



The Business Case for Mill Compliance with and Certification to the Bonsucro Production Standard

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- Introduction: Brazilian Sugarcane production, context of Bonsucro and research objectives
- Methodology and data collection
- Results
- Conclusions and recommendations

Introduction

Brazilian Sugarcane production, context of Bonsucro and research objectives

Sugarcane production in Brazil is differentiated by region as well as ownership and management

Brazil

Annual Crushing (1,000 t/mill)	Harvested Area (1,000 ha/mill)	Yield (t/ha)	Number of mills
560,994 ¹	8,224 ²	68.2	427

Northeast and North

Registered Mills	2006	2014
	64	70
Area (2006 to 2012)	CAGR (%)	AG (Thousand ha)
	1.0	83.5
Brazil production share	10%	
Mills profile	<ul style="list-style-type: none"> Traditional and family mills Low mechanized 	

Number of Mills

- The number of registered mills increased by 41% in São Paulo, 73% in other South-Center states and 9% in the Northeast (2006-2014).
- After a 5 years cycle of strong investments in greenfields (2005 to 2011), the sector is facing structural adjustments with old and low scale mills being shutdown. Subsidized prices of gasoline have decreased attractiveness of hydrous ethanol market, also contributing to the current bad financial shape of the industry.

Area

- Although the compound annual growth rate (CAGR) for sugarcane area in São Paulo is lower than the other states in South-Center, in absolute terms the growth of these regions are similar.

Ownership and Management

- Around 80% of mills in São Paulo are owned and run by large groups (those owning several mills such as Bunge, Odebrecht, Raizen, Guarani-Tereos). This percentage is smaller in South Center (60%) and Northeast (54%)

South Center (excluding São Paulo)

Registered Mills	2006	2014
	85	147
Area (2006 to 2012)	CAGR (%)	AG (Thousand ha)
	11.5	1,652.2
Brazil production share	34%	
Mills profile	<ul style="list-style-type: none"> Mainly new mills Highly mechanized 	

São Paulo

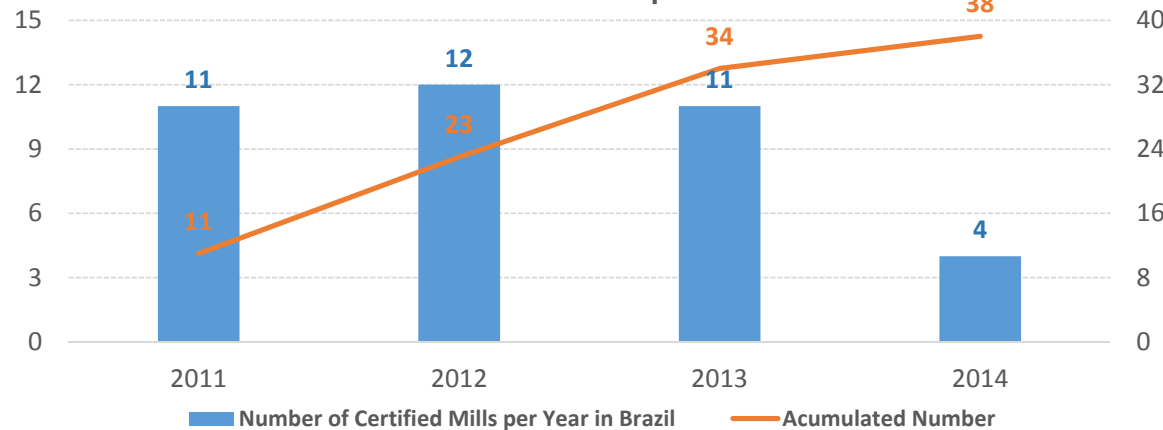
Registered Mills	2006	2014
	119	168
Area (2006 to 2012)	CAGR (%)	AG (Thousand ha)
	6.8	1,580.3
Brazil production share	53%	
Mills profile	New (greenfield) and traditional mills	

Notes: Total sugarcane crushing and harvested area in 2011/12 season in Brazil. Mills registered at the Ministry of Agriculture, Livestock and Food Supply (MAPA).

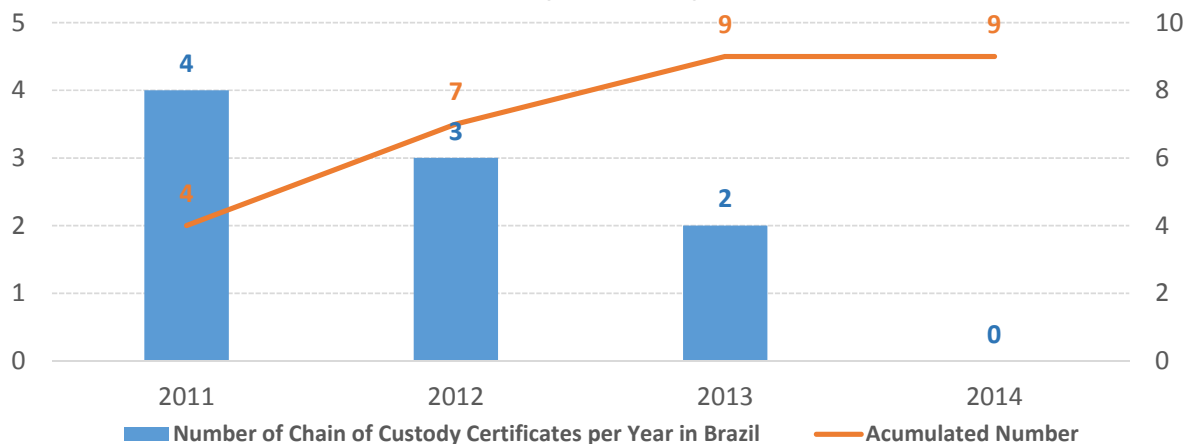
Source: Agroicone; IDEA Group; UNICA; CONAB

Bonsucro certification in Brazil is stable and facing market challenges

Number of Certified Mills per Year in Brazil



Number of Chain of Custody Certified per Year in Brazil



- The total supply of certified volumes has increased, but at an ever-decreasing rate. In 2014 the number of certified mills decreased compared to the previous years, including the number of new mills. In 2012, there were 5 new mills certified, this number was reduced to 2 in the next 2 years.
- Demand for certified products has not followed supply and mills are facing problems to sell and thus obtain margins.
- A business case for mills compliance and certification is important for guiding Bonsucro strategy in Brazil.

The Business Case for Mill Compliance with and Certification to the Bonsucro Production Standard

- **Phase 1 – Defining the analytical scope**

- Secondary data analysis
- Choosing the producers/mill types and relevant costs components
- Development of analysis templates (financial and non-financial)

- **Phase 2 – Data collection and intermediary analysis**

- Interviews with companies 'managers and visits to mills
- Questionnaires sent and returned
- Interviews with experts
- Data organization and analysis

- **Phase 3 – Final analysis and conclusions**

- Findings
- Report

1. What is the **business case** for reaching compliance with the Bonsucro Production Standard?

- Costs and benefits of sugar/ethanol in compliance and not in compliance with Bonsucro
- Environmental, labor and other extra costs for compliance with Bonsucro

2. What is the business case for **validating compliance** with the Bonsucro Production Standard **through third party certification**?

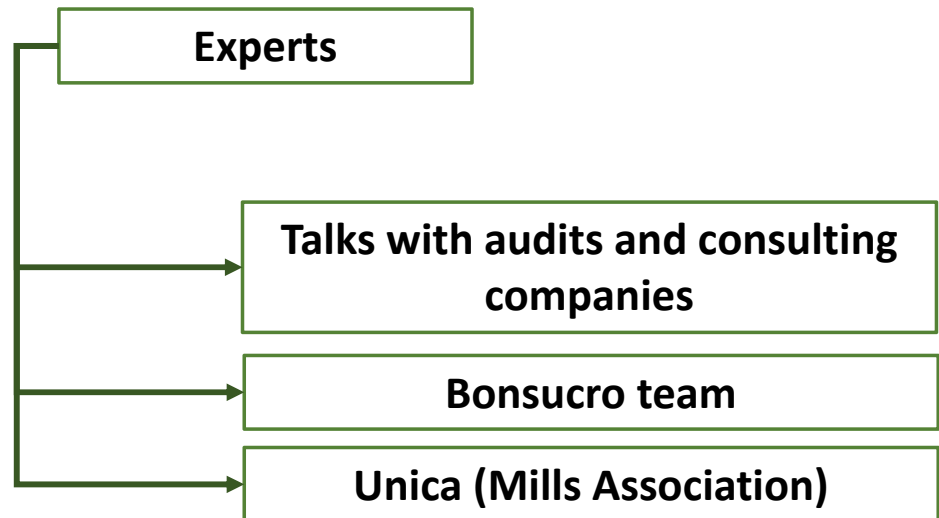
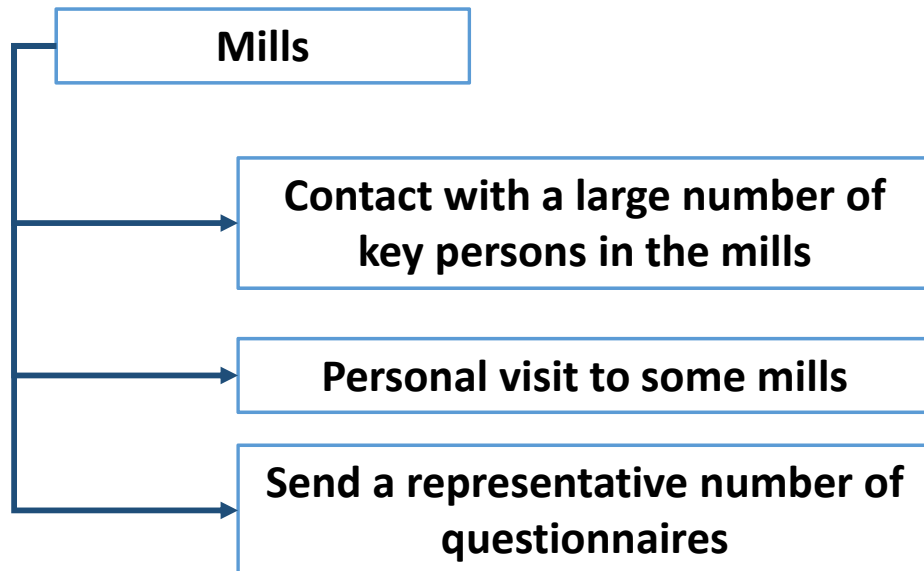
- Costs and benefits of sugar/ethanol validated and not validated through certification
- Costs and benefits of implementing managing control systems and certification costs

3. What are identified **opportunities to increase the appeal of compliance and certification** with Bonsucro from mill perspective?

- How to decrease costs? How to increase benefits?
- How improved managing practices can become opportunities for mills?

Methodology and data collection

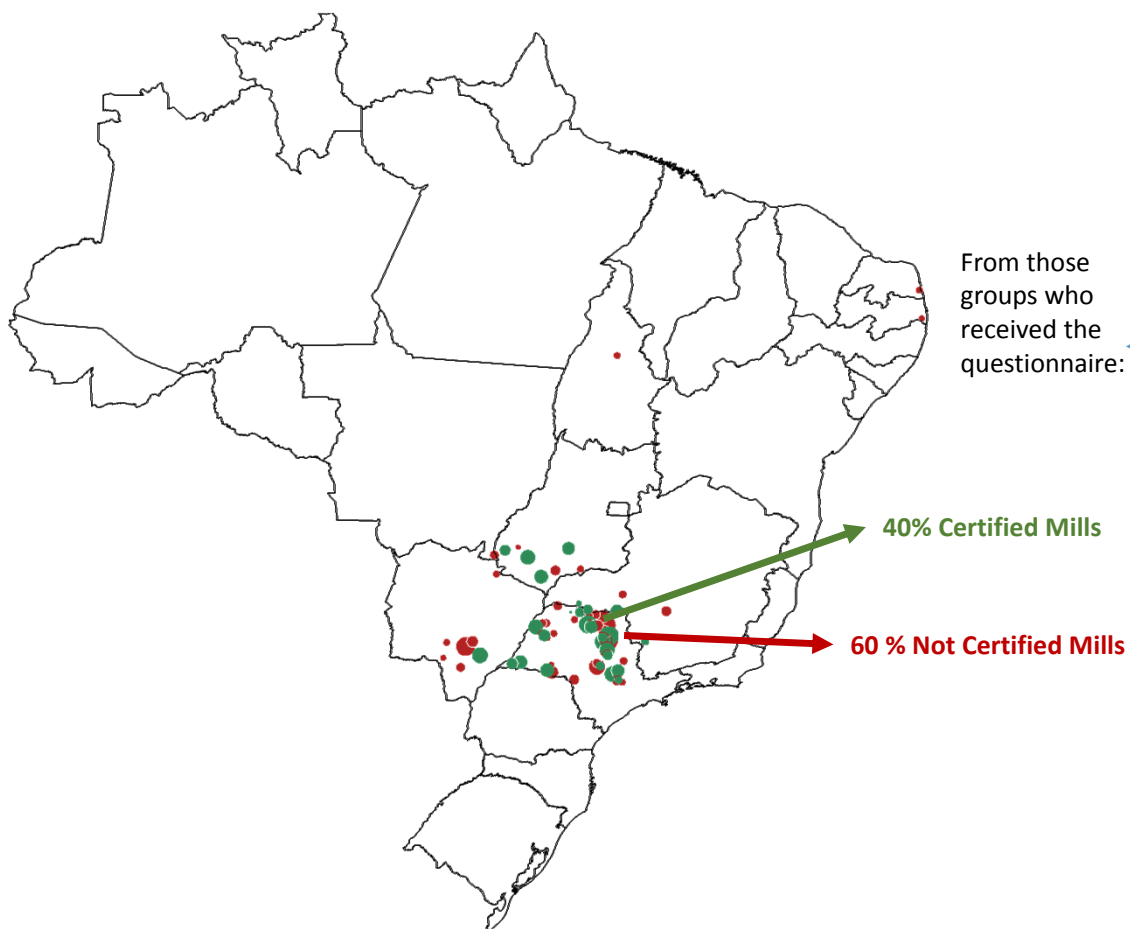
Data collection was based on mills interviews and questionnaires and supported by talks with experts



- Contacts with mills were extremely difficult. Access to their data were only possible due to personal contacts
- We focus data collection on Bonsucro members, both certified and non certified.

We approached 6 groups, with 79 mills, representing 74% of Bonsucro members, both certified and non certified.

Location of mills owned by groups that received the questionnaire



Profile from groups that received the questionnaire

Bonsucro Members	Certified Bonsucro	Mills numbers	% Total
Groups that received the questionnaire	Certified	27	30%
	Not Certified	52	45%
Total Questionnaire Sent		79	74%
Not received the questionnaire	Certified	9	12%
	Not Certified	30	14%
Total Questionnaire Not Sent		39	26%

The study ended up with 12 questionnaires (mills) that could be used for quantitative analysis

New mills categories after data analysis. Traditional and modern plants made more sense than traditional and new plants

Sample

**Initial
assumption**

**Traditional
Plants**

New Plants

Division based on:

- Differences in the costs structure between traditional and new plants
- Initial talking with audits companies and some experts

New division

**Traditional
Plants**

Modern plants

Questionnaire data shows:

- Some new plants in the ramp up process presented high certification costs (it requires detailed verification and analysis)
- Traditional plants with high modernization level and concerned with its brand image in the market presented low certification costs

5 mills

7 mills

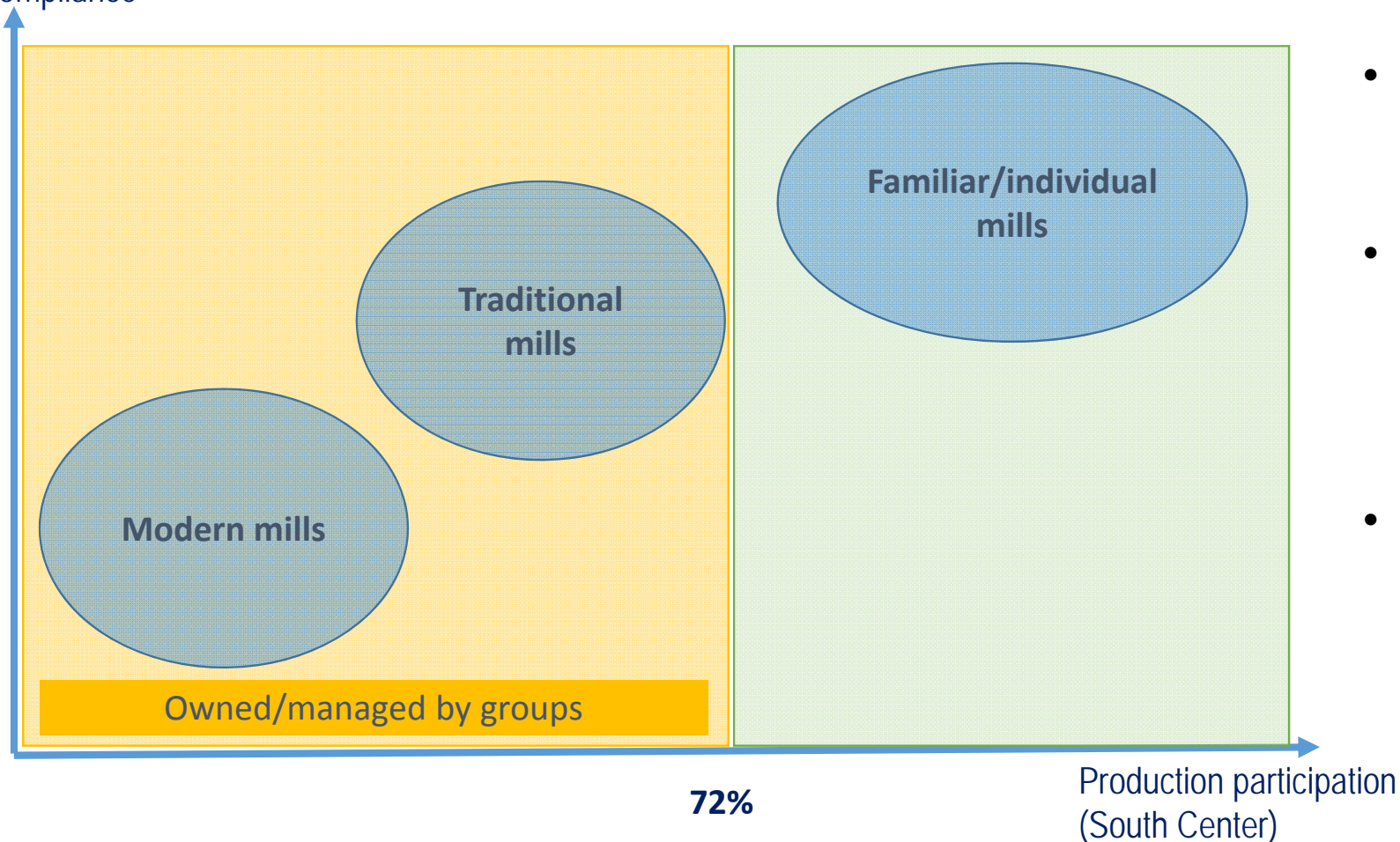
Considerations regarding the sample

- Small sample due to difficulties to obtain those type of information
- The sampled mills didn't have these costs and benefits information ready. Most of them had to collect different type of information with different departments and to estimate some numbers. Therefore, monitoring the evolution of those costs and benefits over the time would be relevant since we expect the mills data will be improving over time (continuous collecting data process)
- The sample well represents the mills owned by large groups. Those owned by families (or other type of characteristics) were not captured in this sample.
- It is also expected that our sample represents the best managed mills. Therefore, costs can be considered underrepresented as well as operational efficiency benefits
- Another research would be necessary for reaching other mills categories.

Participation in Bonsucro	Ownership and Management	Mills category	Number of mills
Bonsucro Member	GROUP	Modern	35
		Traditional	77
	INDIVIDUAL	Modern	1
		Traditional	5
Non Member	GROUP	Modern	56
		Traditional	161
	INDIVIDUAL	Modern	49
		Traditional	155

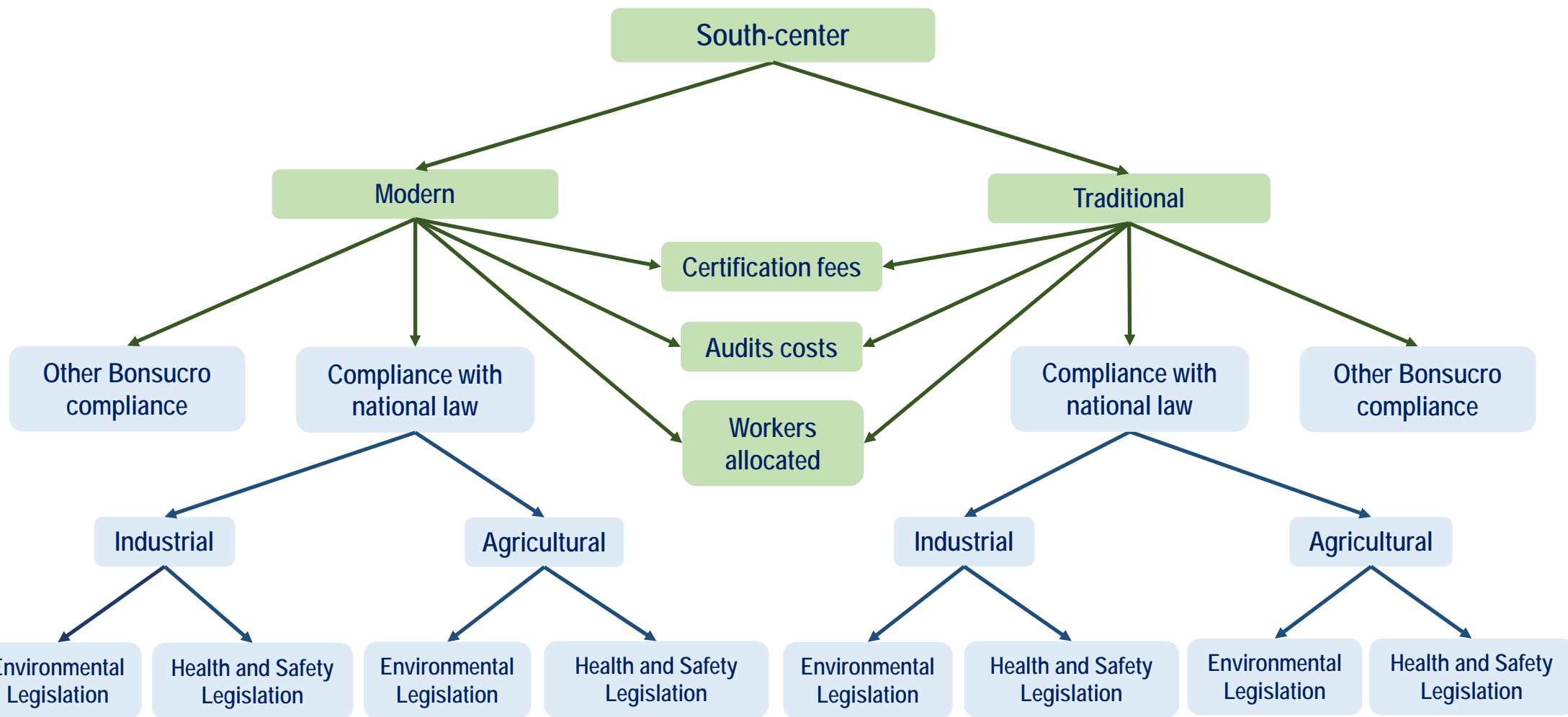
The sample is composed by mills owned and managed by large groups and Bonsucro members which represent the production majority and more efficient mills

Investment needs for compliance

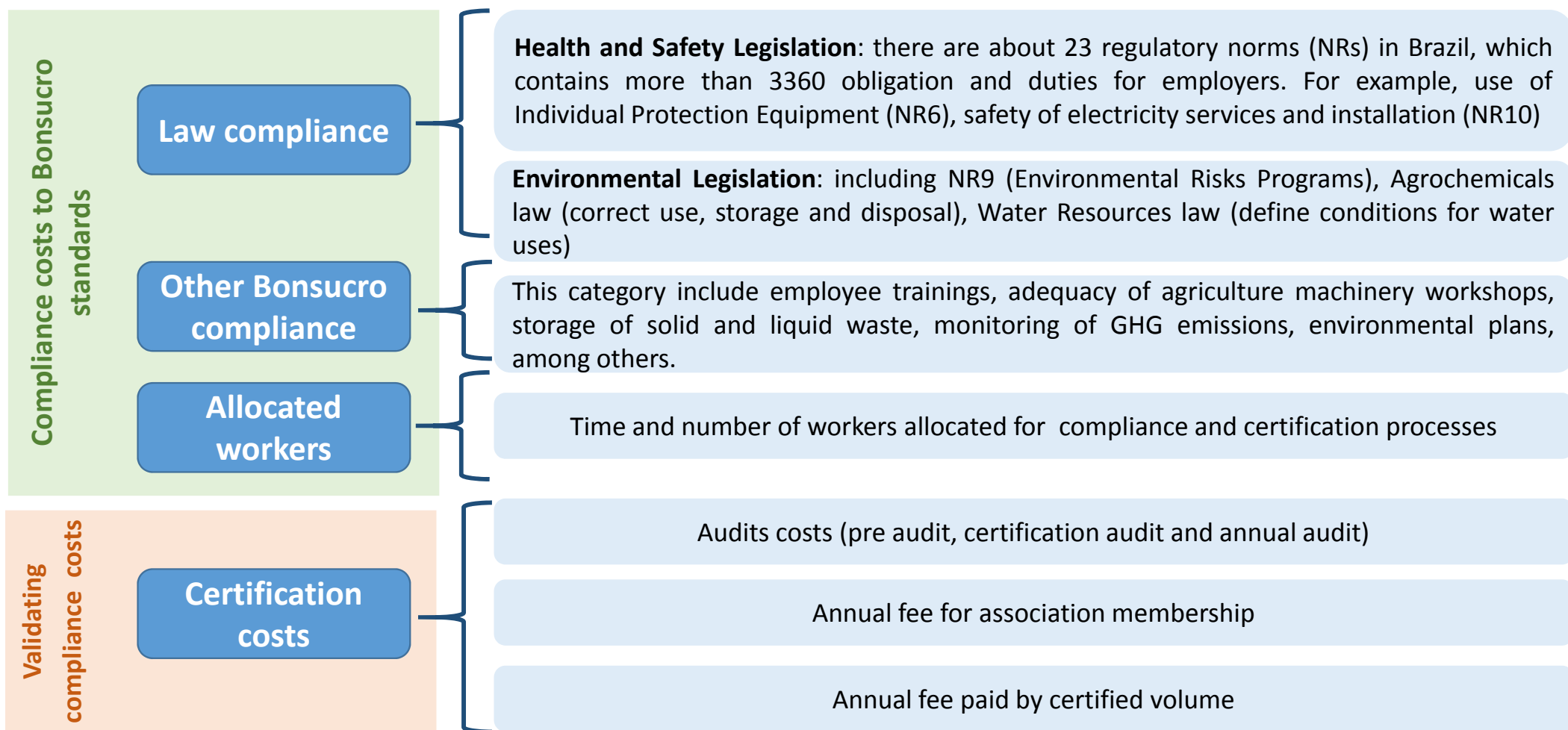


- The sample is expected to be more efficient and with lower investment needs for compliance.
- Within the mills owned by groups, the ones that are Bonsucro members are expected to be more willing to certify. Then, costs for certification may also be lower.
- Besides costs differentials, there are also discrepancies in terms of capacity to invest. Generally, groups have more access to capital (own or borrowed)

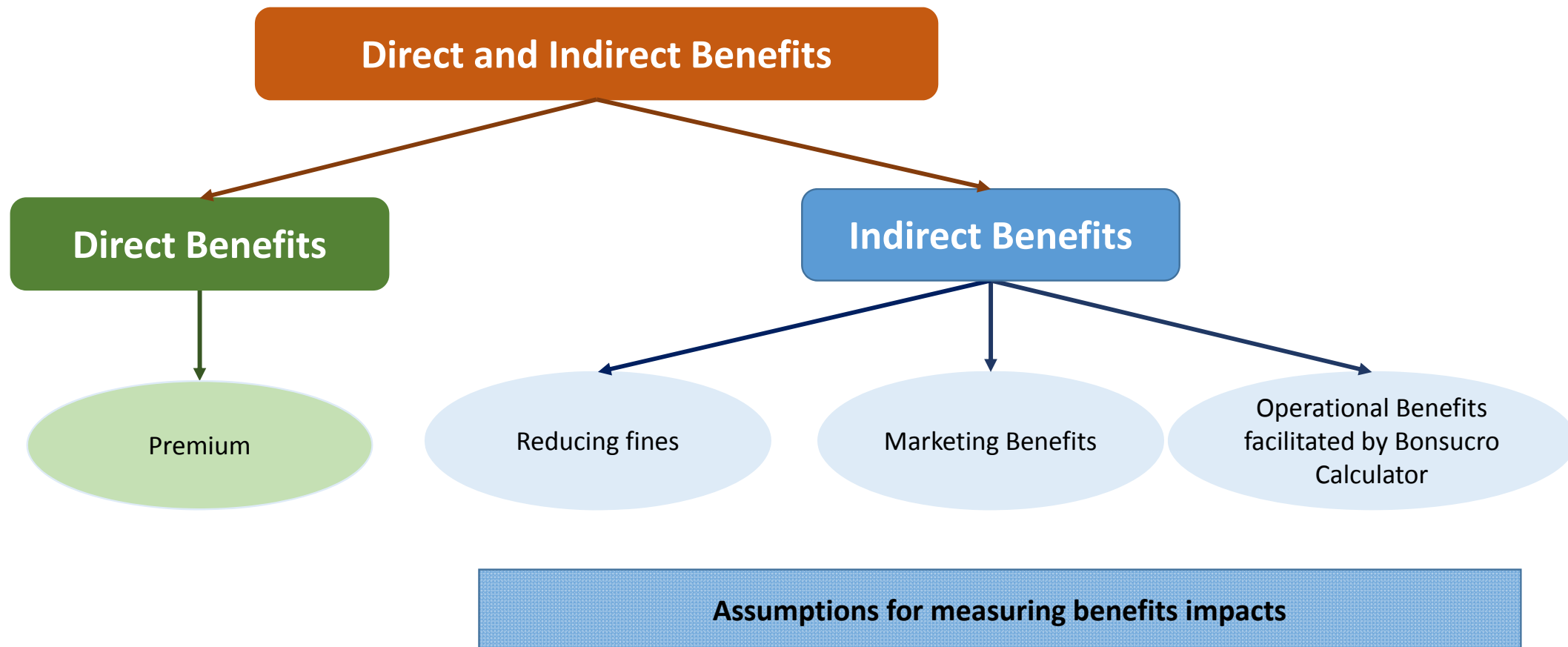
Methodology to measure Bonsucro compliance and certification costs



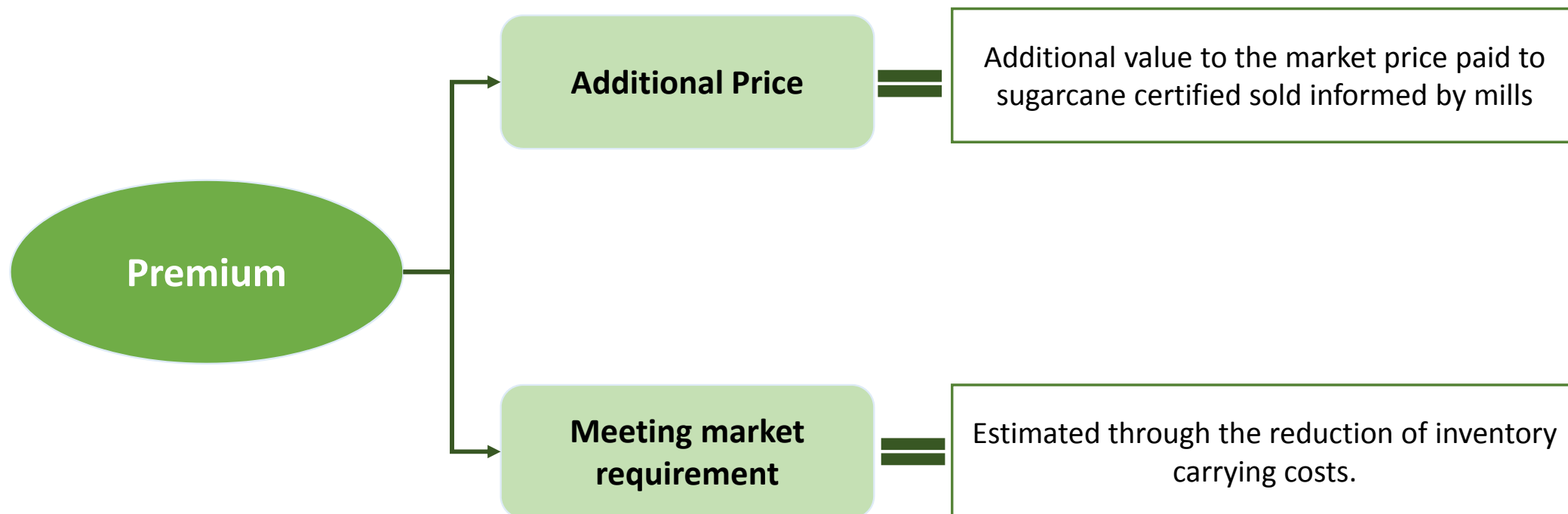
Costs for certification are divided in four categories: law compliance, compliance with Bonsucro standards, allocated workers and certification costs



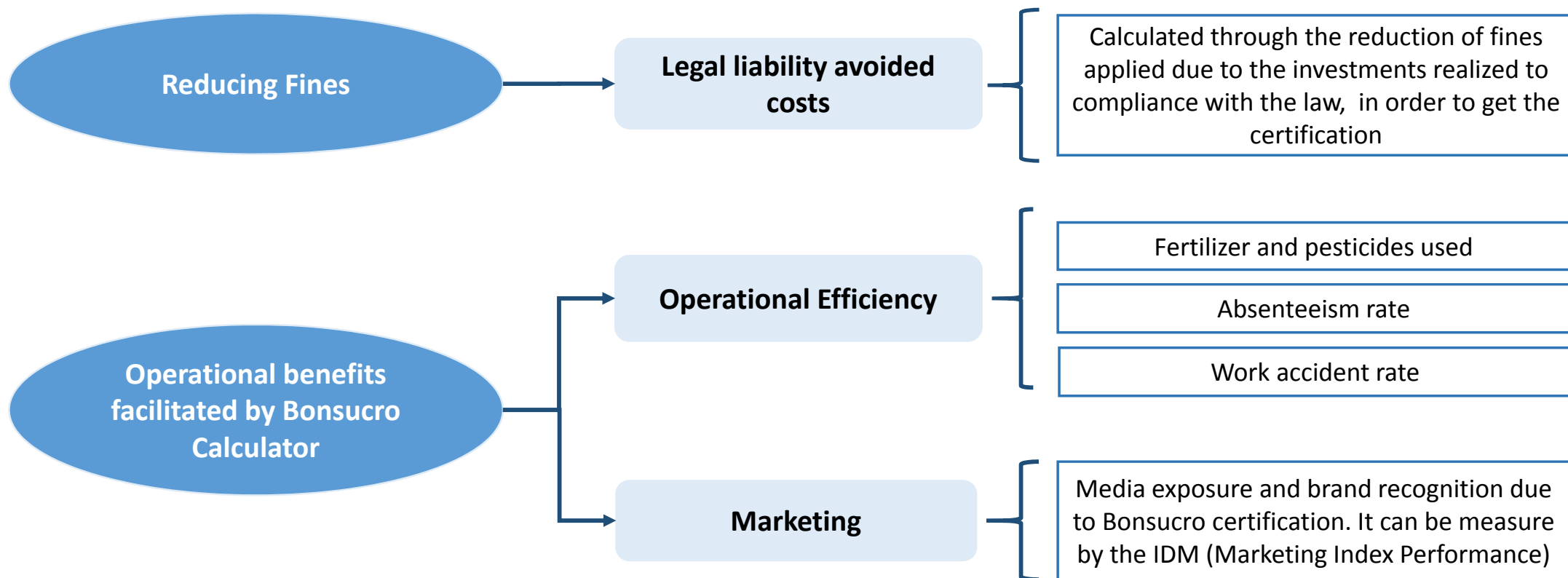
Certification benefits indicated by mills are divided in direct and indirect benefits



Additional price and meeting market requirement are the main direct benefits



Reducing fines and management improvement are the main indirect benefits



How to measure the costs and benefits of Bonsucro certification?

Several costs related to legal compliance are one time investments whereas the benefits are recurrent

NPV, IRR and Pay-back

T=0

- Investments to compliance with law
- Investments to compliance with other Bonsucro requirement
- Auditors
 - Pre audit (optional)
 - Certification audit
- Bonsucro fees
 - Member associated
 - Volume certified

T=1

- Training Employees
- Auditors
 - Annual audit
- Bonsucro fees
 - Member associated
 - Volume certified

- Premium
- Marketing benefits

- Operational Efficiency
- Legal liability avoided costs

T=2

T=3

- Training Employees
- Auditors
 - Recertification audit
- Bonsucro fees
 - Member associated
 - Volume certified

- Premium
- Marketing benefits

- Operational Efficiency
- Legal liability avoided costs

T=4

- Training Employees
- Auditors
 - Annual audit
- Bonsucro fees
 - Member associated
 - Volume certified

- Premium
- Marketing benefits

- Operational Efficiency
- Legal liability avoided costs

T=5

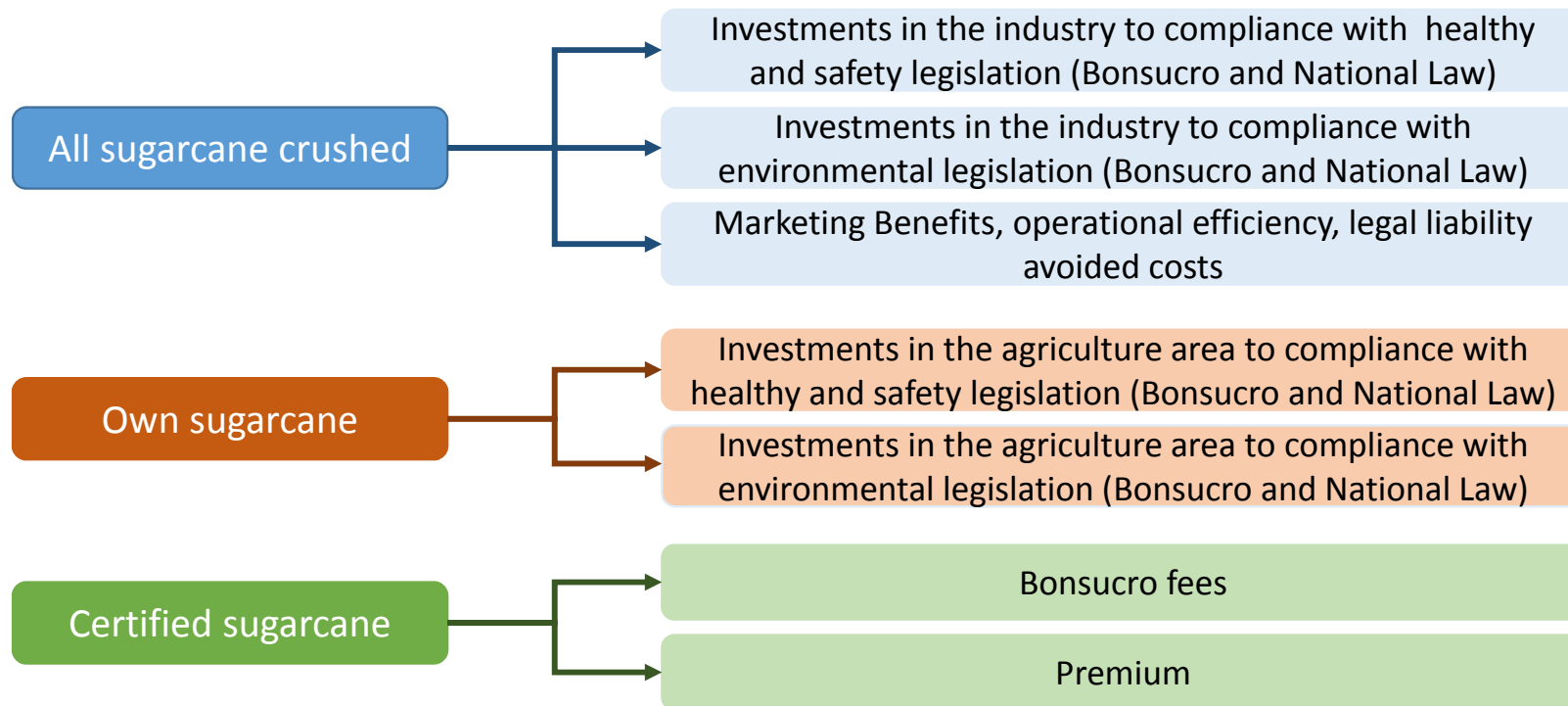
Benefits decreasing in order to achieve zero in $t=6$ ($V_i - (V_i/5)$), when start a new certification cycle

Results

Costs and benefits and Cash flow analysis

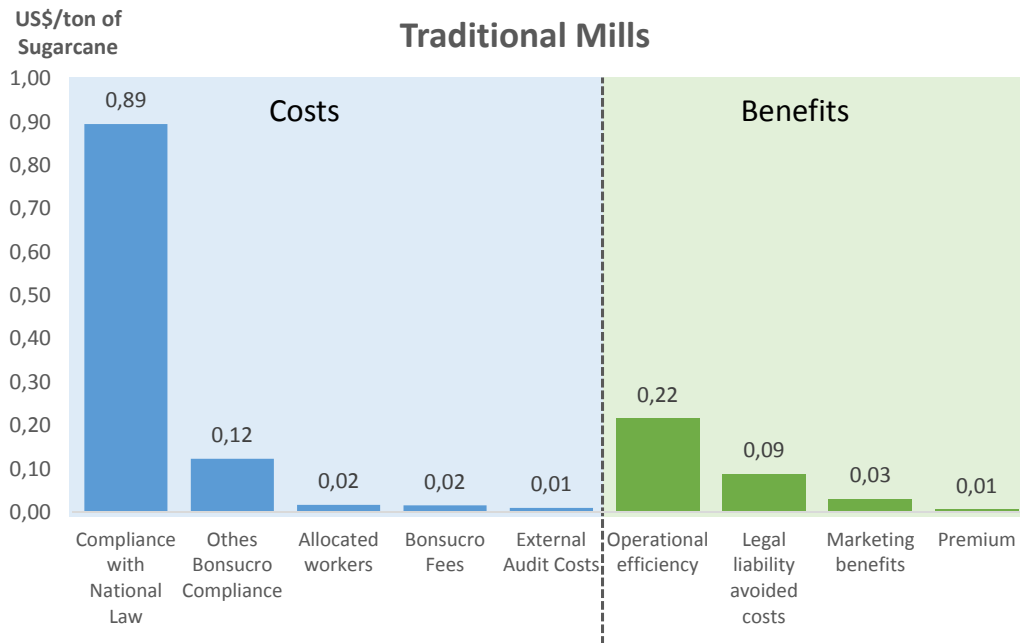
How the different costs and benefits components were considered in our analysis

- All information about investments and monetary benefits presented in the questionnaire by the mills are in total Brazilian reais invested or received
- The data and financial analysis presented in the next slides are in U\$ per ton of sugarcane and some of them, the central information, per ton of sugar
- The data were weighted according to:

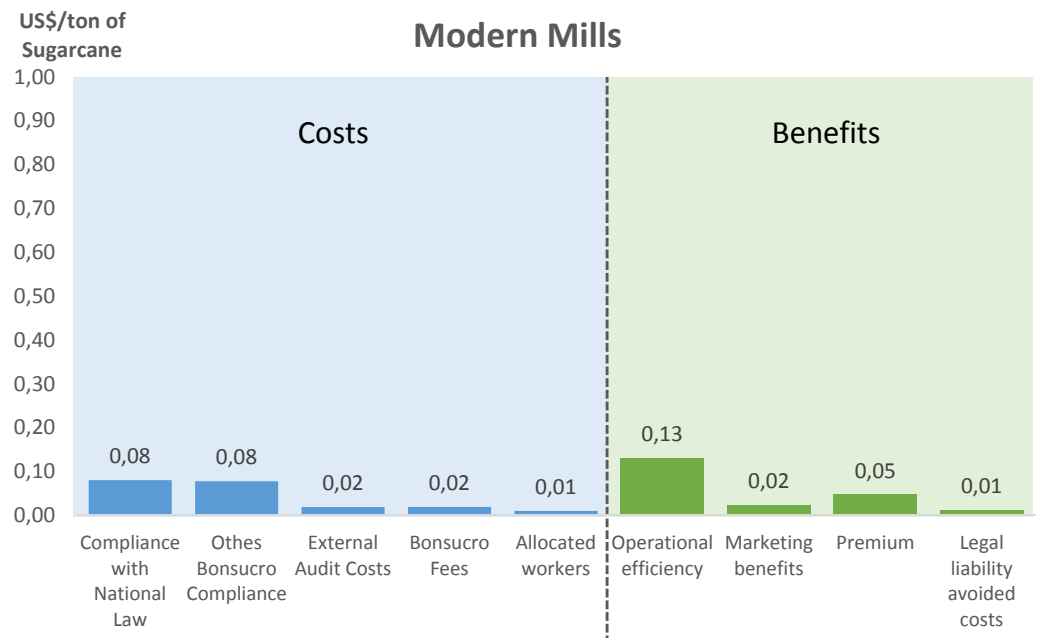


Initial Costs and Benefits to Certification (t=0)

Average costs to obtain certification and the benefits in the first year according to questionnaires data and mills categories



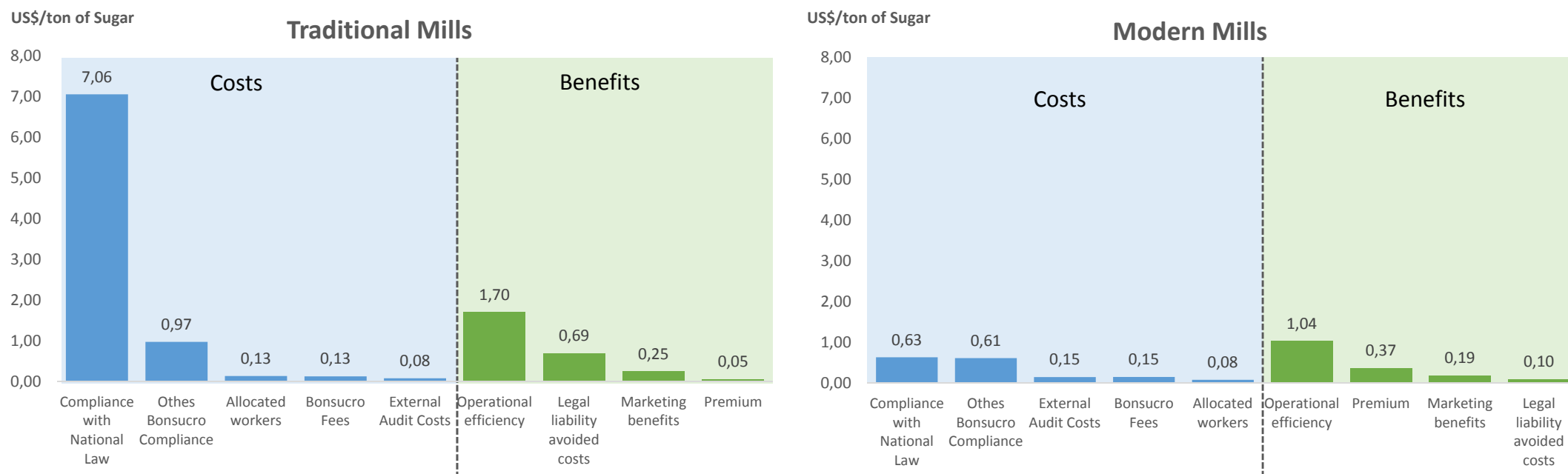
- Compliance with national law is the highest cost component for Traditional mills, summing up U\$0.89 per sugarcane ton, followed by others Bonsucro compliance (U\$0.12)
- The operational benefits is the highest benefits, summing up US\$ 0.22 per sugarcane ton



- For Modern mills, costs for compliance with national law is as high as the costs for others Bonsucro compliance, summing up U\$0.08 per sugarcane ton
- The operational is the highest benefits, summing up US\$ 0.13 per sugarcane ton

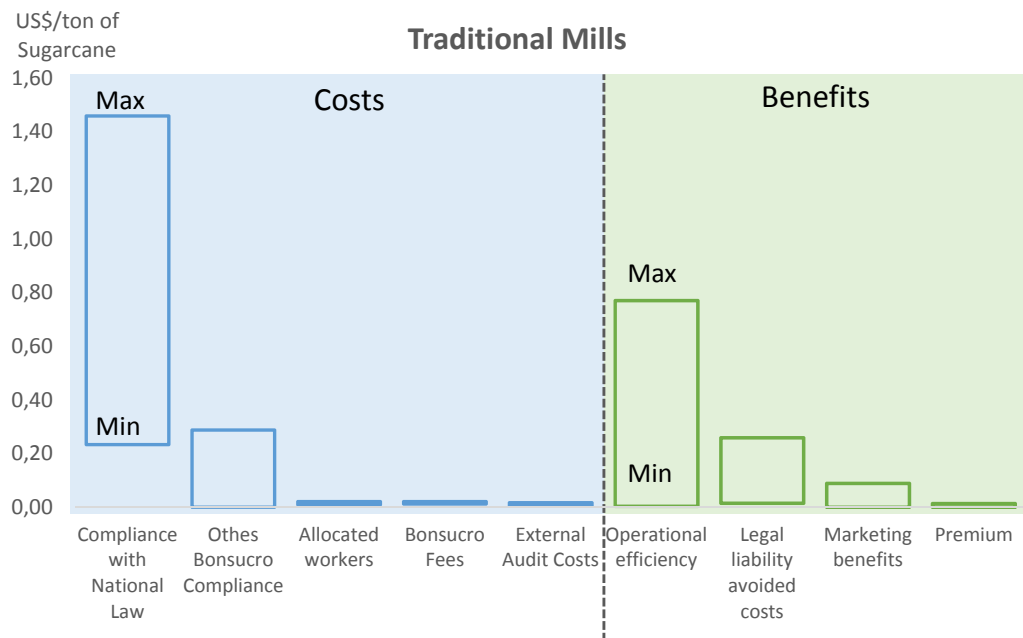
Initial Costs and Benefits to Certification (t=0)

Average costs to obtain certification and the benefits in the first year according to questionnaires data and mills categories (per ton of sugar)

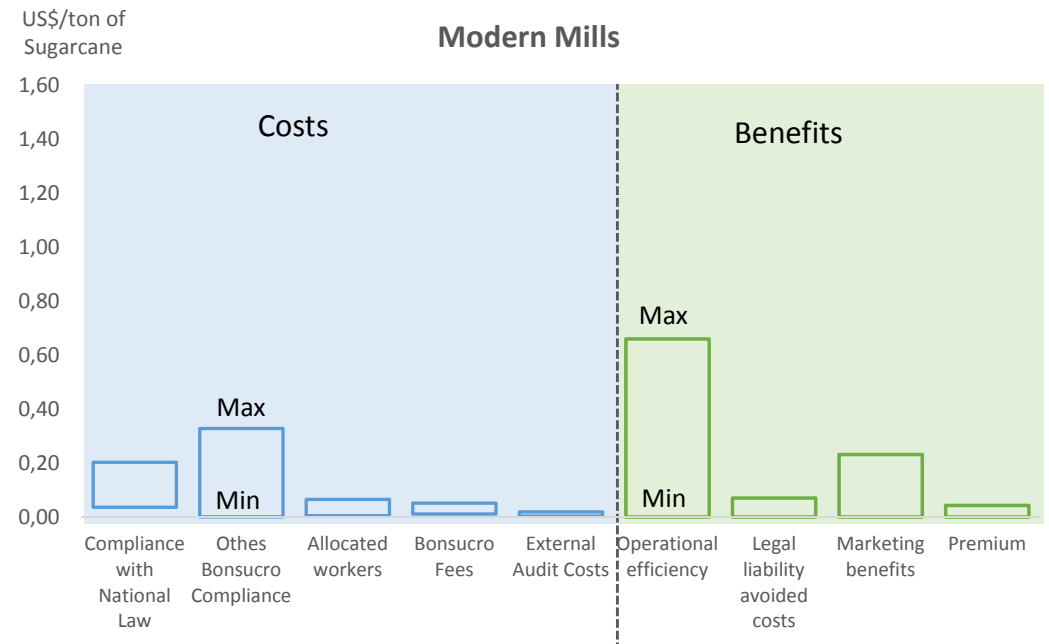


Initial Costs and Benefits to Certification (t=0)

Range of average costs to obtain certification and the benefits in the first year according to questionnaires data and mills categories



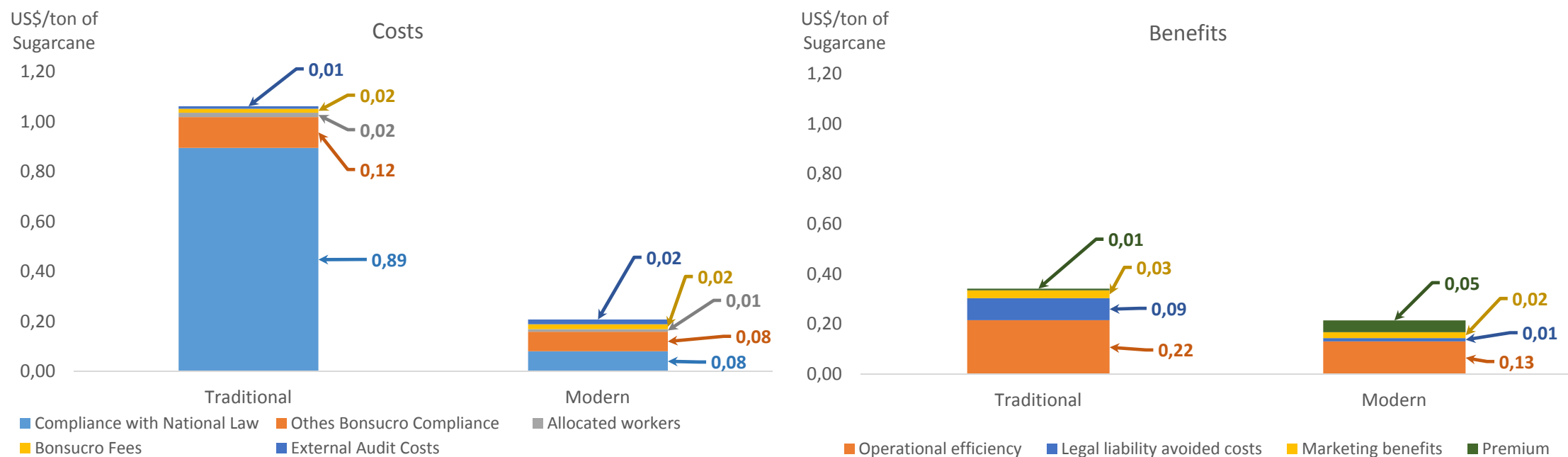
- Both Traditional and Modern mills presented high operational efficiency gains (more than U\$0.60/ton), meaning that both categories can obtain benefits with Bonsucro management tools



- Compliance with national law, instead, is much more relevant for Traditional mills. The highest mill element in the Modern sample presented around the same value as the one of the lowest mill element in the Traditional sample

Initial Costs and Benefits to Certification (t=0)

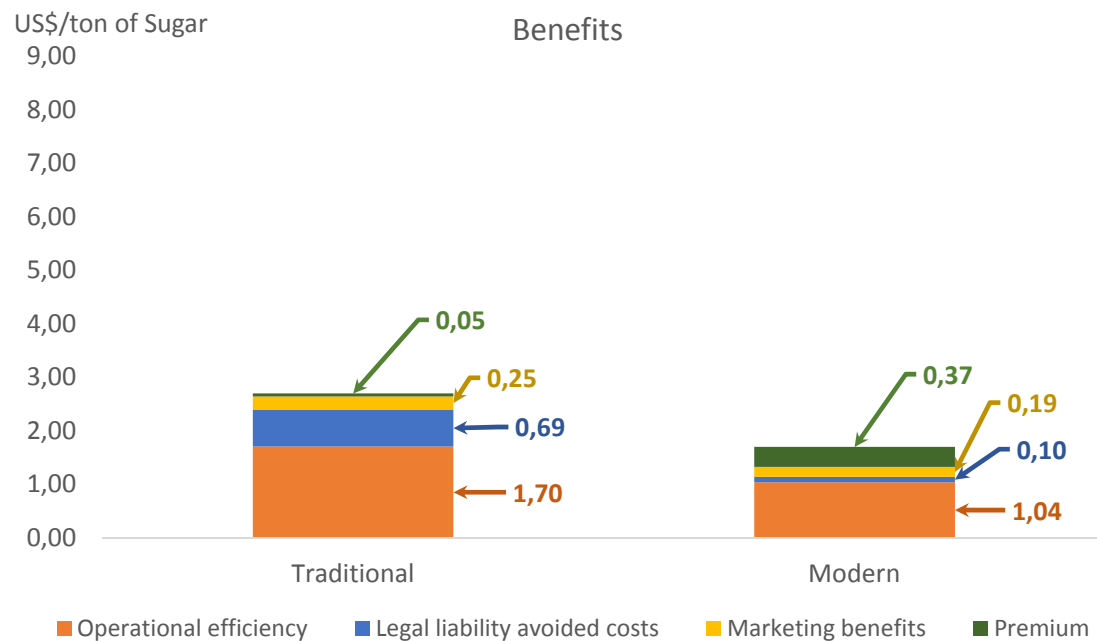
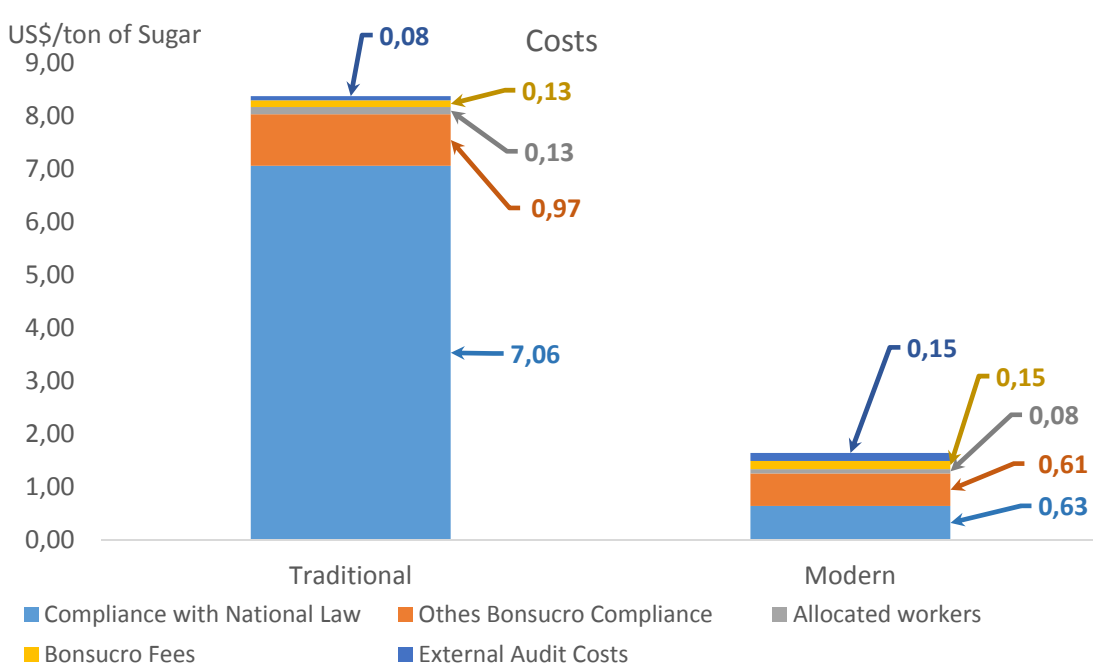
Average costs to obtain certification and the benefits in the first year according to questionnaires data and grouping of mills



The total costs of Traditional mills are about 412% higher than the Modern mills. The compliance with National Law is the most important costs in both groups, it represents about 84% of total costs in Traditional and 39% in Modern mills.

Initial Costs and Benefits to Certification (t=0)

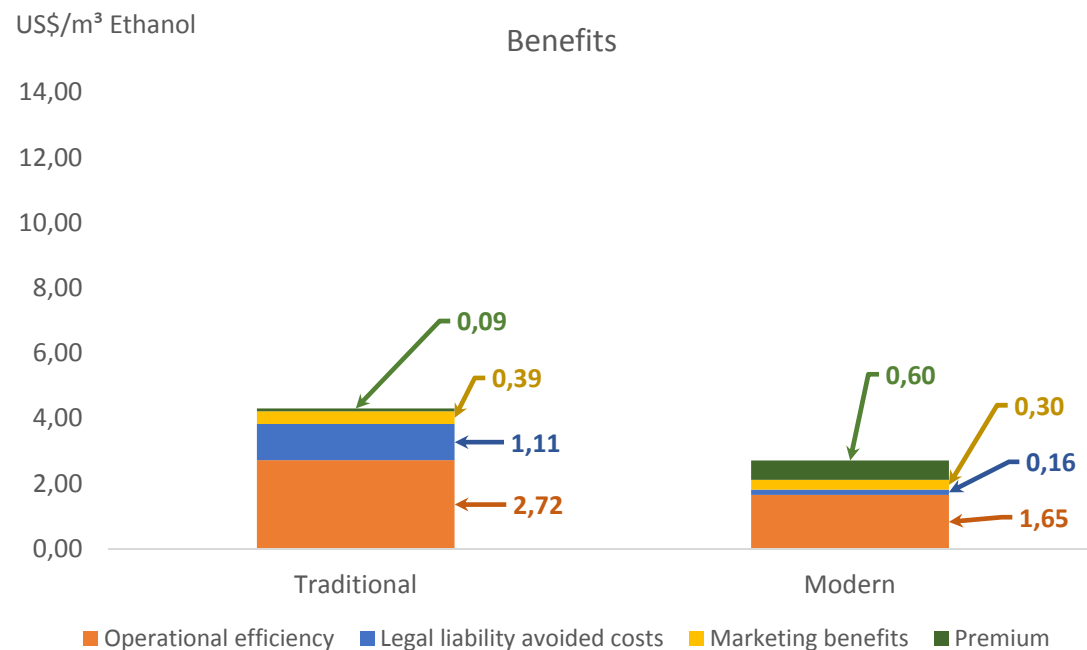
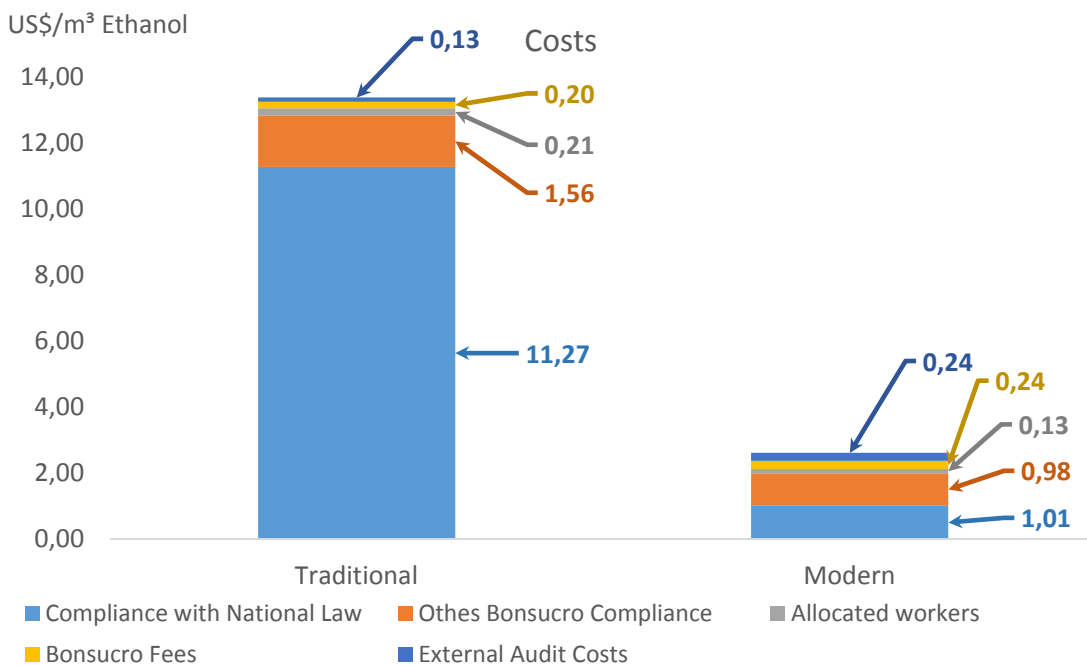
Average costs to obtain certification and the benefits in the first year according to questionnaires data and grouping of mills by tons of sugar



The total costs of Traditional mills (US\$ 8.37/ton of sugar) represents between 20% and 35% of sugar profitability (US\$ 24-42/ ton of sugar), considering the two last years.

Initial Costs and Benefits to Certification (t=0)

Average costs to obtain certification and the benefits in the first year according to questionnaires data and grouping of mills by m³ of ethanol



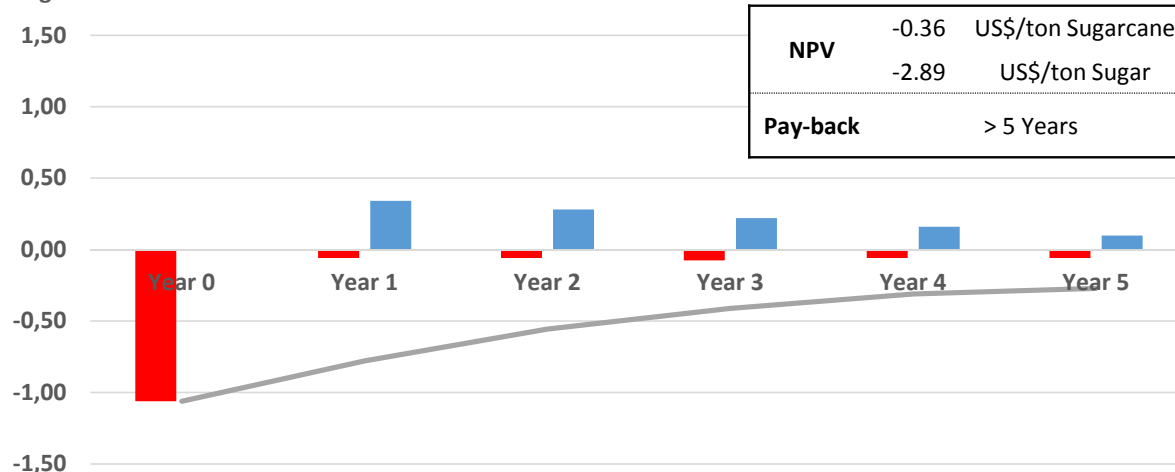
Cash flow scenarios



Cash Flow for Scenario 1 (Including compliance with national law and own cost of capital)

US\$/ton of Sugarcane

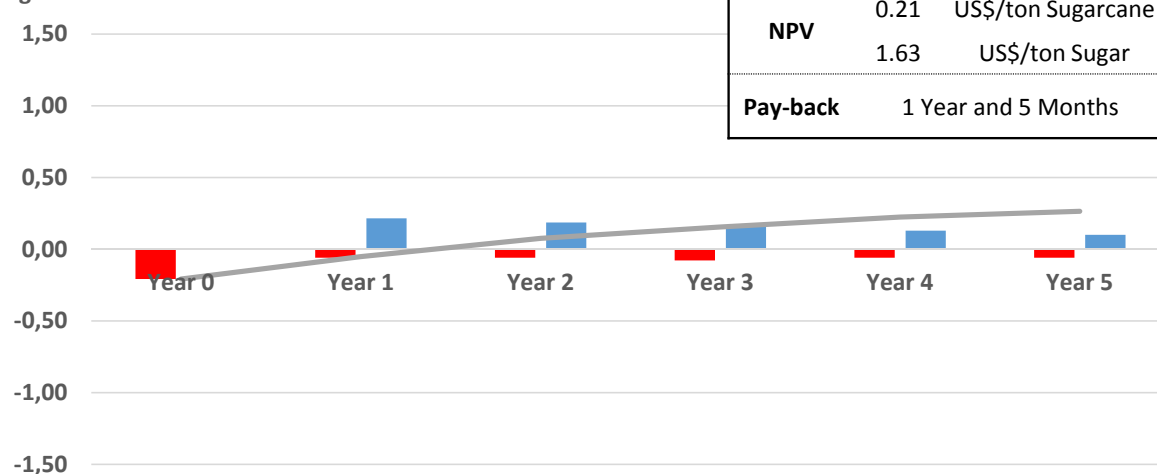
Traditional Mills



- Traditional mills presented a negative NPV and pay-back period longer than 5 years due to the high costs for legal compliance in the first year,

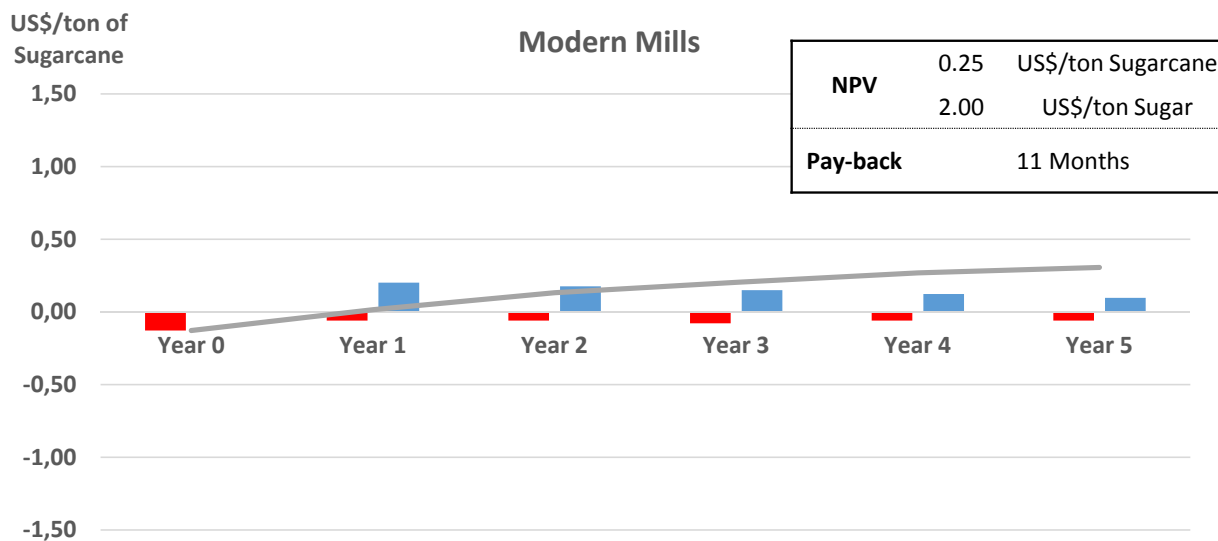
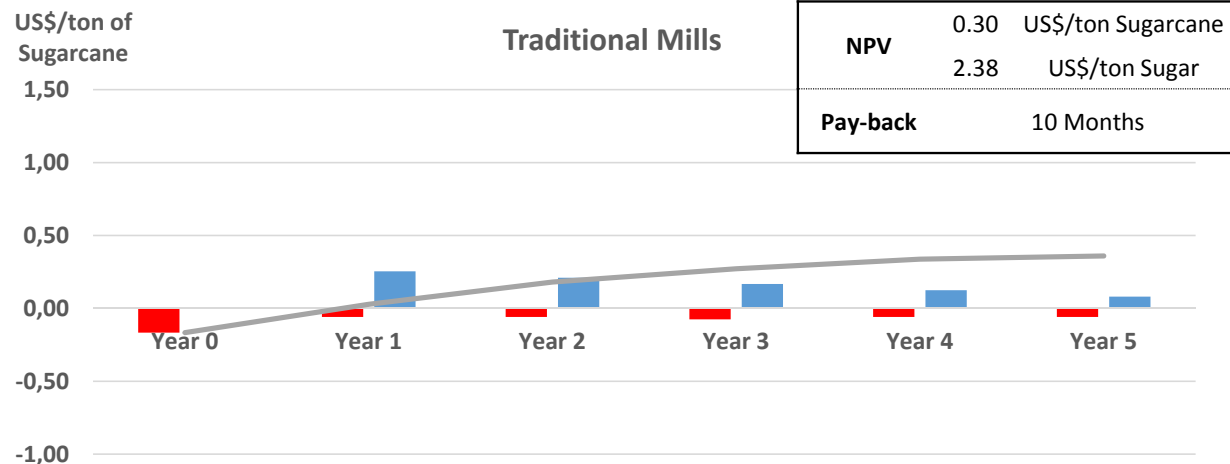
US\$/ton of Sugarcane

Modern Mills



- Modern mills presented a short pay-back period (less than 2 years) and a positive NPV

Cash Flow for Scenario 2 (Excluding compliance with national law and own cost of capital)

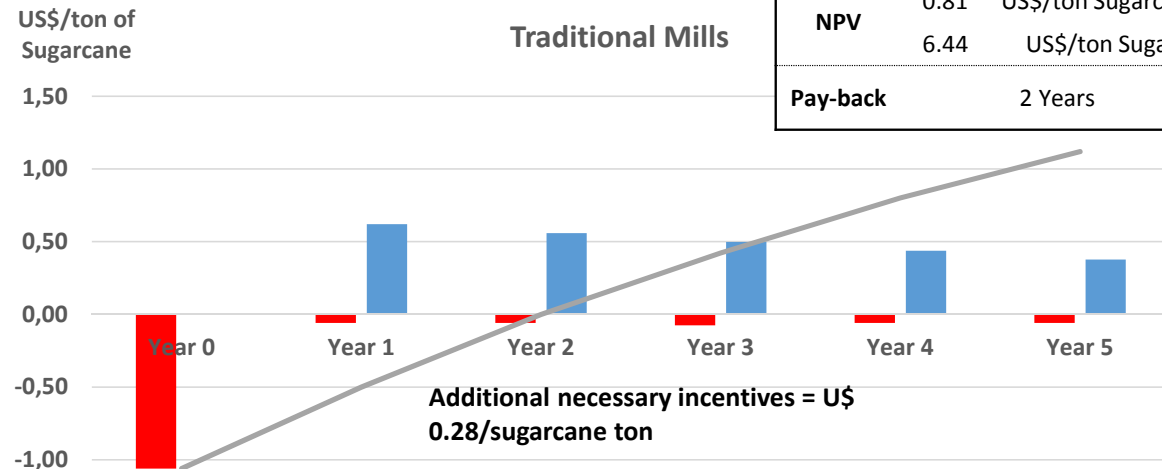


- Without considering law compliance, Traditional mills presented higher NPV than Modern mills

Cash Flow for Scenario 3 (Including compliance with national law, own cost of capital and using a “premium” for achieving pay-back in the first cycle)

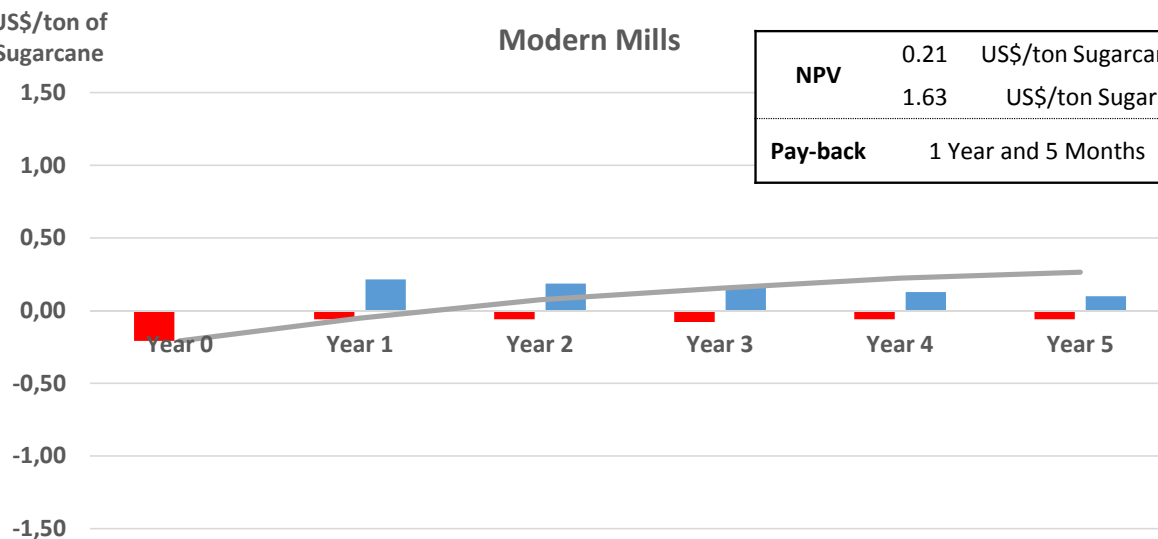
Traditional Mills

NPV	0.81	US\$/ton Sugarcane
	6.44	US\$/ton Sugar
Pay-back	2 Years	



Modern Mills

NPV	0.21	US\$/ton Sugarcane
	1.63	US\$/ton Sugar
Pay-back	1 Year and 5 Months	

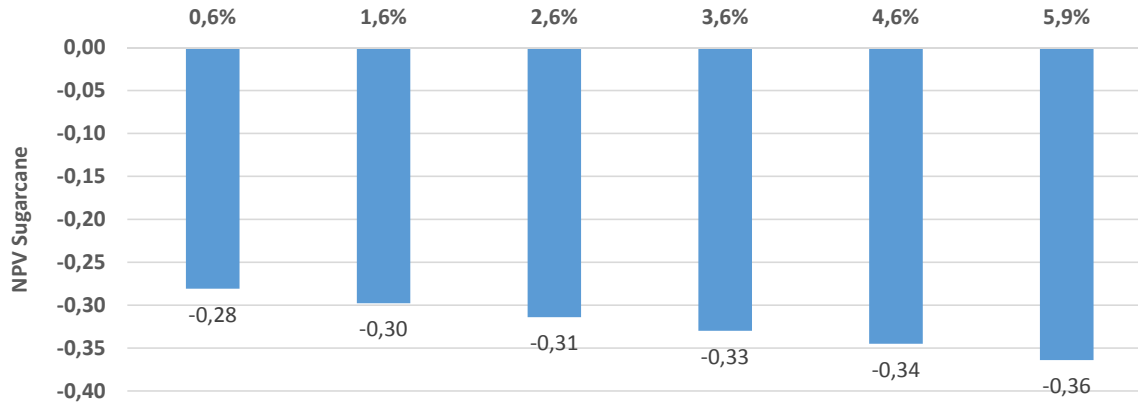


- In order to achieve a pay-back in the first period of certification, this is, before the 3rd year, when the mill needs to recertification, the additional monetary incentives necessary to Traditional mills, considering the investments to compliance with national law, is US\$ 0.28/sugarcane ton
- The main objective of this analysis was simulating the additional financial incentives to have a positive pay-back in the first cycle (before the 3rd year). To do this it was simulated a shock in the premium, but the results would be the same if we have used another type of benefits.

NPV sensitive considering different interest rate

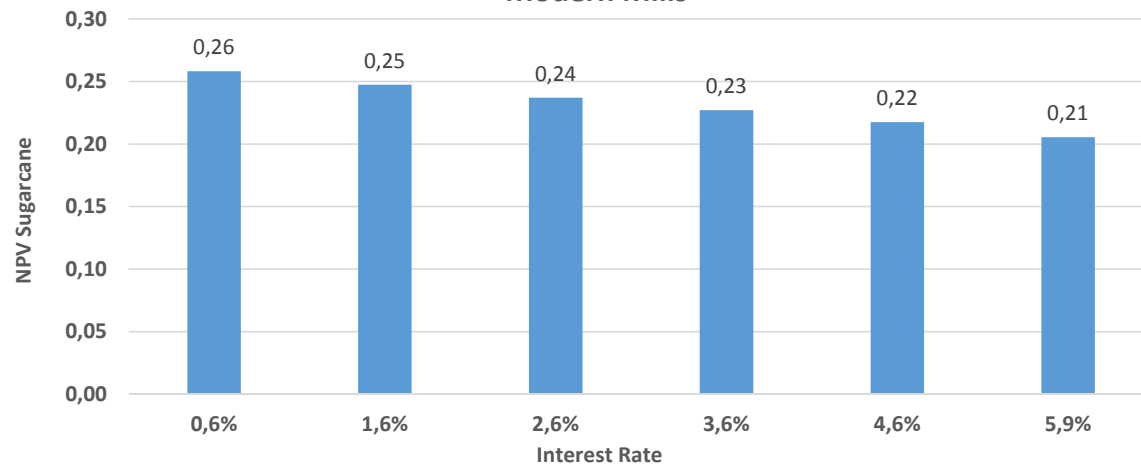
Traditional Mills

Interest Rate



Modern Mills

Interest Rate



- Simulating different interest rate for the scenario 1, which includes the costs with law compliance, there is a small impact in the NPV value.
- For the Traditional mills a reduction of interest rate in almost 5 percentage points was not sufficient to get a positive NPV.

Mills have indicated several challenges in Bonsucro certification process

Market

Mills cannot sell all volume of certified products

The Credit Trade System do not stimulate overall sustainability improvements within sugarcane sector

The Credit value is not enough to cover all investments necessary to get the certification (compliance and certification costs)

Certification Process

Distinctions among auditors check-list and Bonsucro standards

Lack of discussion and clarity in the definition of benchmark indicators leading to unrealistic parameters (mainly the new parameters)

Difficult communication process among Bonsucro and Bonsucro Members

Bonsucro Certification does not replace other certifications and audits (including the ones required by customers who buy Bonsucro products)

Investments

High fees (Bonsucro members, volume certified and auditors)

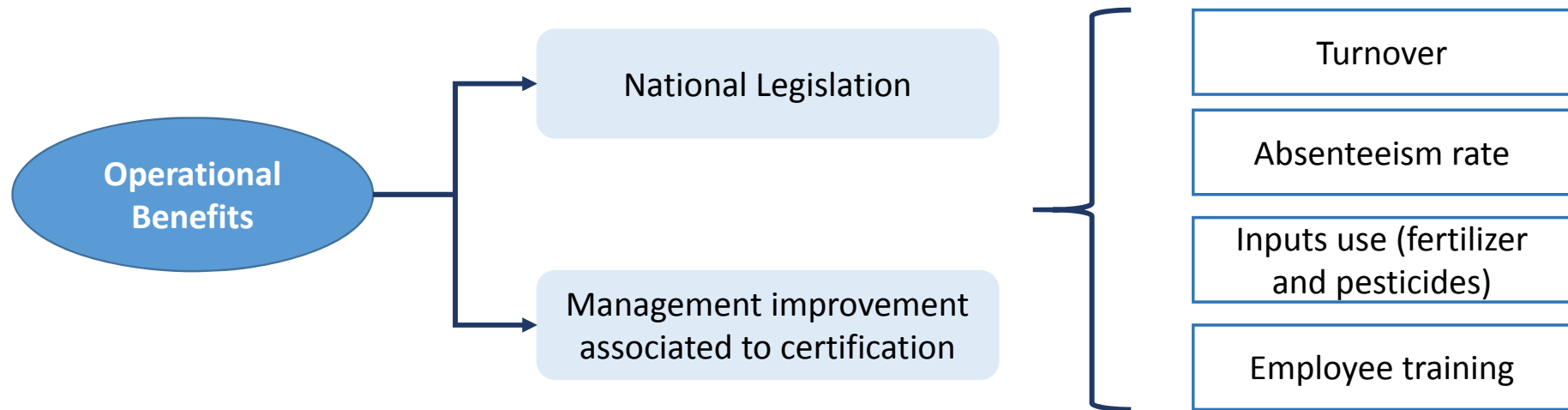
Investments anticipation to compliance with the law (especially for traditional mills)

Conclusions and recommendations

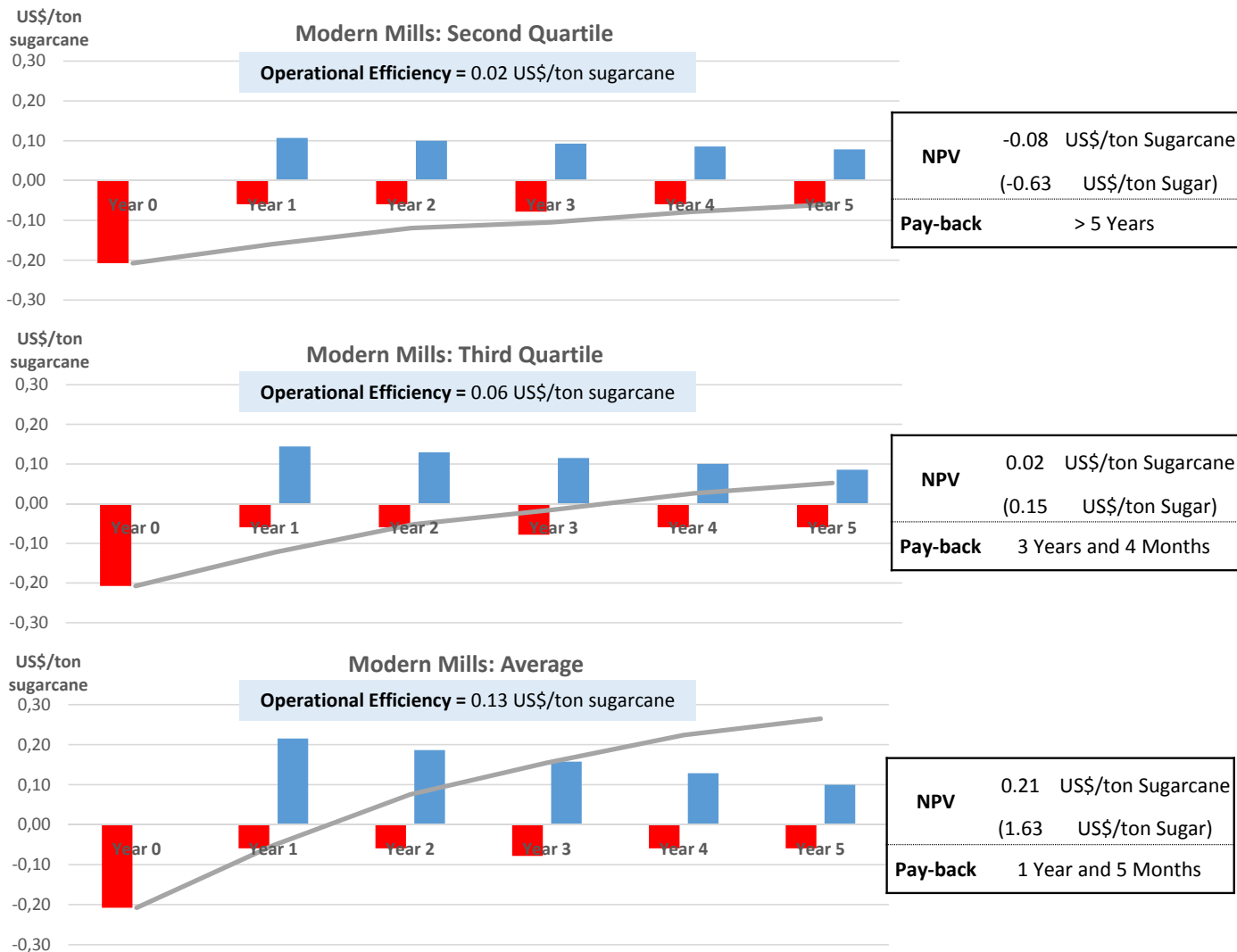
Opportunities to increase the appeal of compliance and certification with Bonsucro

Additional analysis on the sensibility of operational efficiency is necessary to better understand its importance and impacts on conclusions

- Brazilian mills, traditional and moderns, has not been certifying any more (new areas or new mills)
- The most important benefit is operational efficiency and there is high level of uncertainty regarding these values
- Apart from the fact that the sample is very small compared to sector size, interviewed mills had to estimate these values, since most of them hadn't use this value within the management processes
- Considering that investments to compliance with National Law can generated some operational benefits, as reduction in work accident number, turnover rate reduction and others, it is expected that the operational benefits of Traditional and Modern mills were significant different, and that was not the case in our sample. This fact confirms the evidence that there are high uncertainty in this variable.



Operational Benefits Analysis for Modern mills



- The operational benefits is an important variable in the benefits of Modern Mills and different values for it generates different NPVs and pay-backs
- Using the 3rd quartile (Q3), which 75% of operational benefits values are less than it, the NVP decreases in 90% compared to the average value. The pay-back increases in almost 2 years.
- Using the 2nd quartile (Q2), which 50% of operational benefits values are less than it, the NPV is negative and the pay-back is higher than 5 years

Considerations for Brazilian mills

Costs

- Legal compliance – health and security (labor) and environmental issues – is very high in Brazil. Since the compliance is a condition for the certification the challenges are higher for the mills far to legal compliance.
- The majority of the costs are related to legal compliance and, as the mills pointed, they are part of the mills obligations. The incremental costs of certification is moderate. There are synergies for reaching legal compliance and getting certified.
- We could see Bonsucro as a driver for law compliance in Brazil since the full compliance is a long, expensive and complex process.
- Even with a positive NPV, there are several reasons that prevent mills to invest in Bonsucro certification. Even with positive return and pay-back up to 2 years (Modern mills), the majority of Brazilian mills are now in bad financial situation (low margins, high level of indebtedness, low investment capacity)

Benefits

- Operational efficiency is the most important benefit for both Traditional and Modern mills. This benefit is underestimated in most of the mills. We realized this since majority of the mills hadn't this value already estimated by the time we asked. Experts consulted during the research also confirmed this fact
- Marketing benefits were listed as spontaneous media exposure, contribution for good brand image and value, and meeting some customers demand. Long term contract and clear message from market would be alternatives for increasing these benefits
- Premium, understood as an extra value for certified products, were not very high as desired by the mills. Small number of interested buyers and small amounts made the case for low benefits
- We expect that mills not covered in our sample (familiar/individual companies) would present even higher benefits, especially operational efficiency. This is due the fact that our sample is characterized by high efficient mills

Key conclusions for Brazilian mills

	Traditional mills	Modern mills	Other (Brazilian) mills
What is the business case for reaching compliance with the Bonsucro Production Standard?	High costs for legal compliance prevent the business case	There is business case for compliance, if operational efficiency benefits are sufficient high	Mills may benefit a lot from operational efficiency
What is the business case for validating compliance with the Bonsucro Production Standard through third party certification?	Validating compliance does not bring significant cost and benefits to change the business case (if it exists)		Probably not significant, compared with other compliance costs
What are identified opportunities to increase the appeal of compliance and certification with Bonsucro from mill perspective?	Support for legal compliance		<ul style="list-style-type: none"> • Support for legal compliance • Engagement of the principles and benefits associated
	<ul style="list-style-type: none"> • A program to drive the legal compliance by mills, since it is the biggest barrier to the certification. • The operational benefits are the biggest incentive for the certification, but it is very difficult to measure them, so a deeply analysis about it would be necessary. Management tools may help the mills identify these benefits. • To increase certified products demand and therefore premium and other market benefits • Better elucidation of the certification process (criteria and validating) between Bonsucro and member mills 		