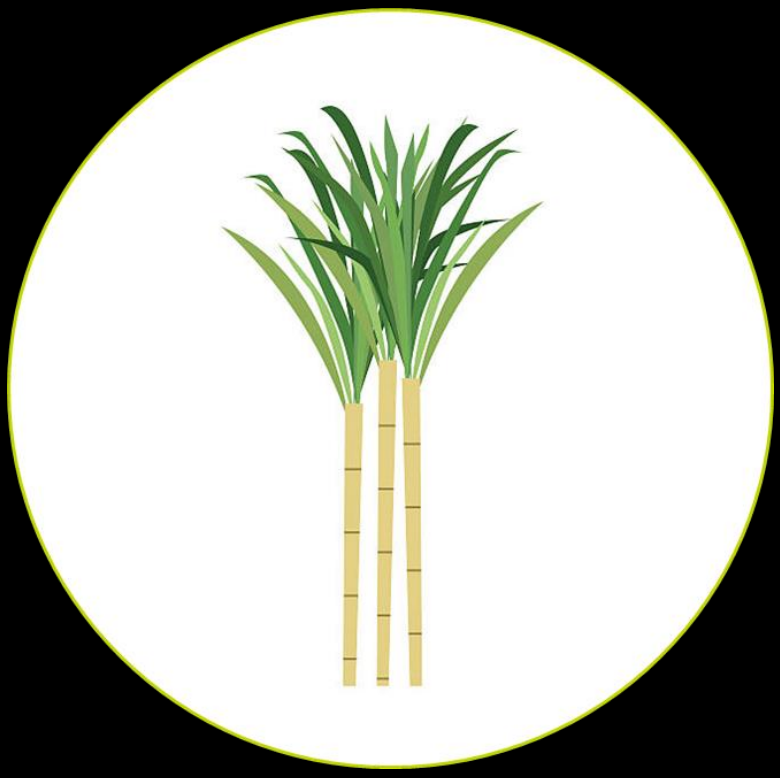
Deloitte.



Final Report

Business Case Study of Bonsucro Certification in India

Submitted to: Bonsucro
April 2021

Table of Contents

Disclaimer **5**
Foreword **6**
Study Background and context **7**
Executive Summary **10**
Chapter 1: Assessment of sugarcane and sugar sector in India **13**
1.1.Sector Overview 13
1.2.Demand for sustainable production 18
1.3.Key drivers for the industry 19
1.4.Key sectoral challenges 20
1.5.Future of the sugar sector in India 22
Chapter 2: Key Findings **23**
Chapter 3: Establishing a Business Case **27**
3.1.Mill analysis 27
3.2.Alignment to UN SDGs 37
Chapter 4: Strengthening the case for Bonsucro certification in India **43**
Chapter 5: Conclusion and Way Forward **44**
Annexure 1: Stakeholder insights on certification **46**
Annexure 2: Stakeholders list **55**

List of Tables

Table 1: All-India area, production, and yield of Sugarcane 13
Table 2: Leading states in sugarcane production, and their area, production and yield, 2018-19 14
Table 3: Sugar exports from India 17
Table 4: Ethanol blending targets and demand for ethanol 19
Table 5: Average annual costs for the mills 27
Table 6: Alignment of mill initiatives with UN SDGs 39
Table 7: Recommendations for strengthening Bonsucro in India 43

List of Figures

Figure 1: Comparison of area and production of Sugarcane across major countries, 2017 13
Figure 2: Sugar production and consumption in India (million MT) 14
Figure 3: Processing of sugarcane for various uses 15
Figure 4: International vs domestic prices of white sugar (USD/MT) 16
Figure 5: Export of (centrifugal) sugar from select countries (2018-19) in '000 tonnes 17
Figure 6: Fair and Remunerative Price (FRP) of sugar, INR per kilogram 20
Figure 7: Cost of production and ex-mill price of sugar in India, INR per quintal 21
Figure 8: Cost comparison among mills (Cost in USD) 28
Figure 9: Total costs and Indirect costs for mills (USD) 29
Figure 10: Cost structure for Mill X1 29
Figure 11: Cost structure for Mill X2 30
Figure 12: Cost structure for Mill X3 30
Figure 13: Cost structure for Mill X4 31
Figure 14: Costs in terms of unit areas and per farmer 31
Figure 15: Comparison of costs and area per farmer 32
Figure 16: Net Present Value per ton of sugar 35
Figure 17: Average Return on Investment - Sensitivity analysis 36
Figure 18: Average Social Return on Investment - Sensitivity analysis 36
Figure 19: Alignment of Bonsucro with SDGs 37
Figure 20: Accident rate at farm level and mill level 38
Figure 21: Key drivers of GHG emissions (farm level) before and after certification 38

List of Abbreviations

BAU	Business as usual
CACP	Commission on Agricultural Costs and Prices
EBP	Ethanol Blended Petrol
FDW	Sustainable Water Fund
FRP	Fair and Remunerative Price
GHG	Green House Gas
Ha	Hectare
INR	Indian Rupee
MAEQ	Maximum Admissible Export Quantity
KVK	Krishi Vigyan Kendra Knowledge Network
MIEQ	Minimum Indicative Export Quotas
MSP	Minimum Selling Price
MT	Metric Tonnes
PDS	Public Distribution System
RSF	Revenue Sharing Formula
SAP	State Advised Price
SMP	Statutory Minimum Price
SSI	Sustainable Sugarcane Initiative
USD	United States Dollars
VSS	Voluntary Sustainability Standard

Disclaimer

This report is intended for the use of Bonsucro India and is subject to the scope of work and purpose defined therein. We, by means of this report are not rendering any professional advice or services to any third party.

For purposes of the exercise, we have used information obtained from primary interactions and secondary information sources, which we believe to be reliable and our assessment is dependent on such information being complete and accurate in all material respects. We do not accept any responsibility or liability for any losses occasioned to any party because of our reliance on such information.

Our procedures did not constitute an audit. A consent was taken from the mills to use their data for analysis. The mills had also participated in scenario building for the purpose of the report.

We make no representation or warranty as to the accuracy or completeness of the information used within this assessment, including any estimates, and shall have no liability for any representations (expressed or implied) contained in, or for any omission from, this assessment.

Foreword

Greetings from Bonsucro,

Sugarcane has an essential and positive role to play in the world's economic and environmental future.

Grown in more than 115 countries and essential to the economy of many, the sector generates employment and income for millions of people. While we must address many complex issues, the long-term prospects are positive for sustainably produced sugarcane and the growing range and value of its derivatives.

Bonsucro is a global multi-stakeholder non-profit organisation that exists to promote sustainable sugarcane production, processing and trade around the world. Bonsucro supports a community of over 250 members in over 50 countries, from all elements of the sugarcane supply chain, including, farmers, millers, traders, buyers and support organisations.

Bonsucro's **vision** is a sugarcane sector with thriving, sustainable producer communities and resilient, assured supply chains. The **mission** is to ensure that responsible sugarcane production creates lasting value for the people, communities, businesses, economies and eco-systems in all cane-growing origins. Bonsucro's **strategy** builds a platform to accelerate change for the largest agricultural commodity in the world – **sugarcane.**

India is the second largest producer of sugarcane in the world and a priority region for Bonsucro. It is imperative to address the sustainability concerns as it is a critical crop in India's agriculture landscape. Bonsucro invested in the India Business Case Study to get an authentic and unbiased insight into the challenges faced by the sector, views of different stake holders and critical financial implications and inferences.

Going forward it is Bonsucro's endeavour to establish a Platform to encourage a dialogue with all its stake holders. The Business Case study is a first step in that direction.

Deloitte Touché Tohmatsu have been a good partner in helping us execute the study. We are thankful to all the Bonsucro members and stake holders who have spared their time to participate in the study.

Rick Lyu

Regional Director Asia Pacific

Bonsucro

Study Background and context

Bonsucro promotes sustainable sugarcane production, processing and trade around the world. This global multi-stakeholder non-profit organization seeks to reduce the environmental and social impacts of sugarcane production. Currently, 280+ members work with Bonsucro across the globe, with 27% land area, and 7.2 million tonnes of sugarcane being Bonsucro certified. India is one of the focus countries for Bonsucro as it is the second largest producer of sugarcane in the world.

Bonsucro promotes the cause of a sustainable sugar sector. Bonsucro certification establishes the commitment to environmentally, socially and economically sustainable practices in the production of sugar. Bonsucro has been working in India since 2014. In 2018, the smallholder standard was rolled out and this gave a fresh impetus to the certification process. Currently, seven mills in India have been certified Bonsucro compliant and a few others are working towards certification.

Bonsucro India has entrusted Deloitte Touche Tohmatsu India LLP to establish the case for adoption of Bonsucro, and to understand the financial implications, and direct and indirect benefits (and costs) of working towards compliance with the Bonsucro Production Standards in the Indian context.

The business case study examines four sugar mills, which are Bonsucro certified, viz., Baramati Agro Ltd, Dalmia Bharat Sugar and Industries Ltd, EID Parry Ltd and Olam International.

The study seeks to assess the following key parameters:

- Cost-benefit analysis
- Return on Investment and Social Return on Investment
- Net Present Value
- Alignment to United Nations Sustainable Development Goals

The following diagram summarises the key areas of research for the study, as well as the study hypothesis and questions.

Study hypothesis	Key questions
Significant benefits are received by sugar mills using Bonsucro Standards	What are the **benefits observed** by adopting Bonsucro standards? • **Financial:** Price premium, Access to preferential markets, Reduction in input costs, Increase in operational efficiency etc. • **Social:** Reduction in accidents, Lower incidence of child labour, etc. • **Environmental:** Impact on soil, Lower water usage, etc. • **Data availability**: Data generated helps in better decision-making What are the **costs involved** in adoption? • Costs of compliance, certification cost, audit cost, annual fee, renewal costs, costs of workers hired for compliance and certification, costs of personnel hired for compliance, costs of training such personnel staff and farmers on the Bonsucro standard What are the **enablers and barriers to adoption** of Bonsucro standards? • Why millers are moving towards sustainability standards, (**enablers** across policy, price premium, market access/ linkages, social & environmental benefits, data availability for decision-making and so on) • What are the **barriers** for millers that choose not to adopt Bonsucro standards, and continue with conventional units

We have received wide support from stakeholders during this study. Some illustrative viewpoints are given as follows:

The BONSUCRO business case study was conducted in a professional manner with the right scenarios as assumptions and financial methodology leading to critical inferences on the economic and social benefit of certification to all stakeholders in consultation. I hope the study will benefit the BONSUCRO board in analysing and redefining a new strategy for the Indian sugar industry that entails accruement of benefits sustainably to all the stakeholders in the supply chain."

-S. Suresh

Managing Director, EID Parry (I) Ltd

" We hope that the outcomes of this Business case study will be looked in to so that we can work together for a better and brighter future. Increased participation from all the stakeholders is very important."

-Bharat Kundal

Vice President & Business Head – Sugar, Olam Agro India Private Limited

"Operations with sustainability in all fields is the least we can do for our future generations. Productivity increase is a Bonus."

-Naveen Kumar Gupta

Deputy Executive Director, Dalmia Bharat Sugar & Industries Limited

"This case study was conducted very thoroughly and we are happy to be part of this process. We believe that outcome of this process will surely boost overall impact of Bonsucro on their members in positive way with balanced approach.''

-Nitin Kayande

Management Representative (Corporate), Baramati Agro Limited

Scope and structure of this report

This report presents Deloitte's analysis and findings on sugarcane and sugar landscape in India, including the assessment of Bonsucro Standards in the smallholder context. It also aims to establish a business case for Bonsucro in India by studying the costs and benefits, returns on investment, payback time, and net present value. This report also studies the alignment of Bonsucro standards with the United Nations Sustainable Development Goals (UNSDGs). The study team undertook secondary and primary research on the aforementioned aspects and synthesized the findings on reported and perceived costs and benefits, based on reported savings from adoption of Standards, emerging strategic areas and way forward. Accordingly, this report contains the chapters as presented in table below:

Assessment of sugarcane and sugar sector in India	**Chapter 1**
Key Findings	**Chapter 2**
Establishing a business case	**Chapter 3**
Strengthening the case for Bonsucro certification in India	**Chapter 4**
Conclusion and Way Forward	**Chapter 5**

Executive Summary

Study background and context

Sugarcane and sugar play significant role in economy of India, trade and livelihood. India is one of the largest producers and consumers of sugarcane in the world. Sugarcane's demand is increasing due to increase in demand for ethanol, jaggery, molasses, etc., as well as rising co-generation needs. Sugar is country's second largest agro-based industry, next to cotton. India is the largest consumer and the second-largest producer of sugar in the world.

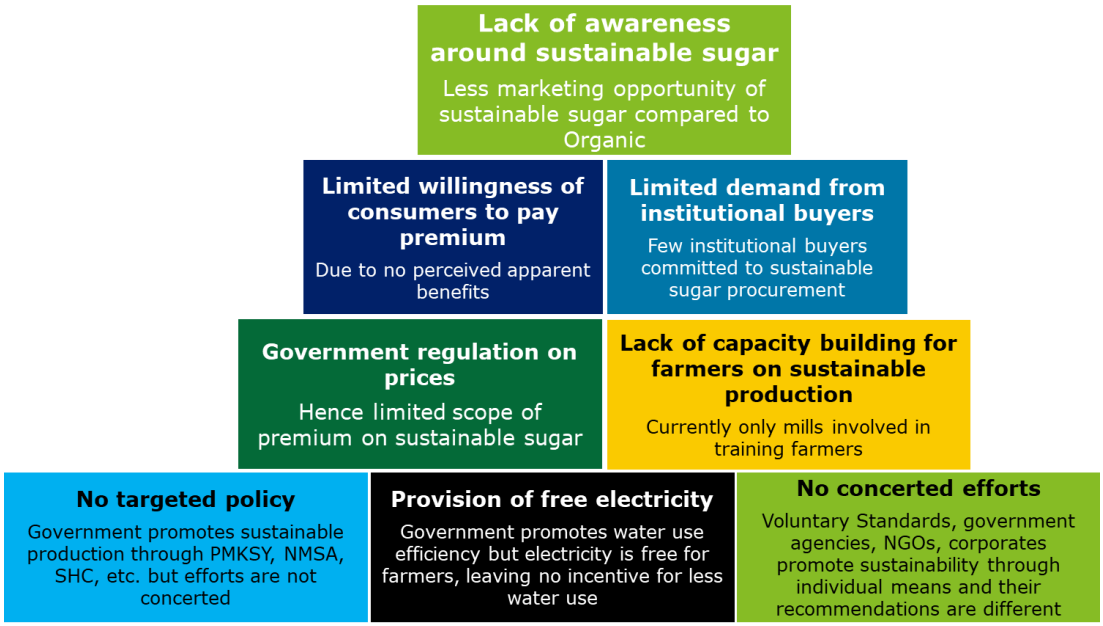
The agriculture sector withdraws 80% of India's water resources. Amidst this, the country is facing a water crisis. A study conducted by WWF (WWF, Living Waters: Thirsty Crops, 2003) concluded that cotton, rice, sugarcane, soya, and wheat are the most water "thirsty" crops in terms of their water requirement per kilogram of crop.

In this context, Voluntary Sustainability Standards (VSS) promote sustainability along the value chain via encouraging less water usage, less chemical usage, better soil management, and promoting better labour conditions, among others. An increasing number of agricultural producers and traders are getting certified as they identify potential social, environmental as well as economic benefits in VSS. Bonsucro is one such global sustainability standard for sugarcane in India. The Standard had been launched in India in 2014, seven mills have been certified so far, with a few more working towards the certification. Bonsucro India engaged Deloitte Touche Tohmatsu India LLP to establish a business case study for Bonsucro in India to understand the financial implications, direct and indirect benefits (and costs) of working towards compliance with the Bonsucro Production Standards in the Indian context.

This report presents some of the key findings from secondary as well as primary analysis. It highlights that while sugarcane is a profitable crop for farmers owing to the high government-determined prices and sturdy nature of the crop, the margins for millers are non-existent as the retail prices are lower than the costs of production. While the industry has been demanding for implementing the Rangarajan Committee recommendation of developing a revenue sharing formula between the growers and the millers, the same is yet to be executed. This formula recommends abandoning the State Advised Price (state announced price over and above central government-determined price) in favour of sharing proceeds of sugar sold between farmers and millers. Owing to the high sugarcane price, there is over production of the crop. However, the high cost of production of sugar in India renders Indian sugar uncompetitive in the international markets as countries like Brazil are able to export sugar at a lower price. Hence, the excess sugarcane is now being diverted to ethanol, an environment-friendly fuel. Co-generation is also important to absorb excess cane production.

From a sustainability context, certified sugar production has been building momentum, however, it is still at a nascent stage. For sustainability to become mainstream, the benefits of sustainability must align with economic gains. While the farmers do see benefit in yield improvement, less water usage, more resilient crop variety, and better working conditions, they still expect a premium as they change their traditional practices in favour of Bonsucro cultivation methods. Similarly, the mills also expect a premium for production of sustainable sugar. However, the premium is difficult to come by owing to regulation of prices. Despite this, the industry experts consider Bonsucro to be a well-thought out certification though a few gaps in the same need to be plugged. For instance, even though the Bonsucro Standards have been customized for smallholder farmers, the audit agencies

practice the same protocols for both large and smallholder farmers. These agencies hence need to be sensitized about the unique cropping pattern in India (a small farm has multiple crops to keep a consistent revenue stream). Translating Standards in vernacular languages shall further increase its relatability since farmers are unfamiliar with English. Another issue is that currently only big mills can afford certification (due to lack of premium). Taking certification to the second or third tier mills is required to mainstream Bonsucro. Some of the barriers to adoption of sustainable sugar are highlighted in the following figure.



Establishing a business case: Financial analysis

In the course of the study, an analysis of the mills' financials was undertaken (through Bonsucro calculator and questionnaire submission) to analyse the costs and benefits of certification, Net Present Value (NPV), Return on Investment (RoI), and Social Return on Investment (SRoI). The analysis indicated that direct costs which include cost of pre assessment, audit and membership fees show less variation when compared to the other costs. Furthermore, the analysis revealed that a mill that is certified for more number of years and has had a longer association with Bonsucro has been able to rationalize costs over time, implying that costs reduce over time as mills expand their certified area and the number of certified farmers.

It was found that mills with higher certified area have lower unit costs. Additionally, as the certified area rises, the cost per farmer also declines as the economies of scale come into play.

The analysis included projections for costs and benefits for the next five years. The analysis assumed five scenarios for the future, in discussion with the participating mills. Across the scenarios the rate of growth of costs and benefits was varied from low (2%), medium (3%) to high (5%) growth. The study also assumed various scenarios for premiums obtained: from no premium to 50% of the certified sugar sold at a premium to all of the certified sugar being sold at a premium of 4%.

Based on the scenarios, calculations were undertaken to arrive at the net present value, return on investment (taking into account returns from sales of certified sugar at a premium) and social return on investment (additionally taking social and environmental benefits into consideration).

The analysis highlighted the following inferences:

- Obtaining premium is critical to recover investments. Even if 50% of certified sugar is sold at a premium, the NPV is positive.
- There is a significant variation in returns across mills. Mills having been certified earlier have gained experience in optimizing costs.
- Even if costs grow at a higher pace (5% per annum), the mills can still achieve a positive return if premium is available.
- For certification to be financially remunerative, it is essential for mills to obtain premiums from sale of certified sugar..

The analysis also studied the mills' efforts for achievement of the United Nations Sustainable Development Goals (UN SDGs). The mills have taken a number of initiatives to align to sustainable development goals, with multiple initiatives like trainings in safety, health hygiene, and nutrition, access to medical facilities at mill and farm level to ensure good health and well-being, treating effluent to ensure clean water, re-using water to optimize water usage. The mills have also adopted climate resilient agriculture practices, including encouraging farmers to minimize chemical use, install drip irrigation systems, and adopt organic practices.

In terms of next steps for achieving greater impact from UN SDGs, it is recommended that government agencies and Bonsucro work in tandem. This is so because, while government has multiple schemes and initiatives to promote sustainability (soil health scheme, subsidy for drip irrigation, organic cultivation, etc.), they tend to work in silos, as a program on soil health would not focus on good labour practices, and a program on water conservation would not focus on organic cultivation. This is where VSS can play a key role, and promote multiple practices in a farm, such as less chemical usage, adoption of drip systems, and soil management.

Strengthening certification and way forward

To strengthen certification and increase uptake of Bonsucro in India, it is critical that large-scale campaigns be undertaken to generate awareness around benefits of Bonsucro including the impact on environment, water use efficiency, and labour conditions. Leading local players that use sugar as a regular raw material should be encouraged to buy certified sugar. Further, awareness of end consumers needs to be enhanced regarding benefits of certified sugar

Another important step is localization of Standards to Indian context, particularly in terms of language. This shall ensure that the Standards are easy to comprehend.

Publicising benefits to mills and how the data generated from Bonsucro calculator may be used to ensure better decision making is also an important step in upscaling adoption. Mill operations and safety levels have been positively affected. This needs to be highlighted in conversations with stakeholders. Benefits in terms of improvement in labour conditions, enhancement in productivity, reduction in water usage, and lowering of GHG emissions should also be highlighted.

Lastly, the costs of trading may need to be rationalized. Currently, the cost of trading credits is fixed and are considered high. The charges are close to USD 1 per credit, hence buyers find it costly to purchase credits. It was suggested that the trading should either be free for initial years, or very nominally priced (as a percentage of transaction price) to encourage higher volume transactions.

Chapter 1: Assessment of sugarcane and sugar sector in India

1.1. Sector Overview

1.1.1. Importance of sugarcane in India

Sugarcane is a widely grown crop in India. It provides employment to over a million people directly or indirectly besides contributing significantly to the national exchequer. Sugarcane is the prime source of sugar, and provides raw material to over multiple other industries, including alcohol, paper & pulp, chemical, cattle feed, pharmaceuticals etc. Besides these, sugarcane also supports rural and cottage industry of *gur* (jaggery) and *khandsari* (sugar extracted from liquid jaggery, a healthier alternative to white sugar) which together produce about 7-10 million MT of sweeteners[1]. The table below depicts a few key statistics for sugarcane in India.

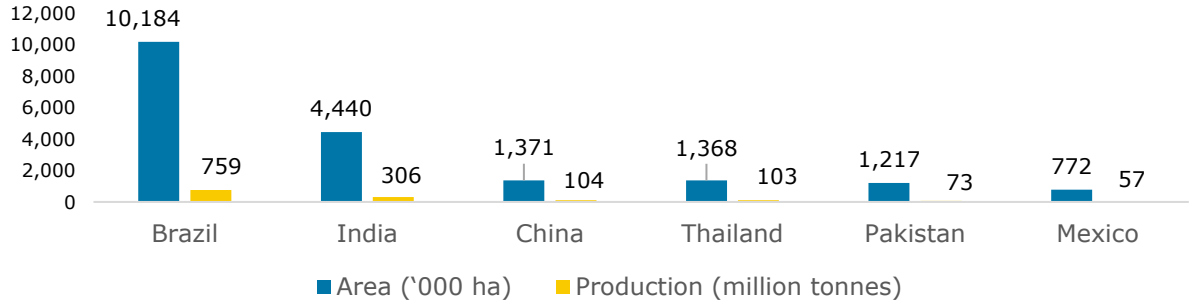
Table 1: All-India area, production, and yield of Sugarcane

Year	Area ('000 ha)	Production ('000 MT)	Yield (MT/ha)
2013-14	4,990	352,140	70.57
2014-15	5,070	362,330	71.46
2015-16	4,930	348,450	70.68
2016-17	4,440	306,069	68.93
2017-18	4,730	376,900	79.68
2018-19	5,110	400,160	78.30

Source: Agricultural Statistics at a Glance, 2018 (Directorate of Economics & Statistics), *Data from Indian Sugar Mills Association

India is the second largest sugarcane producing country in the world, with Brazil being the top producer. The graph below depicts a comparison of top sugarcane producing countries in the world in terms of their area and production.

Figure 1: Comparison of area and production of Sugarcane across major countries, 2017



Source: Agricultural Statistics at a Glance, 2018 (Directorate of Economics & Statistics); Data for all countries for 2017

[1] ICAR-All India Coordinated Research project on sugarcane: Sugarcane in India- Package of Practices for different agro-climatic zones, March 2017

Uttar Pradesh, Maharashtra, Karnataka are major sugarcane producing states in India, and together they contribute about 75% of India's production. In terms of productivity, Tamil Nadu, though a lower sugarcane producing state, has the highest yield of 98.2MT/ha in India.

Table 2: Leading states in sugarcane production, and their area, production and yield, 2018-19

State	Area ('000 ha)	Production ('000 MT)	Yield (MT/ha)
Uttar Pradesh	2,224	179,714.8	80.81
Maharashtra	1,162.8	92,442.6	79.50
Karnataka	506.1	42,006.3	83.00
Bihar	225.6	11,660.9	51.70
Gujarat	167.2	12,036.4	71.97
Tamil Nadu	165	16,207.6	98.24
Andhra Pradesh	102	8,091.2	79.33
Haryana	94.2	7,570.6	80.37
All India	**5,114**	**400,156.8**	**78.25**

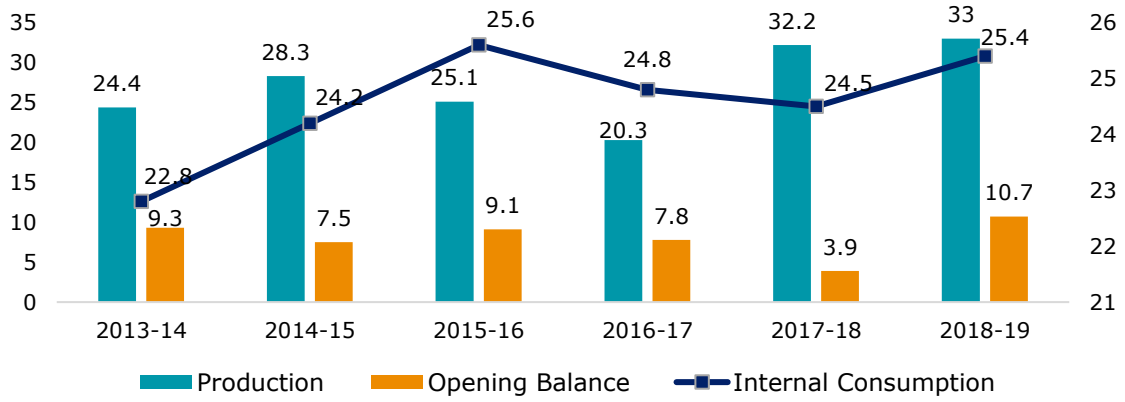
Source: Indian Sugar Mills Association, 1st advance estimates 2019-20

1.1.2. Importance of sugar sector in India

Sugar is the most prominent product of sugarcane. The sugar industry impacts livelihood of about 500,000 workers directly employed with the mills in India[2]. With 532 factories in operation[3], India has a crushing capacity of 340 lakh MT of sugarcane annually[4].

India is the second largest producer of sugar in the world, and also the largest consumer. India consumes over 85% of the sugar domestically. The production and consumption of sugar in India is given below.

Figure 2: Sugar production and consumption in India (million MT)



Source: Indian Sugar Mills Association

However, the per-capita consumption in India (20 kg) is still lower than many countries, including Canada (33.7 kg), Brazil (50.2 kg), Indonesia (25.8 kg), Saudi Arabia (36.6 kg), and Australia (37.1 kg)[5].

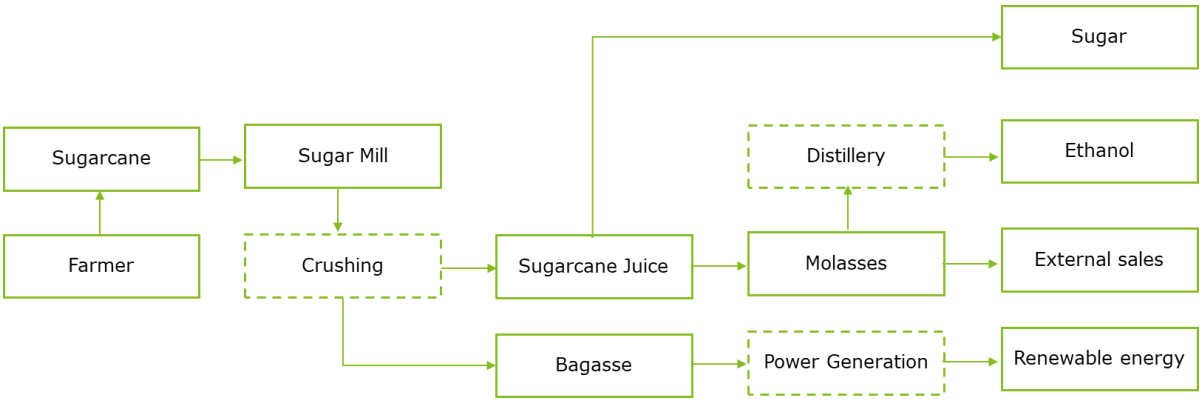
[2] NITI Aayog, Final report of the Task Force on Sugarcane and Sugar industry, March 2020
[3] Indian Sugar Mills Association
[4] NITI Aayog, Final report of the Task Force on Sugarcane and Sugar industry, March 2020
[5] Indian Sugar Mills Association (figures for 2018)

1.1.3. Relevance of by-products of sugarcane processing

The sugarcane sector has been successful in commercially utilizing the crop for purposes other than sugar production. Other than its most prominent usage in production of sugar, sugarcane and its by-products are useful raw material to over 25 industries such as, pulp & paper, boards, and pharmaceuticals, among others. Ethanol, bagasse, and molasses are three products made from sugarcane, which have high commercial use. Ethanol is a principle ingredient in alcoholic beverages, and is widely used in a range of products, from personal care and beauty products to paints and varnishes to fuel. It is also used to produce environment-friendly fuel by blending it with gasoline. In 2018, the government approved National Policy on Biofuels, 2018, and expanded the scope of raw material for ethanol production by allowing use of Sugarcane juice. The policy allowed the use of surplus grains for production of ethanol for blending with petrol. Under the **Ethanol Blended Petrol (EBP) Programme**, the Government of India has set a target to achieve 10% blending by 2022[6], and 20% ethanol-blending by 2025[7]. Bagasse is the dry pulpy residue that remains after sugarcane is crushed to extract is juice and is used as a biofuel for the production of electricity, and for manufacture of pulp and building materials. Sugar mills frequently use bagasse for meeting their electricity demands, and have now also started selling excess electricity generated, to the grid. Molasses is a thick syrup remaining after sugar is crystallised out of cane juice. It is used in baking, industrial production of vinegar and citric acid, and as a sweetener.

The graphic below depicts the processing of sugarcane for various uses:

Figure 3: Processing of sugarcane for various uses



Source: Adopted from Alpha Invesco, Keval Jha, Understanding how the Indian sugar industry works, accessed on 28 September 2020

As of 2018-19, India produces about 3 billion litres of ethanol[8], 80 Mn MT of bagasse[9], and 4.6 Mn MT of molasses[10].

1.1.4. Sector growth

Indian sugar industry is highly regulated. The quantity of sugar to be sold and exported by mills is decided by the government. Sugarcane and sugar production in India have moved on a cyclical

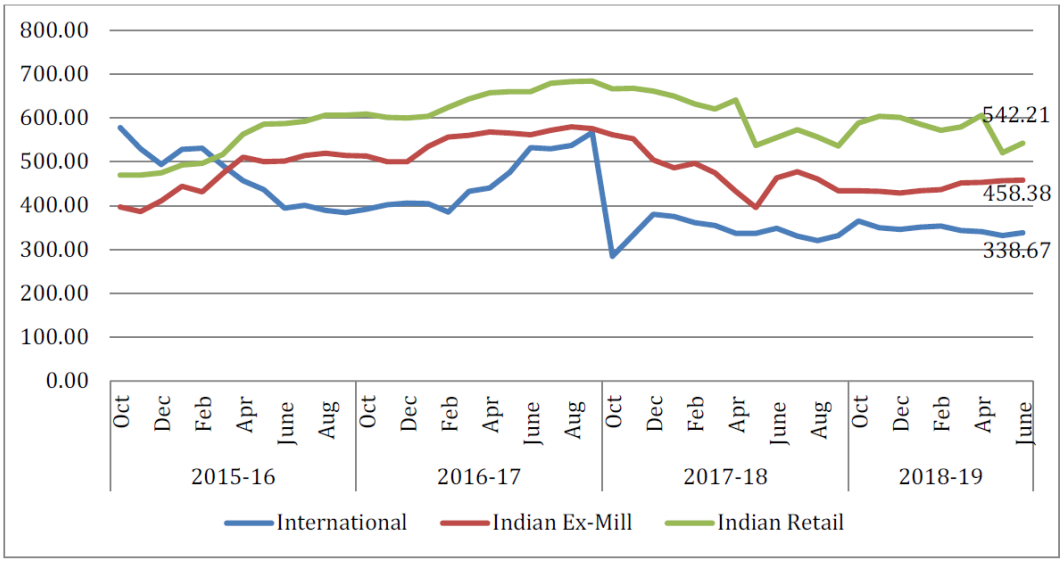
[6] Ministry of Petroleum and Natural Gas, Ethanol Procurement Policy on a long-term basis under Ethanol Blended Petrol (EBP) Programme
[7] Bloomberg Quint, India moves forward target of 20% Ethanol-Blending in petrol by 5 years, 27 January 2021, accessed on 3 March 2021
[8] USDA Foreign Agricultural Service's Global Agricultural Information Network
[9] UN Energy Statistics database
[10] Production volume of molasses across India, Statista

upward trend. It has been noted that in a sugar cycle of roughly 5 years, the industry usually experiences over-production for 3 to 4 years followed by low production for a couple of years[11].

Sugar is a sensitive commodity, as it is not only an important commercial product, but also a key commodity in Public Distribution System (PDS), and hence its prices are regulated by the government. The government fixes a **Fair and Remunerative price (FRP)** for sugarcane each year on recommendations of the Commission on Agricultural Costs and Prices (CACP), Ministry of Agriculture & Farmers Welfare, Government of India. This is the minimum price at which mills can purchase sugarcane from the farmers. The mills that procure sugarcane are mandated to purchase crops from farmers within a specified radius (Cane Reservation Area) at the government-determined FRP. In addition to this, some states announce **State Advised Price** (SAP) at levels higher than the FRP. These higher prices of sugarcane encourage more farmers to cultivate the crop. India's sugarcane production has increased from 295 Mn MT in 2000-10 to 377.7 Mn MT in 2019-20, while sugar production in the corresponding years increased from 18.5 Mn MT to 27 Mn MT (as of July 2020). The average annual demand for sugar stands at 25 Mn MT.

Thus, exports can be seen as one of the options for utilizing the surplus production. However, given that government-mandated price for sugarcane procurement in India is high, the costs of sugar in the country is higher than that of competing countries (Brazil, Thailand), and hence sugar exports from India are considered to be uncompetitive. For instance, in Brazil, Thailand and Australia, the cost of cane per ton (which accounts for 70-75% of the cost of sugar) stood at USD 25.11, USD 27.5, and USD 24.1, respectively, while in India it stood at USD 42.3 (2017-18 season)[12]. The figure below depicts that white sugar prices in India were 60% higher than international prices.

Figure 4: International vs domestic prices of white sugar (USD/MT)

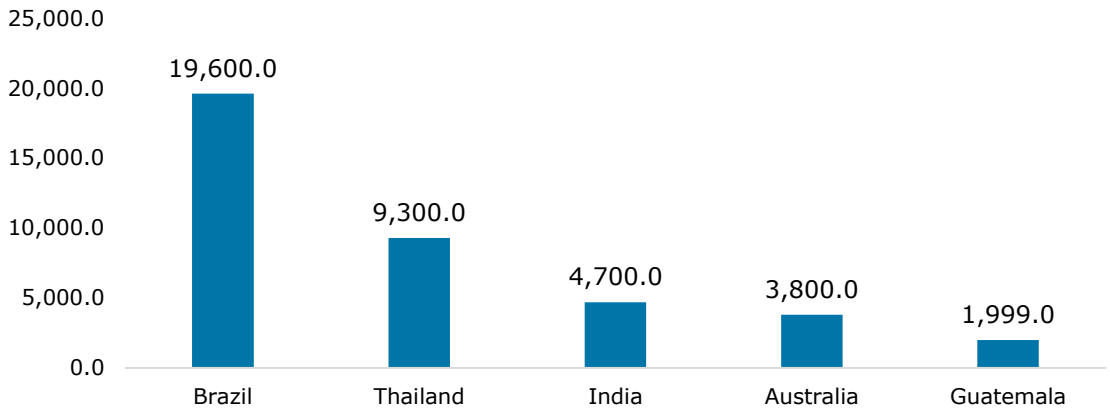


Source: Department of Food and Public Distribution

Consequently, even though India's production of sugarcane is high, its export is relatively low. The following figure depicts the export of sugar from select countries as of 2019-20.

[11] NITI Aayog, Final report of the Task Force on Sugarcane and Sugar industry, March 2020
[12] NITI Aayog, Final report of the Task Force on Sugarcane and Sugar industry, March 2020

Figure 5: Export of (centrifugal) sugar from select countries (2018-19) in '000 tonnes



Source: Foreign Agricultural Service, US Department of Agriculture, Sugar: World Markets and Trade, May 2020

In order to rectify this, the government has been providing export subsidies to help exporters. The subsidy is in the form of direct credit in the farmers' account on behalf of the mills (against sugarcane dues). The subsidies also cover marketing costs which incorporates handling, upgrading, other processing costs, international and domestic transport charges. While this has helped Indian exporters, some countries including, Brazil, Australia and Guatemala, have raised their concerns regarding this at the World Trade Organisation (WTO)[13].

Table 3: Sugar exports from India

	Quantity ('000 tonnes)	**Value (INR crore)**	**Value (USD mn)**
2014-15	1,955.2	5,328.8	730
2015-16	3,844.5	9,824.5	1,355.9
2016-17	2,544.0	8,659.5	1,186.3
2017-18	1,757.9	5,225.6	715.9
2018-19	3,989.6	9,523.1	1,305.8

Source: Agricultural Statistics at a Glance, 2019 (Directorate of Economics & Statistics), *Data sourced from Foreign Agricultural Service, US Department of Agriculture, Sugar: World Markets and Trade, May 2020; Exchange rate as of 30 March 2021

With a view to improving domestic sugar price sentiments, the government fixes indicative export targets for each mill proportionate to their sugar production (**Minimum Indicative Export Quotas**) so as to evacuate sugar stocks. MIEQs are quotas for the minimum quantity that the mills must export to ensure that excess stocks of sugar in the domestic market does not lead to a decline in sugar prices. The quotas are also tradable, hence smaller mills may trade these quotas with larger mills who have a higher capacity to export. For 2018-19, MIEQ was fixed at 5 Mn MT, against which, about 3.7 Mn MT of sugar was exported in sugar season of 2018-19[14]. No compulsion was made on sugar mills by the Government to export sugar from the country and sugar mills were free to export sugar as per their commercial decision.

In view of the huge carryover stock of sugar and estimates of surplus output in the current sugar season (2019-20), the government has allocated mill-wise **Maximum Admissible Export**

[13] The Economics Times, "Brazil, Australia lodge complaint in WTO over India's sugar subsidies", published on 01 March 2019
[14] https://pib.gov.in/PressReleasePage.aspx?PRID=1595283

Quantity (MAEQ). This is the maximum quantity that may be exported out of the country. The MAEQ was fixed at 6 Mn MT in 2019-20.

Along with lower competitiveness of sugar, regulatory intervention for exports makes export market in India vulnerable as the policies are likely to change from year to year.

1.2. Demand for sustainable production

An important development happening globally is the growth in demand of sustainable sugar. As per a report by International Institute of Sustainable Development (IISD), globally, the sale of Voluntary Sustainability Standard (VSS) compliant sugar has experienced a compound annual growth rate of 52% per annum between 2008 and 2016[15]. However, 90% of this VSS-compliant sugar comes from Latin America, specifically from Argentina, Brazil, Costa Rica and Paraguay. This report, however, also highlights that, despite the high growth of the sale of VSS compliant sugar, the overall demand of VSS-compliant sugar is still low due to limited willingness of consumers to pay a premium for sugar and sugar products owing to their negative perceptions on health.

The growth of sustainable sugar in India is still low. As per discussion with stakeholders, it was noted that this is due to lack of any premium on such sugar. Since the government regulates sugarcane price (through FRP) and sugar prices (via selling price) in India, there is limited scope for receiving any premium on sustainable sugarcane or sugar, leaving no monetary incentive for production for the mills. Also, on the institutional buyers' side, while some players have undertaken initiatives to procure more sustainable sugar, there is need for more institutional players (local and international) to actively participate in the initiative.

Another barrier to higher uptake is the lack of awareness for sustainable sugar among consumers as well as farmers. There is also lack of training and capacity building support for the farmers on cultivating sugarcane so as to reduce water usage. In order to mitigate this, the certification ensures that sustainability concerns are addressed and has a holistic approach by means of regular training and development and adequate awareness generation. Bonsucro promotes sustainable sugarcane production through increased water use efficiency, reduction in GHG emissions, lower application of chemicals pesticide, etc. Other than this, government-led **Sustainable Sugarcane Initiative** (SSI) and Solidaridad-led **Sustainable Water Fund** (FDW) have also been promoting sustainable production methods. SSI prescribes certain practices that enable higher yields with less water usage (using less seeds, raising seeds in a nursery, wider seed spacing, and better water and nutrient management). FDW supports mass adoption of water-efficient farming techniques and good agricultural practices to improve water efficiency and productivity. For instance, SSI prescribes raising sugarcane nursery using single-budded chips (conventionally, 2-3 budded sets are used and normally no nursery is prepared), transplanting young seedlings (25-35 days old), after grading (conventionally, direct planting of 3-budded chips is done), and providing sufficient moisture and avoiding inundation of water, whereby 40% of water is saved (conventionally, flooding is practiced). FDW aims to support the roll-out of proven farming techniques and the training of farmers in the application of water-efficient drip irrigation and good agricultural practices. Bonsucro standards applies to any sugarcane mill and their supplying area wishing to sell sugarcane derived products as Bonsucro certified. The Standard evaluates the outcome of practices implemented at mill and farm levels. While all these standards and initiatives are in place, it may take time for large scale adoption of sustainable production in India.

[15] International Institute of Sustainable Development (IISD), Sustainable Commodities Marketplace Series 2019, Global Market Report: Sugar, 2020

1.3. Key drivers for the industry

1.3.1 Ethanol derived from sugarcane offers promising opportunities for absorbing excess production as well as reducing fuel import costs

In 2003, the government launched the **Ethanol Blended Petrol** (EBP) programme primarily to promote environment-friendly fuels (by increasing the usage of ethanol) and reduce energy imports. As of FY18, India imported crude oil worth INR 566,540 crore / USD 77.6 bn (220.4 Mn MT). The EBP programme is a viable option for absorbing excess sugarcane production. The programme targets 10% blending percentage by 2021-22, and 20% by 2029-30. Given the rising percentage blending targets over the years, the demand for ethanol is bound to rise, and hence ethanol is a key driver for growth of sugarcane sector in the country.

Table 4: Ethanol blending targets and demand for ethanol

Year	Target ethanol blend percentage (%)	Estimated required quantity of ethanol (billion litres)
2018-19	6	2.25
2019-20	7	2.80
2020-21	8.5	3.60
2021-22	10	4.50

Source: Ministry of Petroleum and Natural Gas

1.3.2 Cogeneration of electricity from bagasse can help meet power demand in expensive manner

Bagasse cogeneration has been practiced in sugar mills since long to meet sugar mills' own energy needs. However, **supplying excess electricity to the grid has gained momentum worldwide in the last one decade**. Co-generation (onsite generation of electricity) has many advantages, including near-zero fuel cost, increased viability of sugar mills, energy security, fuel diversity, reduced transmission and distribution losses and carbon emission reduction. According to a report on Bagasse Cogeneration, bagasse-based cogeneration could deliver up to 25% of current power demand requirements in the world's main cane producing countries[16]. This is one area which India can potentially leverage to increase the overall performance of the sector.

1.3.3 Consumption of jaggery is gaining momentum as consumers are looking for healthier alternatives to sugar

As health consciousness among consumers is rising, many are preferring jaggery over white sugar. The mineral content of jaggery includes calcium, phosphorus, magnesium, potassium and iron, among others. It is known to prevent rheumatic afflictions, anemia and bile disorders, and maintain blood pressure, and hemoglobin levels. Thus, it is slowly being used as a natural sweetener (replacing sugar). Sugar recovery for different states in India lies in the range of 8.9% to 11.3% on cane (Marketing Year 2018-19), whereas, recovery of jaggery ranges from 10% to 13%[17] depending upon the variety of sugarcane, its quality, soil texture, irrigation facilities, time of cane crushing, etc. Over 70% of the world's jaggery production is in India[18]. As of 2018-19, India exported 313,826

[16] World Alliance for Decentralized Energy (WADE)
[17] International Journal of Engineering Research and Technology, New Ventures of Value-Addition in Jaggery Processing for a Dynamic Sugar Industry, Volume 09, Issue 1, January 2020
[18] Agricultural and Processed Food Products Export Development Authority (APEDA)

MT of jaggery, worth INR 606 crore (USD 230 million)[19]. Demand for organic jaggery has also been rising. There is still considerable potential for growth in the sector.

1.3.4 Sugarcane may be used in multiple industries

Sugarcane and its by-products are useful raw material to over 25 industries such as, pulp & paper, boards, and pharmaceuticals, among others. The green tops of sugarcane are important source of bio-energy (feeding of cattle) and are much in demand in rural area. Molasses is an important feedstock for the distilleries, and bagasse has been found to be a substitute for wood pulp in paper industry. The growing uses of sugarcane in these industries is likely to give further impetus to the demand for sugarcane in the country.

1.4. Key sectoral challenges

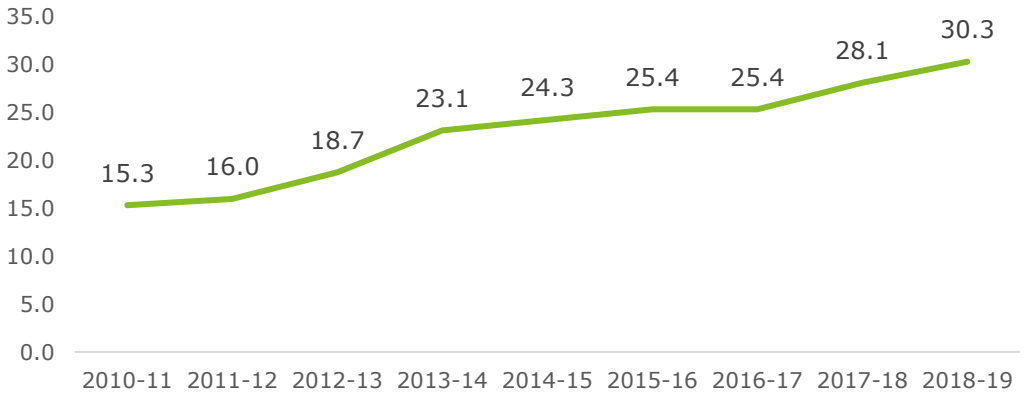
1.4.1 Low sugarcane yields in India

Despite being the second largest producer of sugarcane, **India's yield of sugarcane (69,735 kg/ha) is lower compared to that of other countries**, including Brazil (74,482 kg/ha), China (76,152 kg/ha), Indonesia (75,238 kg/ha), and Australia (80,626 kg/ha)[20]. This is a cause for concern for the industry. The low productivity indicates that there is potential for improvement, as lower productivity not only leads to inefficient utilization of available resources, but also drives down total production.

1.4.2 Government advised prices restrict selling at competitive market prices

Under FRP, the farmers are not required to wait until the end of the season for announcement of profits by the mills. The new system under **FRP assures competitive prices to farmers irrespective of the performance of the mills**. Over and above this, some of the state governments also implement a higher **State Advised Price** (SAP) to be paid to the sugarcane farmers. The assured prices to farmers lead to overproduction of sugarcane, leading to depressed prices of sugars in retail. Moreover, the rising FRP over the years has put mills under stress, leading to mismatch between the price the mills need to pay to farmers and the price they receive from the market. The following figure depicts the rise in FRP of sugarcane in the last ten years

Figure 6: Fair and Remunerative Price (FRP) of sugar, INR per kilogram

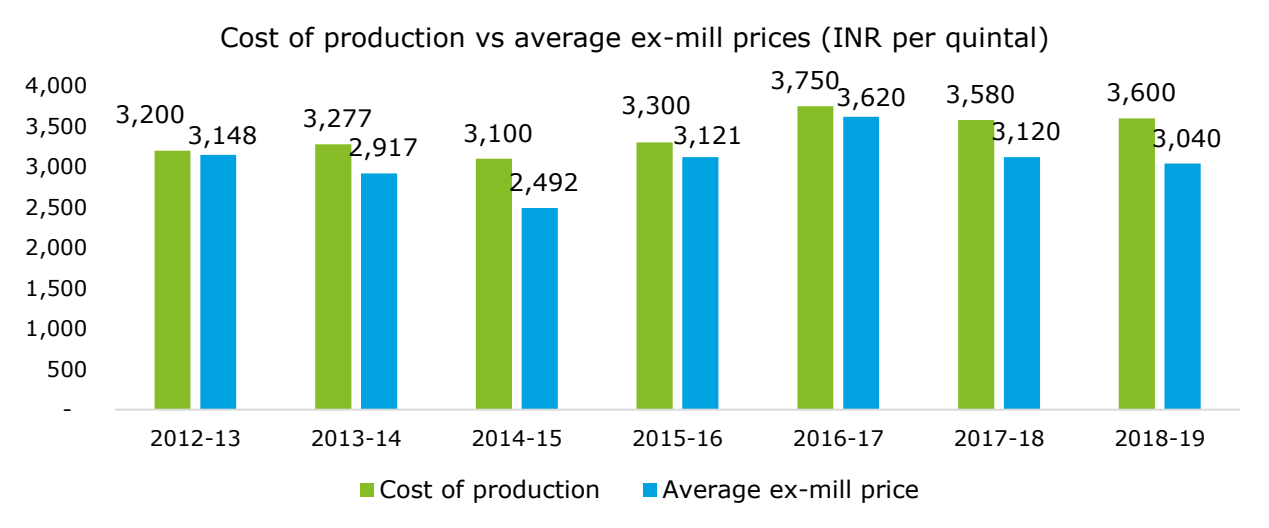


Source: Indian Sugar Mills Association

[19] Indian Sugar Mills Association
[20] Agriculture Statistics at a Glance 2019, data for all countries, including India, as of 2017

The following figure depicts the difference between cost of production and ex-mill price of sugar.

Figure 7: Cost of production and ex-mill price of sugar in India, INR per quintal



Source: Indian Sugar Mills Association

As depicted above, the cost of production has been rising (due to rise in FRP), whereas ex-mill prices have been falling.

This mismatch has also resulted in **delay in payment of farmers' dues by the mills**. This issue has aggravated in the recent years, with reduction in sugar prices, leaving the mills with fewer resources to purchase sugar in subsequent years. The delay in payments also impacts the capacity of sugarcane farmers to invest for the next cycle.

1.4.3 Water-intensive crop

Beside this, another major challenge in the sector is the **water intensiveness of sugarcane**. It requires anywhere between 1500–3500mm of water depending on the region. Additionally, production of 1 kg of sugar requires about 1500–2000 liters of water. Such high water usage has raised concerns over the sustainability of production of the crop, more so, as the groundwater levels in the country are depleting. Driven by the assured prices for sugarcane, many farmers cultivate sugarcane despite it being ill-suited in a water-poor region. For instance, Maharashtra is a drought-prone state, yet the land area under sugarcane cultivation in Maharashtra has gone up from 167,000 hectares in 1970-71 to 979,100 ha in 2019-20[21]. Sugarcane in Maharashtra's Marathwada region consumes 70% of the region's irrigation, while accounting for only 4% of its land[22]. Several studies have hence recommended shifting area under sugarcane cultivation to other crops. These studies suggest limiting sugarcane production in districts where groundwater exploitation is at safe level. Standards for sustainable sugarcane production (such as Bonsucro Standard) may play a crucial role in this considering the stress on increasing water efficiency of production.

[21] Indian Sugar Mills Association
[22] The Diplomat, India's Thirsty crops are draining the country dry, published on 6 April 2017, accessed on 1 October 2020

1.4.4 Limited focus on sustainable production

As discussed above, despite the concerns around water usage and depleting water levels, there is still limited or no focus on sustainable production of the crop. Good agricultural practices call for use of specific inputs, adoption of specific practices and irrigation techniques, and proper residue management. In India, the majority of farmers use traditional practices and apply chemical fertilisers and pesticides. However, **application guidelines are neglected**. It is still common for farmers to not wear PPE kits and safety gear while application. **Almost all farmers burn their trash after** harvest, and trash shredders are hardly available[23].

1.4.5 Sugar is considered a homogenous product

Sugar is considered a homogenous product and hence the scope for earning a premium (for certified/sustainable sugar) is limited (without losing customers). Most institutional **buyers are also unwilling to pay premium** as end consumers are mostly not concerned about the methods of cultivation for sugarcane. Organic sugar is in demand, however, due to its perceived benefits on health. Such benefits are currently being highlighted for sustainably produced sugar.

1.4.6 Lack of awareness around sustainable sugar

The awareness around sustainable sugar is still very limited in India. Until this is strengthened, the market for certified sugar is likely to be very small. The **institutional players also need to show greater commitment by demanding more certified sugar** to meet their sustainability targets. This will boost farmers' confidence as they will be reassured that sustainable sugarcane will be demanded in the market. Further, **awareness must be enhanced among end consumers** as well, highlighting the benefits of sustainable production of sugar.

1.5. Future of the sugar sector in India

Sugarcane is an important crop for the country as it not only supports livelihoods of over a million farmers but also contributes significantly to the GDP. Given its importance in the production of sugar as well as in ethanol blending, and co-generation, it is imperative that its production levels be maintained. However, given its water-intensive nature, it is critical that sustainable methods of producing the crop may be promoted at a larger scale keeping in mind the country's stressed water situation. Encouraging use of inputs as per soil requirements is also important for sustainability. The government plays a significant role in the sector, however, the private players, specifically, the institutional buyers too need to actively participate to ensure that farmers are adequately sensitized regarding the issue and are provided with enough capacity building support for sustainable cultivation. The role of the mills also become important for sensitizing the farmers regarding better cultivation practices and handholding them through the various aspects of using lesser water, adopting mechanised harvesting techniques (to reduce crop residue burning), and using only recommended quantities of fertilisers and pesticides.

[23] International Journal of Current Microbiology and Applied Sciences, Impact of Straw Burning Practices on Economics of Sugarcane in South Gujarat Region, India ISSN 2319-7706, Volume 7 Number 09, 2018

Chapter 2: Key Findings

This section highlights the specific findings for the business case study based on discussions with stakeholders and secondary research.

2.1 Sugarcane is a profitable crop for farmers due to its sturdiness and high FRP.

The crop's sturdiness attracts farmers - mature cane withstands heavy rainfall or dry spells and is also less vulnerable to pests and diseases compared to other crops. Cane is crushed for four months in a year, however, the demand for sugar is across the year. As per government law, millers must purchase entire production of cane from the farmers in their influence area. Hence, marketing of sugarcane calls for minimal effort from farmers. The government-mandated FRP and SAP make the crop profitable for farmers, and thus they tend to continue its cultivation irrespective of the availability of water resources, fertilisers, pesticides, etc.

2.2 The margins are low for the millers.

Owing to high FRP of sugarcane, the cost of production of sugar in India is high, rendering it uncompetitive in the international market. The government has taken a few progressive steps recently, like setting a minimum selling price (MSP) for sugar. However, the industry requires that the MSP match cost of production since it is economically unviable to increase sugarcane price (FRP) and not increase sugar price.

2.3 Revenue sharing is important for the industry to be sustainable.

The Government of India constituted a committee in 2012, chaired by C. Rangarajan to comprehensively look into all the issues related to regulation of the sugar sector, and suggest ways and means to change those regulations in a manner that better promotes efficiency and investments. The committee released its report in 2013, in which it had recommended a Revenue Sharing Formula (RSF) for the industry, wherein the revenue earned from sale of sugar be distributed between grower and the mill. The panel had suggested that 75% proceeds from the sale of sugar should go to growers while the rest should remain with the mill as their operational expenses. This will entail paying the FRP but doing away with the SAP (and replacing it with RSF determined price). This shall balance the interests of both sugarcane grower. However, the RSF is yet to be implemented across the country. The farmers are apprehensive of the implementation as they perceive that sugar factories show losses or very little profits, hence denying them of their legitimate stake in revenue.

2.4 India witnesses surplus sugar production once in every 3-4 years.

Export is seen as one of the options for utilizing the surplus production. However, given that government-mandated price for sugarcane procurement in India is high, the costs of sugar in the country is higher than that of competing countries (Brazil, Thailand), and hence sugar export from India is considered to be uncompetitive. According to the World Trade Organization's "Agreement on Agriculture", India can give subsidies on transportation, marketing, handling, and processing of sugar till 2023. However, there are multiple levels of compliance, rules, and standards that are to be adhered to, with respect to the packaging, transportation, and a onetime quantity of export. Consequently, even though India's production of sugarcane is high, its export is relatively low.

2.5 Ethanol and co-generation may be deemed as an appropriate alternative to excess sugarcane production.

Industry experts suggest that excess sugarcane production in India be diverted to ethanol. Ethanol production can lead to lower emissions and lower fuel import costs while absorbing excess production. Currently, ethanol blend is 5% in fuel, if it is to be increased to 20% (government-set target), there may be a need to look towards other food grain sources.

Co-generation is also important to absorb excess cane. However, most states in India are self-sufficient in power generation. Nonetheless, other sources/inputs of power generation- coal, water are non-renewable, hence, here is a need to stress on green fuels.

2.6 The market for sustainable sugarcane production is still nascent in India.

For sustainability to really become mainstreamed, the benefits of sustainability must align with economic gains. The economic benefit may not always be in the form of a premium, as yield improvement, less water usage (hence cost saving), more resilient crop variety are also economic benefits. Farmers/mill workers also see benefit in increasing social awareness about labour rights. Unfortunately, there are no supporting government policies to give a push to sustainable sugar. However, many stakeholders assert that while sustainability can exist in the absence of economic benefits, it cannot thrive and sustain in the long-term. Economic benefits including a premium for producing and selling certified is an expectation from both farmers as well as the mills.

Despite this, some farmers and mills have adopted Bonsucro standards. However, the volume of production and sale of certified sugar is negligible in India as only few large buyers procure certified sugar, that too in a limited quantity. Other large/ institutional buyers are still unwilling to procure certified sugar as most consumers are not currently showing any tangible concerns regarding sustainable sourcing of sugar.

2.7 While the industry experts consider Bonsucro to be a well-thought out certification, there are some gaps that need to be plugged.

The awareness for Bonsucro in India is still limited. Until this is strengthened, the market for certified sugar is likely to be very small. Initially, Bonsucro standards were meant for large farms. The average farm holding size in India is about 1 hectare. This led to a lack of relatability for farmers and mills willing to practice Bonsucro standards in India. Thus, in 2018, the smallholder standards were developed for smaller farmers, making it more adaptable to the region. The Standards were originally in English, however, given that English is not a medium of communication in rural India, they are also being translated in local languages now – Tamil version of Standards was released for farmers of EID Parry for better understanding.

Presently, the protocol for audit is same across the globe, implying there are no differences in audit mechanisms for large and small farmers. The "one size fits all" approach makes it difficult for the standards to be flexible. Indian agriculture is not monoculture, so on the same small farmland, there are multiple crops grown (unlike countries like Brazil where a single large farmland has multiple acres of a single crop). Hence, the audit companies need to be sensitised to deal with this since their processes are more aligned to international practices.

Another issue is that currently only big mills can afford certification (due to lack of premium). Taking certification to the second or third tier mills is required to mainstream Bonsucro.

The limited applicability of credit trading platform is another concern. While the platform is in place, the small volumes of credit trading, make it very expensive to trade on it. The trading charges are fixed, making it less economical to trade the credits. Waving off transaction charges for the initial couple of years, or charging a fixed percentage of transaction costs would be more economical for the mills and also encourage higher trade.

2.8 A major benefit of Bonsucro certification is the data availability.

Prior to adopting Bonsucro, the mills did not maintain extensive data on sustainability and labour practices (water usage, GHG emissions, fertiliser used, age of workers, etc.). And even those who did, the data was scattered across multiple departments, leading to limited use of data for decision making. With Bonsucro, the mills need to maintain data for the Bonsucro calculator. The data may be used for assessing gaps in the system as well as viewing the benefits accrued, thus helping in decision making on a wider scale. For example, data may be used to assess the training needs and develop focused interventions in that particular area.

Other benefits include reduction in water usage and fertiliser use and savings in terms of more efficient practices. The mills have reported benefits in terms of higher energy conservation, more focused training programs, and enhancement in reputation of the mill.

2.9 The Standard also align with the UN SDGs and hence contribute to countries' achievement of SDGs.

Standards propagate responsible consumption and production, promote decent work practices, work towards clean water and sanitation facilities, and make effort towards preserving climate change. The Standards align with the UN SDGs and the SDG goals tracked by the Standards also align with India's commitment to the SDGs. The mills have been making concerted efforts to achieve sustainable outcomes. For example, the mills indulge in recycling of water, treat affluent before discharge, promote unstallation of drip systems at farms, and use cane responsibly by utilizing all its by-products like bagasse, molasses, ethanol, etc.

2.10 Sufficient demand for certified sugar needs to be created by the buyers

Currently, there is no major demand for certified sugar except from some beverage manufacturers. Given that sugar is not seen as a differentiated commodity, most buyers are buying non-certified sugar. More institutional buyers need to be attracted to procure Bonsucro sugar, by demonstrating the sustainability benefits and the associated improvement in their own brand and reputation.

2.11 Currently, only the millers are involved in training the farmers on the standards.

As per discussions with stakeholders, the mills are not taking up sustainability projects in mission mode. The mills need to have clearly defined objectives, scopes, and implementation timelines and milestones, as well as measurable outcomes and service levels in order to be able to mainstream adoption of certified sugar. There is need for more awareness generation among the farmers as well as the household consumers on benefits of certified sugar. The institutional players also need to be show greater commitment by extending their training and development initiatives for sustainability, as well as generating more demand for certified sugar. While some international players are active in the space, more domestic players need to come forward so as to boost demand.

2.12 More awareness needs to be created for farmers as well as household consumers.

While farmers and consumers are aware of organic sugarcane and organic sugar, there is a considerable gap in awareness regarding certified sustainable sugar. Further, while the consumers are open to purchasing organic sugar (despite its higher price) due to the perceived health benefits, the openness for purchasing certified sugar is not evident as it does not directly benefit the consumers).

2.13 More government sensitization on promoting sustainability may help accelerate the change.

Once a business case is established for sustainable sugar, it may be a logical step to involve the government, KVKs, and international donor agencies to further widen its reach. The NGOs may also involved and sensitised eventually. There is a need for a framework to leverage government schemes and work with stakeholders across the agriculture stakeholder spectrum to increase awareness and promote sustainability adoption.

2.14 Premiums from certified sugar are important for Bonsucro certification to be financially sustainable

The society derives value from Bonsucro certification in terms of reduction of environmental impact and championing human rights. However, for certification to be purely financially remunerative it is essential that mills obtain a premium for certified sugar. This will help offset the investments made in both direct and indirect avenues.

Chapter 3: Establishing a Business Case

This section elaborates findings regarding the assessment of mills' costs and benefits.

3.1. Mill analysis

In this section the cost structures of the four mills have been studied. To maintain strict confidentiality, the four mills are referred to as X1, X2, X3 and X4.

Based on interactions with the mills the figures pertaining to each cost headings have been incorporated. The major cost headings which have been used as part of this study are:

- *Direct costs*: Direct costs include costs directly attributable to the Bonsucro certification process. These include cost of pre assessment, cost of audit, membership fees.
- *Training costs*: These costs include cost of trainings associated with Bonsucro certification.
- *Manpower costs*: These include the manpower costs associated with personnel involved in the certification process.
- *Cost for maintenance of human right and labor standards including a safe and healthy working environment:* Include cost of proving drinking water, first aid, protective equipment and other necessities as mandated by Bonsucro.
- *Cost of Biodiversity and ecosystem services*: Include cost of implementation of Environmental Impact and Management Plan, cost of soil and/or leaf analysis, cost of awareness generation campaigns on approved fertilizers and agro chemicals.
- *Improvement in key business areas*: Costs for improving business performance and the cost of setting up and maintaining grievance and dispute resolution mechanism.
- *Cost of Organization of farmers*: This includes cost of extension services (other than human resource and training costs).

The annual average costs for the four mills in the period post certification are summarized in the following table (Costs in INR):

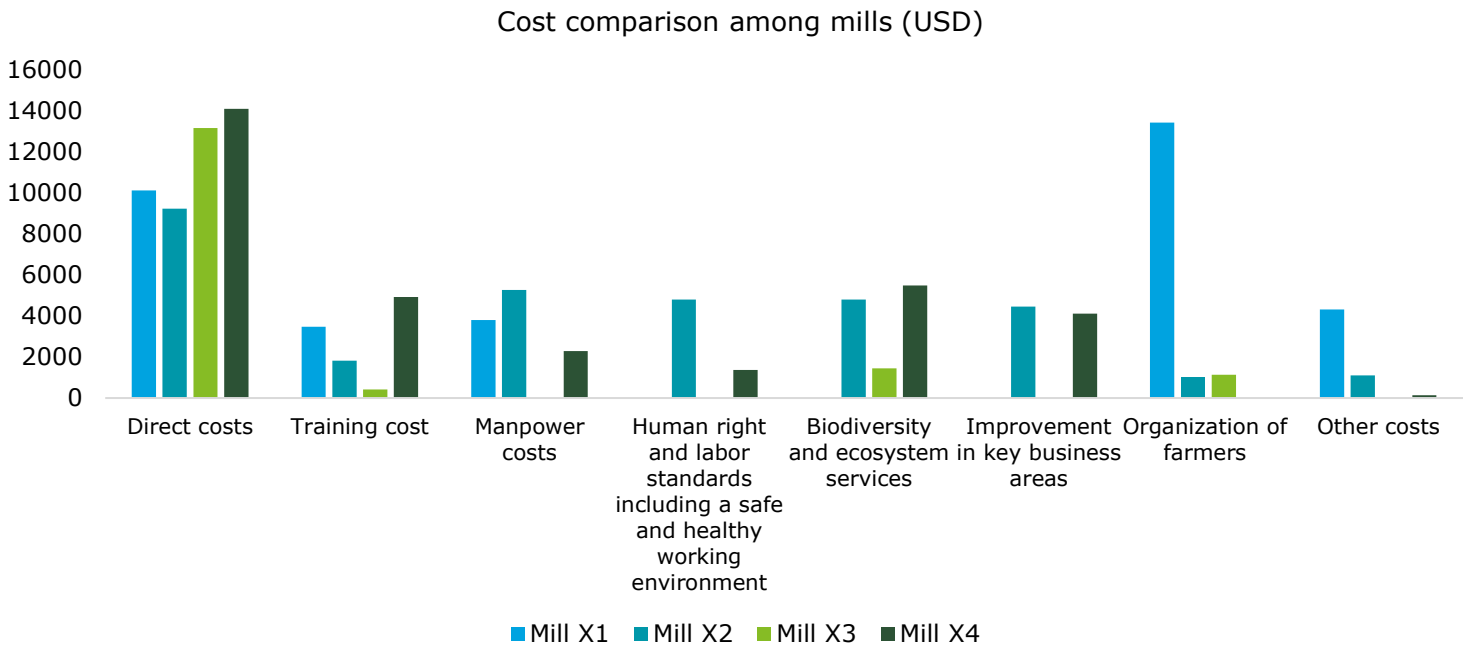
Table 5: Average annual costs for the mills

Cost heading / Cost in INR	Mill X1	Mill X2	Mill X3	Mill X4
Direct costs	738,000	673,975	961,068	1,028,333
Training cost	254,000	132,500	30,000	360,000
Manpower costs	277,750	384,000	-	166,667
Human right and labor standards including a safe and healthy working environment	-	350,000	-	100,000
Biodiversity and ecosystem services	-	350,000	105,565	400,000
Improvement in key business areas	-	325,000	-	300,000
Organization of farmers	980,000	75,000	82,875	-
Other costs	315,000	80,000	-	10,000
SUM in INR	2,564,750	2,370,475	1,179,507	2,365,000

Some of the mills have not attributed any amount for certain cost headings (for example Mill X1 for safe and healthy working environment, biodiversity and ecosystem services, improvement in key business areas). In certain cases, the mills consider expenditure as part of the normal business as usual (BAU) operational activities and do not attribute the same as part of the Bonsucro certification process.

In terms of United States Dollars (USD) (assumed that 1 USD= 73 INR) the following graph shows how the annual average costs have varied across mills:

Figure 8: Cost comparison among mills (Cost in USD)

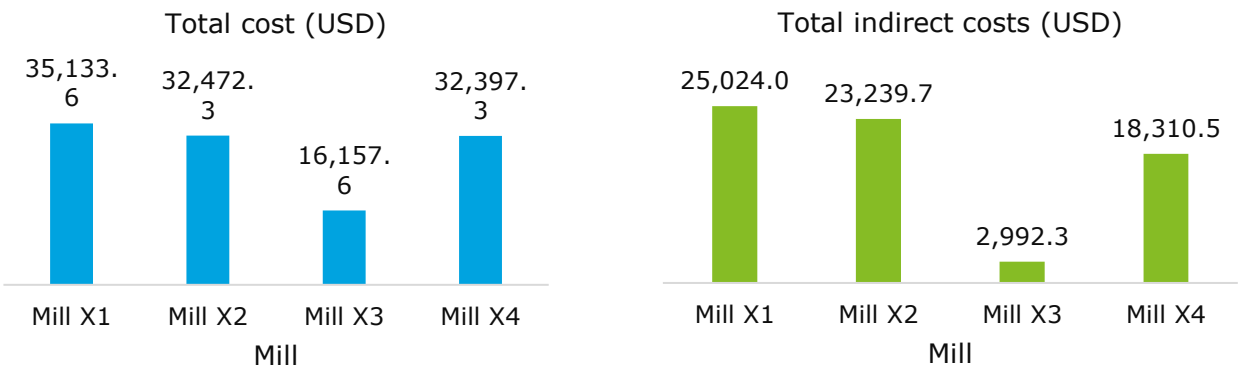


The graph illustrates that all the mills have incurred expenditure under direct cost headings. The variations across direct costs are less extreme when compared to other cost headings. As mentioned earlier, some of the mills have not reported figures across some of the heads. Some of the key reasons are listed below:

- **As mills embark on the certification journey, some of the mills are ahead of the curve on account of being certified earlier**. For such mills due to the experience with sustainability standards, some costs have decreased with time as the team has become more experienced. Some of the costs are also not considered to be uniquely attributable to the Bonsucro certification process as explained further.
- While Bonsucro has significantly contributed to the overall sustainability agenda of the mills, the mills themselves even prior to certification had a level of awareness of sustainability. Thus, many cost items are taken as normal business expenditure, not being tied to Bonsucro certification.

The following graphs illustrate the total costs and the total indirect costs (annual averages post certification) across the four mills.

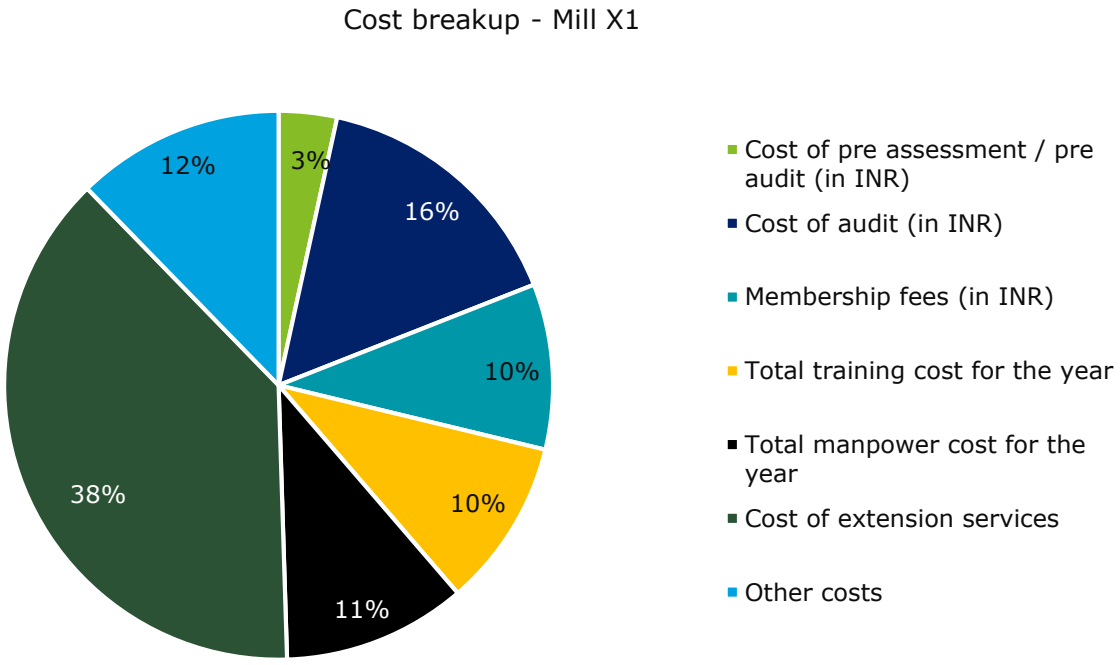
Figure 9: Total costs and Indirect costs for mills (USD)



Three of the four mills have similar cost trends with one mill being significantly lower than the others. This is attributable to an earlier certification date which has allowed the costs to be rationalized across a wider time period and the teams' greater experience in implementation of standards.

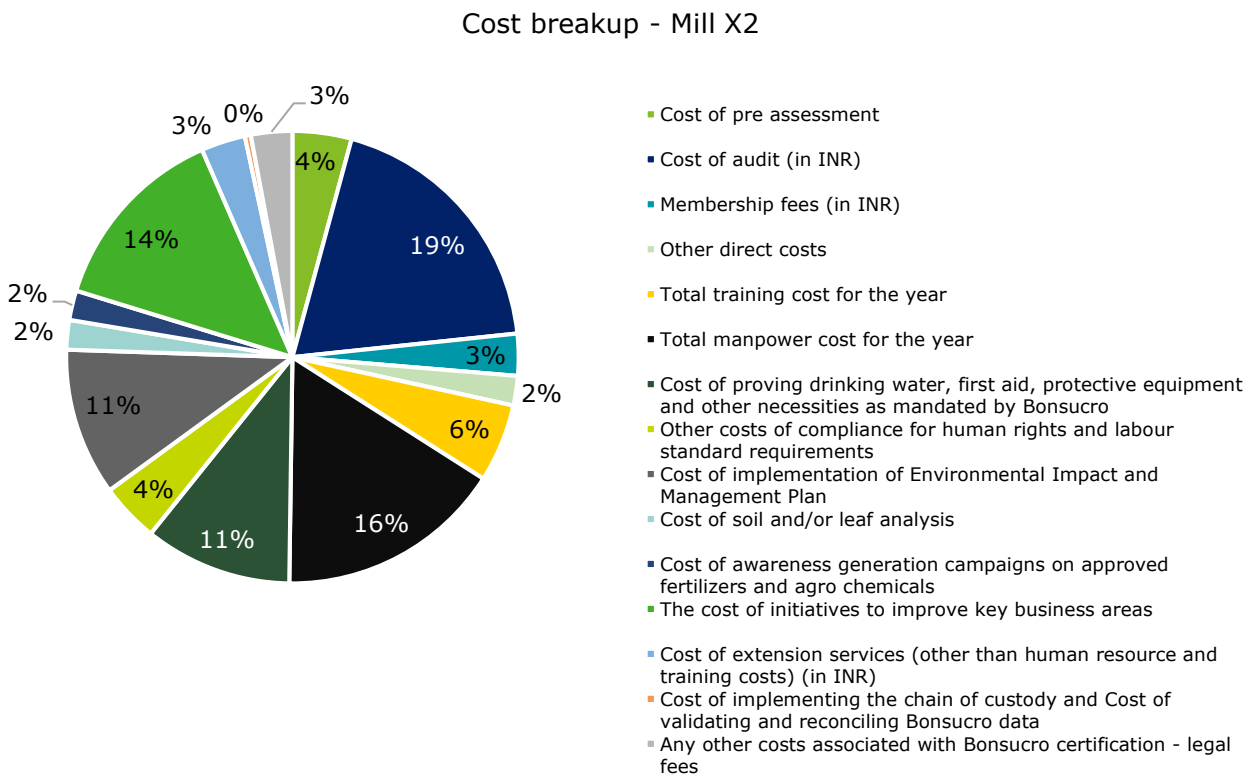
The details of the cost breakup follow:

Figure 10: Cost structure for Mill X1



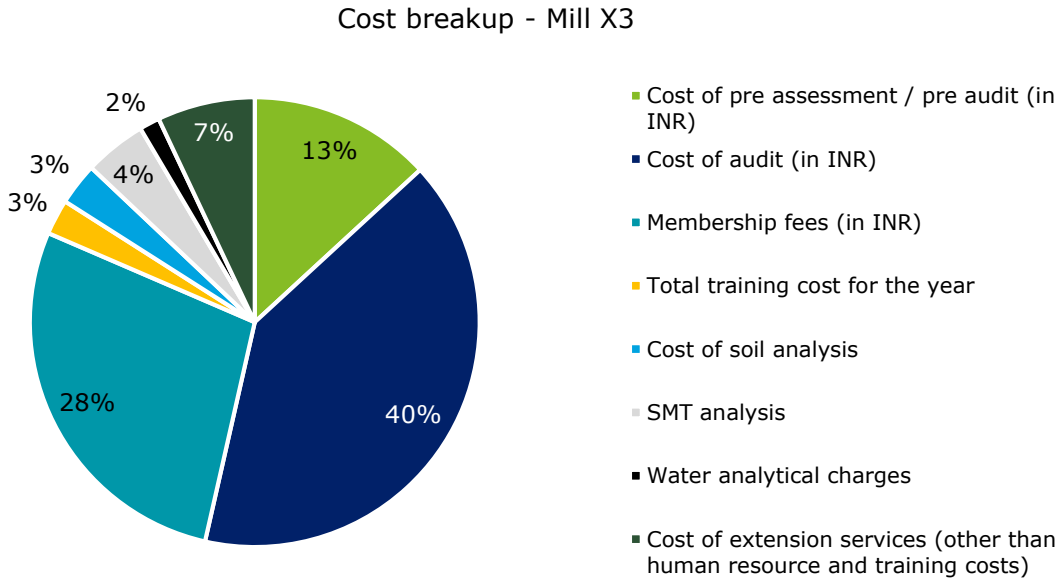
For mill X1 the highest cost is the cost of extension services. This illustrates the effort expended by the mills in mainstreaming sustainability standards across its various stakeholders.

Figure 11: Cost structure for Mill X2



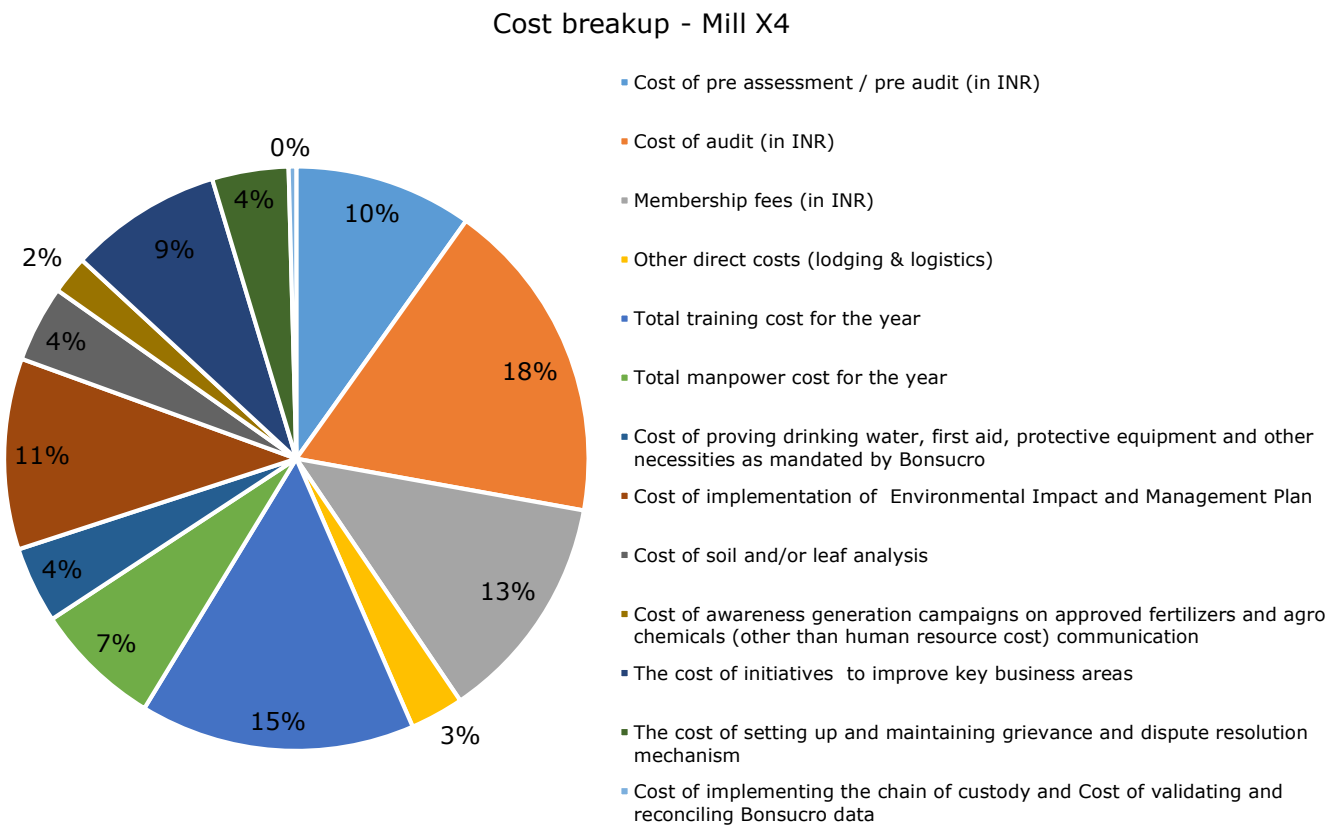
For Mill X2 the highest cost is the cost of audit followed by the manpower cost.

Figure 12: Cost structure for Mill X3



For Mill X3 the highest cost is the cost of audit followed by the membership fees.

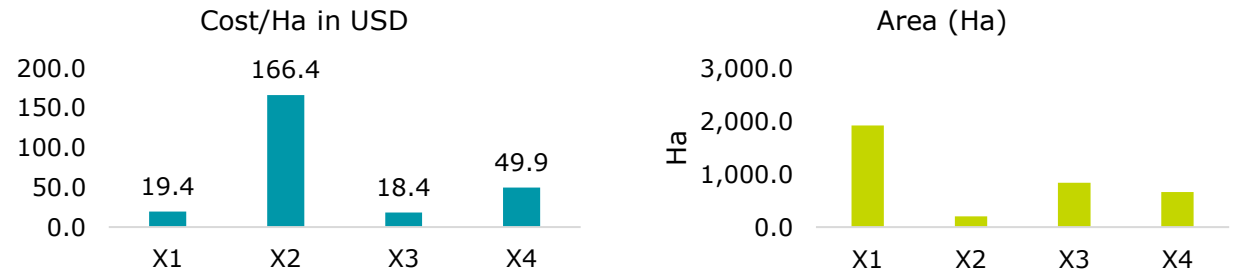
Figure 13: Cost structure for Mill X4



For Mill X4 the highest cost is the cost of audit followed by the cost of training.

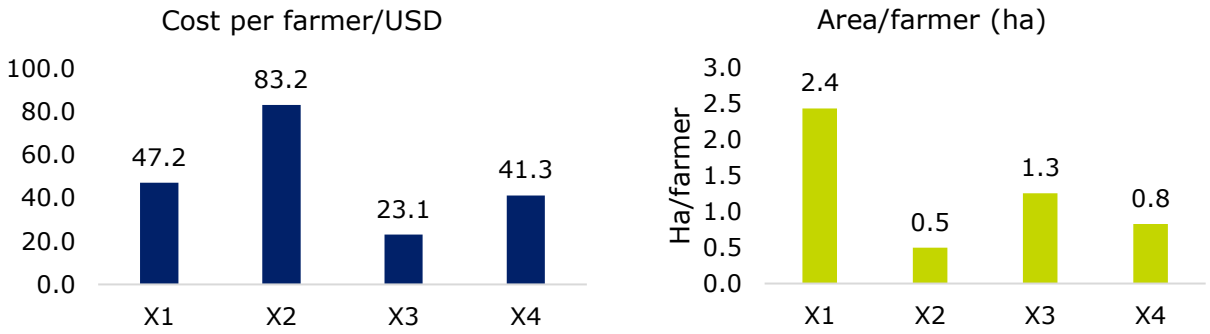
The variation of the total costs for the mills with respect to unit areas and per farmer is explored. The following two graphs give the cost per hectare and the certified area for the mill.

Figure 14: Costs in terms of unit areas and per farmer



The above two graphs demonstrate that mills X1 and X3 have comparatively higher areas. For these two mills the cost per unit area is lower than its peers. This establishes a link between area of certification and the cost per hectare where groups of mills with higher area have lower unit costs. In the next figure the variation of costs per farmer and area per farmer is explored.

Figure 15: Comparison of costs and area per farmer



From the previous two graphs it is clear that area per farmer is higher for mills X1 and X3 when compared to its peers. These two mills (X1 and X3) have lower cost per farmer when compared to its peers (X2 and X4). This shows a link between increasing unit farm size and reducing cost per farmer for groups of mills. Some of the costs associated with certification are fixed costs (for example cost of training content) while other costs like cost of protective equipment vary with increasing number of beneficiaries. Thus, with larger farm size it is possible to gain advantages of economies of scale.

Financial analysis

This section highlights a financial analysis that gives insights into the benefits of certification.

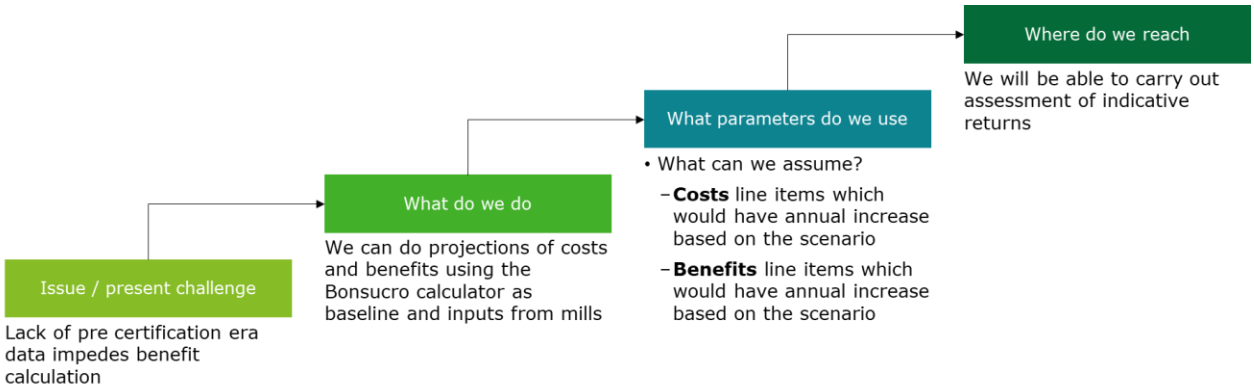
In the previous section an assessment of the major direct and indirect costs associated with certification as well as cost structure of individual mills and comparison of unit costs was carried out. This section focuses on an estimation of the benefits associated with certification to give a holistic view of the financial advantages. This analysis gives insights into both cash outflows (costs) and cash inflows (benefits) which will help estimate net present value (NPV), return on investment (RoI) and social return on investment (SRoI).

Net Present Value (NPV): Net present value (NPV) is the difference between the present value of future cash inflows and the present value of future cash outflows over a period of time. NPV is typically used in investment planning to analyze the profitability of a project.

Return on investment (RoI): This figure reflects the efficiency of the investments in sustainability from a business point of view and for the purpose of this study includes the benefits from certified sugar sales.

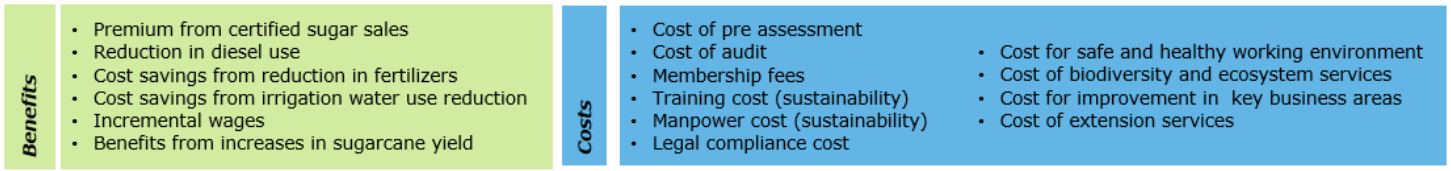
Social return on investment (SRoI): For the purpose of this study, SRoI includes values not defined in traditional financial statements and considers benefits to the society, environment and other stakeholders.

The methodology to conduct the analysis is presented in the following diagram.



The mills have did not have access to cost and benefit data for the pre-certification time. Based on the Bonsucro calculator obtained from mills and structured interviews, critical datapoints were obtained. A model was developed to take in cost and benefit data to project cashflows over a five-year period. The key datapoints for the model are mentioned in the following figure.

For a robust analysis five distinct scenarios were considered and a sensitivity analysis was performed



to see how the NPV, RoI and SRoI varies under different circumstances. As costs and benefits may change at different rates in the future it is important to carry out a sensitivity analysis to see how the financial results vary in different conditions.

The scenarios are illustrated as follows:

#	Scenario	Costs to be varied	Benefits to be varied
1	High Cost (5% annual growth for cost headings) Low Benefit (2% annual growth for benefit headings) Premium (4% premium over non-certified sugar)	• Direct costs • Training cost (sustainability) • Manpower cost (sustainability) • Legal compliance cost • Cost for safe and healthy working environment • Cost of biodiversity and ecosystem services • Cost for improvement in key business areas • Cost of extension services	• Growth of percentage of Bonsucro certified sugar • Quantity of sugar produced • Price of sugar • Rise in Yield • Premium for certified sugarcane
2	Low Cost (2% annual growth for cost headings) High Benefit (5% annual growth for benefit headings) Premium (4% premium over non-certified sugar)		

#	Scenario	Costs to be varied	Benefits to be varied
3	Med Cost (3% annual growth for cost headings) Med Benefit (3% annual growth for benefit headings) Premium (4% premium over non-certified sugar)	• Cost of implementing the chain of custody and Cost of validating and reconciling Bonsucro data • Other costs not included above	
4	Med Cost (3% annual growth for cost headings) Med Benefit (3% annual growth for benefit headings) Premium (0% premium over non-certified sugar)		
5	Med Cost (3% annual growth for cost headings) Med Benefit (3% annual growth for benefit headings) Premium (4% premium over non-certified sugar but 50% of the certified sugar is sold)		

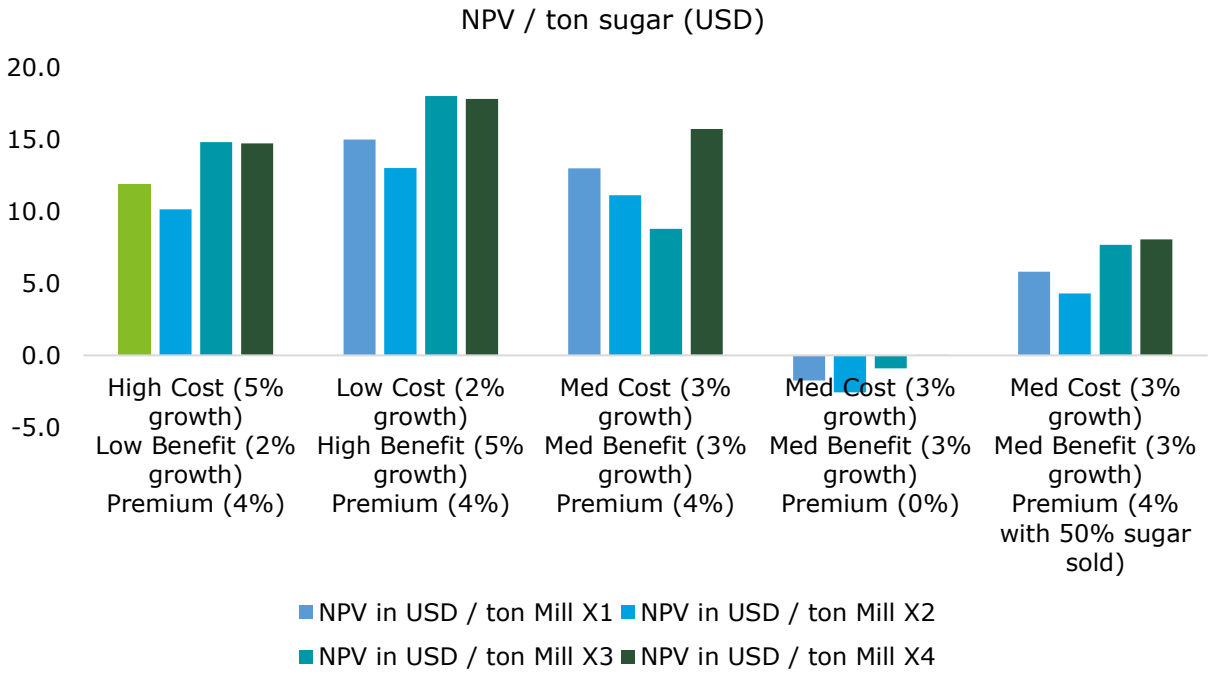
Assumptions made:

- *Premium from certified sugar sales* – from stakeholder discussions with the mills, it was highlighted that majority of buyers are yet to accede to paying premiums. Hence, a scenario has been constructed to account for this.–Interactions with the sugar buyers reveal that premium payment is usually confidential data. Considering inputs from the buyers, 4% premium for certified sugar over non-certified sugar has been assumed. The percentage of certified sugar being produced in the mill has been set based on inputs from the mills.
- *Savings from diesel use reduction* –5% reduction in diesel use initially and the amount saved would increase by 5% every year has been assumed. Diesel price is assumed to rise by 10% every year.
- *Savings from reduction in fertilizer use* - 5% reduction in fertilizer use initially and the amount saved would increase by 5% every year has been assumed. Fertilizer price is assumed to rise by 10% every year.
- *Cost savings from irrigation water use reduction* –5% reduction in electric power in the first year and the amount saved would increase by 5% every year has been assumed.
- *Incremental wages* –A portion of the incremental wages paid to mill employees over minimum wages as a benefit (positive cashflow) for the calculation of NPV has been assumed.
- *Benefits from increases in sugarcane yield* –3% rise in yield and a 3% rise in cane price has been assumed.

- For return on investment calculation (RoI) only the premium for certified sugar has been considered. For social return on investment the other benefits mentioned above have been considered as well.
- It is to be noted that for some of the mills the datapoints for the above-mentioned benefits are not tabulated in the Bonsucro calculator – thus, these parameters could not be included in the model.
- A discount rate of 6% in line with India – 10 year Government bond yield

The following graph illustrates how the NPV has varied per ton of sugar.

Figure 16: Net Present Value per ton of sugar



Key Takeaways

From the above graph, the following conclusions may be drawn:

- The four mills follow the same general trends in NPV. As benefits have risen so has the NPV and as costs have risen the NPV has fallen.
- When no premiums have obtained, for three of the mills the NPV is negative.
- Obtaining premium will speed up recovery of investments
- Even if 50% of the sugar is sold at a premium, in such a case as well the NPV is positive.

The next part of this section focuses on – the return on investment and the social return on investment.

Figure 17: Average Return on Investment - Sensitivity analysis

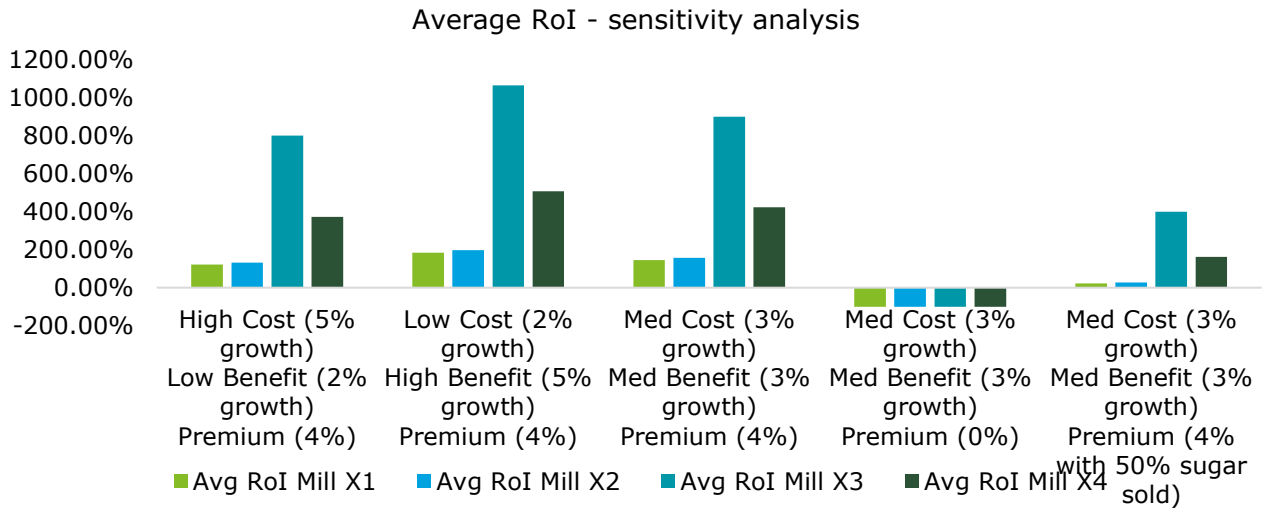
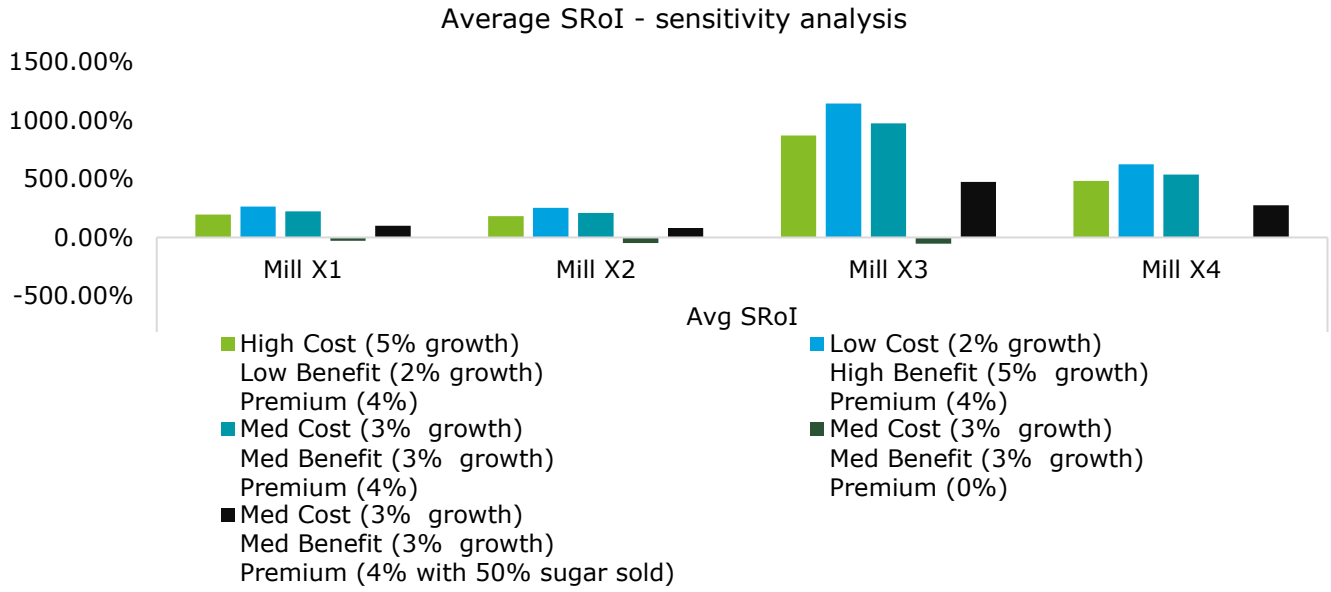


Figure 18: Average Social Return on Investment - Sensitivity analysis



Key takeaways:

- There is a significant variation in returns across mills
- Even if cost have high growth, presence of premiums will give mills a positive return
- It is essential for mills to obtain premiums from sale of certified sugar for certification to be financially remunerative
- Cost base has a significant impact on NPV/RoI – for NPV/RoI to be high, supporting costs will have to come down

3.2. Alignment to UN SDGs

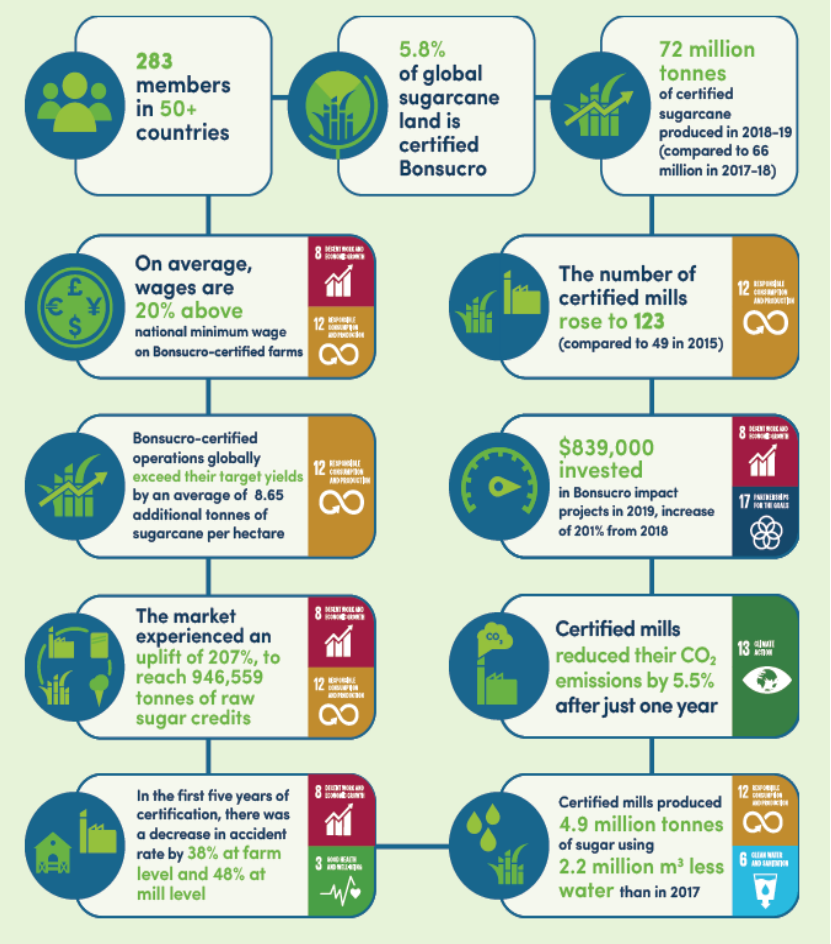
3.2.1. Alignment of Bonsucro with SDGs (Global level)

Bonsucro strives to promote investments that support the sugarcane sector in lowering its contribution to climate change. Through adoption of Bonsucro, there has been reduction in GHG emissions, water use and chemical application. Additionally, it has led to a reduction in accident rates at farm and mill levels and enhanced gender equality. All these aspects have not only positively impacted the lives of people but has also contribution to achievement of UN Sustainable Development Goals.

It focusses on seven SDGs, including Good health and well-being, Decent work and economic growth, Gender equality, Responsible consumption and production, Clean water and sanitation, Climate Action, and Partnership for the goals. The following figure indicates the SDG alignment of Bonsucro.

Through its analysis of certification data, Bonsucro has potentially avoided 200 million Kg of CO_2 from entering the atmosphere during their first year of certification[24]. Additionally, at Bonsucro-certified mills, water use decreased, dropping from 8.45 m^3/tonnes to 1.66 m^3/tonnes of finished products during 2013-19[25]. Similarly, artificial fertiliser use has reduced for Bonsucro-certified farmers[26].

Figure 19: Alignment of Bonsucro with SDGs



Some of the positive externalities from Bonsucro in terms of SDGS have been highlighted below:

SDG 8: Decent work and Economic Growth

Working in sugarcane production, workers may experience risks including fire hazards, toxic substances, repetitive actions, heavy load lifting, overexposure to sunlight and heat stress. Hence certified mills are required to improve knowledge on health and safety risks and design sufficient training materials to help farmers adopt effective management practices. This has resulted in reduction in accident rates at both mill and farm level.

[24] Bonsucro Outcome Report 2019, Version 1.0, April 2020
[25] Bonsucro Outcome Report 2019, Version 1.0, April 2020
[26] Bonsucro Outcome Report 2019, Version 1.0, April 2020

Source: Bonsucro

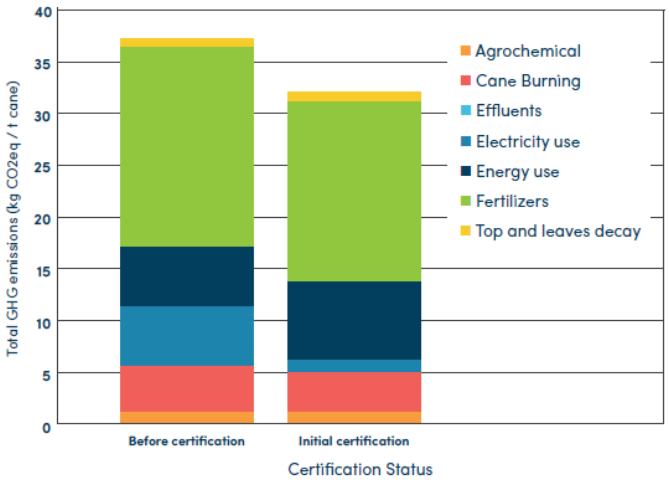
Figure 20: Accident rate at farm level and mill level

Source: Bonsucro Outcome Report 2019, Version 1.0, April 2020

SDG 13: Climate Action

Bonsucro also promotes reduction in GHG emissions. By analysing Bonsucro data between 2013 and 2018 on GHG emissions generated before and after certification for six Bonsucro-certified mills, Bonsucro found that entities were 14% more likely to reduce GHG emissions at the farm level after certification than prior to certification.

Figure 21: Key drivers of GHG emissions (farm level) before and after certification



Source: Bonsucro Outcome Report 2019, Version 1.0, April 2020

3.2.1. Alignment of SDGs at mill-level

This sub section highlights various initiatives taken by mills and their alignment to various United Nations Sustainable Development Goals.

Table 6: Alignment of mill initiatives with UN SDGs

SDG Goal	EID Parry	Olam International	Baramati Agro	Dalmia Bharat
	• Imparts training to all employees in use of PPEs.	• Runs campaigns in farming communities and factories on health, hygiene and nutrition.	• Annual medical check ups for mill employees. • Dedicated doctor to attend to farmers. • Own health center at factory premises.	• Tie-up with hospitals, provision of first aid room. • Annual health check-ups for employees, Doctor visiting the facilities. • Availability of ambulance at the unit in case of mishaps.
	• Promotes non-discriminatory practices at farm level.	• Conducts gender sensitivity workshops in communities. • Created milestone for residential training of 600 sugarcane women farmers at VSI Pune on sustainable sugarcane practices	• Equal opportunities to all employees irrespective of gender at the time of recruitment.	• Promotes non-discriminatory practices at farm level.
	• Treats its discharge in treatment plant; treated affluent is used for irrigation for own cane farm. • Installed Zero Liquid Discharge system	• Runs campaigns in farming communities for clean water and sanitation, not only for farmer but also for field labours. • For factory clean water arrangement is being done for all employees and workers at factory site.	• Installed RO system at villages. Water is priced at INR 2 per 20 litres.	• Installed water coolers, dispensers, and RO plant for mill workers.

SDG Goal	EID Parry	Olam International	Baramati Agro	Dalmia Bharat
	No information	• Follows ILO Conventions on human rights and labour practices. • Conducts regular awareness sessions on Fair Employment Practices; Human Rights and Workplace rights • Monitors child labour practices in its operations.	• Training programs deployed for both farmers and mill employees. • Factory provides inputs like fertilizers, advances, irrigation equipment, etc. to farmers.	• Pays the workers over and above the minimum wages to ensure their economic well being.
	• Indulges in 100% recycling of water– approx. 17 crore litres of water was recycled last year. — Treated affluent is used for irrigation for own cane farm. • The mill recommends fertiliser use based on existing soil nutrients.	• Climate smart sugarcane farmer support program (Madhu Shree) helped save 61 bn litres of water. • Phase II of Madhu Shree programme (Climate Smart Agriculture- CSA) focusses on improving soil health, integrating pest management, water use efficiency and demonstrating the use of green energy	• The mill has a zero-discharge policy. No polluted water is discharged outside. • The company has created forest land and treated waste water is discharged here.	• Follows a no wastage policy and optimized usage, wherein all non-hazardous waste is disposed to authorized retailers; hazardous waste like oil and grease is mixed with bagasse for co-generation. • The surplus affluent after recycling is sent to farmers for irrigation through its pipe network.

SDG Goal	EID Parry	Olam International	Baramati Agro	Dalmia Bharat
	• Adopted a separate Bonsucro training capsule wherein an AC Bus goes around the village to educate farmers on sustainable practices (Pre-Covid). Now, there is a digital Farmer Connect app for the same (Post-Covid).	• Climate Smart Agriculture (CSA) farmer support program, Madhu Shree – emphasis on drip irrigation, mulching, green manuring to increase soil organic carbon and demonstrating the use of green energy, etc. • Demonstrations on CSA • Weather alerts to farmers. • Entrepreneurship model for promoting water saving techniques like Seedling planting, mechanization etc .	• Encourages farmers to use drip irrigation for sugarcane cultivation, target is to minimize flood irrigation. • Uses condensed water generated from processes for various activities.	• Uses all cane responsibly. The bagasse is used in boilers to produce power, the balance if any, is sold to the grid; molasses is utilized in distillery and sold as ethanol to OMCs. The ash from the boilers is supplied to farmers for utilizing in the field, and press mud is utilized as bio compost in fields by the farmers.
	• Tied up with Japanese company for recycling water to high pressure boiler. The water is demineralised and reused.	• Olam has robust partnerships with IFC and Solidaridad for promoting sustainability activities in field.	• Baramati Agro has waste management contract with external agency to promote sustainable waste management.	• Partnered with NABARD for development of ponds and for water conservation practices.

Source: Primary consultations with each of the sugar mills

SDG Alignment: Future Outlook

The Government of India is strengthening its commitment to SDGs through multiple initiatives like conduction sensitization workshops, tracking SDG progress across states and UTs, and localizing SDGs to the Indian context.

- For instance, a **National Workshop on capacity development for localising the SDGs** was held in February 2018. Union Territories (UTs) and 23 states, as well as other relevant stakeholders participated in the workshop.
- The **SDG India Index** was launched to track the progress of all the States and Union Territories (UTs) on the priority SDG indicators.

It is also planning to incentivize achievement of sustainable practices through various means. Various state governments are also partaking in this endeavor.

- A one-time assistance of INR 3,750 per ha area is provided to the farmers registered under **Mission Organic Value Chain Development for North Eastern Region** (MOVCD-NER) for procurement of biofertilizers, biopesticides and neem cake etc.
- The **Government of Telangana** links the existing direct benefits transfer to the farmers under the Rythu Bandhu Scheme by transferring benefits to farmers adopting desired cropping pattern.

Another way the government can promote UN SDG achievement is by **mandating large farmers / agri corporates to avail subsides or benefits of schemes only if they undertake certain sustainability initiatives**. This will encourage a much-needed correlation between multiple schemes.

While government has launched multiple schemes and initiatives to promote sustainability, the initiatives work in silos. For example, a scheme for Soil Health Management does not focus on ensuring decent labour conditions. Similarly, a scheme on water management does not propagate the use of less chemical pesticides/fertilisers. This is where Voluntary Sustainability Standards like Bonsucro can promote multiple efforts together. The Standards can through the right training and capacity building can promote drip irrigation system for water efficiency, while also encouraging the use of less chemical pesticides/fertilisers, and educate farmers on decent working practices.

Chapter 4: Strengthening the case for Bonsucro certification in India

A few recommendations for enhancing the business case for Bonsucro certification in India are tabulated below.

Table 7: Recommendations for strengthening Bonsucro in India

Gaps	Recommendations
Lack of awareness– There is a lack of awareness of the Bonsucro standards among end customers and along the sugar value chain. There is also a gap in understanding of the implication of certification.	• The institutional players need to be made aware of the benefits of Bonsucro sugar, including the impact on environment, water use efficiency, and labour conditions. • Leading local players that use sugar as an input material should be encouraged to buy certified sugar. • The NGOs may also be roped in for the purpose. • Further, awareness of end consumers needs to be enhanced regarding benefits of certified sugar. • Execution of these steps may translate into premiums as well.
Contextualization to Indian scenario – It is felt by many stakeholders that the Bonsucro standards are not fully aligned to Indian ground realities.	• Though the smallholder standards exist, they are not easy to understand and follow for the farmers. • The mills have also engaged a limited percentage of farmers for Bonsucro production (due to absence of premiums and limited demand). This means that only few farmers are aware of the Bonsucro standards. • Some mills have introduced Standards in vernacular language for better understanding by farmers. Such initiatives need to be expanded.
Understanding benefits of certification – there is a need to go beyond market price premiums to understand the case for certification.	• The Bonsucro calculator is a major value addition for mill operations as it helps in data driven decision making. • Mill operations and safety levels have been positively affected. This needs to be highlighted in conversations with stakeholders. • Benefits also accrue in terms of improvement in labour conditions, enhancement in productivity, reduction in water usage, and lowering of GHG emissions.
Cost of trading credits – The current cost of trading on Bonsucro platform are high and need to be rationalized.	• Currently, the cost of trading credits is fixed and are considered high. • The charges are close to $1 per credit, hence buyers find it costly to purchase credits. • It was suggested that the trading should either be free for initial years, or very nominally priced (as a percentage of transaction price).

Chapter 5: Conclusion and Way Forward

It is well accepted that substantial environmental and social benefits emanate by adopting various practices promulgated under Bonsucro. Therefore, the country could benefit by reducing ecological footprint and subsequently reaching its SDG commitments. However, owing to the less apparent economic benefits, there is muted interest in adopting the Standards. The analysis has shown that a positive Net Present Value is possible only if there is a premium on certified sugar. Also, obtaining premium will speed up recovery of investments and even if cost have high growth rate, presence of premiums will give mills a positive return.

Apart from this, mills have cited access to global credit trading platform, networking opportunities, data availability, prospect to sell to institutional buyers as the biggest enablers to certification. These benefits must thus be emphasised by Bonsucro while interacting with new mills for bringing them under the ambit of certification. Other benefits that are appreciated by the mills are related to improvement in operational efficiency, greater export opportunities, and enhanced company reputation.

In order to scale up the adoption of Bonsucro, greater emphasis needs to be placed on the inherent benefits of the Standards, such as traceability of sugar. Every pack/bag of sugar should highlight how and from where the sugar was sourced, and the people it positively impacted during its course. Sharing stories of better health outcomes for the farmers, greater cost savings (less water and chemicals used), and other positive externalities might help consumers be more mindful of the source of production.

Further, there needs to be heightened focus on enhancing the visibility of Bonsucro through ad campaigns, road shows, and increase in brand reputation. Other than this, more needs to be done in terms of involving NGOs, private sector as well as the government (KVKs) to increase awareness and capacity building around Bonsucro. Farmers and mills practicing sustainable cultivation may also be incentivized with additional subsidies for contributing to country’s SDG commitments.

Annexures

Annexure 1: Stakeholder insights on certification

This section highlights the views of key stakeholder groups pertaining to sustainable sugar in general and Bonsucro certification in particular.

Government body/organizations

	Stakeholder views
Sector overview	• Sugar is an important commodity and previously only available via PDS. Post its liberalization, it is still politically sensitive, and hence sugar (and sugarcane) prices are regulated by government. • Sugarcane is an important crop in India's agricultural landscape due to its hardy nature and high premium for farmers. Farmers get 60% higher return on sugarcane compared to other crops. • Owing to high government-mandated price, the sugar mills fall into short margin trap. There is no margin to pay farmers. — The Government uses Revenue Recovery Certificate to ensure timely payments to farmers. • The industry has been asking for a revenue sharing model, the time may be ripe for developing such a model. Under this mode, the SAP would be abandoned and 75% of the proceeds from the same of sugar shall accrue to the farmers. • Sugarcane is considered a water-intensive crop (18 month duration), however it needs to be seen in context of wheat and paddy which are 4-6 months crops. • Free or subsidized electricity is likely to lead to rampant irrigation and leaves little incentive for restricting water use. • States like Uttar Pradesh and Maharashtra have done well in terms of diversification of crops (to promote more water efficient crops), and high-yielding variety of sugarcane (90 days). • Sugar mills are not financially strong, hence banks are unwilling to give large loans for ethanol blending. Also, the costs of loans for sugar mills by banks have an interest rate of 9.5% to 12.5% despite it having security collateral in form of sugar/sugarcane. • Sugarcane and sugar prices in India are not linked. There is unequal balance between production subsidy and export subsidy. • In terms of policy, certified sugar is yet to take off in India. • The concept of sugarcane in India is commercial and does not take sustainability into consideration. • Sustainability calls for alignment between sugarcane production, processing and exports. • In India, reforms are not easy as the response to reforms are sometimes huge as evident from current protests. • Some advise on strengthening certification: — Consumer awareness needs to be enhanced

Stakeholder views	
	— Aligning over 500 mills and production of 300 million tons over 5 million hectares is a difficult task, hence process of certification needs to be simplified as much as possible. — Sugarcane farming may be made sustainable if cluster policy is followed, wherein farmers are grouped in clusters and imparted training on sustainable cultivation practices and certification. • Brazil has significant component of ethanol output, it diverts sugarcane to its uses depending on the market price. — When price of ethanol is higher, Brazil diverts more sugarcane towards ethanol, when price of sugar is higher, it diverts more sugarcane to sugar production. • India is still at a nascent stage with respect to ethanol blending; large scale ethanol blending will take time in India to develop. • Export control reduces choice of options for mills for utilizing excess production. MAEQ is more flexible compared to MIEQ as mills need to meet 50% of the quota.
Strengthening certification	• There may be a need to develop a framework to leverage government schemes (for irrigation, sustainable agriculture practices, etc.) and link them with sustainability to ensure that the farmers following sustainable practices may benefit from government schemes. • Sustainability is not practiced because, although it is good for the environment, the business case is not established in terms of financial/ any other tangible returns. Unless there is a business case, it cannot be sustained. This is possible if economic benefits are forthcoming. • While most stakeholders are cognizant of organic standards, awareness regarding Bonsucro among non-sugar related stakeholders (water department, export agencies) is limited.

Sugar Association

Stakeholder views	
Sector overview	• Sugarcane is a highly profitable crop and hence farmers prefer growing it. • Indian sugar industry is plagued by multiple issues - excess production, mounting inventory, need for out-of-the-box reforms, decline in demand due to COVID-19, maturing loans, etc. • FRP is a farmer-friendly policy. However, mills feel the pressure of paying FRP while not getting correspondingly increase sugar retail price. • Ethanol blending has good prospect for improving the financial situation of mills. • Sugar surplus causes capital lock and reduces liquidity for mills. Export control reduces choice of options for mills. • There is a need for liberalization in controls. • MAEQ (Maximum Admissible Export Quantity) is more flexible than MIEQ (Minimum Indicative Export Quotas). • Food grain vs fuel debate with respect to ethanol blending will remain and if the target of 20% ethanol blending is to be achieved, then other surplus food grains will have to be looked at beyond sugarcane, as sugarcane alone may not be able to meet the ambitious government target.
Strengthening certification	• Bonsucro framework is comprehensive but difficult and not tailored to the local region, making it difficult for farmers to comprehend There is scope for more customization in the standards. For example, releasing standards in local language, and sensitizing certification/audit agencies regarding the differences in large and smallholder farm practices. • Awareness of Bonsucro is restricted only to sugar industry stakeholders. Awareness regarding Bonsucro among non-sugar related stakeholders (water department, export agencies) is limited. • The mills are not in a position to incur extra expenditure without promise of premiums. Only multinational buyers are committed to sustainable sugar. Need to create win-win situation for farmer, sugar mill as well as consumer. This may be done through highlighting the benefits of certified sugar for environment, health and thus justifying a premium. — This is based on the premise that consumers perceive organic sugar as beneficial and hence are willing to pay a premium due to its perceived health benefits and less pesticide use. Similar benefits need to be marketed for Bonsucro sugar.

Research Institute

Heading	Stakeholder views
Sector overview	• Refined sugar and Sulphur-less sugar is becoming prominent in India,. • Key sectoral challenges: — FRP system should be modified to reflect market realities. — There is a need for implementing the revenue-sharing model and do away with SAP to meet interests of both sugarcane growers and mills. Under the model, the system of SAP should be abandoned, and 75% of the revenue generated by the mills from the sale of sugar and its by-products is shared with cane suppliers. • In terms of sugar processing technology, India is at par with Brazil. • The Government has given lucrative prices for ethanol, which will positively impact the sugar industry. Ethanol production will help reduce surplus sugar production which lowers prices.
Strengthening certification	• Certifications are important but there should be focus on awareness. It seems the awareness about the benefits of sustainable sugar is very limited amongst buyers and household consumers. • Health benefits of certified sugar should be stressed. This may be done through highlighting the benefits of certified sugar for environment, health, similar to how the benefits of organic products are emphasised.

Certification Agency

Heading	Stakeholder views
Sector overview	• Certification is done by the certification bodies – SCS Global and Control Union. The process is rigorous and unbiased. • Farmers while benefited from Bonsucro may not be fully cognizant of Bonsucro. At the ground level, there is need for strengthening knowledge about the standard and its benefits • Certification process takes approximately 2 to 3 months, from sign of work order to issue of certificate. • Corporate sustainability commitments and premium institutional buyers drive sustainability certification in India. • Certified sugar has limited or no margins. Sustainability cannot thrive solely on environmental or social benefits, there needs to be an economic benefit as well. • Bonsucro calculator is a great tool for data gathering and decision making. The mills generally did not maintain the kind of data before certification. • Audit includes farm audit, mill interviews, mill audit (HR, legal, operations process), which is conducted over five days.

	• Initial audit in the first year is followed by surveillance audits. Certification is valid for three years, after which it must be renewed. • The India, surveillance audits are undertaken every year, and the mix of farmers audited may change each year. This implies that while most farmers are same, there may be some farmers who are excluded (for example, if they drop out of sugarcane cultivation), and some new farmers who may be added (for example, the ones who adopted Bonsucro in the audit year). • Farmers do not bear audit costs, the cost is borne by the mill. • The costs for certification include a one-time certification costs and a recurring annual charge.
Strengthening certification	• Certified sugar has limited margins. Unless there is a premium for certified sugar the program adoption will be limited. • Program will gain strength only if farmers are benefited. There should be value orientation in terms of increased revenue/livelihoods for farmers. • Bringing cooperative mills under the ambit of certification is important and wide coverage is needed with government stakeholders being cognizant of the benefits. More awareness generation initiatives would be useful for this. • There should be a mechanism to link government priorities like National Clean Air Programme to Bonsucro standards.

Buyers

Heading	Stakeholder views
Sector overview	• Sugar is seen as a commodity rather than a differentiated product. It is considered a homogenous commodity. Hence, there is less perceived differentiation in terms of quality. • Sustainability is a factor in sugar procurement for some of the institutional buyers, but reliability, quality, packaging, delivery time, and familiarity with the seller play a more important role. • International companies do set annual goals for procurement of sustainable inputs. However, percentages are confidential. • Other than niche segments, end customers in India are not fully committed to paying premiums for sustainable certified products. Rather, there is a preference for organic products due to perceived health benefits and the easier marketability. • Willingness to pay premiums for Bonsucro certified sugar is limited — There is a limited scope for price premium for certified sugar unless the same can be carried forward in end pricing. Hence, the awareness about the sustainable sugar and its benefits should be created amongst end customers.

Heading	Stakeholder views
	• Sugar industry should be cognizant of water depletion and should use better irrigation techniques rather than going for legislative changes for allowing use of more water. — The institutional buyers too need to be mindful of water conservation, and deploy practices like water mapping, water stewardship etc. — The local stakeholders like agri universities, village level institutions, local entrepreneurs, farmers and youth should also be involved in water management.
Strengthening certification	• Awareness should be increased among end customers (e.g. retail customers) about sustainable sugar and its benefits • There is a growing preference towards healthy products, local products and traditional products. However, any major tangible preference by customers for sustainable products/ sourcing is not seen currently. Only a niche category of consumers say it's important. • There is a need to demonstrate impact of certification, pass the impact story along and demonstrate to end buyers the justification for premiums. • Standards should be translatable to local contexts, there is a need to work with support service organizations, premium paid to mills should percolate to farmers and cost of certification should be rationalized. Traceability in this regard is important so that the end buyers are aware of who are getting benefitted socially/ environmentally and how. • Bonsucro standards are complicated for smallholders and has to be simplified for farmers – so they see an impact on the bottom-line. • Need to educate end buyers on exactly what certification means and implies.

Sugar mills

Heading	Stakeholder views
Sector overview	• It is imperative that sustainability benefits align to economic gains. • Large farm sizes are enablers for increasing the footprint of certification. • Sugar mills are not taking up sustainability projects on a large scale. There is a need for behavioral change at the level of farmers, mills, as well as buyers. • Cost of production of sugar is high in India. Minimum selling prices has to match cost of production for financial sustainability. • There has to be revenue sharing as it is not sustainable to increase FRP each year, and not increase sugar price correspondingly.

Heading	Stakeholder views
	• Managing inputs and processing efficiency have been good post Bonsucro certification. The standard has well defined matrices and increase data availability is one of the major benefits of Bonsucro certification. One of benefits with Bonsucro is that quantitative assessment can be done. • Bonsucro facilitates tracking of compliances and enhances labour working conditions • One major concern in large-scale adoption is that farmers do not see value in adoption in terms of profitability, premium, or monetary returns. • However, the farmers do appreciate the reduction in costs due to lower fertiliser use and lower water use, but since that does not directly translate into higher incomes, they are wary of adoption. — Mills impart regular training to farmers on sustainable practices in general, and on Bonsucro in particular. — The mills were conducting training and extension activities prior to certification as well. Hence, there has not been a significant increase in training costs, however, the trainings are now more focused. • Costs for provision of first aid kits, PPE kits, water facilities have also not been significant at the mill level as they were being provided prior to certification as well. • However, costs of provision of aforementioned facilities have risen at the farm level. An additional cost of ~Rs. 1,000 per labour is borne by the mill per year for provision of these amenities. • Mills also recommend using fertiliser based on soil nutrients. — Regular soil testing is also conducted by the mills. • Post certification, the mills have done better in terms of identifying avenues for energy and water conservation. • However, improvement in quality is hard to discern as Bonsucro volume is small as compared to the total volume produced by the mills
Strengthening certification	• Bonsucro framework is comprehensive but difficult to implement as it is not easy to comprehend by farmers who are not well-versed with English. Certification has to be incentivized and contextualized for local conditions. For example, releasing standards in local language, and sensitizing certification/audit agencies regarding the differences in large and smallholder farm practices. • Process-driven nature of Bonsucro certification is appreciated. • Bonsucro and other social organizations should promote awareness and good agricultural practices. Such initiatives cannot be done by sugar mills as the industry itself is ailing. • The charges for using Bonsucro trading platform are high for the buyers (close to USD 1 per credit). The trading of credits should be free in initial years, or be very nominal percentage of transaction amount instead of a fixed charge.

Heading	Stakeholder views
	• High audit fees and only two certification agencies in India is a hindrance. • Sugar buyers have stringent norms for procurement, but Bonsucro Certification does not give special privilege or benefits from buyers. Hence Bonsucro should conduct outreach activity among sugar buyers.

Other relevant stakeholders (Multilateral organisations, Bonsucro programme coordinators, Bonsucro brand ambassador, etc.)

Heading	Stakeholder views
Sector overview	• India is dominated by smallholder farmers so the "one size fits all" of international standards (which were suited for large farms) did not make sense in the Indian context. Hence standards were evolved for smallholder farmers. • Capacity building of audit agencies to fit Indian market is being undertaken. Indian agriculture is not monoculture, so on the same small farmland, there are multiple crops grown (unlike countries like Brazil where a single large farmland has multiple acres of a single crop). The audit companies have to be sensitised to deal with this since their processes were more aligned to international practices • Economical sustainability is positive for farmers as sugarcane is lucrative for farmers in comparison to rice and wheat. • While farmers expect monetary benefits, they see benefits in labour rights as well – minimum wages, good working practices, no child labour, no forced labour, etc. • The mills expected a premium out of Bonsucro, but that is not currently happening. • Indian sugar industry is cyclical in nature – there is either a deficit or surplus. Very few companies are making sustained profits. • Sugar prices not being linked to sugarcane prices hampers the financial sustainability of the sector. • Government is encouraging a gradual transition to less water intensive crops for farmers. • There is a need to measure actual quantity of water used and its usage pattern. Government policies currently don't do that. Bonsucro measures water usage which is very useful in this regard. • Government is now playing active role in sustainability due to climate change which includes: — Soil Health Cards/ Need based application of fertilisers — Management of soil residue — Waste management rules — Mechanisation at subsidized costs However, it does not involve itself in micro level activities • For mills with digitized record keeping, the certification process is easier.

Heading	Stakeholder views
	• Unfortunately, there are no supporting government policies to promote sustainable sugar. • The Bonsucro credit trading platform is a price-matching mechanism allows businesses to buy and sell Bonsucro Credits – which are proof that a unit of sugarcane, raw sugar, ethanol or molasses has been sustainably produced to Bonsucro's Production Standard. Trading of credits has been helpful for larger players in the industry. However, the volume of trade is very miniscule currently in India.
Strengthening certification	• Incentive for adoption of Bonsucro is not very high. However, many companies have shareholders spread globally who have commitments on sustainable production. • For certifications like Bonsucro to take off, sustainability has to be shown to be profitable. • Operational benefits justify the certification. Adhering to Bonsucro standards cause savings at farm level and processing level. Sales benefit will occur as a result. Improving productivity and curtailing costs are the main value proposition of Bonsucro certification. • Benefits of certification like brand value and operational advancements should be stressed to the audience. • Market based incentives for water savings should be explored. • Peer certification and third-party verification may be explored to reduce turnaround time for certification.

Annexure 2: Stakeholders list

A) Non-mill related stakeholders

Non-mill related stakeholders			
S. No.	**Category**	**Stakeholder Name**	**Stakeholder Designation and Organisation**
1	Government body / organisation	Mr Manash Choudhury	Deputy Adviser (Agriculture), NITI Aayog *(Government policy think tank)*
2		Mr Adhir Jha	Managing Director & CEO, India Sugar EXIM Corporation *(a premier sugar exporter of India and a representative body of the Indian Sugar Industry)*
3		Mr RK Jain	Chairman, Central Water Commission
4		Mr Prakash P Naiknavare	Managing Director, National Federation of Cooperative Sugar Factories Limited
5		Mr Shekhar Gaikwad	State Sugar Commissioner, Maharashtra
6	Research Institute	Dr RV Dani	Technical Advisor & Head, Vasantdada Sugar Institute
7	Other relevant stakeholders	Mr Kiran Wadhwana	Bonsucro brand ambassador in India
8		Dr Gopinathan MC	International Program Coordinator-Sugarcane, Solidaridad (Ex Bonsucro)
9		Mr Ajith Radhakrishnan	Country Coordinator Water Resources Group, World Bank
10		Mr Harsh Vivek Dr. Raj Pal Singh	Program Leader, South Asia Food and Agribusiness Advisory Services, IFC Sugarcane Advisor, IFC
11	Certification Agency	Mr Sajan Sethumadhavan Mr Sudeep Nair	Program Manager, Control Union Certification Senior Auditor, Control Union Certification
12		Mr Bobby Matthew	SCS Global Services
13	Private firm	Mr Roshan Lal Tamak	Executive Director & CEO – Sugar Business, DCM Shriram
14		Mr Dibyendu Hazra	Balarampur Chini
15		Mr Samir Somaiya	Chairman & Managing Director, Godavari Bio-refineries
16	Buyers (local)	Mr Sanjib Bezbaroa	Vice President, Corporate EHS, ITC
17		Mr Karimah Hudda Mr Manisha Singh	Global Sustainability Lead - Procurement-Mondelez International Strategic Sourcing Manager- AMEA Region, Mondelez International
18		Mr Rahul Kumar	CEO, Lactalis India

Non-mill related stakeholders			
S. No.	**Category**	**Stakeholder Name**	**Stakeholder Designation and Organisation**
19	Buyers (International)	Mr Kevin Ogorzalek	Sustainable Sourcing Manager, Barry Callebaut

B) Mill related stakeholders

Mill-related stakeholders					
Overall	**Legal**	**Human Rights**	**Sustainability, Biodiversity and Ecosystem**	**Production efficiency**	**Farmer linkages**
Dalmia Bharat Sugar and Industries Limited					
• Spokesperson/Point of Contact – **Naveen Gupta**	• Advocate – Rahul Desai	• Human Rights & Labour Officer- Anand Shankar Kamoji • Health & Safety Officer- Praveen Gojare	• Corporate Social Responsibility Manager- Nitin Karulupe	• General Manager – Production - Nitin Karulupe	• Agri / Cane Extension Officer- Srikant Patil • Cane Production Manager- Sangram Patil
Olam International					
• Spokesperson/Point of Contact – **Bharat Kundal**	Cane Head - Sudhir Patil				
Baramati Agro Limited					
• Spokesperson/Point of Contact – **Nitin Kayande**	Pankaj Gawande				
EID Parry Limited					
• Spokesperson/Point of Contact – **S.J Lakshman** • Sr. manager Finance, S Kaumaravel	• Associate Vice President (HR)- B. Suresh	• Associate Vice President (HR)- B. Suresh	• Corporate Social Responsibility Manager- S.J Lakshman • Senior Associate Vice President (Works)- V. Ramasubra-manian	• Senior Associate Vice President (Works)- V. Ramasubra-manian • Deputy General Manager – Process - K. Sukumaran	• Associate Vice President & Head (R&D), and Cane Extension- S.J Lakshman

Deloitte.