stalks of sugarcane are tied and taken by workers for their cattle. • Bundled sugarcane is loaded onto the tractor-driven trolleys or bullock-carts.	• Cutting sugarcane by machetes at the base just above the surface of the soil is a specialized job. • Skilled worker is able to cut enough sugarcane for cleaning by other workers. • Tying sugarcane neatly in bundles requires skill. • Deftly loading bundles of sugarcane onto trolleys/bullock carts for weighing.	• Adult male workers harvest sugarcane. However, female and young workers and even children have been spotted harvesting sugarcane. • Men, women, young workers and children clean sugarcane with sickles. • Men, women and young workers make sugarcane bundles and load them on trolleys and bullock-carts. • Using machetes and sickles can lead to severe cuts. • Bundling and loading without PPE can cause injury. • Working in sugarcane fields exposes to snakebites, scorpion bites, insect-bites. • Exposure to heat, sun, fog, frost, cold and rain. • Blisters on the palms.

27 Ratua means Ratoon, a new shoot or sprout springing from the base of sugarcane plant, after cropping.

PHASE OF PRODUCTION	TASKS/ACTIVITIES	SKILLS REQUIRED	ROLE OF CHILDREN, YOUTH AND ADULTS AND ASSOCIATED RISKS
8. Transporting sugarcane from field to sugarcane center (October-March)	• Attaching loaded trolley to tractor. • Attaching loaded cart to ox or buffalo. • Transporting loaded trolley/cart to the sugarcane center. • Getting loaded trolleys/carts weighed on the weigh-bridge. • Parking weighed trolleys/carts alongside lorries for transfer of sugarcane. • Getting empty trolleys/carts weighed. • Collecting weighing slip. • Maintenance of weighbridge.	• Maintenance of tractor and trolley. • Operating skills for tractor and trolley. • Maintenance of cart and handling draught animals. • Operating bullock-cart. • Checking correct weighing of trolley/ cart. • Crosschecking weighing slip.	• Adult workers engaged in the operation. • Due to uneven fields and bad roads, chances of loaded tractor-trolley toppling over. • At times, draught animals get uncontrollable. • Absenteeism of tractor driver delays the supply of sugarcane to the cane center, reducing its weight and overall quality, thereby affecting the income of the farmer. Exposure to heat, sun, fog, frost and cold. • Night driving to sugarcane center is risky. • Correct reading of weighbridge and weighing slip.
9. Transporting sugarcane from sugarcane center to factory (October-March)	• Contract labor transfers sugarcane from loaded trolley/ bullock-cart to lorry. • Lorry properly stacked for maximum load of sugarcane. • Lorry weighed at the weighbridge. • Lorry driver collects documents and drives over-loaded lorry from sugarcane center to the sugar factory. • Maintenance of lorry. • Maintenance of weighbridge.	• Expert in handling and loading sugarcane. • Expert in maximum loading of sugarcane in lorry. • Expert in the use of machetes. • Maintenance of lorry. • Cautious in driving over-loaded lorry on bad roads through villages. • Knowledge of direct and alternate routes from sugarcane center to the sugar mill.	• Only adult male workers engaged in the operations. • Good lorry drivers for driving over-loaded trolleys. • Contract workers often consume alcohol during work, which poses risks for driving. • Over-loaded lorries tend to topple at the slightest misbalance. • Workers exposed to heat, sun, cold, fog and frost. • Loading lorry after sunset is risky as there are no lights. • Theft of sugarcane from the sugarcane center. • Irregularity in weighing of sugarcane.
10. Unloading at sugar factory (October-March)	• Gate entry of lorry at the factory gate. • Parking under the unloading bay. • Gripping of sugarcane by gripper being operated by crane operator. • Releasing of sugarcane on the loader for shredding. • Maintenance of crane and gripper.	• Efficient and alert staff at the factory gate. • Efficient security personnel for quick unloading of sugarcane lorries. • Expert crane operator for quick loading of sugarcane onto the loader.	• Adult male workers are engaged for the operation. • Educated staff at the weighing scale. • Movement of loaded and unloaded lorries around the loading bay is very risky. • Crane operator is precariously situated atop the cabin (40-foot height). • Free movement of gripper can cause serious injury.

5.8 TASK AND RISK MAPPING OF SUGARCANE PRODUCTION IN SOUTH INDIA

PHASE OF PRODUCTION	TASKS/ACTIVITIES	SKILLS REQUIRED	ROLE OF CHILDREN, YOUTH AND ADULTS AND ASSOCIATED RISKS
1. Land preparation (August–October)	• Ploughing to loosen the soil to a depth of 18-24 inches and destroy weeds, grasses and roots of the recently-harvested crop. • Use of tractors by medium and large farmers, and ox or buffalo by small farmers. • After proper ploughing, planking (leveling) is done to close the field and retain its moisture till the time of sowing. • Sowing is normally done two-three weeks after ploughing, depending on weather conditions and availability of seeds, fertilizers, equipment and labor. Hoes are used for manual sowing.	• Knowledge of handling, maintenance and repair of tractors and agricultural equipment. • Knowledge of harnessing draught animals. • Knowledge of contouring of land for proper drainage and to prevent water-logging and soil erosion. • Knowledge of good seeds, correct use of fertilizer, and weather patterns.	• Children and women do not generally play a role in the preparation of land. The small farmers prepare the land themselves with the help of ox or buffalo. Handling animals is dangerous at times as they are quite unpredictable. • Small and medium-size farmers can also hire tractors, driven by skilled drivers, to prepare the land and pay the established rate per acre. Chances of accident and injury are common while handling machinery or tractor equipment. • Medium-size farmers may also drive their own tractors for preparing land for sowing. • Medium and large farmers employ drivers to operate their tractors. High possibility of accident while driving the tractor. Absenteeism by driver could cause delay in land preparation.
2. Planting seeds (August-October)	• Harrowing the field with tractor, buffalo or ox and making furrows. • Dropping setts (sugarcane seeds) manually or through seed drill in single or double rows.	• An experienced person who can make furrows in proper rows with the ridger attached behind the tractor. • A skillful person who can harness the draught animal to make furrows. • Knowledge of good quality seed. • Skill in cutting setts of proper size for seed planting.	• Families of smallholdings are involved in sowing activities. Sowing responsibilities aregiven to a contractor on an established rate per acre. He engages his family members, relatives and neighbors. Hiring women and children is very common. • Children are exposed to great risks while cutting seeds with machetes. • Risk of heat, dehydration and exposure to sun.
3. Fertilizer application (August-October) Basal Dose (October-December) Top Dressing (August-September) Second Dose (January-February) Third dose (April-May) Fourth dose, optional (July-August)	• Basal dose of fertilizers and chemicals applied through a seed-drill or manually. • Different kinds of fertilizers are mixed on the field and filled in individual bags for broad-casting. • Planking is done immediately to prevent seed damage due to exposure to heat or cold. • Fertilizers for top-dressings are also prepared similarly.	• Knowledge of fertilizers, pesticides and insecticides is very important. • Skill in operating a seed-drill attached to the tractor. • Fertilizer mixing and broad-casting requires proper technique.	• Children and women are not engaged in broadcasting fertilizers or operating seed-drills; however, young workers are at times engaged in the operations. Their age cannot be ascertained as there are no documents available to substantiate. • Operators get injured while handling seed-drills. • Mixing and broadcasting fertilizers without using PPE is hazardous to health. • Exposure to sun is a health hazard. • Weight of bags causes strain on shoulder and back.

PHASE OF PRODUCTION	TASKS/ACTIVITIES	SKILLS REQUIRED	ROLE OF CHILDREN, YOUTH AND ADULTS AND ASSOCIATED RISKS
4. Irrigation 1st watering (October-November) 2nd watering (January-February) 3rd watering (April-May) 4th watering, rain supplementing (July-August) 5th watering (October-November) 6th watering, for late harvesting (January-February)	• Irrigating either through canal or tube-well bore. • Monitoring availability of canal water. • Repairing tube-well motor and pump. • Arranging diesel for the running of fuel-run tube-wells. • Repairing tractors. • Requesting rural electricity department for supply of electricity to operat pumps. • Making temporary drains and check-walls for channelizing water-using for channelizing water using hoes.	• Knowledge of operating tube-well. • Knowledge of plumbing. • Knowledge of electrical repairs. • Knowledge of repairs and maintenance of pumps. • Knowledge of operating tractors. • Draining excess water.	• Children and women generally are not involved in these activities. However, young workers are at times engaged in the operations; their age cannot be ascertained, as there are no documents available to substantiate. • Risk of electric shocks when working around water and electricity. • Drinking ground water without treatment. • Watering the fields, especially at night, exposes workers to the risk of snake and scorpion bites and wild animals. • Risk of heat, dehydration, and exposure to sun. • Risk of getting injured while working with a hoe. • Blisters on palms as a result of continuous use of hoe. • Strain on back and shoulders from using hoe.
5. Roughing/ Hand-weeding (November-January)	• Removal of grass and weeds by hand. • Cutting unwanted weeds and grasses with sickles. • Peeling-off unwanted weeds and grasses with hoes.	• Knowledge of unwanted grasses and weeds. • Using sickles and hoes.	• Children, women and young workers are at times engaged in the operations, but their age cannot be ascertained, as there are no documents available to substantiate. • Using sickles and hoes can cause injuries. • Walking without shoes exposes workers to snakebites and scorpion bites. • Exposure to heat and sun.
6. Tying peripheral rows of sugarcane (December/ January)	• Peripheral rows are tied as sugarcane gains height; otherwise, in water-logged areas, sugarcane topples even with a gentle breeze.	• Tying the sugarcane at the appropriate height. • Deciding the number of canes that need to be tied together.	• Only adult workers engaged. • Often stools and ladders are used for tying at higher levels. • Danger of falling off the stools or ladders. • Razor-sharp leaves of sugarcane cut hands and legs. • Exposure to snakebites, scorpion bites and insects in the fields. • Exposure to heat and sun.

PHASE OF PRODUCTION	TASKS/ACTIVITIES	SKILLS REQUIRED	ROLE OF CHILDREN, YOUTH AND ADULTS AND ASSOCIATED RISKS
7. Harvesting plant (October-February) Ratua (March-May)	• Harvesting in small land holdings done manually by family members. • Contractors arranged by the sugar factory, but paid by the farmers do harvesting. • Sugarcane is first cut with the machete just above the surface of the soil. • Sugarcane is then cleaned with sickles. • Cleaned sugarcane is then tied in bundles. • Ladders for loading sugarcane on lorry. • Only in Gujarat the field is first burnt and then harvested, but no bundling is done and loose sugarcane is loaded in lorries/bullock carts. • Green stalks of sugarcane are tied and taken by workers to their cattle. • Bundled sugarcane is loaded onto the lorry. • Lorry maintenance. • Staying in make-shift shelters in the fields.	• Cutting sugarcane by machetes at the base just above the surface of the soil is a specialized job. • Skilled worker is able to cut enough sugarcane for cleaning by other workers. • Tying sugarcane neatly in bundles requires skill. • Deftly loading bundles of sugarcane onto lorry. • Making temporary shelters for the families. • Good skill required for walking up the ladder with bundle of sugarcane on head..	• Men, women, young workers and even children harvest sugarcane. • Men, women, young workers and children clean sugarcane with sickles. • Male and female workers make bundles and load them on lorries and bullock-carts. • Using machetes and sickles can lead to severe cuts. • Bundling and loading without PPE can cause injury. • Working in sugarcane fields exposes workers to snakebites, scorpion bites, insect bites. • Exposure to heat and sun. • Burning fields sometimes causes burns to the worker. • Sometimes cane is smoldering at the time of harvest, causing burns to the workers. • Staying in temporary shelters exposes workers to wild animals. • Having infants and small children in harvesting areas is very risky. • Makeshift attached kitchen alongside each shelter poses great risk of fire. • Climbing a ladder with sugarcane bundles is very risky.
8. Transporting sugarcane from farm to sugar mill (October-mid-May)	• Contract labor transfers sugarcane from field to lorry. • Transporter's labor stacks sugarcane properly for maximum loading. • Lorry maintenance.	• Expert in handling and loading sugarcane. • Expert in maximum loading of sugarcane in lorry. • Expert in the use of machetes. • Maintenance of lorry. • Cautious in driving over-loaded lorry on poor roads through villages. • Knowledge of direct and alternate routes from field to the sugar mill.	• Only adult male workers engaged in the operations. • Good lorry drivers for driving over-loaded lorries. • Drivers often drink alcohol, which poses risks during work.
9. Unloading at sugar factory (October-March)	• Gate entry of lorry at the factory gate. • Parking under the unloading bay. • Tying bundles of cane with steel wire. • Lifting and releasing cane on the loader for shredding..	• Efficient and alert staff at the factory gate. • Efficient security personnel for quick unloading of cane lorries. • Efficient and alert worker for tying bundles of cane from lorry. • Expert crane operator for quick loading of cane onto the loader.	• Adult male workers are engaged for the operation. • Trained and educated staff at the weighting scale. • Movement of loaded and unloaded lorries around the loading bay is very risky. • Crane operator is precariously positioned atop the cabin (40-foot height). • Free movement of gripper can cause serious injury. • Workers tying cane bundles are continuously exposed to accidents.

5.9 REGIONAL OBSERVATIONS

5.9.1 Uttarakhand

Uttarakhand, a newly-constituted state in the northwest region of Uttar Pradesh, has an area of 53,500 sq. km., of which 65 percent is forestland. Its Terai region in the foothills of the Himalayas has one of the most fertile lands in the country. As most of the state is made up of hills and valleys, the total area utilized for agriculture is about 24 percent of the total land area, which is around 1.3 million hectares.

According to Ministry of Agriculture, 108,000 hectares were used for sugarcane cultivation in Uttarakhand in 2011-12. The production target was 6.55 million tons of sugarcane, of which 3.67 million tons was estimated to be crushed to produce 340,000 tons of sugar, with a recovery rate of 9.20 percent. The entire state has 10 sugar mills, of which six are co-operatives/public and four are privately owned.[28] One of the districts, Udham Singh Nagar, includes six of the 10 mills and produces the bulk of sugarcane in Uttarakhand. The farmers in this district own some of the largest farms of the country, with land holdings as large as 200 hectares or more. Sugarcane is supplied to factories in the district as well as to the neighboring state of Uttar Pradesh.[29]

Cultivation of sugarcane in Uttarakhand is declining. According to the former Vice President of Farmers Federation of India, who is a long-time sugarcane farmer with 160 hectares, the lack of labor, irregular payments for sugarcane, and low sugarcane

Contractor's workforce for sowing sugarcane.

prices paid by sugar mills are prompting farmers to switch to less labor-intensive and shorter-duration crops. Other farmers in the area shared similar views, and said it is challenging to supply sugarcane and collect payments from mills located 80 kms away. During interviews, some farmers stated that the main reason for the labor shortage is the lack of migrant labor, as workers' movement to find jobs has become minimal due to the National Rural Employment Guarantee Act (NREGA).[30] This has led to an acute shortage of manpower in the agriculture, industrial and construction sectors across the country. Workers at the farms receive a monthly salary of INR 3500, which is below the minimum wage (daily minimum wage for unskilled[31] agriculture worker in Uttarakhand is INR

28 Financial Portal–Money Control, www.moneycontrol.com/news/current-affairs/uttarakhand-sugarmills-produce-3232-lakh-quintalssugar_688881.html

29 The farmers located at the border of two states could fall in the command area of a number of sugar mills and therefore are free to supply sugarcane to the mill that provides them the best and ontime prices for their sugarcane.

30 NREGA aims at enhancing the livelihood security of people in rural areas by guaranteeing one hundred days of wage-employment in a financial year to a rural household whose adult members volunteer to do unskilled manual work.

31 knowledgecentre.drwa.org.in/green/pdffiles/page23-28.pdf

Cane operator unloading sugarcane

162).[32] The security guard at a sugar mill receives a monthly salary of INR 2500 for a 24x7 job without any weekly days off.

During farm visits, it was evident that children were involved with their parents in sugarcane sowing activities. They were seen cutting sugarcane seeds into smaller pieces (called setts), carrying them to the furrows, and dropping them along the ridges while walking behind the tractor. Also, workers were seen applying fertilizers and spraying pesticides without using PPE. The contract rate for sowing was paid on per-acre basis, and the harvesting rate was paid on per-weight basis. When calculations were done on the total earnings for the total number of days, the compensation was below the minimum wage rate. Neither the farmers or workers in the areas had any awareness about the state-prescribed minimum wage rate.

5.9.2 Uttar Pradesh

Uttar Pradesh has an area of 29.44 million hectares. It is India's most populated state, with more than 166 million people. According to the Department of Agriculture and Co-operation (DAC), Uttar Pradesh had a land area of 2.18 million hectares under sugarcane production in 2011-12, targeting to produce 123.9 million tons of sugarcane, of which 68.14 million tons was slated to be crushed for producing sugar. The average yield of sugarcane in Uttar Pradesh is 56.73 tons per hectare, below the national average of 68.10 tons per hectare. With an expected recovery of sugar at 9.15 percent (also below the national average recovery of 10.20 percent), the state was expected to produce about 6.23 million tons of sugar, slightly higher than 25 percent of the country's production of 24.66 million tons. The process of sugarcane cultivation in Uttar Pradesh is the same as in Uttarakhand, as the climatic and soil conditions are similar.

Loading and lopping sugarcane.

32 http://www.paycheck.in/main/salary/officialminimumwages

Uttar Pradesh has 157 sugar mills, of which 106 are private and 51 are co-operatives/ publicly owned. The majority of private factories have a crushing capacity of 5,000 tons crushed per day (TCD) or more, and the co-operative/public factories have a maximum capacity of 2,500 TCD. A few factories are very large, and six have a capacity of at least 14,000 TCD. Some sugar factories in Uttar Pradesh are more than a century old. The State Advisory Price (SAP) for sugarcane announced by the state government for the season 2011-12 is INR 2400 per ton for the general varieties, and INR 2500 per ton for the early varieties. These are amongst the highest prices in the country. The two districts visited, Pilibhit and Lakhimpur Kheri, are located along the Indo-Nepal border (in the north-west of the state). Combined, the two districts have a sugarcane crushing capacity of 100,000 TCD. While the majority of the sugarcane growers own less than a hectare of land, there is a considerable number of growers that own up to 10 hectares and a small number that own more than 10 hectares. The data about the farmers is available with the respective sugar mills in the region. Most of the sugar factories in Uttar Pradesh have computerized the following operations:

- preparation of cane supply calendars;
- issuance of supply tickets (parchis) to the farmers;
- making sugarcane payments through the banks; and
- maintenance of grower records.

Until recently, sugar factories in Uttar Pradesh and Uttarakhand purchased sugarcane through sugarcane co-operative societies. A number of factories in Uttar Pradesh have been entering into direct contracts with the growers, as is common in other states, and are increasingly executing tri-partite

Children playing with machete.

agreements with banks and farmers for procurement of sugarcane and facilitating the use of "kisan" (farmer) credit cards and soft loans to farmers.

The general manager of a sugar factory in Pilibhit reported that they have more than 82,000 farmers supplying sugarcane through 78 sugarcane centers, some of which are more than 50 kilometers away from the factory. Last year, the factory crushed 850,000 tons of sugarcane with a recovery of 9.13 percent. Although the supply of sugarcane is marginally higher in the current season, the recovery of sugar is lower (9 percent). The factory has computerized information about all of its sugarcane suppliers and has opened bank accounts for each one of them in rural banks near their respective villages. In addition, hand-computers have been issued to the sugarcane centers, which are electronically connected to the weighbridge. As a trolley is weighed, a computerized slip is generated showing the details. This slip is handed to the farmer. In

the evening, the data from hand-computers is transferred to the main computer in the factory. As soon as the data is loaded onto the main computer, each farmer receives a text message on their mobile informing them about the completion of their supply transaction. In 3-4 weeks, the factory releases the payment to all the suppliers and directly transfers the appropriate amount into the respective farmers' accounts. Eventually the farmers are informed via text message that their payment has been processed. This has been a major step toward eliminating corruption and avoiding harassment of farmers, thus indirectly motivating them to cultivate sugarcane. Importantly, there were no arrears payments pending from the previous year. A visit to the factory confirmed non-engagement of child labor, but revealed various health and safety issues.

Another visit was made to a sugar mill located in Palia Kalan, established in 1971-72, with a sugarcane crushing capacity of 11,000 TCD. It has a co-generation plant producing 12 MW of electricity; a 18,000 kiloliter (KL) distillery producing 60 kiloleters per day (KLPD) of ethanol; and a press-mud plant. It has 37 sugarcane centers spread over a 40 kilometer radius. Payment of sugarcane is made 25-30 days from the date of supply and no arrears payments from the previous year are pending. In Uttar Pradesh, the majority of the 106 sugar factories belonging to the private sector did not owe arrears payments.

Farmers indicated during interviews that they are not satisfied with the SAP. According to them, input prices (fertilizers, diesel, pesticides, commodities and labor wages) have risen sharply, and therefore the declared price of sugarcane is not reasonable. According to the growers, the contract workers are satisfied with the prevailing wage rates, but are unable to get work year-round. Sugarcane is a seasonal industry and during monsoons (rainy season from July-September) there is not much work on the farms. Therefore, a regular income to the workers is not assured. The daily-rated workers get wages below the minimum wage, but no one is aware of the minimum daily wage.

The workers on large farms could come from the local villages, from Nepal (Tharu tribes settled along the border) or from Bangladesh, settled on the periphery of the forests along the banks of the Sharda River. Ploughing, leveling, planking and the application of fertilizers, pesticides and weedicides, irrigation and the transportation of sugarcane from the fields to the sugarcane centers is done by family members of the farmer, while contractors do sugarcane sowing and harvesting. The entire family and extended family of the contractors, approximately 20-25 adults and children, move from village to village, pitching their tents and taking back-to-back contracts. The younger children look after the infants in the field; the rest of the family members, including older children, are involved in sugarcane harvesting, bundling and loading onto the trolleys. These tribal workers do not send their children to school because of their nomadic lifestyle.

Contract workers engaged in sowing activities on the small and mostly family-run farms were from the same village or the neighboring villages. As the land-holdings are small in the region, there is no significant migrant labor. Contractors involve their families in sowing and harvesting activities. Children accompany their parents to the fields to work with them. They attend the village schools throughout the year, except during the harvesting season when attendance in the school becomes irregular.

5.9.3 Gujarat

Gujarat is the western-most state of India, with an estimated population of over 60 million and an area of 196,000 sq.km. Due to rugged topography and unfavorable climatic conditions, agricultural output in Gujarat is not very high. It is, however, self-sufficient. Despite these limitations, Gujarat has established itself in the production of other cash crops, such as cotton, and is India's largest cotton producer. The state government policies support and promote agriculture development. The state's plan, Gujarat Agro Vision 2010, envisages improving the quality of life of the rural population by widening their employment opportunities and increasing their income. Sixty-three percent of the population of Gujarat lives in rural areas and depends on agriculture and on the non-farming sector, such as milk production.

Gujarat has an estimated area of 177,000 hectares under sugarcane production; it was projected to produce more than 13 million tons of sugarcane in 2011-2012, which is marginally higher than the previous year because of a more accurate estimate of the average yield of sugarcane at 73.53 tons/hectare. It is expected to produce about 1.3 million tons of sugar at an estimated recovery of 10.5 percent, which is higher than the national average. In Gujarat, the sugar factories are still in the process of adopting co-generation of electricity along with sugar production as an additional source of income.

Gujarat pioneered the co-operative movement in India, and is the only state where management of industries by co-operatives has been successful. All 22 sugar factories in the state are co-operatives.[33] There are many associations in Gujarat

Child stitching packed bags.

that support farmers in the region. For example, Bhadgam Sewa Sahkari Mandli is a farmers' association with a membership of 300 farmers from the Bhadgam village. It provides loans and advances to farmers at nominal rate of interest for the purchase of seeds, fertilizer, diesel, tractors, agricultural implements and motorcycles. Repayments are directly deducted from the respective farmer's account against the payment he receives from the supply of sugarcane. Bhadgam Water Distribution Society, another farmer association, has a membership of 270 farmers. Its objective is to provide timely supply of water to its members for irrigation. They collect irrigation charges from the farmers and deposit with the irrigation department on a commission basis. The commission is used to pay for repairs and maintenance of canals and for society staff.

Sugar factories play a dominant role in the sowing of sugarcane in Gujarat. In June-July, the farmers inform sugar mill management the total area of their land they intend to

33 A co-operative sugar factory is owned and run by shareholders who are mostly farmers.

allocate for sugarcane sowing. The factory then instructs the farmer which variety of sugarcane is to be sown and in which month. Sowing is generally done just after the end of the monsoons (rains) from late August to October. The dosage of fertilizers and application of pesticides is also monitored by the factory. A factory employee, or "muqaddam" is responsible for approaching labor contractors from neighboring districts to arrange for migrant workers to harvest sugarcane. The harvesting is done in November-December, depending on the sowing period.

A co-operative sugar mill established in 1978, located north of Surat in Olpad Taluka with a 5,000 TCD capacity and a 60 KLPD capacity distillery, has 12,500 listed shareholders. Last year, it crushed 1.1 million tons of sugarcane with a recovery rate of 9.47 percent. Approximately 950,000 tons of sugarcane will be crushed this year at a projected recovery rate of about 10.3 percent. The mill chairman's major concern is the acute shortage of labor for harvesting sugarcane. They have adopted the practice of burning the standing crop of sugarcane and then harvesting; burning of sugarcane plants burns the leaves and leaves the stalk containing sucrose. This reduces harvesting work, as workers do not have to remove the leaves from the plant while harvesting or post-harvest. Instead they harvest, bundle, and load the sugarcane onto trolleys. However, this method causes a loss in sugarcane weight and reduces sucrose content in sugarcane, which impacts sugar recovery.

The muqaddam working with the factory reported that he recruits workers from the nearby Dang district. The Zonal Supervisor of the mill provides cash advances to the muqaddam to distribute to the prospective contractors who arrange for the workers. The contractors are paid INR 190 per ton of sugarcane harvested. Interest on the advances is deducted at the time of final payment made to the contractor. The mugaddam makes all arrangements for the migrant workers, including housing on the farms or in nearby villages. The factory provides bamboos and tarpaulin for building temporary shelters for these migrant workers. One of the contractors and his team of five workers load three or four lorries per day. Each one of them is able to earn about INR 200 per day. Their task is dangerous and they often get injured by the sharp sugarcane edges or by machetes used to harvest the sugarcane. Nevertheless, they do not receive any medical treatment or compensation from the farmer or the factory.

The sugar factory releases payment of INR 700 per ton within a fortnight of the sugarcane being supplied by the farmer. After six months, a second payment of INR 700 per ton is released to the farmer. The third and final payment (INR 600–800) is released after the closure of the factory at the end of the season and finalization of the Profit & Loss Account. The sugarcane harvesting and transportation charges, if arranged and paid by the factory, are deducted from the final payment made to the farmers. The Gujarat government does not have a fixed SAP, which creates resentment among the farmers and often leads to agitation and protests. The farmers do not know the final rate of sugarcane until the mill finalizes its accounts and then releases the final payment.

The factory assistant manager took the assessment team on a factory tour. The unloading area, although mechanized, poses risks for the person tying and untying the sugarcane onto the loader. The crane operator above the loader was seated in an open cabin without any protection and could fall from a considerable height. Various gaps in the implementation of the health

and safety norms were observed during the visit. Two children whose ages could not be ascertained, worked as operators, stitching packed bags of sugar in the packing section. These stitching machines had no needle protecting guards nor were the children provided with any protective equipment. As a general practice, children are not engaged in any factory in the sugar industry; however, in some cases, the contractors may use child labor for odd jobs to avoid paying higher wages to adult workers.

A 38-year-old farmer from the village Ranveri in Taluka Valod, of district Tapi, inherited 15 hectares of land from his father. He cultivates 13 hectares with sugarcane and supplies to a prominent sugar mill in the village Bamania, Mahua, Surat. He has engaged two daily wagers to whom he pays INR 80 each per day for doing odd jobs at the farm. He has also employed a supervisor on a monthly salary of INR 3,500. The farmer has a tractor, which he uses for ploughing and transportation. He is unhappy with the price of sugarcane that he received against last year's supplies because, with higher input costs, he feels farming has become a loss-making business and survival is difficult. A young farmer and the president of a local NGO (the Brakish Water Research Centre at Olpad) explained that due to acute shortage of labor and the low price of sugarcane, Gujarat's farmers are shifting to other commercial crops such as cotton. Another farmer, who also serves as Secretary-General of Gujarat Khedut Samaj (Gujarat Farmers' Association) shared similar views. His organization has been involved in running campaigns against the government, mainly demanding an increase in the price of sugarcane and other agricultural crops and calling for arrears payments of the previous year's sugarcane supplies.

Migrant worker's son going to school.

In an interview, an associate professor at the Centre for Social Studies in Surat stressed that labor is being exploited in the agricultural sector and that the government is incapable of ensuring that minimum wages are paid to the workers in the unorganized sector. The living conditions of the migrant workers are alarming. According to him, with the introduction of NREGA in 2005, the availability of migrant workers is fast declining, thus impacting sugarcane cultivation. Wages are increasing due to the labor shortage, but farmers are tempted to shift to other crops with higher returns, like cotton. As most of the workers have been paid advances through the Muqaddam during the off-season, they have little choice but to work at the employer's wage or contract rate, which is always below the minimum wage rate. He also briefed the interviewer about an ongoing campaign by an NGO called Zameen Haq Suraksha Samiti, whose head is a trade unionist, against the forest department over cultivation of forestland in the Dang area.

In a brief meeting with the Deputy Commissioner of Labor, the assessment team learned that Gujarat is the only state in the country with a separate Department of Labor for Agriculture. Assistant Labor Commissioner Rural (Agriculture) expressed concerns about the ignorant attitude of mill management towards migrant workers. Although he has not received a single complaint from any worker in the past two years, he feels it is the moral responsibility of the factories to provide proper shelter, potable water, fire wood, medical and educational facilities and transportation fare to the migrant workers. Acting within his position, he has recommended to senior officials that the government should provide movable sheds for workers who move from field to field, fixed sheds for workers who camp in a village, mobile toilets and blankets and aganwadis (rural crèches) for children of migrant workers. According to him, there are over 100,000 migrant workers in agricultural activities in Gujarat, of which 50 percent are local tribal groups and 50 percent come from neighboring states.

The harvest was in full swing during the farm visits. Most of the harvesting was being done by migrant workers from Rajasthan. Children were seen harvesting the burnt sugarcane without shoes, and infants were lying on a piece of cloth in the work area. The children are at a high risk for injury from snakes, scorpions and stray dogs. The factory pays the workers according to the weight of sugarcane harvested and weighed at the factory. The earnings are below the minimum wage for all workers.

5.9.4 Maharashtra

Maharashtra is the third largest state in India, both in terms of area and population. It has an area of 308,000 sq. km and a population of 112 million. It is the second-largest producer of sugarcane in the country, after Uttar Pradesh. In 2011-12, with an estimated area of 1.02 million hectares under sugarcane, it is estimated to produce 83.4 million tons of sugarcane with an estimated yield of 81.6 tons per hectare. Maharashtra has the highest recovery of sugar in India, an estimated average of 11.30%, and is estimated to produce the largest quantity of sugar of any state at 8.58 million tons.

Maharashtra has the largest number (205) of sugar factories in the country. Before India's independence (1947), it only had two sugar mills. Most of the factories were established in the last 30 to 40 years. With the Green Revolution, Maharashtra thrived in cultivation of sugarcane. The crushing capacity of factories is generally between 2500-5000 TCD; almost 88 percent of factories are co-operatives and 12 percent are privately owned. More than 25 percent of these factories have already started or are in the process of adopting co-generation of electricity for additional income.

Maharashtra does not declare the State Advisory Price (SAP) for sugarcane. At the time of the study, farmers were asking for a rate of INR 2200 per ton in the first installment and a total of INR 3,300 per ton as the final payment. The Fair and Remunerative Price (FRP) fixed by the central government is INR 1450 per ton; this is the minimum price that mills must pay for the sugarcane, but individual mills are at liberty to pay more. In spite of numerous agitations and protests, the state government has sidestepped the issue of SAP and the mills are making an initial payment of INR 2,000-2,050 per ton within two weeks of the sugarcane delivery.

Sugarcane sowing in Maharashtra is done at the onset of rains, in July-August, and harvesting is done in the following year from October to April-May. In Maharashtra, sugarcane is a 15-16 month crop, compared to

Migrant workers' colony.

an 11-12 month crop in North India. This could be one of the reasons for higher yields and better recovery of sugar from the sugarcane. Pune, Satara and Sangli are major sugarcane producing regions; these three districts have over 40 sugar mills combined.

Accompanied by local child rights NGO, Sakhee, the assessment team visited a sugar mill located in Daund, Pune. The mill was established in 2001 and has 47,000 shareholders.[34] With a current sugarcane crushing capacity of 5,000 TCD, it processed 1,000,000 tons of sugarcane last year at a recovery of 10.9 percent. This year it is expected to crush 800,000 tons of sugarcane with the recovery rate expected to be above 11.5 percent. The reasons for less sugarcane include diversion of sugarcane for production of "gur" or jaggery, reduced area under sugarcane production, lower rainfall, and a change in cropping pattern.

34 Farmers/stakeholders who have purchased shares in a co-operative society are called its shareholders.

Two mill officials reported that the factory arranges the labor for harvesting on behalf of the farmers, and deducts INR 250 per ton for harvesting besides charging for transportation of sugarcane from the farms to the factory. In the current season, the factory arranged for 5,000 migrant workers through their muqaddums, mainly from the Beed and Jalgaon districts of Maharashtra. The migrant workers are provided materials to make temporary shelters within the factory premises. They bring their cattle (to pull carts loaded with sugarcane) and the factory provides the carts. They leave for the sugarcane fields early in the morning to harvest, and return to the factory by sunset. The factory has an ambulance on call and a fire brigade for emergencies. Factory management stated that they are holding a year's stock of 100,000 bags of sugar awaiting quota clearance, and this is not permitting them to clear last year's arrears.

Migrant worker's shelter.

The mill's sugarcane development officer informed the assessment team that he has been educating the farmers on better sugarcane cultivation techniques. He recommends and provides improved variety of seeds, which are high yielding, disease-resistant and have higher sucrose content. He insists on 5x1.5 feet of spacing while sowing to achieve the best yields. With this method, the quantity of necessary seeds is one-third of what is required by the traditional method, but tillering reaches the optimum level that is practically possible.[35] The farmer earns more due to fewer expenses and shorter sowing time. There is a school called "Akshar Shala" for the children of the migrant workers, run by Gyan Prabodim, a local NGO. The school is within the factory's premises and has two classrooms and two teachers; enrollment is 66 children, although not more than 40-45 attend school daily. The teachers explained that they make a round of the workers' camp everyday, urging parents to send children to the school. Few parents are keen to send their children to school, preferring to take their children to the fields to help in harvesting.

Interviews were held with some local farmers. A young and educated farmer belonging to a political family of the village Rahu in Taluka Daund, who owns 25 hectares of land devoted to sugarcane, informed us that sugarcane is harvested in the region without burning the leaves first. It is cleaned of stalks and tied in bundles and carried to the lorries by the harvesting contractor. The stalks are sold by the contractor to the local villagers or used to feed their own cattle. The transport contractor loads the sugarcane on the lorries and cuts the sides for better fitting. Another farmer from village Dehu of Taluka Haveli, Pune, owns 12 hectares in which he planted sugarcane. His crop was harvested and sold to the local co-operative. He mentioned his disappointment with the first payment he received from the co-operative (INR 1850 per ton). The final payment will be declared and given only after the finalization of accounts, which may take six to eight months. He feels that after deductions, the factory will not pay him more than INR 200 per ton as final payment. A 60-year-old farmer of the village Kauthesamera, Taluka Daund, owns 2 hectares of land on which he cultivates sugarcane and wheat by rotation. He gets a yield of about 90 tons per hectare and is dissatisfied with the rate of sugarcane paid by the factory, and with the lack of government policies benefiting sugarcane growers in India.

We met with the Human Resources (HR) Manager, Managing Director, and Chairman of another co-operative sugar mill located in Bhuinj, Satara. The factory has a labor force of 653 workers, including 12 zone supervisors, 48 Muqaddams[36] and 96 slip boys.[37] It crushed 966,000 tons of sugarcane in 2010-11, making 115,000 tons of sugar with a recovery rate of 11.97 percent. The target for 2012 is to crush 850,000 tons of sugarcane to produce 100,000 tons of sugar at 12 percent recovery. They have over 4,000 migrant workers from the Beed, Nagar and Jalgaon districts of Maharashtra. The assessment team visited the migrant labor camp, which had a colony of about 1,000 temporary shelters for more than 3,000 workers and children. A seven-year-old boy told assessors that he goes to "Shakhar Shala" primary school in the factory campus. While the parents pay for the uniform, the school arranges books and mid-day meals for the children. His mother informed us that the teachers come to the camps and request

35 www.sugarcanecrops.com/crop_growth_phases/tillering_phase/

36 A sugar mill could employ a number of muqaddams. Each muqaddam is responsible for 200-300 (or more) growers. Their role is to arrange the contractors for harvesting and transportation of sugarcane from the fields to the factories.

37 Slip boys are the sugar mill field staff responsible for arranging labor for harvesting and organizing transportation of sugarcane from the field to the factory.

workers to send their children to school. The majority of the parents prefer to take their children to the fields with them to help with harvesting, as education is not a priority for them. Only infants are left behind under the care of older people. She reported that the factory provides material for the shelters in addition to providing water, firewood and streetlights.

The factory management conducted a factory tour, including the bio-culture laboratory, dispensary, fruit-tree plantations, nursery of medicinal plants, exotic flowers in green-houses, vermi-compost, organic fertilizer manufacturing, tree-plantation program in a nearby park, and a mineral-water bottling plant with a capacity of 10,000 bottles per day. The factory had a co-generation plant of 22 MW. Established in 1970, the factory has increased its crushing capacity to 5,000 TCD. The chairman's vision is to provide additional income for all 38,000 shareholders. He has committed to the Central Minister for Rural Development to build 1,000 low-cost permanent houses for the migrant workers, irrespective of whether he receives financial subsidies from the state and/or central government. According to him, the temporary shelters where workers reside are unsafe and risky. The factory has made an initial payment of INR 2,050 to its farmers; it has also cleared the backlog of last year's arrears payments. The factory was unable to harvest over 100,000 tons of sugarcane last year due to the labor shortage, it has imported a mechanical sugarcane harvester this year. The factory also has over 100,000 bags of last year's sugar awaiting quota release.

The assessment team met with a contractor who has been working with this factory for the past seven years. He is paid INR 220 per ton for harvesting and loading the sugarcane, and an additional INR 120-150 per ton for transportation to the factory, depending upon

Sugarcane harvestor with trolley

the distance of the fields. His team comprises of 10 married couples, mainly relatives and neighbors from the village who leave for the fields in the early morning and return by sunset. They leave the infants in the camp under the care of the older people, while the older children go to school. He is able to earn enough money in eight months to sustain 12 months' family expenses. There is no work in his native village in Beed. When one of his workers from the same village was interviewed, he mentioned that he is happy to earn a living working with the above-mentioned contractor, as there is acute poverty in his hometown without any job opportunities.

The assessment team also met with the operator of the mechanical sugarcane harvester, who also works with the transporter. He was trained to operate the harvester by the company who delivered the machine. This is his first experience handling a harvester. Since the machine

is new, he has not faced any breakdowns. According to him, harvesting sugarcane with the harvester is expensive, but it is quicker and has minimal wastage. As the harvester has been successful, the factory plans to import three more harvesters before the next crushing season. The managing director informed us that they would be able to crush more sugarcane in fewer days and prevent the sugarcane from getting diverted to other factories with the harvesters.

Some farmers and muqaddam were interviewed in Shahunagar, Satara. Muqaddam arranging work for one of the local factories informed us that the factory has a capacity of 2,500 TCD and was established in 1983. It has 25,000 shareholders and intends to crush about 400,000 tons of sugarcane this season. This year, the factory is paying INR 1,900 as the initial payment to the growers. While the contractor is paid INR 220 per ton, he pays INR 190 per ton of harvested sugarcane. It takes two workers to harvest and load two tons of sugarcane in a day. All the workers are from the village Kasir, district Beed, and this is their second season with the same factory. They are provided bamboos and tarpaulin by the factory to construct their shelter, but are not provided any water or electricity.

The assessment team also visited the farm of an award-winning farmer from Asta village, Walwa Taluka, District Sangli. This farmer owns seven hectares of land and he cultivates sugarcane in about four hectares. He is able to produce about 450 tons of sugarcane, with the high yield of 120 tons per hectare – the highest in the country. He has been recognized for this agricultural achievement, and attributes the high yield to his scientific method of cultivation. He uses a particular variety of seed and during land preparation at the time of sowing, uses organic manure while ploughing the land, and follows plant spacing of 1.5x5 feet to

Farmer Sanjiv Mane with U.S. President Obama

obtain maximum tillering. After getting the soil tested, he applies fertilizers according to the requirement. He has installed drip irrigation just below the surface of the soil and irrigates the field almost daily. He is thus able to use water optimally in a controlled manner, without unnecessarily flooding his fields. He gives four top dressings of fertilizers every 40-45 days. Even his secondary (ratua) harvest has a high yield of 80-90 tons per hectare. He supplies his sugarcane to a mill in Rajaramnagar, Taluka Walwa, Sangli. The mill has a crushing capacity of 4,000 TCD.

Migrant workers from the Beed, Nagar and Jalgaon districts of Maharashtra carry out harvesting in the Pune and Satara districts of Maharashtra. Children accompany their parents to the fields and are engaged in harvesting sugarcane. They seldom go to the temporary schools provided by the sugar mills near their shelters. Most of the parents prefer that their children assist them in harvesting and look after infants rather than attend school. Children are exposed to all kinds of risks. Although sugar mills in Maharashtra pay higher rates to contract workers as compared to Gujarat, the earnings are still less than the minimum wage rate of Maharashtra.

Children in temporary school

5.9.5 Karnataka

Karnataka has a total land area of 191,800 sq. km; it is the eighth-largest state of the country in terms of area and population (estimated to be 61.13 million in 2011). Karnataka has favorable climatic conditions for sugarcane cultivation, with high sugarcane production estimated at 39.7 million tons for 2011-12 in an area of 440,000 hectares, with an expected average yield over 90 tons per hectare. With an average recovery of almost 11 percent, Karnataka is expected to produce 3.7 million tons of sugar in 2011-2012. There are 66 sugar factories in Karnataka, of which one-third are co-operatives and the rest are privately owned. About 50 percent of the factories have started electricity co-generation. Most factories have a crushing capacity of 2,500-5,000 TCD. Over the past four decades, there has been a substantial rise in sugarcane production in Karnataka and a corresponding increase in the number of sugar factories, with more planned. Many of the existing factories are increasing their crushing capacities, and by-products such as ethanol, co-generation, distillery and compost-making have become an integral part of the sugar economy.

There have been several farmer agitations and protests against the state government for not fixing the State Advisory Price (SAP) of sugarcane. As there is no SAP, each factory pays a different rate and, unlike in North India, a final rate for sugarcane has not been announced. Factories make an initial payment of INR 1,800- 2,000 within two to three weeks of procurement. If the farmers do not get a substantial rate, it will impact sugarcane sowing and the sugarcane of the next season will get diverted to neighboring states where the rates are higher.[38] Belgaum and Mandya are the main sugarcane producing regions in Karnataka. Together, they have 40 percent of the 66 sugar factories. Belgaum alone has 19 sugar factories, the highest number in any region in the state. While Karnataka mills get some of their sugarcane from across the border in Maharashtra, some Karnataka sugarcane also gets diverted to Maharashtra.

A meeting was held with the Director of the Consortium for Trade and Development (CENTAD), the Deputy Commissioner and Administrative Head of Belgaum, the Joint Director of the District Industries Centre, a labor officer and the labor commissioner. They informed the assessment team that the state government has not made a decision on the SAP and therefore there is no uniformity in prices paid by the sugar factories. There are two types of co-operative factories operational in Karnataka:

38 Sometimes the sugarcane factory of one state is closer to the command area of sugarcane in an adjoining state. Therefore, for the convenience of the growers, the Sugarcane Department of both states demarcate the areas accordingly. Besides government regulations are only for sugar mills, not for growers.

- Those managed by the elected body of shareholders with the chairman as the head; and
- Those managed by the government. The board comprises senior government officials, and the chairman is appointed by the government and the district head serves as managing director of the mill.

Meetings were also held with some of the sugar mills in the region. One of the mills, located in Nipani, Belgaum, has a crushing capacity of 2,200 TCD. The management informed the assessment team that the day of the visit was the last day of crushing for that season and that they would be closing at about 280,000 tons, 10 percent higher than last year's crushing of 253,000 tons. The increase is mainly attributed to the shifting of crop cultivation from tobacco to sugarcane and an increase in the irrigated area. With a recovery of 12.15 percent, they were planning production of about 33,000 tons of sugar, a 10 percent increase from last year's 30,000 tons. The factory has 20,000 shareholders and they have been paying the farmers INR 2,050 per ton as the initial payment, within two to three weeks of supplies. The balance will be paid after the finalization of the accounts. About 50,000 tons of sugarcane were harvested and brought to the factory by farmers; the balance (230,000 tons) was harvested by contractors at INR 250 per ton and transported to the factory through transporters at INR 100 per ton. Sowing is done between July-October, and the farmers are free to grow any variety of sugarcane. The 800 migrant workers who work in the region come from the Beed, Jalna and Sangli districts of Maharashtra. In North Karnataka, migrant workers come from Maharashtra and Andra Pradesh, whereas in South Karnataka migrant workers are generally from the neighboring districts within the state. An NGO is running the Janarth Shakar Shala, a school for migrant workers' children. It works in both Maharashtra and Karnataka. They informed us that 32 children, between five and 12 years of age, are enrolled during the current season. Some of the children have very good learning and narration skills. The NGO provides books and uniforms to the students and there are two trained teachers.

The local labor inspector organized a meeting with management of another sugar factory in Niyamit, Chikodi, Belgaum. The factory, established in 1974, currently has 25,600 shareholders. In 2006, its crushing capacity was increased to 5,500 TCD. It has a 20.7 MW co-generation plant and 30 KLPD distillery, as well as an ethanol plant. It crushed 932,000 tons of sugarcane with a recovery rate of 12 percent to produce 111,300 tons of sugar in 2010-11. It has already crushed 730,000 tons and produced 86,191 tons of sugar with a recovery rate of 11.89 percent in 2011-2012. The payout for sugarcane in the current year is INR 2,050 per ton. There are 700 families of migrant workers, with about 2,000 workers, who have been provided shelter in the camp within the factory premises. About 120 of the workers' children are enrolled in the local school, Janarth Shakar Shala, funded by a local NGO and the state and central government. Besides, there is a Doodhganga Sugar Primary and High School run by the factory for 750 students who are children of the factory's staff and workers and also from the local villages. The school spans from nursery to tenth grade (Class X) and has 28 trained teachers. It also has two buses for transporting students from and to remotely located villages.

One of the farmers of the village of Ugar Khurd, who owns six hectares of land for sugarcane production, informed assessors that he gets a yield of 60 tons per hectare from the main harvest and 50 tons per hectare from ratua. He has been paid INR

2,000 per ton for his sugarcane supplies, and he is unsure whether he will receive an additional payment from the factory. He waters and fertilizes the field himself. His wife and younger sister help him with weeding. He has two daughters, aged 3 and 5 years, whom he leaves in the "aanganwadi" whenever he goes to work in the field. He wants to educate his children so that when they grow up they are not dependent on agriculture for survival. Another small farmer from the Sergupe village in Taluka Athani owns two hectares of land, all of which is under sugarcane cultivation. He supplies sugarcane across the border to a mill located in Panhala Taluka, Kohlapur. He received an initial payment of INR 2,050 and is hopeful for a good final payment. He does all the work in his farm since he cannot afford to engage workers, as the wages are very high.

The assessment team visited one of the biggest sugar factories in India, established in 1942 and located in Ugar Khurd, Athani Taluka, Belgaum, with a crushing capacity of 10,000 TCD. In addition, it has a distillery of 75 KLPD, ethanol of 20 KLPD and co-generation of 44 MW. The deputy manager reported that there are no migrant workers; 1,550 contractual laborers recruited from nearby villages do the harvesting. They are paid INR 224 per ton and transporters are paid between INR 90-120 per ton, depending upon the distance. As there are no migrant workers, there is no school for the migrant children. The sugarcane manager of the factory procures sugarcane from the command area around the factory as well as other parts of Maharashtra. They make sugar sachets (packets) and export to Germany and other European countries.

The labor contractor of the factory works with a team of 10 couples who camp in the nearby village. Their children accompany them to the fields, as there is no one to take care of them. This exposes them to many risks, as the young children play with machetes and other sharp-edged tools. The factory pays the contractor INR 220 per ton and sells the green stalks of the sugarcane to the local villagers. They are involved in the harvesting, bundling and loading of sugarcane in the lorries. All of them are from the village of Vadgaon, District Beed.

Another contractor from Bansura in Nizamabad reported that his team of 16 couples and children had arrived at a sugar mill in Khanapura, Belgaum over a month ago. The factory covered the travel cost. After working for just about a month, the factory shut down operations as there was no more sugarcane left for crushing. The families had come all the way for work and found themselves unemployed. This was the first instance we observed where the factory had no work for their workers. The deputy HR manager of the factory informed us that the migrant workers are waiting for their accounts to be settled at the rate of INR 200 per ton.

A farmer in the village Shivpur, Taluka Madhur Town, Mandya, owns 1.5 hectares of land and cultivates sugarcane. He has been growing sugarcane for over a decade and thinks that the price of sugarcane at INR 2000 per ton is a loss-making crop. He has participated in agitations organized by activists and farmers, but the outcome has not been positive. His wife and two school-going sons help him in the field. With no other source of income, he is finding it difficult to survive only on farming. The contractor harvesting his sugarcane for the mill in Koppa, Mandya has a team of 10 couples and children who are all from the village Rairudh, Taluka Agribomand, Bellary. Every harvest season they come to Mandya and are able to earn sufficient money. This year, the contractor is receiving INR 200 per ton for harvesting, while he pays his workers INR 190 per ton. Their children stay

with them, as the parents do not feel the need for them to go to school. They are camping in a nearby village where they have made their own shelters with materials provided by the factory.

The assessment team visited a public limited company (sugar mill) in Mysore with a 5,000 TCD crushing capacity, 30 MW co-generation and 36 KLPD distillery. It has a nine-member Board of Directors, who are all senior I.A.S. (Indian Administrative Services) government officers. The government has appointed the chairman and the managing director. It has 15,000 farmers supplying sugarcane. Sugarcane in this part of Karnataka is sown between June-September and harvesting takes place from October-March. In 2011, the factory crushed 500,000 tons of sugarcane with a recovery rate of 8.4 percent. In 2011-2012, it is projecting to crush the same quantity but with a higher recovery rate of 9.4 percent. Because of the low recovery rate in the region – due to a shorter-duration crop, seed variety, soil and climatic conditions – all five factories in Mandya are paying INR 2,000 per ton as full and final payment. The factory had arranged 2,000 migrant workers mainly from Bellary district for harvesting, and provides shelter and medical facilities to the workers, but no school. Therefore, the children stay either in camps or accompany their parents to the field. The factory is educating the farmers on innovative methods of farming to reduce seed consumption and increase yield. Furthermore, regulations insist that the farmers are paid within three weeks of their supplies, but it takes the factories a minimum of three months to sell their sugar.

The sugarcane commissioner of the state of Karnataka, Bangalore, felt that introduction of NREGA had created enough job opportunities for workers in their respective villages and therefore there is no urgent need for them to travel in search of work. This is affecting not only sugarcane, but also the entire agricultural, industrial and construction activities across the country.

It was noticed during field visits that most of the sugar mills had recently closed due to non-availability of sugarcane. However, there was evidence of child labor being used in sugarcane harvesting in some of the regions. There are schools for children of migrant workers, but parents preferred that the children assist in harvesting in order to earn more. The migrant workers are from the neighboring states of Maharashtra and Andhra Pradesh. Their earnings are lower than the declared minimum wage rate, but they are not aware of the proper rate. A smallholding farmer observed applying fertilizers in his sugarcane field was not using PPE. He was aware of the risks he was undertaking, but did not see any benefit in spending the money "just to protect his own health."

VI. RISK ASSESSMENT BASED ON FLA CODE OF CONDUCT

The following is a labor risk assessment of the sugarcane industry based on the FLA Workplace Code of Conduct.[39]

EMPLOYMENT RELATIONSHIP

Employers shall adopt and adhere to rules and conditions of employment that respect workers and, at a minimum, safeguard their rights under national and international labor and social security laws and regulations.

Employment of migrant workers is very common in most regions visited during the study. None of the farm workers had written contracts with the labor contractors, farmers or the factories. Usually, families migrate from

39 See www.fairlabor.org

one state to the other for six to eight months. There are no written contracts between the factories and the labor contractors or between factories and the farmers. The terms and conditions of payment are verbally agreed upon and based on piece rate (usually weight of the sugarcane harvested or weight of the sugarcane loaded in trolleys), therefore the entire family – including children – works to maximize earnings. Seasonal workers are not registered with local authorities and there are no social security contributions made for the migrant workers.

Meanwhile, workers inside the sugar mill are covered by the Factory Act of 1947. During the course of the study, in-depth analysis of labor standards and compliance were not conducted for workers inside the factories; doing this would require additional research. For example, since the factory runs for eight months in a year, research would be needed to investigate what the workers do for the remaining four months. Most of the FLA benchmarks on the Employment Relationship are applicable to workers inside the sugar mill.

FORCED LABOR

There shall be no use of forced labor, including prison labor, indentured labor, bonded labor or other forms of forced labor.

No obvious cases of forced labor were observed. However, contractors pay an advance to the migrant workers, usually the head of the family, and sometimes engages their own family members and relatives to work in the fields. The advances are large and the workers have to work on the rates established by the factory leaving no room for negotiations. Furthermore, in the case of the families, except for the head of the family, no one else knows the amount of money they will receive for the work they complete. Other members of the family may also feel obligated to work alongside the family head.

CHILD LABOR

No person shall be employed under the age of 15 or under the age for completion of compulsory education, whichever is higher.

Children were openly engaged in sowing and harvesting activities in the farms assisting their parents in all the regions visited. In one instance, two children were observed working within a sugar factory for a packing contractor. There is no age verification process in place for migrant workers. Youth are especially at risk, as they are treated as adult workers. Migrant workers camp in the fields for six to eight months and the children are unable to attend school because no schools are available (except for a few schools for migrant workers in Maharashtra).

HARASSMENT OR ABUSE

Every employee shall be treated with respect and dignity. No employee shall be subject to any physical, sexual, psychological or verbal harassment or abuse.

No cases of harassment and abuse came to light. This could be because of the relatively few workers interviews conducted. Further in-depth interviews need to be conducted with workers (especially migrant workers) to know about the situation related to this code element.

NONDISCRIMINATION

No person shall be subject to any discrimination in employment, including hiring, compensation, advancement, discipline, termination or retirement, on the basis of gender, race, religion, age, disability, sexual orientation, nationality, political opinion, social group or ethnic origin.

Discrimination was not observed during the study. This could be attributed to the acute labor shortage during the peak sowing and harvesting season in the north and the harvesting season in the south. Sowing, being a critical activity, has to be completed

without delay. As there is shortage of labor at that time of the year, farmers engage male and female workers for that particular task. Otherwise, most of the other tasks are completed by women. Since harvesting is contracted by weight, either married couples or men are preferred for that work.

HEALTH, SAFETY AND ENVIRONMENT

Employers shall provide a safe and healthy workplace setting to prevent accidents and injury to health arising out of, linked with, or occurring in the course of work or as a result of the operation of employers' facilities. Employers shall adopt responsible measures to mitigate negative impacts that the workplace has on the environment.

Proper health and safety practices are seldom followed on the sugarcane farms. Workers were exposed to a wide range of risks, such as a lack of PPE while handling chemicals, fertilizers, machetes, sickles and other agricultural implements. Proper shelter is not provided to the migrant workers, and are often crowded and unsafe. Some of the shelters are made of bamboo and thatch, and can easily catch fire. In some cases, drinking water and proper sanitation facilities are not available. In some instances, infants are left unattended in unmanned camps or in the fields and may be bitten by snakes or scorpions, or attacked by stray dogs.

FREEDOM OF ASSOCIATION AND COLLECTIVE BARGAINING

Employers shall recognize and respect the right of employees to freedom of association and collective bargaining.

There were many hired laborers on all of the visited farms, yet there was no observed presence of worker organizations and unions. Assessors did not observe any collective bargaining mechanism in the field, even though several thousand workers were involved in the harvesting of sugarcane. As indicated in the report, the bulk of working conditions and wages were negotiated between the farmers and workers directly in North India and between the contractor and the workers in South India. All workers under the same subcontractor would receive the same wage rate, although the wage rate for different contractors may vary slightly (but not much, as most contractors pay the prevailing industry rate in the region).

HOURS OF WORK

Employers shall not require workers to work more than the regular and overtime hours allowed by the law of the country where the workers are employed. The regular work week shall not exceed 48 hours. Employers shall allow workers at least 24 consecutive hours of rest in every seven-day period. All overtime work shall be consensual. Employers shall not request overtime on a regular basis and shall compensate all overtime work at a premium rate. Other than in exceptional circumstances, the sum of regular and overtime hours in a week shall not exceed 60 hours.

Work in the sugarcane farms is conducted from 8:00 a.m. to 6:00 p.m., with a two-hour lunch break during peak afternoon. However, since much of the work is of contractual nature, this timetable is not strictly followed. During harvesting, workers work an excessive number of hours in the filed to harvest sugarcane in time to deliver to the mill or the procurement center.

COMPENSATION

Every worker has a right to compensation for a regular workweek that is sufficient to meet the worker's basic needs and provide some discretionary income. Employers shall pay at least the minimum wage or the appropriate prevailing wage, whichever is higher, comply with all legal requirements on wages, and provide any fringe benefits required by law

or contract. Where compensation does not meet workers' basic needs and provide some discretionary income, each employer shall work with the FLA to take appropriate actions that seek to progressively realize a level of compensation that does.

In most instances, contract labor is involved in harvesting and sowing of sugarcane. In medium and large land holdings of North India, farmers have hired daily wageworkers as well. Due to an acute shortage of labor during the peak season, farmers reported that they felt "compelled" to pay higher wages than the minimum wages prescribed by the state. Otherwise, as a general practice, wages paid to the workers in the agricultural sector were always below the state-prescribed minimum wages. No additional benefits are given to the workers except in South India, where migrant workers are provided bamboo, thatch and tarpaulins to build their shelters free of cost by the factories. Workers are compensated at the regular rate for working overtime even though the prescribed overtime rate is double the regular hour rate. None of the interviewed farmers follow the laws as far as compensation to workers is concerned.

VII. CONCLUSION

Sugarcane is one of the most important agricultural commodities in India and supports millions of farmers and their families. The sugarcane supply chain in India is transparent to a large extent. Due to the regulatory framework surrounding the procurement of sugarcane, most farms are attached to one of the 566 sugar mills in India. Details of the farmers, their land-holdings, area under sugarcane cultivation, varieties sown, yield and quantity of sugarcane supplied by the farmers, and finally the payments received by the farmers can be tracked from the data available from the sugar mills. Some farms may not be identified, as they provide their sugarcane to local industries making a low-price sweetener called "gur."

The study shows that Indian sugarcane farms experience a similar lack of labor standards implementation and humane working environments as many other agricultural sectors in the nation, such as cotton, hybrid seeds, etc. Child labor, health and safety, and nonpayment of minimum wages seem to be the most prominent concerns at the farms. In spite of some legislation setting standards for the agricultural sector, a general enforcement of laws and inspection or monitoring either by the state or the private sector are weak. Migrant workers and their families are widely used, mostly in the harvesting of sugarcane. Both inter-state and intra-state migration is taking place from very poor regions of the country to sugarcane-producing areas.

Current agronomic practices in sugarcane farms make it a resource-intense crop that is uneconomical and non-viable in the long-run, given rising input and energy costs and the low FRP and SAP set by the government. Nevertheless, the study also uncovered existing best practices and technical know-how in the country that can substantially increase the productivity and hence profits of the farmers. We visited one farm producing an average of 120 tons of sugarcane per hectare with minimal chemical and irrigation costs. Some of the best practices observed have the potential to be replicated in other farms as the climatic conditions, access to inputs and knowledge, drip irrigation facilities, and varieties of sugarcane are easily available in the local market. Improving labor conditions and enhancing productivity should go hand-in-hand with any future intervention.

During the assessment team's visit to ten sugar mills, it became evident that different factories have their own ways of ensuring a regular supply of sugarcane. Some facilitate recruitment of migrant workers for sugarcane harvesting; others have robust payment systems for farmers and impart technical knowledge; while still others provide their own premises to house temporary migrant workers. The association of the farms with the sugar mill provides a great opportunity to drive compliance with labor standards through the sugar mills to farms in their "command area." The role of the muqaddam in Gujarat, Maharashtra and Karnataka is important, as they are the factory staff responsible for arranging labor contractors, paying them advances on behalf of the sugar mills, and working closely with them. Similarly, in Uttar Pradesh and Uttarakhand, officials of the procurement departments of sugar mills visit and interact with all their suppliers, contractors and workers. Training and capacity building of muqaddams and procurement department officials on labor standards could have a positive impact on the recruitment process and on living and working conditions of migrant laborers.

An encouraging sign was the presence of various farmers associations, civil society organizations and sugarcane societies working in the sugarcane production space (mostly in the states of Gujarat and Maharashtra). They are already connected to the network of sugarcane growers and are involved in extending soft loans, awareness building, facilitating access to irrigation facilities, etc. These could prove to be an efficient delivery mechanism for improving labor standards and awareness of agronomical practices. Furthermore, the presence of various government bodies and officials working in the sugarcane supply chain, such as the sugarcane commissioner, labor inspectors, labor officers, the district magistrate and various IAS officials, demonstrate that there is a vast government machinery that should be leveraged to bring about sustainable changes in working conditions in the sugarcane sector.

Given the enormous size of sugarcane production and the marked differences in attitudes and perceptions of the various supply chain actors in different regions, the strategy for each region needs to be tailor-made and the appropriate entry points need

ANNEX I: LABOR LAWS AND REGULATIONS IN INDIA: AGRICULTURE SECTOR

CONSTITUTIONAL FRAMEWORK

Under the Constitution of India, labor is a subject on which both the central and state governments are competent to enact legislation. A large number of labor laws have been enacted addressing different labor issues, including occupational health; safety; employment; training of apprentices; fixing of minimum wages; increments review and revision of minimum wages; mode of payment of wages; payment of compensation to workmen who suffer injuries as a result of accidents or causing death or disablement; bonded labor; contract labor; women labor and child labor; resolution and adjudication of industrial disputes; provision of social security such as provident funds; employees' state insurance; gratuity; provision for payment of bonus; regulating the working conditions of certain specific categories of workmen such as plantation labor; beedi (indigenous cigarettes) workers; etc. There are also labor laws enacted and enforced by the various state governments that apply within their respective states. Also, both central and state governments have formulated rules to facilitate implementation of these laws. The Ministry of Labor and Employment is mandated to create a work environment conducive to achieving a high rate of economic growth with due regard to protecting and safeguarding the interests of the working class and the vulnerable sections of the society.

NATIONAL LAWS

The following labor laws could be relevant in the agriculture sector.

1. The Child Labour (Prohibition and Regulation) Act, 1986
2. Juvenile Justice Act 2000, (Care and Protection of Children) Act 2000, as amended in 2006[40]
3. Right to Education Act, 2009
4. The Contract Labour (Regulation and Abolition) Act, 1970
5. The Equal Remuneration Act, 1976
6. The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979
7. The Minimum Wages Act, 1948
8. The Personal Injuries (Compensation Insurance) Act, 1963
9. The Weekly Holidays Act, 1942
10. The Bonded Labour System (Abolition) Act, 1976
11. The Workmen's Compensation Act, 1923

However, none of these laws are followed in the agriculture sector, nor is there political will to develop a mechanism for robust implementation of these laws.

40 ChildlineIndia, 2012, www.childlineindia.org.in/

Working conditions inside the sugar mill are governed by Factory Act, 1947. "Factory" in the act is defined as any premises employing 10 or more workers, which conducts manufacturing process with the use of electricity, or employing 20 or more workers, conducting manufacturing with or without the use of electricity. The Act details conditions on the health, welfare and safety of workers; working hours of adults; annual leave with wages; and employment of women and young persons. It also authorizes entry of factory inspectors with assistants or public authority or with an export in the premises of a factory to make examination of the premises, plant, machinery, article or substance.

To ensure the welfare of workers in the unorganized sector (including weavers, handloom workers, fishermen and fisherwomen, toddy tappers, leather workers, plantation labor, beedi workers, and others) the government proposed to enact comprehensive legislation for these workers. The Ministry of Labor and Employment drafted the ''Un-Organized Sector Workers Bill, 2004" which, inter-alia, envisaged provision for safety, social security, health and welfare matters. The draft bill was sent to all stakeholders including the National Advisory Council (NAC) and the National Commission for Enterprises in the Un-Organized Sector. The Ministry had also received a draft bill called the "Un-Organized Sector Workers Social Security Bill, 2005" from NAC. The draft bill was examined in the Ministry in consultation with the state governments, central trade unions, employers' organizations and NGOs. It was redrafted in 2007, and was finally passed by both houses of Parliament in December 2008. Nevertheless, no action has been subsequently undertaken to initiate its implementation.

ANNEX II: STAKEHOLDERS INTERVIEWED FOR THE STUDY

State: Uttarakhand
District visited: Udham Singh Nagar
Accompanied by: Saket Saxena, Savera Social Welfare Society, Pilibhit

Date	Name	Designation	Status
23.02.12	Saket Saxena	Member, local NGO- Savera Social Welfare Society	Involved in agro, health and welfare programs concerning the poor.
	Centre in-charge	Bajaj Sugar Mill	Weighing of sugarcane at cane center
	Worker	Contractor's worker	Loading of cane from trolleys to trucks
	Cane Inspector	Bajaj Sugar Mill	Cane development for Bajaj Sugar Factory, Barkhera
	Saudagar Singh	Farmer	Owner, 25 hectares of farm land
	Worker	Monthly rated	Worker at Saudagar Singh's farm
	Female workers	Contractor's workers	Harvesting sugar cane at Saudagar Singh's farm
	Madho	Supervisor	Supervision of 80 hectares of farmland of Milkiyat Singh
	Jamuna Prasad	Driver	Maintenance of tractor and agri. implements of Milkiyat Singh
	Worker	Monthly rated	Worker watering sugarcane, involved in odd jobs
	Worker	Monthly rated	Worker spraying pesticide, involved in odd jobs
24.02.12	Sandeep Singh	Farmer	Owner, 14 hectares of farmland
	Laturi Ram	Contractor	Sowing sugarcane at Sandeep Singh's farm
	Workers	Contractor's workers	Relatives working with contractor Laturi Ram
	Child workers	Contractor Laturi	Both 12 years old. Studied until class 1 (Laturi's family)
	Worker	Monthly rated	Permanent worker of Sandeep Singh
	Mahender Singh	Farmer	8 hectares farmland
	Centre in-charge	L H Sugar Factory	Weighing of sugarcane for Lalit Hari Sugar Factory, Pilibhit
	Watch-man	Centre of L H Sugar Factory	Employee of Lalit Hari Sugar Factory, Pilibhit
	Workers	Contractor's workers	Loading cane from trolleys to trucks at the Centre
	Mahender Singh	Farmer	Owner, 9 hectares of farmland
	Mahesh Singh	Farmer	Owner, 8.5 hectares of farmland
	Centre in-charge	Gadarpur Co-operative Sugar Factory	Weighing of sugarcane for co-op sugar factory, Gadarpur
25.02.12	Baldev Singh	Farmer	Owner, 21 hectares of farmland
	Joga Singh	Farmer	Owner, 4 hectares of farmland
	Centre in-charge	Sitarganj Co-operative Sugar Factory	Weighing of sugarcane for Sitarganj co-op sugar factory
	Cane Society Clerk	Khatema Cane Society	Employee of Khatema Cane Society
	Farmer	Director	Owner of 12 hectares of farmland and director, Khatema Cane Society
	Factory-gate Incharge	Sitarganj Co-operative Sugar Factory	Weighing of sugarcane at the factory gate
	General Manager	Sitargarganj Co-operative Sugar Factory	2,500 TCD Sitarganj co-operative sugar factory
	Nar Bahadur	Contractor	Sowing of sugarcane at Jagat Singh's farm
	Jagat Singh	Farmer	Owner, 28 hectares of farmland
	Worker	Monthly rated	Worker at Prabhat farms involved in odd jobs
	A.P.Rastogi	Ex Vice-President, Farmers Federation of India	Owner, Prabhat farms (160 hectares)

State: Uttar Pradesh
District visited: Pilibhit and Lakhimpur Kheri
Accompanied by: Saket Saxena, Savera Social Welfare Society, Pilibhit
Accompanied by: Amardeep Singh Mann, Farmer-Activist, Palia Kalan, Lakhimpur Kheri

Date	Name	Designation	Status
26.02.12	Saket Saxena	Member, NGO-Savera Social Welfare Society	NGO involved in agro, health and welfare programs concerning the poor
	Raja Ram Nath Agarwal	Director/Farmer L.H. Sugar Factory	Owner 11,000 TCD sugar factory & 60 hectares of farmland in Pilibhit
	Rajeev Agarwal	General Manager L.H. Sugar Factory	Sugarcane purchase, administration & H.R.
	Nathoolal	Farmer	Owner, 1 hectare of farmland
	Lakshman Prasad	Farmer	Owner, 1.5 hectares of farmland
	Harbinder Singh	Farmer	Owner, 12 hectares of farmland
	Worker	Contractor's worker	Loading of sugarcane from trolleys to trucks at the L.H. Sugarcane Centre
	Centre Incharge	L.H. Sugar Factory	Weighing of sugarcane at the sugarcane centre
	Dilay Ram	Farmer	Owner, 2 hectares of farmland
	Ram Bharosay	Farmer	Owner, 1 hectare of farmland
27.02.12	Kukki Sohal	Farmer	Owner, 50 hectares of farmland
	Worker	Monthly rated	Labor at Kukki Sohal's farm involved in odd jobs
	Rakesh Bhasin	Farmer	Owner,15 hectares of farmland
	Amardeep Singh Mann	Farmer	Progressive farmer and former exec. director of Neoli sugar factory, owning 40 hectares offarmland in Lakhimpur
	Contractor	Contract work in farms	Harvesting of sugarcane
	Bahadur Singh	Contract farmer	Annual contract of 35 hectares farmland
	Sadir Ali	Farmer	Owner, 8 hectares of farmland
28.02.12	Tarsem Singh	Farmer	Owner, 27 hectares of farmland
	Preetam Singh	Farmer/Sarpanch	Owner,35 hectares of farmland
	Contractor	Contract work in farms	Harvesting at Preetam Singh's farm
	Worker	Contractor's worker	Working for contactor Kalloo at Preetam Singh's farm
	General Manager	Hindustan Sugar Factory	10,000 TCD sugar factory at Palia Kalan
	Chief Engineer	Hindustan Sugar Factory	10,000 TCD dugar factory at Palia Kalan

State: Gujarat
District visited: Surat and Tapi
Accompanied by: Jayesh Patel, Farmer-Activist, Gujarat Khedut Samaj, Surat
Accompanied by: M.S.H.Sheikh, Farmer-Activist, Brakish Water Research Centre, Olpad

Date	Name	Designation	Status
13.03.12	M.S.H.Sheikh	President/farmer/activist	NGO-Brakish Water Research Centre, Olpad. Owns 13 hectares of farmland
	Jayesh Patel	Sec-general/ farmer	NGO-Gujarat Khedut Samaj, Surat
	Slip Boy	Shree Khedut Skum Ltd Sugar Factory	Monitoring sugarcane harvesting and delivery to factory
	Muqaddam	Shree Khedut Skum Ltd Sugar Factory	Monitoring sugarcane harvesting for factory
	Contractor	Shree Khedut Skum Ltd Sugar Factory	Contract for sugarcane harvesting
	Female worker	Contractor's worker	Harvesting for contractor
	Contractor	Shree Khedut Skum Ltd Sugar Factory	Loading sugarcane for factory
	Chairman	Bhadgam Sewa Sahkari Mandli, Olpad	Bhadgam Sewa Sahkari Mandli, Olpad
	Chairman	Badgam Water Distribution Society	Badgam Water Distribution Society
	Vice Chairman	Badgam Water Distribution Society	Badgam Water Distribution Society
14.03.12	Jayesh Patel	Sec-general/ Farmer	Gujarat Khedut Samaj, Surat
	Contractor	Shree Sayan Vibhag Skum Ltd	Contract of sugarcane harvesting for Sayan Sugar Factory
	Worker	Contractor's worker	Harvesting for contractor
	Chairman	Shree Sayan Vibhag Skum Ltd	5,000 TCD factory with 12,500 shareholders
	Managing Director	Shree Sayan Vibhag Skum Ltd	5,000 TCD factory with 12,500 shareholders
	Asst. Factory Manager	Shree Sayan Vibhag Skum Ltd	Handling factory production
	Child workers	Shree Sayan Vibhag Skum Ltd	Two male child workers stitching packed sugar bags
	Associate Professor	Centre for Social Studies, Surat	Veer Narmad South Gujarat University Campus, Surat
	Associate Professor	Centre for Social Studies, Surat	Veer Narmad South Gujarat University Campus, Surat
15.03.12	M.S.H.Sheikh	Farmer/ activist	NGO
	Deputy Labor Commissioner	District of Surat	Handling labor issues in industrial sector
	Asst. Labor Commissioner	District of Surat	Handling labor issues in agriculture sector
	Ankur Shah	Farmer	Owner, 14 hectares of farmland, Tapi

State: Maharashtra
District visited: Pune, Satara, Buinj and Sangli
Accompanied by: Anjali Pawar, Farmer-Activist, Director, SAKHI (NGO)
Accompanied by: Suresh K Vairalkar, Farmer-Activist, Pune

Date	Name	Designation	Status
16.03.12	Anjali Pawar	Director, SAKHI (NGO)	NGO working for Child Rights
	Chairman	Bhimashanker SSK Ltd. Sugar Factory	5,000 TCD capacity, 6mw co-gen
	Secretary/ Farmer	Bhimashanker SSK Ltd. Sugar Factory	Owner, 7 hectares of farmland
	Uday Singh Gaekwad	Farmer	Owner, 13 hectares of farmland
	Harish Ch. Thumke	Director/ farmer	Owner, 35 hectares of farmland
	Mahesh Bhagwad	Director/farmer	23 hectares
	Personal Assistant to Chairman	Bhimashanker SSK Ltd. Sugar Factory	Bhimashanker SSK ltd. Sugar Factory
	Cane Dev. Officer	Bhimashanker SSK Ltd. Sugar Factory	Bhimashanker SSK Ltd. Sugar Factory
	Goraknath Diwekar	Farmer	Owner, 2 hectares of farmland, Daund
	Dinakar Sahibrao,	Farmer	Owner, 3 hectares of farmland, Daund
17.03.12	Anjali Pawar	Director SAKHI (NGO)	Working for child rights
	Student	Student of Primary School Bhimashanker SSK Ltd. Sugar Factory	Son of migrant worker
	Female migrant worker	Mother of student	Migrant worker at Bhimashanher SSK Ltd. Sugar Factory
	Managing Director	Kisanveer Satara SSK Ltd	5,000 TCD capacity, 6 MW co-gen
	Chairman	Kisanveer Satara SSK Ltd	5,000 TCD capacity, 6 MW co-gen
	Contractor	Kisanveer Satara SSK Ltd	Contract for harvesting sugarcane
	Worker	Contractor's worker	Harvesting sugarcane
	Driver	Cane Harvestor	Working for contractor
18.03.12	Babu Anand R. Jadav	Farmer	Owner, 6 hectares of farmland
	Muqaddum	Ajinkyatara SSK Ltd Sugar Factory	Supervising harvesting and transportation of sugarcane for Ajinkyatara SSK Ltd Sugar Factory
	Contractor	Ajinkyatara SSK Ltd Sugar Factory	Harvesting sugarcane for Ajinkyatara SSK Ltd Sugar Factory
	Sanjiv Ganpatrao Mane	Farmer	Owner, 7 hectares of farmland in Sangli; highest yield of sugarcane in country

State: Karnataka
District visited: Belgaum and Mandya
Accompanied by: Santosh Hipparagi, Labour Officer, and Satyanarayan, Labor inspector
Accompanied by: M.B.Patil, Director, CENTAD

Date	Name	Designation	Status
19.03.12	M.B.Patil	Director, Centad	NGO, works with UNCTAD & WTO in agro & trade program
	Deputy Commissioner	District Head	District Belgaum
	Labor Officer	Labor Department	District Belgaum
	Labor Officer	Labor Department	District Belgaum
	Joint Director	Industries Department	District Belgaum
	General Manager	H.R. and Administration	Renuka Sugar Company, Belgaum
20.03.12	Labor Officer	Labor Department	Accompanied to Nipani
	Labor Officer	Labor Department	Accompanied to Nipani
	Managing Director	Halasidanath SSK Niyamit Ltd	2,200 TCD sugar factory at Nipani
	Office Superintendent	Halasidanath SSK Niyamit Ltd	Administration of Sugar Factory
	Environment Engineer	Managing school for children of migrant workers	School being run by NGO Janarth Shakar Shala
	Labor Inspector	Taluka Athani	Accompanied to Doodhganga & Ugar Sugar Works
	Director	Doodh Ganga Krishna SSK Niyamat	5,500 TCD sugar factory at Chikodi, 20.7 MW co-gen, 30 klpd distillery
	Iragoude Patel	Farmer	Owner, 6 hectare of farmland, Ugar
	Deputy Manager, Personnel	Ugar Sugar Works	10,000 TCD sugar factory, Ugar Khurd
	Cane Manager	Ugar Sugar Works	Procurement of sugarcane for factory
	Bhurmukalapa Bhoje	Farmer	Owner, 2 hectares of farmland, Athani
	Contractor	Ugar Sugar Works	Contract for harvesting sugarcane for Ugar Sugar Works
21.03.12	Contractor	Laila Sugar Works	Contract for harvesting sugarcane for Laila Sugar Works, Khanapura
	Manager	Administration, Laila Sugar Works	Laila Sugar Works, Khanapura
	Deputy Manager	H.R., Laila Sugar Works	Laila Sugar Works, Khanapura
22.03.12	Raju Dollyagowda	Farmer	2 hectares farmland in Madhur town
	Contractor	Mysore Sugar Company Ltd, Mandya	Contract for harvesting sugarcane for Mysore Sugar Company Ltd, Mandya
	Chairman	Mysore Sugar Company Ltd, Mandya	Mysore Sugar Company Ltd, Mandya
23.03.12	Sugarcane Commissioner	Department of Agriculture	Designated officer for sugarcane policy for Karnataka

ANNEX III: ACKNOWLEDGEMENTS

1. Joint Secretary, Ministry of Agriculture, New Delhi
2. Chief Director (Sugar), Ministry of Consumer Affairs, New Delhi
3. Saket Saxena Member, Savera Social Welfare Society, Pilibhit, Uttar Pradesh
4. Late A.P.Rastogi, Prabhat Farms, Khatema, Udham Singh Nagar, Uttarakhand
5. Centre Incharge, Majhola, Udham Singh Nagar, Uttarakhand
6. Raja Ramnath Agarwal, Executive Director, L.H.Sugar Factory, Pilibhit, Uttar Pradesh
7. Amardeep Singh Mann, Farmer, Palia Kalan, Lakhimpur Kheri, Uttar Pradesh
8. General Manager, Bajaj Hindustan Ltd.Palia Kalan, Lakhimpur Kheri, U.P.
9. Jayesh Patel, Secretary General, Gujarat Khedut Samaj, Surat, Gujarat
10. M.S.H.Sheikh, President, Brackish Water Research Centre, Olpad, Surat, Gujarat
11. Chairman, Shree Sayan Co-op.Sugar Factory, Olpad, Surat, Gujarat
12. Associate Professor, Centre for Social Studies, Surat, Gujarat
13. Associate Professor, Centre for Social Studies, Surat, Gujarat
14. Anjalee Pawar, Director, SAKHEE, Pune, Maharashtra
15. Activist, Pune, Maharashtra
16. Chairman, Bhima Sugar Works, Daund, Pune, Maharashtra
17. Chairman, Kisanveer Co-op Sugar Factory, Satara, Maharashtra
18. Sanjiv Ganpatrao Mane, Farmer, Asta, Sangli, Maharashtra
19. Director, CENTAD, Belgaum, Karnataka
20. Deputy Commissioner, Belgaum, Karnataka,
21. Labor Officer, Belgaum, Karnataka
22. M.D.Co-op. Sugar Factory, Nipani, Belgaum,
23. Director, Shri Doodhaganga Krishna Co.op, Chikodi, Belgaum
24. Commissioner, Mysore Urban Development, Mysore
25. Chairman, Mysore Sugar Company Ltd. Mandya, Karnataka
26. Commissioner Cane Development, Bangalore, Karnataka
27. Deputy Head, Sugar Policy, Indian Sugar Mills Association, New Delhi
28. Manager Procurement, Indian Sugar Exim Corp. Ltd. New Delhi