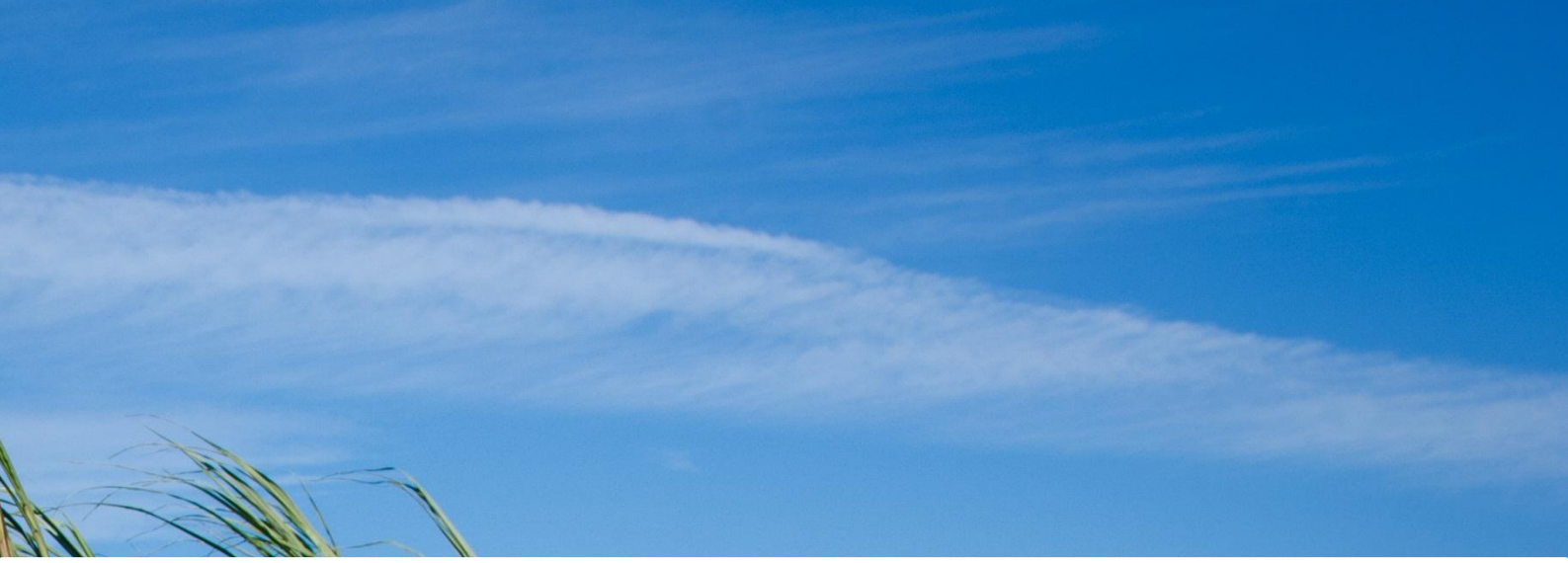

BONSUCRO®

Preliminary Outcome Report 2013 - V1.
15 January 2014

Bonsucro Secretariat

Bonsucro's mission is "to foster the sustainability of the sugarcane sector through a metric-based certification scheme and by supporting continuous improvement for members".

Bonsucro is the trading name of the Better Sugar Cane Initiative ltd, a company registered in England and Wales, company number 06798568.

E&OE: information correct at time of publishing - January 2014

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1. Introduction, Scope, and Objectives

Bonsucro has developed and is maintaining a voluntary global metric standard with the objective of improving social, environmental, and economic sustainability of sugarcane farming and of production of ethanol and sugar. This Preliminary Outcome Report is an exercise, carried out by the Bonsucro Secretariat, to assess and communicate about the initial results of Bonsucro's certified members in relation to the Bonsucro Production Standard. Besides the outcomes of certification, Bonsucro also monitors closely the results of its own operations. For more information please see "A Guide to Bonsucro".

Bonsucro's Monitoring and Evaluation System (M&E) focuses on 14 Key Priority Indicators (table below). They were chosen by the Secretariat and brought to the scrutiny of Bonsucro members. These indicators were not formally adopted, but will be adopted by the Board of Directors in early 2014.

Table 1. Priority Indicators for Monitoring & Evaluation

Area	Short to medium-term goals as per Theory of Change	Issue	Indicator of Bonsucro Production Standard	Indicator	Short to medium-term metric (as per Bonsucro Production Standard)	Compliance outcome
Land Rights	**All sugarcane is grown in legally-owned land, local communities are consulted and respected**	Land Ownership	1.2.1	The right to use the land can be demonstrated	Yes	Land where sugarcane is grown is legally-owned and not contested by local communities

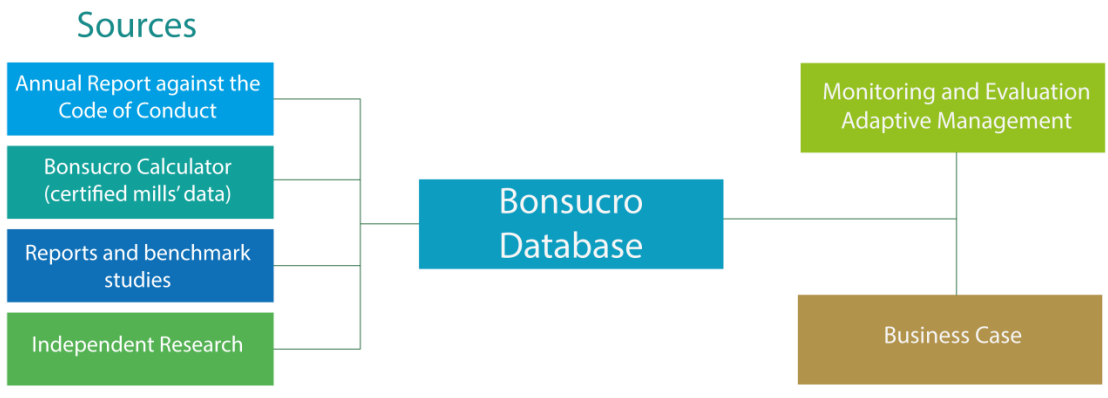
Enterprise Resilience	**Farmers add value to their work**	Yields	3.1.2	Yield (tc/ha harvested/y)	45 for Dryland; 65 for Supplementary Irrigated Systems; and 85 for Irrigated Systems	Yields are improved
		Value Added	5.9.1	USD $/t cane	**Mill** > 4; **Agric** >2	Sustainable sugarcane adds value to farmers and mills
	Mills are technically efficient	Mill Efficiency	3.1.4	Mill overall time efficiency (processing time as percent of total time)	>75	Mills are efficient economic operators
Labour Rights	**Workers work in a safe environment**	Workers Safety	2.3.1	Lost time accident frequency (number per million hours worked)	**Mill** <15; **Agric** < 45	Workers engage safely in a professional activity in the sugarcane sector
	ILO Standards apply to all workers of the sugarcane sector	Wages*	2.4.1	Ratio of lowest entry level wage including benefits to minimum wage and benefits required by law ($/$)	≥1	National minimum wage is ensured
		Minimum Age of Workers*	2.1.1	Years (Minimum)	18 for hazardous work 15 for non hazardous work	Child labour is eradicated in the sugarcane sector
		Workers Rights* (regarding forced or compulsory labour, discrimination, and freedom of association)	2.1	To comply with ILO's Labour Conventions	Yes	ILO standards apply to all workers of the sugarcane sector
Climate Change	**GHG emissions are contained**	GHG Emissions	3.2.1	Net GHG emissions for sugar	<0.4 t CO2eq/t sugar	Sugarcane industry does not contribute to climate change.
		GHG Emissions	3.2.2	Net GHG emissions for ethanol	<24 gCO2eq/MJ	Sugarcane industry does not contribute to climate change.
Biodiversity & Natural Resources	**Areas of High Conservation Value are preserved and mills mitigate their impacts on the environment**	Water	5.2.1	Net water consumed per unit mass of product (kg/kg of product)	**Mill**, <20 kg/kg sugar; or <30 kg/kg of ethanol. **Agric** <130 kg/kg cane	Efficient use of water in agriculture and milling. Environmental burden of sugar milling is contained
		Environmental Impacts*	4.1.7	Herbicides and pesticides applied per hectare per year	<5 kg active ingredient/ha/y	Impact on biodiversity of sugarcane growing is managed

		Environmental Impacts*	4.1.6	Nitrogen and phosphorus fertiliser (calculated as phosphate equivalent) applied per hectare per year	<120 kg/ha/y	Impact on biodiversity of sugarcane growing is managed; Run-offs from fertiliser are reduced
		Biodiversity*	4.1.2	High Conservation Value areas (interpreted nationally as described in Appendix 1) used as a % of total land affected by a new project or an expansion	0	Areas with high conservation values are protected

* Core Criteria (compliance is required for certification)

Bonsucro collects information from various sources. Qualitative data regarding implementation of the Standard, market outlook, and the views and experiences from the adoption of the Standard and/or membership accession are collected through reports against Bonsucro's Code of Conduct which are submitted to Bonsucro on an annual basis. Bonsucro also monitors publication of independent academic research, standard benchmarking studies and other reports relevant to its M&E system. Finally, Bonsucro collects quantitative data from audits and surveillance audits of certified mills, which cover all the sustainability areas described above.

Figure 1. Data Sources & Uses



The scope of this Preliminary Outcome Report covers 31 certified mills in Brazil and Australia, in the period of **June 2011 to October 2013**, which comprise 39 observations (8 of them had submitted their first annual surveillance audit); it also considers two independent publications of 2013 as well as the Annual Reports against the Code of Conduct received from 21 members (7 mills, 3 civil society, 4 end-users, 1 farmer, and 6 intermediaries), at the time (March 2013) Bonsucro had 77 members[1] and the farmer membership class had just been introduced.

The main objectives of this report are:

- Outcomes & Impacts Communication: To support the development of a business case, showcase positive results of certification, and to offer a platform for communicating on the outcomes and impacts of adoption of the Bonsucro Standards;
- Strategies behind the Standards: to enable Bonsucro to better understand the effectiveness of its Standards in making behavioural changes and to identify their strengths and weaknesses;
- Organisational Learning & Adaptive Management: To enable Bonsucro to better understand the effectiveness of the organisation and strategies, and to identify issues, trends, and areas for improvement.

[1] In January 2014 membership has almost tripled and approaches 200 members.

2. METHODOLOGY FOR DATA COLLECTION

Data collection, storage, and use are under the responsibility of different staff members:

- *Head of Engagement*: Responsible for gathering and storing data from Members' Annual Reports (submitted yearly);
- *Certification Coordinator*: Responsible for liaising with certification bodies, acquiring, organising, and storing data collected from certified mills by certification bodies;
- *Research and Policy Analyst*: Responsible for monitoring, gathering, and assessing independent research about Bonsucro; Responsible for analysing certification data and writing M&E and outcome reports;
- *Head of Sustainability*: Responsible for supervising the M&E system; Responsible for supervision of data collection and organisation; Responsible for the data collection tool (Bonsucro Calculator); Responsible for supervision of data analysis and M&E and outcome reports.

Independent research, reports, and benchmark studies offer important data to Bonsucro; together with Bonsucro events, they may contribute towards monitoring influencing factors and unintended effects as well as towards understanding broader implications of adoption of the Bonsucro Standards (e.g. community level impacts). We strive to take into consideration studies from respected organisations, researchers, and authors specialised in the sugarcane sector. Data from these sources is collected directly by the secretariat and by Bonsucro members. They are shared internally to relevant team members for their consideration and further actions.

The Annual Report against the Code of Conduct is a compulsory requirement for Bonsucro members. Members respond to questions designed by the Secretariat regarding their experiences with Bonsucro, their market, their plans, and their activities to support Bonsucro's goals. It is also an opportunity for members to let

Bonsucro know about their concerns, challenges, and opportunities in the sugarcane world. The reports offer rich qualitative information about adoption of the Standards, market of certified products, amongst others. Data is collated and studied by the secretariat to design global, regional, and local action plans.

Finally, and most importantly, with regards to mills' certification data, to monitor progress regarding the Priority Indicators for M&E presented above, Bonsucro has implemented a data collection protocol (captured in the Production Standard Audit Guidance and Certification Protocol), which guides what and how data should be collected for each of the Standard's indicators.

For audit against the Production Standard growers and millers are required to fill out the **Bonsucro Calculator**, which is used to evaluate conformity of an operator with each metric indicator of the Bonsucro Production Standard by calculating the performance of the operator and comparing it with the level set in the Standard. The Bonsucro calculator is therefore designed to collect and manage data, and is used to perform data analysis, both cross-sectional (comparing certified units' results) and longitudinal (understanding individual evolution over time).

Data verification is put under the responsibility of the licensed certification bodies which have the mission to collect sufficient evidence that justify any data entered in the tool. The guiding documents clarify how indicators should be interpreted and what is expected from auditors collecting data.

Every auditor collecting data is trained on the Bonsucro Calculator as well as on the data itself, either by Bonsucro or internally, and has the necessary technical knowledge to understand and verify information collected from farms and mills and to report it. Bonsucro's Audit Guidance and Certification Protocol entail different methods to obtain data, including: interviews, sampling, documental and background checking, visual audits, among others. As licensed certification bodies are the entities with full on-the-ground access to the data and the knowledge

necessary to perform audits, ensuring they are skilled, trained and competent increases the reliability of the data, hence the certification decision.

Audit results and Bonsucro calculators are sent to Bonsucro after validation by the certification body. This way, Bonsucro obtains individual-level data of certified member mills. It is important to note that the mills own their individual data and make them available to the certification body which relay them to Bonsucro. Individual-level data will never be disclosed publically. Bonsucro then uses the data in an aggregated way and considers it anonymously for purposes of evaluation and communications.

Through its role of accreditation body, Bonsucro monitors the activity and the compliance of certification bodies with the Certification Protocol and verifies specifically the quality of the work as data verifier of the certification bodies. This helps Bonsucro to have an increased confidence in the data received.

3. Results from Independent Research & Benchmark Studies

Bonsucro is a young and evolving organisation, the quantity and quality of independent research about its operations and results are still limited. However, Bonsucro expects to gradually attract more academic interest and it is always open to provide information and to collaborate with independent researchers. By monitoring publications Bonsucro expects to learn from different viewpoints and to continuously improve its systems and practices. Below are a number of studies published in 2013 that offer important insights about Bonsucro, its strengths and its weaknesses:

IUCN on Raizen's Maracaí Mill Implementation of Bonsucro

Main findings:

- "Raízen's implementation of the Bonsucro standard has been associated with several important and positive changes at the field, mill, and company management levels" (pg. 2)
- 20% reduction in inorganic fertilizer application and 4-fold reduction in acidifying gases emissions from Maracaí Mill;
- Workers were trained according to Bonsucro's specifications;
- Bonsucro also operates as a reinforcement of the Brazilian Forest Code, it effectively creates an additional compliance mechanism;
- "Despite the lack of detailed guidance from the Bonsucro Standard as to the requirements of the EMP (Criterion 4.1, Appendix 4), the company prepared a substantive EMP for the Maracaí Mill and its supplier, including a set of time-bound targets for implementing improved practices related to several conservation and environmental management issues." (pg. 6). (being addressed in the current Standard Revision).

WWF's "Searching For Sustainability: Comparative Analysis of Certification Schemes for Biomass used for Production of Biofuels"

Main findings:

- The Bonsucro Production Standard covers 93% of WWF's sustainability indicators;
- Bonsucro was the single voluntary scheme with the fewest number of unfulfilled criteria, which testifies to the completeness of its Standard's scope;
- Regarding the provision for environmental management plans of certified mills: "Bonsucro is the only standard which contains a procedure for monitoring and evaluating impacts in connection with certification activities" (pg. 35);
- Bonsucro's (non-EU-RED) Production Standard sets targets more ambitious than the EU-RED for reducing GHG emissions;
- Production Standard: "All elements of a social and environmental management systems are covered in the standard. Biodiversity assessment and priority habitat conservation are addressed." (pg. 36)
- "Social and labour performance is comprehensively covered" (pg. 37)
- There is a need to improve the Standard with regards to food security (being addressed in the current Standard Revision)

4. Findings from Annual Reports from Members

The Annual Report against the Code of Conduct is a compulsory requirement for Bonsucro's membership. Members respond to questions designed by the Secretariat regarding their experiences with Bonsucro, their market, their plans, and their activities to support Bonsucro's goals. It is also an opportunity for members to let Bonsucro know about their concerns, challenges, and opportunities in the sugarcane world. The reports offer rich qualitative information about adoption of the Standards, market of certified products, amongst others.

In 2012, 21 members from all classes submitted their Annual Reports and more should be received next year following the increased number of members and the potential threat of sanction for not reporting.

Figure. 2

1. *Better corporate image*: over 70% of respondents associate Bonsucro with improved corporate image and improved communications about their social-environmental responsibility to stakeholders;
2. *Increased supply chain coordination*: All respondents associated Bonsucro to coordination of the supply chain towards achieving the Standards, in effect this means that members perceive the forum that Bonsucro provides as an important tool for achieving their sustainability targets in sugarcane;
3. *Improved supply chain mapping*: 75% of end-user respondents have associated their work with Bonsucro with improved mapping of their supply chains for sugar. Bonsucro works with end-users to map their supply chains and to foster sustainability among their suppliers;
4. *Better internal control systems*: All respondent mills stated that to reach the Standard requirements, better internal control systems (such as for input control, staff safety, chain of custody systems, etc.) have been implemented;
5. *Reduced liability and costs of compliance with local legislation*: Two major mill groups have affirmed that by implementing the Standard and better practices to achieve the levels required, they have reduced costs of compliance with local legislation.
6. *Reduced agricultural and industrial inputs*: One major mill group and a farmer stated that adoption of the Bonsucro Standard has led to reduced use of agricultural and/or industrial inputs.

5. METHODOLOGY & FINDINGS FROM MILLS' CERTIFICATION DATA

Methodology

Bonsucro worked on determining the baseline values for 31 certified units (from their initial audit reports) it also used the information from surveillance audits of 8 mills, covering the period between June 2011 and October 2013. This data was then compared to industry references and to the requirements of the Bonsucro Production Standard which was designed as the baseline. It was then determined what the main differences between mills results and the baseline were, or in other words, how further behind or advanced mills were from the level in which they would be considered sustainable and what this means for them. Looking at current patterns of certification, the results of this exercise cannot be extracted to a global level as 92% of the certified mills are located in the south east part of Brazil, therefore they cannot be used to draw inferences from the population of mills worldwide. As the baseline was determined using the Bonsucro Standard and industry references, therefore not analysing non-certified mills, the results cannot be used to compare certified mills with non-certified mills. Finally, the analysis of early certification data might show some issues with the quality of data, mainly due to the inexperience of the collectors at the early age of the organisation, and due to some inaccuracy of the collection tool and the lack of guidance.

To reduce the risk of low quality data, Bonsucro's Head of Sustainability has cross-checked all data and where necessary requested confirmation from the data collectors or excluded contentious data from the assessment. Averages (means) of selected indicators were calculated and compared with the references by Bonsucro's Research & Policy Analyst. Where relevant, the averages were scaled up to the entire Bonsucro certified mills and farms.

Despite all shortcomings and limitations of the data, this study is useful for understanding the main positive results of certified mills and provides an initial baseline for longitudinal investigations with panel data (studying certified mills

progress over time, using the same variables and individuals) that will be carried in the coming years.

Findings

The following shows a summary of the most relevant results within the Priority Indicators. Other results were not presented due to insufficient or inaccurate data. Bonsucro continues to monitor other variables and works with certification bodies to improve data collection methods. Results are presented in aggregate to protect commercially sensitive information of mills; individual data will not be disclosed but can be used internally by Bonsucro. The figure below presents the main results.

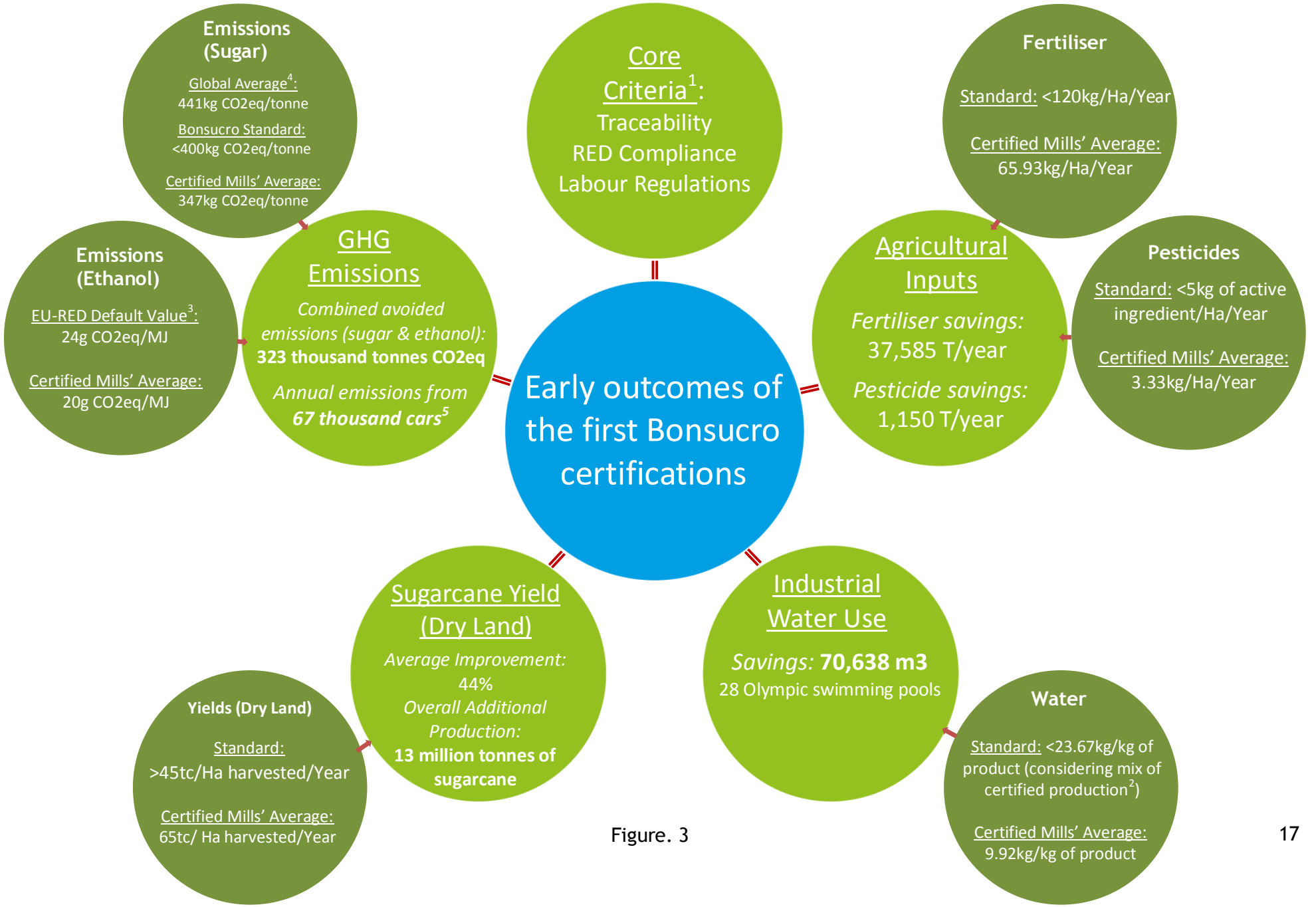

Early outcomes of the first Bonsucro certifications
Core Criteria[1]:
Traceability
RED Compliance
Labour Regulations
GHG Emissions
Combined avoided emissions (sugar & ethanol):
323 thousand tonnes CO2eq
Annual emissions from
67 thousand cars[5]
Emissions (Sugar)
Global Average[4]:
441kg CO2eq/tonne
Bonsucro Standard:
<400kg CO2eq/tonne
Certified Mills' Average:
347kg CO2eq/tonne
Emissions (Ethanol)
EU-RED Default Value[3]:
24g CO2eq/MJ
Certified Mills' Average:
20g CO2eq/MJ
Agricultural Inputs
Fertiliser savings:
37,585 T/year
Pesticide savings:
1,150 T/year
Fertiliser
Standard: <120kg/Ha/Year
Certified Mills' Average:
65.93kg/Ha/Year
Pesticides
Standard: <5kg of active ingredient/Ha/Year
Certified Mills' Average:
3.33kg/Ha/Year
Sugarcane Yield (Dry Land)
Average Improvement:
44%
Overall Additional Production:
13 million tonnes of sugarcane
Yields (Dry Land)
Standard:
>45tc/Ha harvested/Year
Certified Mills' Average:
65tc/ Ha harvested/Year
Industrial Water Use
Savings: 70,638 m3
28 Olympic swimming pools
Water
Standard: <23.67kg/kg of product (considering mix of certified production[2])
Certified Mills' Average:
9.92kg/kg of product

Figure. 3

Notes

1. Core Criteria: All certified mills comply with the Core Criteria of the Production Standard. They all have full traceability of their supply, they all comply with EU-RED (Renewable Energy Directive) regulations, and they all comply with the labour regulations as required by the Bonsucro Production Standard.
2. Water – mix of certified production: There are two different metric standards for water consumption in relation to sugar or ethanol production. The production mix (proportion) of sugar and ethanol from certified mills was calculated using the production data ($\frac{T\ sugar \times 20 + T\ ethanol \times 30}{T\ sugar + T\ ethanol}$ = 23.67kg/kg of product);
3. The EU-RED default values for sugarcane ethanol emission as published in the Renewable Energy Directive (L 140/58).
4. Global average for sugar production emissions (field-to-factory-gate raw sugar): as per values in academic paper (FISHER, J. "MA22 the Variability and Drivers of the Carbon Footprint of Cane Sugar". Paper presented at the XXVIII ISSCT Congress. Sao Paulo, 2013).
5. Calculated using the EPA's Greenhouse Gas Equivalencies Calculator.

6. RECOMMENDATIONS AND NEXT STEPS

Influencing factors and unintended consequences

Although the data was not collected by Bonsucro, we expect that several other factors may have influenced the results, such as location where mills are located, legislation, corporate policies, trade requirements, weather conditions, amongst others. For that reason, the results cannot be interpreted as a direct effect of Bonsucro certification. Although not accounted for in this report, influencing factors provide important leads for Bonsucro to organise next outcome/impact evaluations. In the same sense, unintended effects were not monitored in this study. Bonsucro has focused only on the Priority Indicators and its intended effects, but the Secretariat has been mapping possible unintended consequences and Bonsucro should develop indicators for accounting for them.

Discussion and Future Strategy

The results of this initial assessment are very encouraging. With regards to the indicators considered, certified mills are doing beyond what would be expected from them, which has translated in important savings in terms of agricultural and industrial inputs (and consequently, economic benefits), as well as notable reduction in environmental impacts. The fact that mills have done better than what the Bonsucro Production Standard requires and the fact that certification has not been pervasive within the industry (which would point to laxity of the Standard); testify that the Standard is robust and achievable.

However, the results cannot be interpreted as actual impacts of Bonsucro, but offer relevant insights regarding certified mills' progress and may be used as a baseline for monitoring their yearly results. Nevertheless, Bonsucro should encourage mills to share their pre-certification data and to collect data from non-

certified mills so as to grasp better understanding about the direct impacts of certification. Furthermore, as preparation for a more comprehensive impact study, Bonsucro should develop a plan for collecting contextual data (e.g. community-level impacts, watershed impacts, etc.).

Bonsucro has been using the first results as input for the revision of the Production Standard that started in November 2012 and is expected to finish in June 2014 with the publication of the revised Standard. The Standard Revision Committee and commissioned experts have used the results to suggest improvements and amendments to the Production Standard.

Bonsucro will also improve its scrutiny on the data received and work closely with the data collectors (work carried out by the certification body) to support them in verifying and checking the quality of these data. A revised protocol of certification is currently being developed and Bonsucro has agreed to provide a data check-list for auditors to help them spotting most frequently made mistakes.

With regards to the Annual Reports against the Code of Conduct (figure 2), the points that were mentioned by individual mill groups (5- Reduced liability and compliance costs & 6- Reduced agricultural and industrial inputs) offer important leads for Bonsucro to organise future outcome evaluations and may also orient more in-depth studies. The results of these Annual Reports offer important qualitative data and future Annual Reports should investigate more the perceived impacts at the ground level. The low level of submission of the Annual Report by members (only 21 members out of 77) requires attention. Bonsucro is currently studying a more efficient way to enforce this provision of the Code of Conduct. This issue will be discussed by the Board in 2014.

In terms of communications, Bonsucro is looking to enhance communications about the economic benefits of achieving certification (e.g. monetise the savings and impact reductions from certified mills), and working on a methodology that will allow this. The objective is to help decision makers to value the benefit of certification and therefore encourage them to engage on the road towards a sustainable sugarcane sector.

To respond to the high level of interest and expectations by stakeholders observed during Bonsucro Week, Bonsucro will endeavour to annually review, update, and expand the data presented in this report. Bonsucro's annual outcome report will be published at the time of each Bonsucro Week (Annual General Meeting).