

**OUTCOME
REPORT 2019**



The global sugarcane platform

Bonsucro Outcome Report 2019

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Bonsucro's vision is a sugarcane sector with thriving, sustainable producer communities and resilient, assured supply chains.

Our mission is to ensure that responsible sugarcane production creates lasting value for the people, communities, businesses, economies and ecosystems in all cane-growing origins.

Bonsucro is a company registered in England and Wales, company number 06798568.

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EXECUTIVE SUMMARY

In 2019, Bonsucro continued to grow and build momentum towards its vision. It was a year of many firsts: the first mills in Costa Rica and Mexico achieved certification and an Argentine mill was the first in the country to achieve certification for ethanol. Bonsucro also worked with Brazilian petrochemical company, Braskem, and European packing solutions company, Tetra Pak, to offer the first bioplastic packaging in the food and drink sector to be made from Bonsucro-certified, sustainably sourced sugarcane.

Bonsucro certification has, once again, proven to add value to producer communities. Environmental impacts were reduced, yields increased, and labourers work under safer conditions. And on average, workers earn 20% above the legal minimum wage.

This report covers the period 1 January 2019 – 31 December 2019.

Membership growth

Bonsucro membership continued to grow in 2019 and remains very diverse. By the end of December 2019, there were 553 Bonsucro member organisations in 51 countries. Many of these new members are from countries such as Poland, Ecuador, Hungary, Portugal that are new to Bonsucro and from emerging sectors such as biomaterials.

Production levels and market uptake

Bonsucro-certified operations exceeded yield targets in the 2018-19 season by an average of 8.65 tonnes per hectare. This means that certified farmers are able to produce 8.65 tonnes of cane more than conventional farmers per hectare of land. If extended to the whole supply area, farmers could collectively produce an additional 12 million tonnes of cane by becoming certified.

The rise in productivity has also led to an increase in market uptake. Our credit trading platform experienced an uplift of 207%, year on year, also boosted by its transferral to an online system.

Capacity building and continuous improvement

Bonsucro has increased its capacity building activities in the past year. Smallholder sugarcane farmers are vital to some countries' production volumes, yet engaging with them has traditionally been challenging. In 2018-19, Bonsucro developed targeted programmes to build the capacity

of smallholders and provided training on sustainable sugarcane farming in Pakistan, India and Thailand. With the help of project partners, the Bonsucro team delivered training on: sustainability, the Bonsucro Production Standard and undertaking a gap analysis. In addition, the team has developed training materials that can be used in other smallholder farming communities across the world. These projects and associated training materials support the 'farmer pathway' of the Theory of Change.

It was also an important year of building and strengthening stakeholder relationships, as Bonsucro increased the scope of its partnership work. In addition to collaborating with members on specific projects, Bonsucro has established strong partnerships with organisations such as the Fairtrade International and the Earth Innovation Institute. Beyond this, Bonsucro stepped outside the sugarcane sector to consider sustainable farming more broadly. It joined forces with the Better Cotton Initiative, the Alliance for Water Stewardship and global banks to help producers gain access to finance and incentivise good sustainability performance with preferential terms on loans, for example.

All these projects provided multiple learning opportunities, catalysed ideas and built relationships that stand to benefit the entire sugarcane sector.

Protecting the environment

Bonsucro strives to inform and promote investments that support the sugarcane sector in lowering its contribution to climate change, identifying solutions and building climate resilience. Sugarcane can also play a role in a low carbon economy – as a source of renewable energy and raw material for bioplastics – helping to decarbonise the energy sector and reduce the need for fossil fuels.



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Greenhouse gas emissions

Through the analysis of certification data, Bonsucro has found that certified operators altogether have potentially avoided 200 million kg CO₂ from entering the atmosphere during their first year of certification – this equated to planting 10 million pine trees to absorb carbon dioxide.

Water use

Water scarcity poses major risks in certain sugar-producing regions. Efficient use of water in sugarcane production remains vital to conserve and protect the environment. At Bonsucro-certified mills, water use has decreased continuously over the past few years. Over the last six years, it dropped from 8.45 m³/tonnes to 1.66 m³/tonnes of finished products. Additionally, the longer a mill has been certified, the less water it consumes.

Fertilisers and pesticides

Balancing the need to fertilise sugarcane plants with promoting soil health and protecting the environment remains a challenge. Bonsucro's Production Standard requires farmers to apply fertilisers according to science-based recommendations. While there has been a gradual reduction (from 93.6% of recommended use in 2013 to 89.4% of recommended use in 2018) in artificial fertilizer use among certified producers, particularly the longer they have been certified, it will be important to accelerate efforts to help both smallholder and conventional farmers make further progress.

To support this transition, Bonsucro has worked closely with members and farms working towards certification for the past two years. Guided by the Bonsucro Production By its very nature, the sugarcane sector

can be a dangerous working environment. Workers are called to handle hazardous chemicals, drive heavy machinery, handle sharps tools, work long hours under high temperatures. The implementation of the Bonsucro Standard requires operators to improve their practices to protect their workers. After five year of certification, operators experience a continuous reduction of accident rate, by 48% at mill level and 38% at farm level.

Looking ahead

As producer communities continue to face mounting climate and environmental challenges, sustainability standards, like Bonsucro, will become even more important. In 2020, Bonsucro will develop a new ten-year strategy, with a focus on strengthening strategic partnerships, increasing its engagement with smallholder farmers and stepping up its efforts to promote gender equality.

The organisation has also begun a process of consultation to revise the Bonsucro Production Standard in line with evolving social, environmental and economic challenges in the sugarcane sector. This will be fundamental as Bonsucro continues to expand and promote responsible sugarcane production worldwide, and will build on its existing efforts to improve labour rights, increase yields, decrease environmental impacts and drive innovations in supply chains.

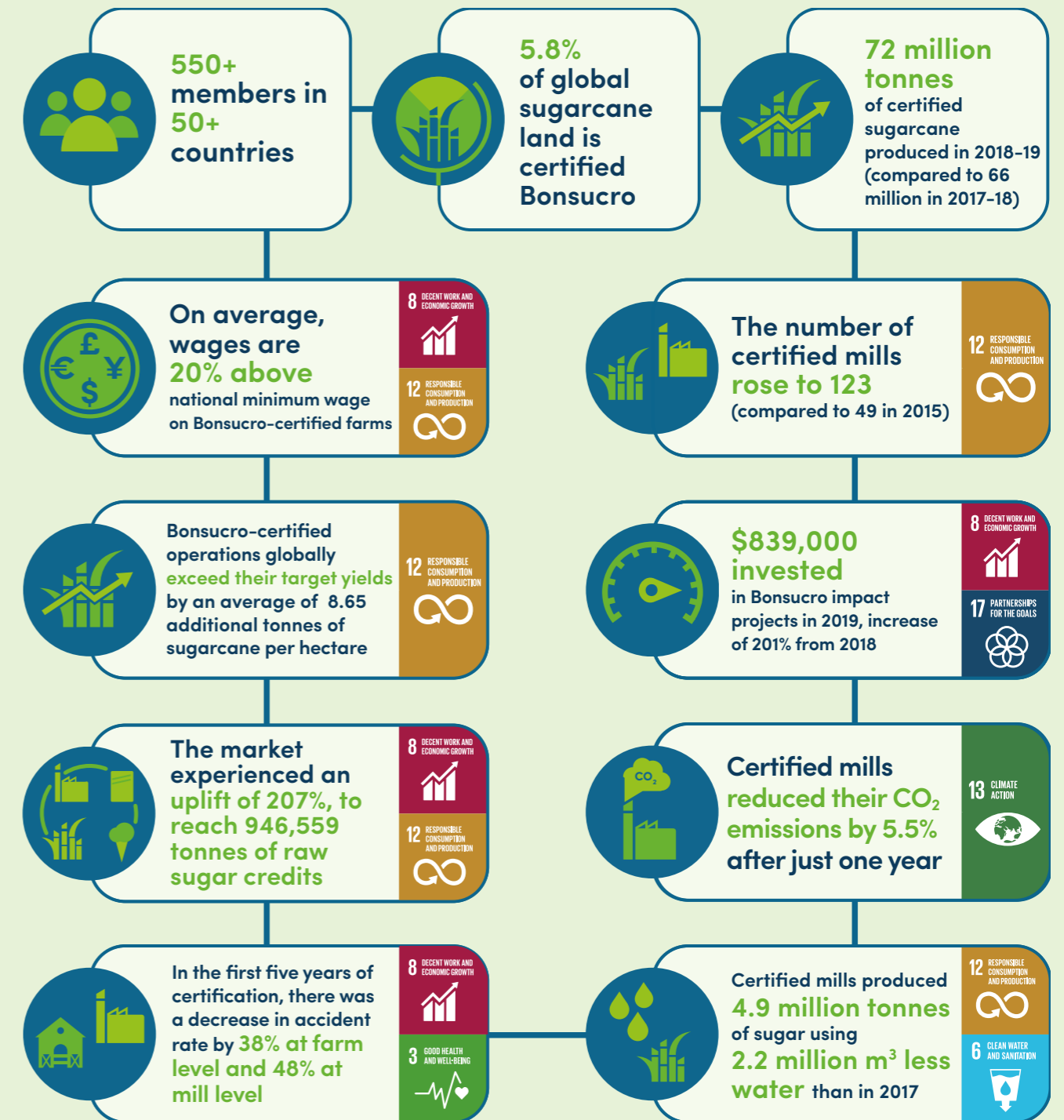
Overall, Bonsucro is confident that it can continue to connect actors along the sugarcane supply chain so that responsible sugarcane production creates lasting value for people, communities, businesses, economies and ecosystems.




SUPPORTING THE SUSTAINABLE DEVELOPMENT GOALS IN NUMBERS



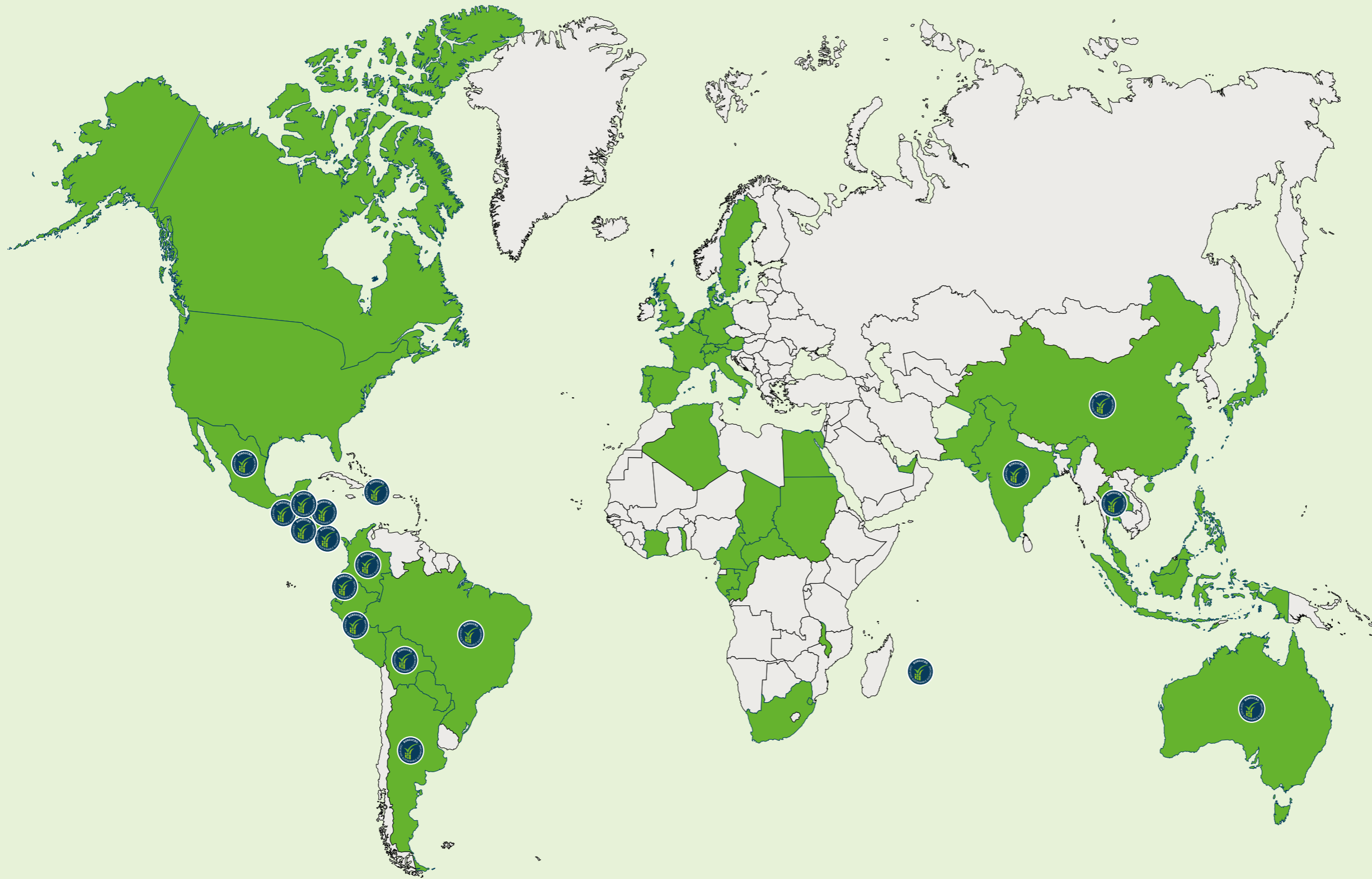
THE GLOBAL GOALS
For Sustainable Development



BONSUCRO WORLDWIDE

 Countries with Bonsucro Members

 Countries with Certified Mills



SUMMARY PER REGION/COUNTRY



Brazil

-  **70 Certified Mills**
-  **136 Members**
-  **2,981,282.41 tonnes**
(Certified Volume)

The Americas without Brazil

-  **18 Certified Mills**
-  **76 Members**
-  **664,399.39 tonnes**
(Certified Volume)

Africa

-  **1 Certified Mill**
-  **20 Members**

Asia

-  **22 Certified Mills**
-  **270 Members**
-  **122,662.71 tonnes**
(Certified Volume)

Pacific

-  **12 Certified Mills**
-  **15 Members**
-  **376,498.78 tonnes**
(Certified Volume)



THEORY OF CHANGE

At the core of Bonsucro’s strategy are two central questions: 1) “What change do we want to happen?” and 2) “How does this change happen?”. The strategy also aims to address stakeholder concerns around the pace and scale at which change is taking place in the sugarcane sector. In particular, certification is no longer Bonsucro’s sole focus – it is one of a number of ways to help producers improve their practices. To support this multi-faceted approach, Bonsucro has developed a Theory of Change that illustrates how the complex process of change in the sugarcane sector will unfold over time and explains how Bonsucro activities are intended to lead to proposed outcomes and impacts.

Bonsucro’s Theory of Change is centred on the continuous improvement of sugarcane farmers’ and millers’ social, economic and environmental performance, and driving supply chain excellence. To deliver these positive impacts, Bonsucro has conceptualised its approach through four main pathways of impact. The pathways define how Bonsucro works and invests resources.

- 1. Farmer impact pathway:** A focus on bringing independent farmers (outgrowers) into performance improvement activities, as they are responsible for a significant share of the global cane production.
- 2. Mill impact pathway:** Improved ability for an increasing number of sugarcane mills to enhance social, environmental and economic performance.
- 3. Buyer impact pathway:** Drive supply chain excellence through certification and deliver products and programmes that allow supply chain actors to invest in and support their suppliers.
- 4. Sector impact pathway:** Facilitate and support national sector improvement approaches in selected high potential countries.

Bonsucro monitors each pathway using a number of indicators that help to track how the organisation is progressing towards its vision of a sugarcane sector with thriving, sustainable producer communities and resilient, assured supply chains.

2019 highlights

Bonsucro has continued its progress towards its vision and is pursuing its mission in line with its Theory of Change. The Bonsucro standards remains the foundation of all that Bonsucro

does and how it performs. In late 2018, Bonsucro released its latest Bonsucro Chain of Custody Standard, revised in accordance with the ISEAL code of practice for Standard Setting. The revision was the result of an assessment revealing that the organisation needed to adapt its system to better address the reality and complexities of the supply chain for sugarcane-based products. Bonsucro therefore expects the uptake of certified sugar and other products to increase over the coming years. This is likely to be driven by an increased activity among commodity traders, for whom the Standard offers greater flexibility in acquiring and transferring certified sugar and related products.

Bonsucro has continued its effort to develop a digital platform to collect certification data to facilitate the benchmarking of producer performance. In the meantime, Bonsucro has created an internal working group to structure its data management approach and design a strategy.

In 2019, Bonsucro continued its investment in and progress on developing and managing its improvement programme, confirming the critical role these projects play in transforming the sugarcane sector. In 2019, encouraged by its members and working with a network of trusted partners, Bonsucro has engaged in seven innovative programmes in six countries designed to advance sustainability agendas and tackle key systemic issues.

The programmes involve a network of innovative partners that have developed tools and methods to drive improvement in the sector. Additionally, Bonsucro held dedicated events to facilitate the exchange of best practices and solutions, including Bonsucro Global Week in Thailand and several Bonsucro Technical Week events, and training events organised by its licensed training providers.



In order to promote sustainable products, Bonsucro has invested in the development of an online platform for the trade of credits. For the first time in 2019, the platform also included the trade of cane credits and molasses credits in addition to sugar and ethanol credits, in response to market demand.

The revision of Bonsucro Production Standard has proved to be an important factor to enable operators and stakeholders to share their practices and achievements. In 2019, five major stakeholder knowledge exchange events took place. Firstly, trade union CNV Internationaal led a stakeholder discussion on including trade unions in the standard revision process. The Central American Sugarcane Industry Association (LAICA) held a workshop with sugar mill managers, and a working group for African sugarcane operators also took place, as well as a forum for stakeholders in Thailand and Bonsucro Global Week 2019. Finally, two in-person meetings and multiple online meetings of the Bonsucro production standard revision working group enabled experts from around the globe to exchange views and experience in the sugarcane sector and beyond.

In order to promote sustainable products, Bonsucro invested in the development of an online platform for the trade of credits. For the first time in 2019, the platform also included the trade of cane credits and molasses credits in addition to sugar and ethanol, in response to market demand. The trades allow a direct connection between buyers and producers to promote and reward sustainability performance. They also bring additional financial resources to further develop Bonsucro's improvement programme, with a proportion of the buyer's fees directed into a dedicated fund.

Bonsucro continued to engage with the farmer communities, particularly in India, Thailand, Mexico, South Africa and Brazil, through initiatives sponsored by Bonsucro members and the Swiss State Secretariat for Economic Affairs (SECO) via ISEAL. These activities are critical to supporting farmers to initiate their journey toward sustainable farming. The initiatives have two main objectives – building farmers' capacity and helping them gain access to finance, both of which are vital to achieve change. The increased level of engagement with farmers has led to more entities being certified against the Bonsucro Smallholder Standard.

However, the number of farmers engaged remains low (around 10,000) in relation to the approximately millions

of smallholder sugarcane farmers globally. Bonsucro will continue recruiting and engaging more stakeholders to accelerate the uptake of sustainable practices among smallholder communities worldwide.

Bonsucro continued to support and encourage mills to become certified. In 2019, there were 29 newly certified entities (compared to 26 in 2018), with operators in Mexico, Costa Rica, Peru and Mauritius having now achieved Bonsucro certification. This growth confirms the global uptake and relevance of Bonsucro as a platform to promote and recognise sustainable performance in the sugarcane sector. The key driver for increased uptake is buyers requesting their suppliers to become certified as a component of their commercial relationship. Sugar buyers such as Ferrero, PepsiCo, Hershey's, Corbion and Coca-Cola have been instrumental in increasing the number of certified entities. Bonsucro is still working to demonstrate the full value it can bring to producers and operators, building on available performance data.

Bonsucro continued its strategy of engagement with buyers, traders and industrial partners, particularly in the bioplastics sector, resulting in more buying companies becoming Bonsucro members. Based on its trust in and long-term commitment to Bonsucro, Brazilian petrochemical company, Braskem, has been instrumental in driving the bioplastic sector towards Bonsucro. Consequently, a number of bioplastic actors have become members and achieved certification. This participation is central to the evolution of the sugarcane sector, and can be linked directly to Bonsucro's continued efforts to prove itself as the trusted platform for change in the sugarcane sector and demonstrate its sustainability achievements.

Bonsucro Global Week 2019 in Bangkok, Thailand was a success and saw a record number of participants. This unprecedented level of interest confirmed the value of Bonsucro's efforts to support the Thai sugar sector in developing a roadmap for sustainable sugarcane production.



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Bonsucro Global Week Thailand also marked the start of Bonsucro's Code of Conduct and Grievance Mechanism revisions. A fundamental review began in late 2018, which is due to be finalised in April 2020. Bonsucro's Code of Conduct is the foundation of members' agreement with Bonsucro to participate in the platform. The Code has been redrafted to articulate members' roles and responsibilities more clearly and improve Bonsucro's human rights' due diligence. It has also been updated to reflect globally recognised frameworks for managing social and environmental risks in business activities and supply chains, such as the UN Guiding Principles on Business and Human Rights and the Organisation for Economic Co-operation and Development's (OECD) Guidelines for Multinational Enterprises.

Also started in 2019, through the standard revision process, participants to the public consultation that took place as the initial step of the Standard revision process share their expertise and expectations to help ensure that Bonsucro continues to develop the Bonsucro Standard in a way that delivers value. The organisation is working to create a centralised, consistent system to capture all these exchanges in a systematic way and maximise the value of the input it receives, as it seeks to move closer to its goal of transformational sector change.

Bonsucro will continue engaging with new actors to recruit new participants, notably in the renewable energy sector, in order to increase visibility and add value for certified operators. This will also attract new voices, resources and funding to develop improvement programmes.

Bonsucro has also adopted a country-level approach, encouraging diverse stakeholders to come together to overcome systemic challenges. Bonsucro continued to manage three country plans (India, Thailand and Brazil) and one regional plan (Central America). In India, Thailand and Central America, the participants included millers, farmers, buyers and technology providers. Participant meetings also increased in 2019, confirming that Bonsucro is seen as a safe platform for collaboration.

As Bonsucro continued to deliver on its Theory of Change, the Bonsucro team gathered in London in December 2019 to consider how to move beyond leveraging the Standard as the Bonsucro's principal mechanism for change and catalyse progress along four impact pathways. It also reflected on the organisation's direction towards 2030. This work lays the foundation for the strategy review requested by Bonsucro's Board of Directors, which will take place during the 2020-21 financial year.

Performance – further advances towards achieving Bonsucro's vision and mission

In 2019, Bonsucro's activities were dictated by its Theory of Change and associated impact pathways, bringing further confidence to its stakeholders that the organisation is progressing toward its mission. Importantly, it identified further opportunities for improvement, which will help to inform Bonsucro's Board of Director's decisions on optimising resource allocation to deliver on its Theory of Change.

MEMBERSHIP HIGHLIGHTS

Bonsucro membership continued to grow in 2019 and remains very diverse. By the end of 2019, there were 553 member organisations in 51 countries. The increase is mainly due to more recruitment in the Industrial Class (11% increase), and the Intermediary/Trader, and End User membership classes (20% increase in each). Many of these new members are from countries new to Bonsucro and from developing sectors such as biomaterials.

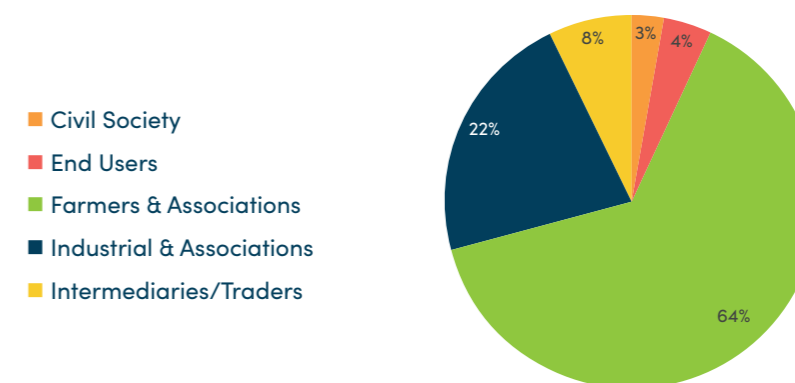
Bonsucro Membership



*Previous report data was adjusted to reflect calendar year number of members rather than financial year (April to March in the United Kingdom).

Producers (farmers and mills) remain the majority of Bonsucro's membership, representing 86% of total membership. Of the current 353 farmer members, 316 or 89% are farmers with less than 100 hectares.

Membership by Class

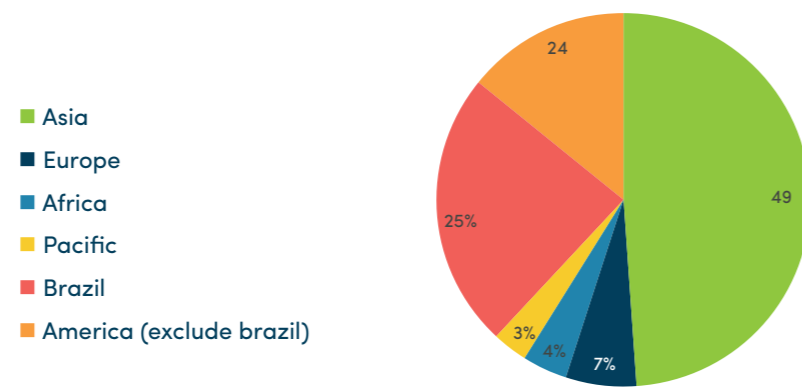


Membership

Asia accounts for half of Bonsucro's membership, mostly due to the number of smallholder farmers. Brazil and the Americas follow, representing a third of Bonsucro members. This is in line with the continuous support Bonsucro receives in the region

from producers, producer and trade association, national and regional commitment and market demand. Bonsucro continues its engagement work in Africa to increase its visibility and recognition among local stakeholders.

Membership per region

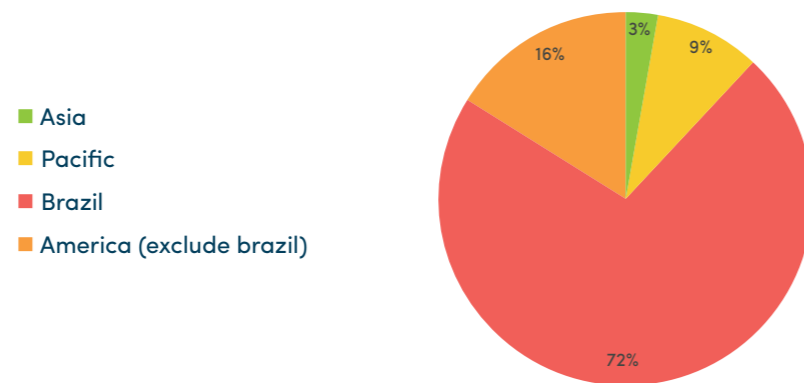


Market

2019 was a positive year for Bonsucro in terms of market results. Production of certified material increased considerably reaching a record 6.2 million tonnes of Bonsucro certified sugar produced and 2.5 million cubic metres of Bonsucro certified ethanol, from 123 certified mills in 18 countries. Brazil accounts almost three quarters of the certified sugar production followed by the Americas. As

certification gains momentum in other regions, the imbalance of production across the globe is likely to reduce overtime. Bonsucro works closely with producers around the globe to support their journey toward certification and increase their offer of certified products at regional levels. Bonsucro is also supporting its buyer members to identify and work with local suppliers to achieve the same.

Certified sugar production share per region



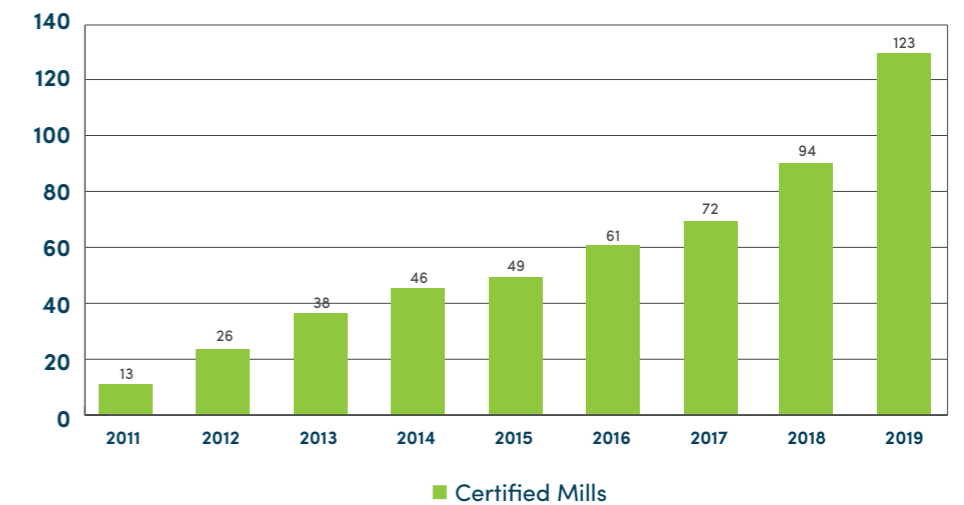
Certifications

Certifications in 2019 continued to increase considerably.

Production certification (at mill level) increased by 36% from 2018. This is evidence that the strategy adopted by Bonsucro in 2015, to remove the certification fee (a volume-based fee applied to certified mills) to encourage mills to certify larger portions of their supplying area and to attract new mills to seek certification has been effective.

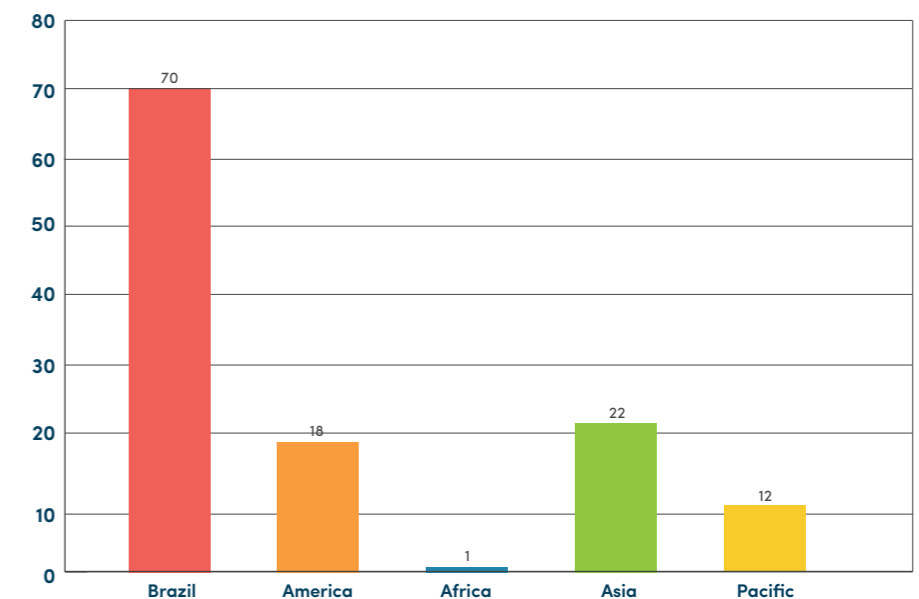
The increase in certified volumes can also be attributed to the additional support that the Bonsucro team offers to farmers and mills through impact projects and membership services. Technical support and Bonsucro Connect has effectively engaged new mills in efforts to improve sustainability measures. Bonsucro currently estimates that about 27% of the world's sugarcane land is engaged in the platform, i.e., the land is owned or operated by a Bonsucro member.

Number of Bonsucro Certified Mills



Brazil continues to account for the greatest number of certified mills (70 out of 123 or 57%). The share of Brazilian mills is reducing over time as more mills outside of Brazil are becoming certified. Asia now has the second largest number of certified mills, thanks to the uptake of certification in Thailand and India.

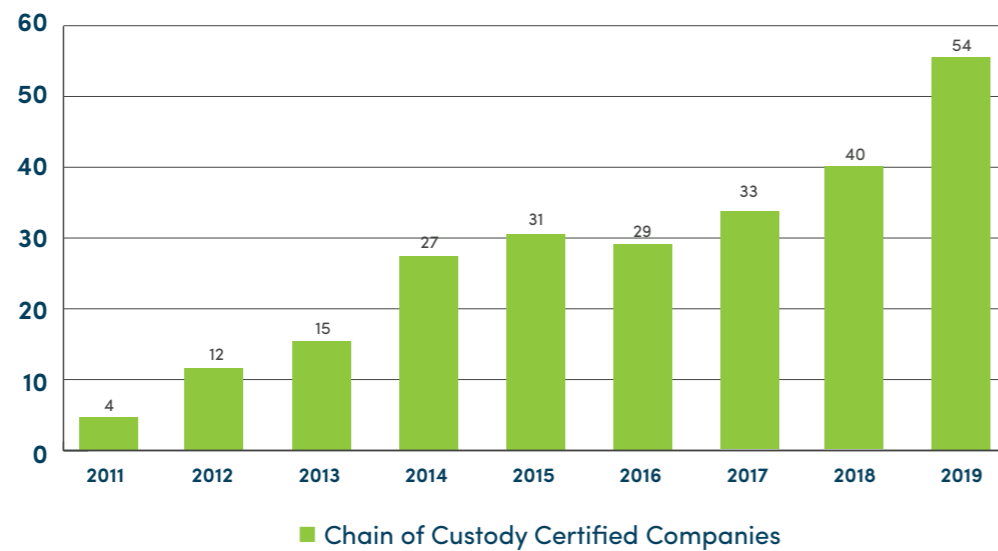
Number of Certified Mills



Likewise, Bonsucro has witnessed an increase in the number of Bonsucro Chain of Custody certifications which reached a record high of 54 certified companies in 28 countries, including new countries such as Egypt, Turkey and Spain.

Chain of Custody certification ensures that End Users of Bonsucro certified products can make accurate public claims on their support to the production of sustainable sugarcane with confidence and that supply chains are traced and independently verified by a Bonsucro licensed certification body. The 35% increase in Chain of Custody certifications signals positive expectations for market uptake in the years to come, since it applies to traders, intermediaries, processors and manufacturers along supply chains for both sugar and ethanol, and more recently for molasses and sugarcane biomaterials.

Number of Bonsucro Chain of Custody Certified Companies

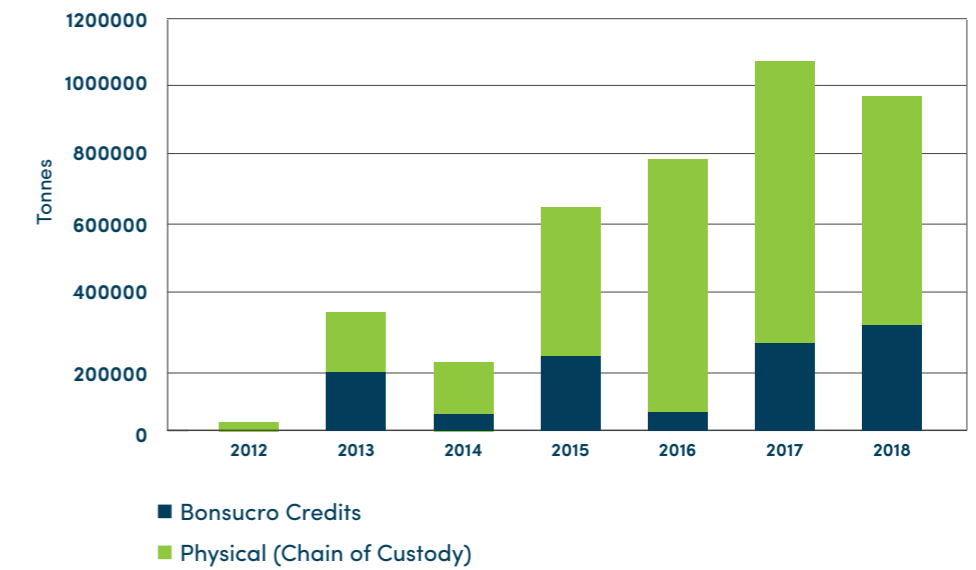


Market Uptake

Market uptake has improved considerably for ethanol from 14% in 2017 to 24% in 2018 which aligned with the increased commitment of bioplastic companies to demonstrate their support to sustainable procurement of material. The uptake of the certified sugar increased from 22% in 2017 to 23% in 2018%. Certified sugar sales have reached nearly 1 million tonnes*, including a 9% increase in the sales of Bonsucro sugar credits.

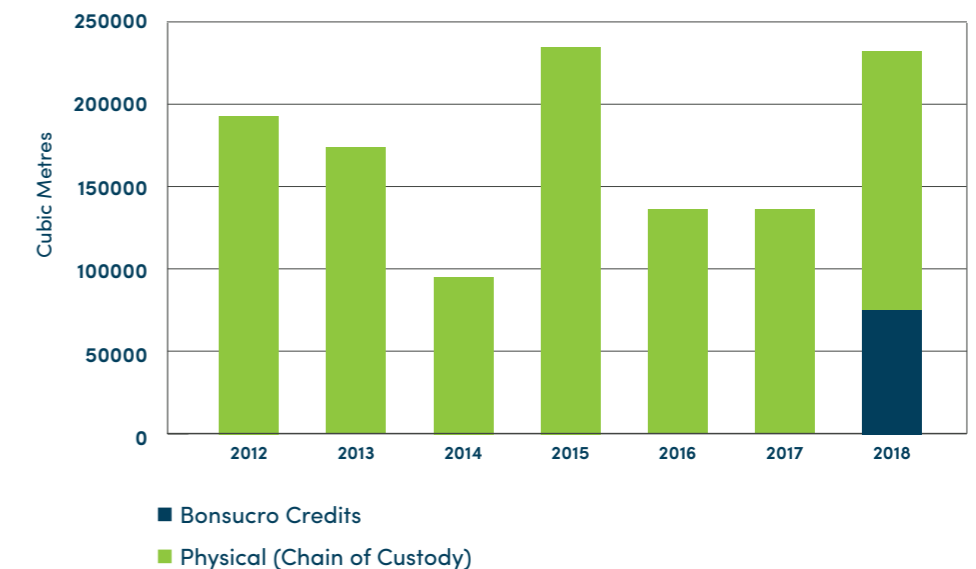
This was before the introduction of the Bonsucro Credit Trading platform, which is expected to facilitate credit trading. In fact, credit trading alone, in 2019, has already surpassed the 2018 sales by a staggering 207% to reach 946,559 tonnes. This indicates a considerable increase of uptake in the coming years.

Certified Sugar Sales



Certified ethanol sales experienced a substantial increase of 68% in 2018, reaching over 230 thousand cubic metres of certified ethanol traded. The increase occurs thanks to an increased of both physical and most importantly credit trades who hadn't been traded since 2015 (74,600 m³ versus 1,353 m³).

Certified Ethanol Sales



*2019 data has not been fully confirmed (audited) and received by Bonsucro. This is due to the audit cycles, ie data for 2019 will only be fully confirmed by end of 2020.



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CASE STUDIES

Case study 1: Bonsucro & RenovaBio: Exploring synergies and advancing GHG reduction in Brazil

Project partners: Earth Innovation Institute and Agroicone

Project length: 12 months **Budget:** \$22,347,79

Supporting the Sustainable Development Goals:



RenovaBio is the Brazilian biofuel policy designed to provide an important contribution to the fulfilment of the commitments determined by Brazil under the Paris Agreement, like the decrease of Brazil's greenhouse gas (GHG) emissions by 2029. It aims to do this by encouraging an increase in the production and participation of biofuels in the country's energy transport matrix. RenovaBio has established a certification scheme for biofuel, towards which Brazilian sugarcane mills are working, that will enable them to trade decarbonisation credits on the Brazilian stock exchange.

Bonsucro continuously seeks to grow awareness and adoption of its standard. In Brazil, this can be achieved by aligning its framework with RenovaBio to optimise costs and time for mills. In 2019, Bonsucro received a grant of US \$22,000 from the Earth Innovation Institute to provide a common understanding of how RenovaBio works and how other regions might benefit from this approach.

Bonsucro addressed the topic at Bonsucro Global Week in Bangkok in March 2019, and through three stakeholder forums in Brazil. The Bonsucro team also commissioned a technical

comparison study, which enabled the organisation to understand how best to align with RenovaBio's requirements. The study has been shared with key stakeholders in Brazil and the project is now complete. Bonsucro is working to incorporate the study's findings and recommendations through its ongoing Production Standard Revision process.

By aligning opportunities of optimisation, joint work and integration with the Brazilian Government and reflecting it in the Bonsucro Standard, Bonsucro can help to ensure that more producers adopt sustainability standards.

"Integrating with RenovaBio in Brazil is a prime example of Bonsucro collaborating with other certification schemes for the greater good and asserting itself as the global platform for change. RenovaBio will lead biofuel businesses in Brazil towards more sustainable and efficient operations, and Bonsucro can be the complete solution for that."

Livia Ignácio, Regional Coordinator Brazil, Bonsucro



Case study 2: Building the capacity of sugarcane smallholders in Thailand

Project partners: Fairagora and PepsiCo

Project length: 18 months **Budget:** \$157,245

Supporting the Sustainable Development Goals:



Thailand is a key sugarcane origin for Bonsucro and its members. Sugarcane is Thailand's most important agricultural crop providing more than 1.5 million jobs and generating almost US \$6 billion per year. Smallholders are significant to the sector as 70% of cane production is on farms of less than 10 hectares. Sustainability challenges affecting the sector and smallholders include soil degradation, child labour, overuse of agrochemicals, lack of collaboration between millers and farmers, labour and human rights abuses and the unsustainable use of water resources. In addition, climate change negatively impacts farmers – with increased variability within the seasons disrupting rain patterns in particular.

Bonsucro is committed to the acceleration of sustainable sugarcane production in Thailand. To date, Mitr Phol, TRR Group, East Asia Sugar, KTIS, KSL and KI Groups have joined Bonsucro and 12 of 51 Thai mills have achieved Bonsucro certification. TRR Group achieved the first certification against the Smallholder Standard in 2019.

Engaging with smallholders to encourage the adoption of new sustainable farming practices presents challenges but also a wealth of opportunities. The process is often gradual because farmers lack access to the technical knowledge and finance to invest in changing their practices. However, as sustainability challenges become ever more pressing and global brands shift gear to accelerate progress on sustainable farming, empowering smallholders is vital. For example, to fulfil its goal to source 100% of its cane sugar sustainably by 2020, PepsiCo is taking action by including and building the capacity of its supply chains. Within its sugar supply chain, PepsiCo worked

with Fairagora, Nestlé and Mitr Phol to develop a smallholder capacity building programme, including the use of a mobile tool to assess smallholders' training needs and provide relevant training.

To help share best practices learnt through this project, Bonsucro harnessed the power of its platform to invite the sugarcane value chain and in particular Bonsucro certified sugar mills to reflect on the benefits and key learnings. The Bonsucro team presented the initiative during Bonsucro Global Week to its global stakeholders, and raised it during a Thai Stakeholder Forum in October 2019. In addition, Bonsucro has commissioned a technical benchmark of the mobile tool used in the project to help ensure it can be used effectively by smallholders seeking to achieve the Bonsucro Production Standard for Smallholders. The tool is already being considered by a new mill supported by a large multinational as part of its efforts to empower smallholders.

"Engaging smallholders remains a challenge as the sugarcane value chain raises its ambition in terms of sustainable sourcing practices. The Bonsucro platform presents a significant opportunity for corporate members such as PepsiCo to pilot new digital tools to scale smallholder engagement and foster collaboration across the value chain."

Christèle Delbé, Partnerships and Innovation, Bonsucro



Case study 3: Promoting sustainable sugarcane production in Pakistan

Project partners: International Finance Corporation, Almoiz and Thal Industries

Project length: 12 months **Budget:** \$49,666

Supporting the Sustainable Development Goals:



Pakistan is the world's fifth biggest sugarcane producer and an important origin for Bonsucro and the sector. Sugarcane production employs around 1.5 million people in the country and around 64% of sugarcane is cultivated on farms of between 1 to 10 hectares. Challenges affecting yields include water scarcity, lack of high yield varieties, and inadequate management of inputs such as seeds fertilisers and pesticides. Mills in Pakistan currently have limited access to information on sustainable production practices, and the Bonsucro Standard has not yet been formally adopted at scale. Smallholder engagement and capacity building also remains a challenge.

To help address these challenges and encourage greater uptake of the Bonsucro Standard, Bonsucro is engaging with major sugar producers across the country. Nine prominent Pakistani sugarcane producers have joined Bonsucro, building the foundation for a local multi-stakeholder platform aiming to accelerate sustainable sugarcane production.

In particular, Bonsucro was approached by the International Finance Corporation (IFC) a member of the World Bank Group to help two mills (Thal Industries Corporation and Almoiz Industries Limited) and their supplying smallholders to adopt sustainable production practices and boost their sugarcane production efficiency. This initiative could reach 15,000 farmers. It could also inspire other producers to follow the path taken by Almoiz and Thal Industries to change the approach to sustainability in the Pakistani sugarcane sector. Bonsucro delivered training to the

operating staff at the mill and undertook a performance gap analysis of the two mills and ten of their key sugarcane suppliers against the Bonsucro Standards, conducting on-site visits, evaluating performance and making recommendations to inform capacity building plans.

Bonsucro subsequently created a support programme to accompany the IFC and mills to implement best practices with monthly conversations and advice sharing. All the farmers working towards certification have undertaken training on health and safety (delivered by the mill) and been provided with personal protective equipment and trained on how to use it. Meanwhile, the mills have created the structure and trained people to manage the Bonsucro system on the long-term. By monitoring the changes in performance at mill and farm level, Bonsucro has confidence that these efforts are leading to a positive transformation.

"The Bonsucro framework has helped define pragmatic first steps for two mills in a country where sustainable production standards are not yet common practice. Thanks to the support from the IFC, the two mills we have supported have an opportunity to inspire and become a blueprint for other mill groups keen to adopt best practices in sugarcane production"

Rick Lyu, Regional Director for Asia Pacific, Bonsucro



Case study 4: Expanding access to finance to improve sugarcane farming in South Africa

Project partners: Swiss State Secretariat for Economic Affairs, ISEAL, Alliance for Water Stewardship, SRK, WWF, Better Cotton Initiative, RCL Foods and Akwandze, Nedbank.

Project length: 24 months **Budget:** \$637,804

Supporting the Sustainable Development Goals:



Farmers and processors adopting sustainable farming practices are often rewarded by improved access to markets. Some may also receive preferential financial terms for loans. However, producers generally still receive limited recognition or reward for their good practices from financial institutions. This is largely because these institutions have a relatively low level of awareness of sustainability frameworks and limited access to performance data, preventing them from assessing the sustainability profile of their agriculture clients effectively.

In 2019, Bonsucro was awarded a two-year grant by the ISEAL Innovation Fund to develop a new methodology for financial institutions to assess the sustainability performance of farmers and their agricultural landscapes. In this way, financial institutions will be in a better position to offer incentives for sustainable behaviour and contribute to achieving the Sustainable Development Goals (SDGs) on poverty alleviation (SDG 1) and responsible consumption and production (SDG 12), for example. In addition to further incentivising producers for adopting sustainable farming practices, the initiative is also reinforcing the business case for sustainability standards.

Bonsucro is leading the project, creating an approach that combines three existing standards for sustainable production: Bonsucro for sugarcane, the Better Cotton Initiative (BCI) for cotton and the Alliance for Water Stewardship (AWS) for water management. Additionally, Bonsucro will align the methodology and supporting tools to the IFC Performance Standard, which is commonly used by financial institutions.

Through the project, launched in July 2019, Bonsucro is adopting a landscape approach across sugarcane and cotton farming in the region of Malelane in South Africa. Through the Bonsucro platform, the Bonsucro team convened five stakeholder groups to support and strengthen the project: sustainability standards

(Bonsucro, AWS, BCI and Cotton South Africa); sugarcane sector representatives (RCL Foods, SA CANEGROWERS), financial institutions (Nedbank, Akwandze), the NGO sector (WWF) and a technical consultant (SRK).

Together with its partners, Bonsucro is implementing the project in five phases: inception, scoping, developing the framework, conducting a pilot trial and sharing best practice. Firstly, Bonsucro collaborated to build a full understanding of each other's sustainability standards. The scoping phase of the project, now underway, includes a social and environmental study of the area to assess how farmers currently collect data and gain visibility of other key stakeholders and their practices.

To help share knowledge gained through this project with other ISEAL members, Bonsucro organised the first ever ISEAL members platform in Africa. The first meeting took place in Cape Town in September 2019, with participation of eight ISEAL members (Bonsucro, Alliance for Water Stewardship, Roundtable on Sustainable Biomaterials, Roundtable on Sustainable Palm Oil, Rainforest Alliance/UTZ, Marine Stewardship Council, Fairtrade International and the GEO Foundation) and two support organisations, Solidaridad and WWF. Building on the insights, new relationships and successful collaboration were gained so far, Bonsucro is preparing to deliver the core of the project in 2020.

The Good practice, better finance project contributes to changing how financial institutions look at the social and environmental risk of farmers and their landscapes. It encourages a more holistic and forward-looking approach to risk assessment which is necessary to make sound financial decisions."

Boudewijn Goosens, Regional Director, Africa & Middle East, Bonsucro



Case study 5: Supporting mills and smallholders in adopting sustainable practices in India

Project partners: PepsiCo and One Peterson

Project length: 24 months **Budget:** \$110,000

Supporting the Sustainable Development Goals:



India is the second largest sugarcane producer in the world. The sector employs over 1 million people directly or indirectly and produces over 400 million tonnes of sugar per year. A further 30 million sugarcane farmers, representing about 7% of the rural population, supply mills in India.

Bonsucro is committed to the acceleration of sustainable sugarcane production in India. To facilitate collaboration and help empower a community of sustainability leaders, Bonsucro India Coordinator, Ritu Baruah, has established a local accelerator plan to which operators can adhere and commit. To date, a group of 12 mills have joined Bonsucro, including Olam, EID Parry and DSCL. Following the achievement of EID Parry in becoming the first mill to achieve Bonsucro certification in 2015, six mills have now achieved certification, including four using the Bonsucro Standard for Smallholder Farmers.

To help reach its goal to sustainably source 100% of sugarcane by 2020, PepsiCo is supporting the inclusion and capacity building of smallholders in India. Since 2018, Bonsucro has helped three of its supplying mills in India - Vijayanagar Sugar Mills, Baramati Agro and NSL mills - to build smallholders' capacity to improve their sustainability performance and work towards Bonsucro certification.

Following a gap analysis of the selected mills, Bonsucro worked with consultants at One Peterson to develop materials to train mill staff and enable them to train smallholders, together with templates to evaluate the training and a guide to certification. In particular, Bonsucro created templates for hazard and risk

identification, an environmental impact management plan and health and safety plans at both mill and farm level. The project is reaching completion. Two of the three participating mills are now Bonsucro-certified, confirming that the training programme and templates have enabled smallholder farmers to adapt their practices to the requirements of the Standard. To capitalise on the work in this project, Bonsucro is extending free access to all the materials developed to all its member mills in India and beyond.



"It's been fantastic to see this project help lead to two of the mills achieving certification. The benefits will continue beyond the end of the project, as other member mills are using this training material for staff capacity building. In particular, it has helped to improve documentation and planning for the mills and farms. We would like to thank PepsiCo for its continued support."

Ritu Baruah, Programme Manager, India, Bonsucro



Case study 6: Partnering with Fairtrade to support smallholders, mills and buyers in Belize and Mauritius

Project partners: ISEAL and Fairtrade International

Project length: 18 months **Budget:** \$143,177

Supporting the Sustainable Development Goals:



Food and beverage manufacturers are increasingly moving to source sustainable sugar to promote supply chain resilience and respond to stakeholder expectations. However, the sugar sector is highly fragmented and has a broad range of frameworks and standards on offer. Buyers therefore face challenges as they encourage their suppliers to adapt their practices to meet various sustainability standards. Meanwhile, mills and farmers face the difficulty of implementing various and sometimes inconsistent practices or measures to demonstrate compliance, duplicating efforts and resources.

In 2017, Bonsucro was awarded a grant from the ISEAL Innovation Fund to deliver a project to assess the viability of collaboration between two sustainability standards – Fairtrade and Bonsucro – in the same marketplace. The goal was to establish whether smallholders could increase their market access and reduce the impact of sugar quotas on their livelihoods by gaining the best of two respected standard schemes. The expected benefits for smallholders included improved input management and efficiencies (from the Bonsucro Standard) and improved farmer organisation and self-determination (from the Fairtrade Standard).

Bonsucro and the Fairtrade International developed the project in three phases. Firstly, they benchmarked the Bonsucro Smallholder Standard and Fairtrade Standard, with Bonsucro engaging with Fairtrade-certified farms to identify what steps they would need to take to become

Bonsucro-certified. The partners then held workshops in Belize and Mauritius to explore how the Fairtrade and Bonsucro Standards and audit systems could be implemented effectively at farm level. This was followed by a workshop with Bonsucro members in Thailand during Bonsucro Global Week to explore the potential benefits of a dual certification and collaboration between Bonsucro and Fairtrade. These were practices that comply with both standards, shared reporting and reduced audit time.

The project has enabled Bonsucro to better understand how stakeholders are affected by inconsistent sustainability standards, and evaluate how it can best facilitate collaboration with other schemes active in the sugarcane sector. The initiative has also enabled Bonsucro to increase its reach to new sourcing origins that may be of interest to its members.

“Partnership is an important philosophy for Bonsucro. We believe that great change happens through partnerships with exceptional organisations like Fairtrade. Collaborating with Fairtrade certified farms, we have seen first hand the positive impact that implementing sustainability standards can have for smallholder farmers over the long term.”

Danielle Morley, CEO, Bonsucro



Case study 7: Mauritius reduces its use of agrochemicals to comply with the Bonsucro Production Standard

In 2019, leading African sugarcane producer and processor, Omnicane Milling Operations Limited, became the first sugarcane mill in Africa to achieve Bonsucro certification. The certification of the Mauritius-based company's mill marks a significant milestone for Bonsucro as it continues to expand across all cane-growing regions. The achievement is also an important accomplishment for both Omnicane and the Mauritian sugarcane industry, and follows a major collaboration to significantly reduce chemical application rates, in line with the Bonsucro Production Standard.

According to the Food and Agriculture Organization (FAO) of the United Nations, Mauritius is one of world's highest users of agrochemicals per hectare in Africa. In 2017, the country used an average of 9.75kg of chemicals per hectare of arable land. However, the Bonsucro Production Standard stipulates a maximum herbicide application rate of less than 5kg of active ingredient per hectare.

“Implementing the Bonsucro Production Standard helps us to create added value and increase efficiency while minimising strategic and operational risks,” explains François Audibert, Omnicane’s Chief Operations Officer for Agriculture. “In particular, successfully reducing our herbicides application rate... was a major breakthrough for us [in the drive to achieve certification].”

Industry cohesion was central to this effort, confirms Rajiv Ramlugon, Group Chief Sustainability Officer at Omnicane, with two institutions in particular playing a key role in supporting Omnicane in achieving its goal. “The support from and collaboration with the Mauritius Sugar Industry Research Institute and the Mauritius Sugar Syndicate provided a national drive to promote sustainability initiatives across the Mauritian cane industry,” he says. The Research Institute advised on reducing Omnicane’s use of herbicides, while the Mauritius Sugar Syndicate established a National Cane Sustainability Steering Committee made up of significant stakeholders in the Mauritian sugarcane sector such as the three Mauritian mills, and the Research Institute.

Dr Suman Seeruttun, Head of Agronomy Research for the Mauritius Sugarcane Industry Research Institute, oversaw the chemical reduction research. “We have developed evidence-based weed management strategies since 2005, and the Omnicane project also benefitted from our continuous herbicide testing programme for new, more

effective and environmentally-friendly active ingredients,” he says. Importantly, Dr Seeruttun believes the project was also successful due to “the commitment by [Omnicane’s] Management and its willingness to adopt the new herbicide recommendations proposed [by the research team].”





Case study 8: Threading sustainability through the value chain: Braskem and Tetra Pak

There is a growing interest in plant-based packaging among consumers, as people seek to reduce their environmental impact, and many more shoppers are looking for assurance that the packaging of the products they buy have been sourced sustainably. Plant-based packaging materials create fewer greenhouse gas emissions compared to conventional materials made from fossil fuels. Bioplastics are an example of a plant-based material offering advantages over conventional plastic. Although bioplastics currently represent around 1% of the global plastics market, it is an innovative sector, and predicted to grow by 25% in the next five years*.

In 2019, Brazilian petrochemical company Braskem collaborated with the processing and packing solutions company Tetra Pak to produce a bioplastic packaging from sustainably sourced sugarcane.

Having joined Bonsucro in 2010 to explore business opportunities in the ethanol sector, Braskem soon saw the potential of expanding its biomaterials portfolio, becoming a global leader in the market. With a focus on sustainability, the company invests in research across the chemical and plastics markets. Similarly, Tetra Pak aims to conserve natural resources, optimising its use of raw materials, and contribute to a low-carbon economy. Together, they created packaging made entirely from plant-based and renewable materials, with Tetra Pak becoming the first company in the food and beverage industry to responsibly source plant-based polymers using the Bonsucro Standard.

This project connected different actors along the supply chain to work towards sustainable objectives collectively, with Braskem taking a leading role in supporting improvement on farms and at mills.

Tetra Pak went further by applying for Bonsucro's Chain of Custody certification, creating a competitive advantage for its food and beverage customers, by promoting supply chain traceability for both customers and consumers.

Tetra Pak has reported a positive reaction from customers on its Bonsucro certification, with many customers interested in using Bonsucro certification logo on pack. Erik Lindroth, Tetra Pak's Sustainability Director said, "the Bonsucro certification was instrumental in securing the world's first certification of packaging by the Nordic Swan ecolabel."

The media interest in the first fully traceable plant-based packaging with a fully traceable supply chain was significant, with the story reported by more than 100 media outlets in the UK, USA, Switzerland, the Netherlands and Russia. If other packaging companies follow Tetra Pak's lead, there is real potential to further promote sustainable sugarcane farming. And in turn, help producer communities to thrive.



* <https://www.european-bioplastics.org/new-market-data-the-positive-trend-for-the-bioplastics-industry-remains-stable/>

PROMOTING SUSTAINABLE SUGARCANE FARMING THROUGH IMPROVED BUSINESS RESILIENCE

Yield

Producing more sugarcane with less land is what defines sustainable intensification of agriculture production. The Bonsucro Production Standard encourages farmers to improve their practices to produce more with less. As yields are greatly impacted by climate, the Bonsucro Production Standard defines regional specific yield targets, making it one of the few locally adapted metric standards. The yield

targets were scientifically defined through the analysis of conventional farmers production records around the globe. As shown in Figure 1, over the years, Bonsucro's certified farmers have consistently exceeded the yield targets defined by the standard (yield gap between target and achieved greater than 0) demonstrating that certified farmers achieve higher productivity than conventional farmers.

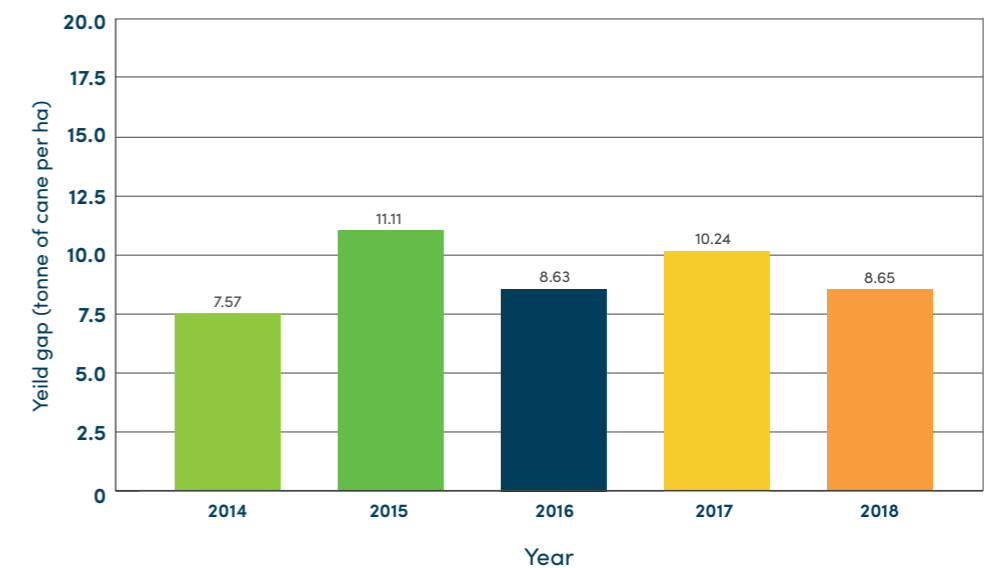


Figure 1. Yield gap from 2014 to 2018 (n_2014: 46, n_2015: 60, n_2016: 84, n_2017: 88, n_2018: 58)

In 2018, increased productivity saw certified farmers producing 12 million tonnes of sugarcane more than conventional farmers, based on 1.32 million hectares of land. This was achieved with the same resources available to conventional farmers. In other words, non-Bonsucro-certified sugarcane farmers would have had to use over 171,000 hectares to achieve the same quantities of cane.

The graph in Figure 2 shows how the yield gaps changed between the first year of certification and the fourth year of certification. The yield gap rose to 12.14 tonne of cane per hectare after the first year, reaching 8.8 after the second year and 7.5 tonnes per hectares after four years. Explaining this trend in more depth would require further analyses to understand the influencing factors (such as location, soil, climatic zone (see Figure 3), farming practices).

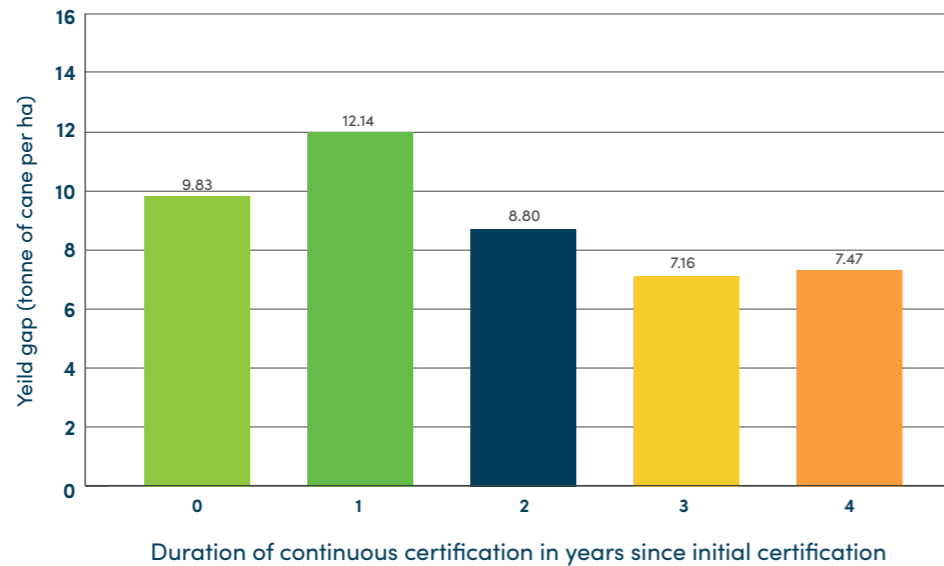


Figure 2. Yield gap based on duration of certification (n: number of mills included in analysis: n_0: 118, n_1: 82, n_2: 62, n_3: 40, n_4: 17)

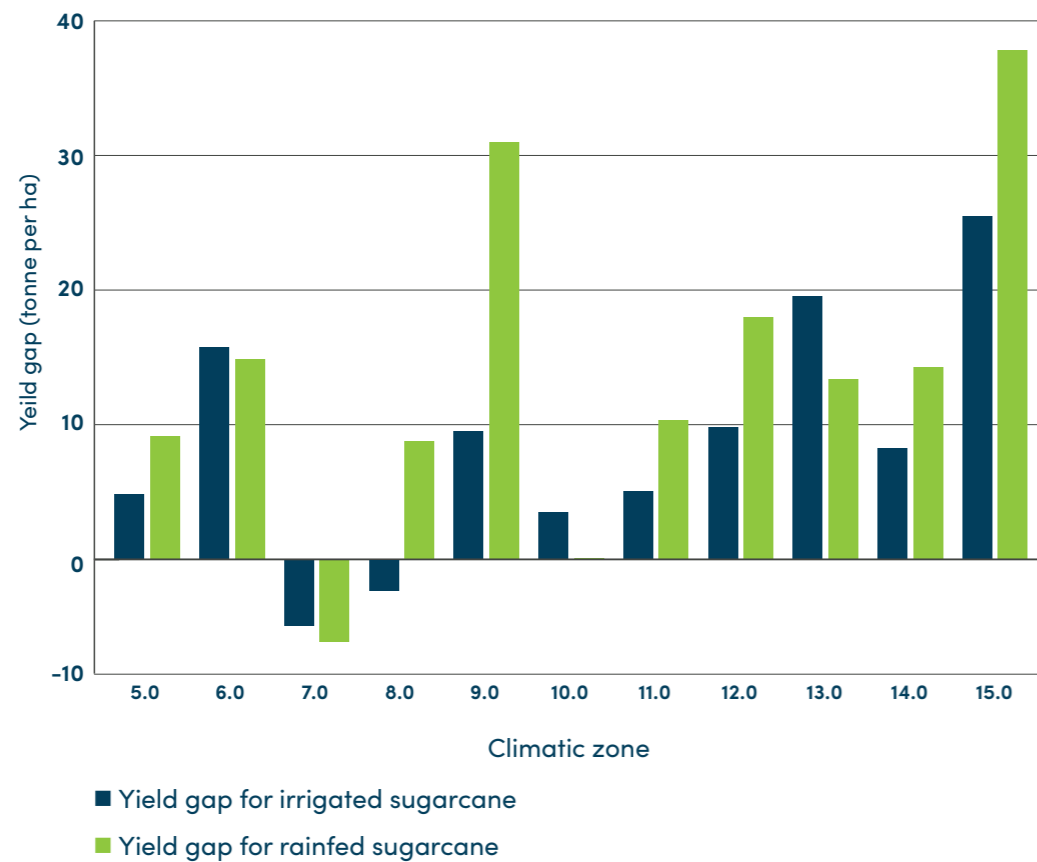


Figure 3. Yield gap based on climate zone (n: number of mills included in analysis: n_zone5: 4, n_zone6: 35, n_zone7: 7, n_zone8: 68, n_zone9: 47, n_zone10: 50, n_zone11: 55, n_zone12: 38, n_zone13: 2, n_zone14: 9, n_zone15: 2)

Creating added value

The additional value created by Bonsucro-certified production is defined by the Bonsucro Standard as total sales minus all costs of production, excluding salaries and benefits, taxes, dividends and investments.

The 2018-19 season ended with a positive outcome, as added value at farms and mills was rising, closely mirroring the evolution of reported sugarcane and sugar prices. Any rise in sugarcane price is likely to have positive

impact on creating additional value for mills and farms. Conversely, a plummeted sugar price will negatively impact farmers and mills. Considering that the average international price of sugar fell by 14% between 2016 and 2017, and a further 23% between 2017 and 2018 (according to sugar price data reported by certified operators), there have been negative consequences for Bonsucro producers' added value, which has dropped by around 19%.

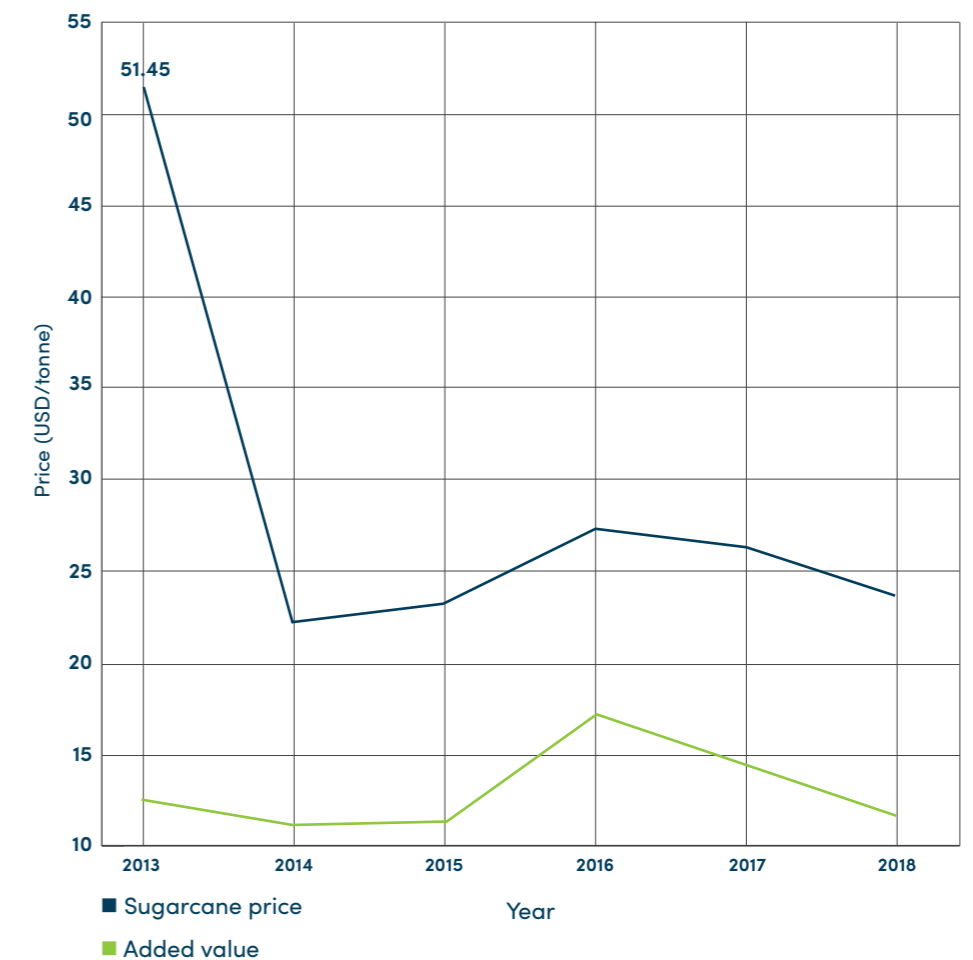


Figure 4. Added value at the farm level from 2013 to 2018 (n: number of mills included in analysis: n_2013: 32, n_2014: 43, n_2015: 60, n_2016: 80, n_2017: 90, n_2018: 54)

This confirms the sensitivity of producers to the international sugar market, which directly impacts livelihoods in local communities. Bonsucro is increasingly working with partners and organisations to improve access to better finance for sustainable producers. In South Africa, the Swiss State Secretariat for Economic Affairs (SECO) is funding a project via ISEAL through which Bonsucro, Better Cotton Initiative and Alliance for Water Stewardship are collaborating to evaluate how sustainable smallholder farmers can access better and more preferential financial services (please see case study 4).

Cost of production

Farmers have adapted their management practices in response to the drop in sugarcane price, with the reported cost of production per hectare also lowering. Farmers have gradually

reduced the average cost of production by 31% from 2012 to 2018. Similarly, mills reduced their production costs by up to 20% in 2018 compared to 2012.

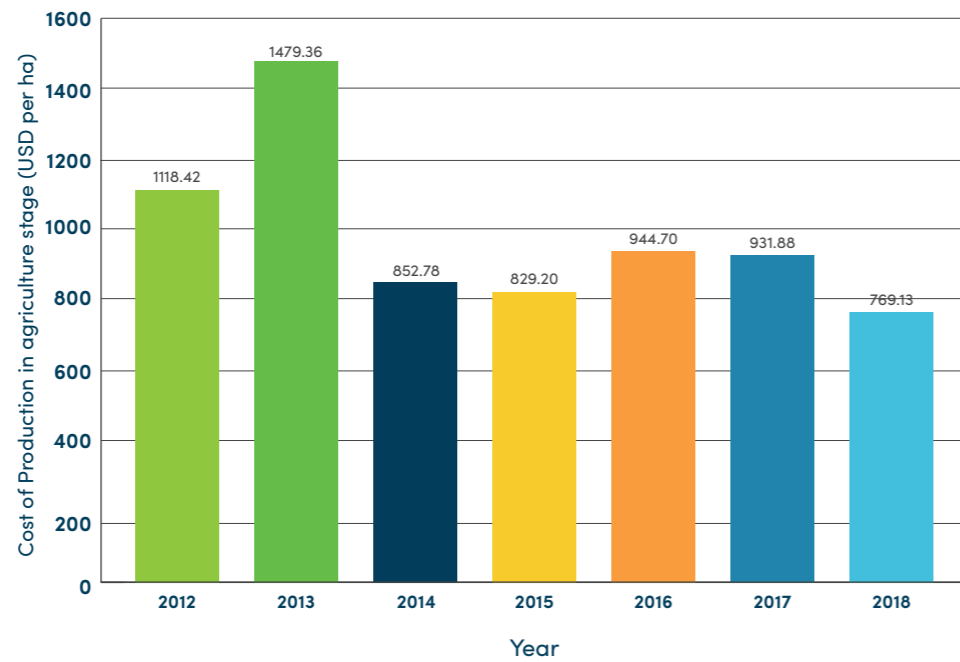


Figure 5. Cost of production at the certified farm level from 2012 to 2018 (n₂₀₁₂: 26, n₂₀₁₃: 31, n₂₀₁₄: 39, n₂₀₁₅: 59, n₂₀₁₆: 79, n₂₀₁₇: 89, n₂₀₁₈: 54)

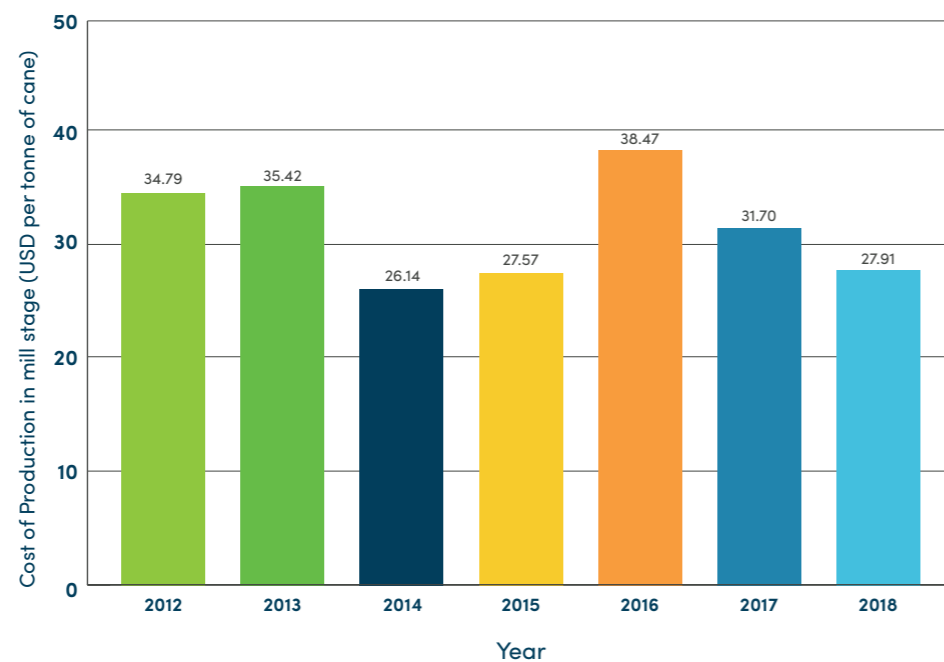


Figure 6. Cost of production in the mill level from 2012 to 2018 (n₂₀₁₂: 27, n₂₀₁₃: 34, n₂₀₁₄: 42, n₂₀₁₅: 57, n₂₀₁₆: 78, n₂₀₁₇: 88, n₂₀₁₈: 50)

The pressure on mill and farm managers from shareholders and owners to react to market volatility and maintain low production costs is significant. Overall, certified mills have successfully maintained the ratio of cost of production to sales over the past five years (which has fluctuated between 54.4% and 65.41%).

The Bonsucro Standard provides indicators that might influence the costing and strategy of operations. In addition, Bonsucro

has developed a market for certified material through a credit trading system established in 2013. This was upgraded to an online platform, launched in 2019. The platform introduces the possibility of selling credits to a new market and therefore has the potential to increase income to operators at no additional production cost. Bonsucro members purchased 946,559 tonnes of credits in 2019, an uplift of 207%, year on year.

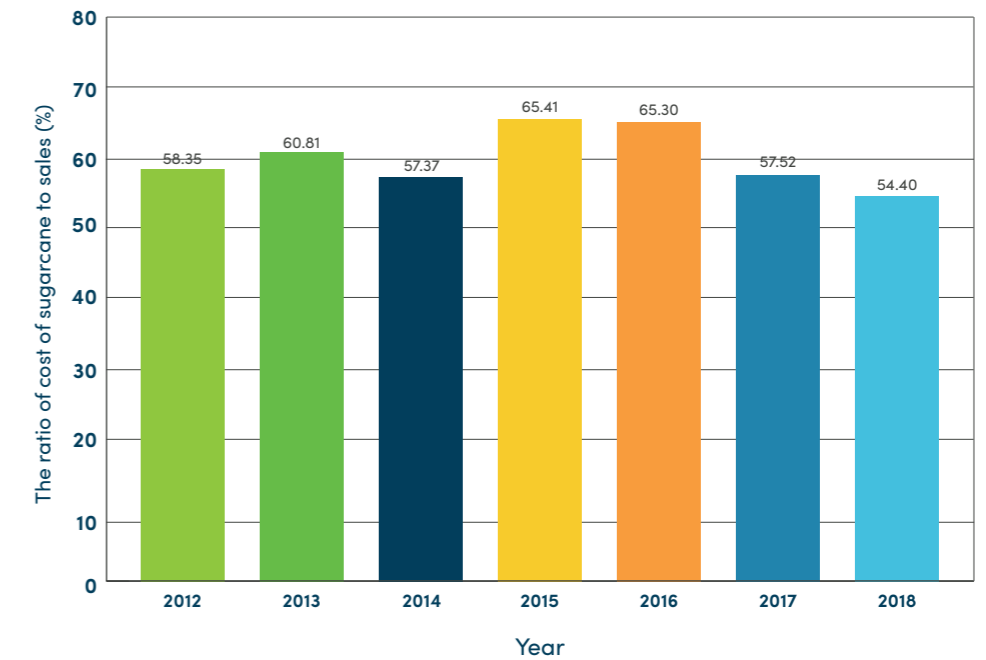


Figure 7. Cost of production vs sales from 2012 to 2018 (n₂₀₁₂: 19, n₂₀₁₃: 17, n₂₀₁₄: 28, n₂₀₁₅: 46, n₂₀₁₆: 62, n₂₀₁₇: 62, n₂₀₁₈: 34)

Mill time efficiency

Overall mill time efficiency is calculated as the percentage of total time (during the crushing season) in which the mill was effectively crushing cane; the closer the result is to 100%, the better. The Bonsucro Production Standard requires a minimum of 75% for overall time efficiency.

By sharing data collected through the certification process, Bonsucro members can use Bonsucro's tools to benchmark their results against a pool of certified producers. Bonsucro is currently developing tools that give members immediate access to their own results and relevant benchmarks.

As shown in Figure 8, the range of results is significant, varying from 70.47% to 91.13% with an average of 87.29% from 2012 to 2018. In terms of the impact on certification status, the results show that the longer members have been certified, the higher their time efficiency is.

Bonsucro continues to build its technical capacity to analyse the data collected through the certification process. The potential impact of enabling increased levels of benchmarking is expected to be substantial and will deliver value to members as they seek to improve the quality of the reporting.

As part of its efforts to promote continuous improvement in the sugarcane sector, Bonsucro encourages certified producers to share their achievements and best practices, in order to support less experienced producers to improve. For example, in 2019, Bonsucro organised Technical Week and training events in Argentina, India and Ecuador that were attended by more than 80 participants. A dedicated session offers a platform for participants to share challenges and practices. Participants also have the opportunity to visit a farm or mill to see first-hand how implementing the Bonsucro Standard has improved productivity.

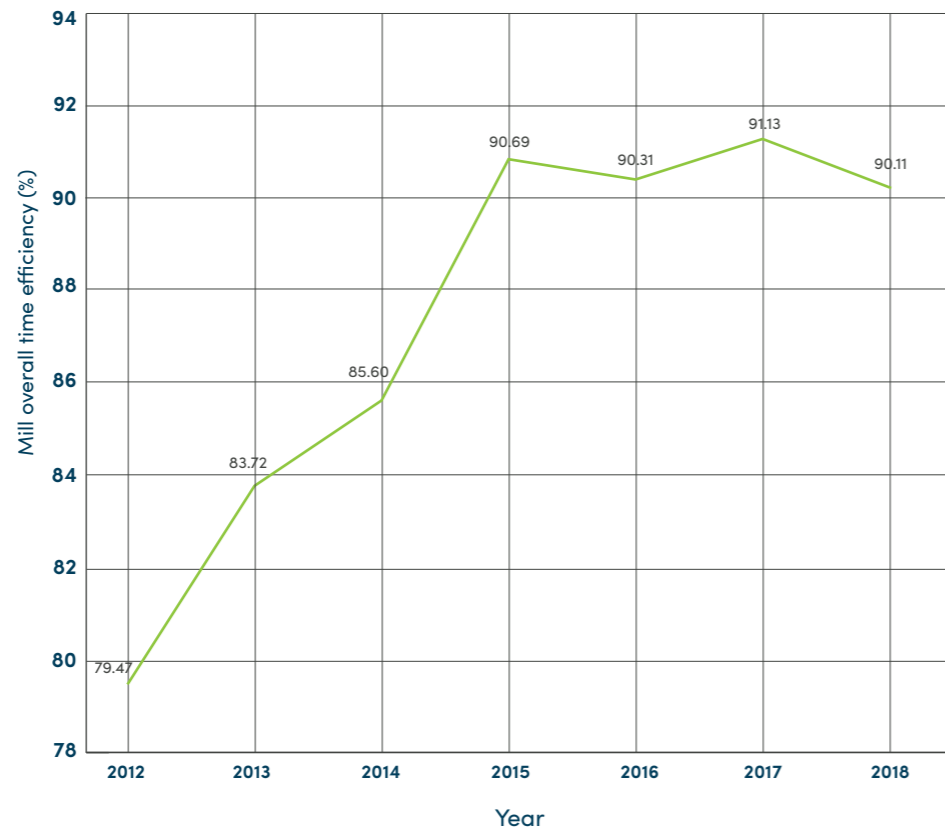


Figure 8. Mill overall time efficiency from 2012 to 2018 (n_2012: 27, n_2013: 35, n_2014: 42, n_2015: 56, n_2016: 75, n_2017: 84, n_2018: 53)

When examining performance across the certification period, time efficiency increases the longer a mill has been certified, confirming that certified entities are continuously improving their practices and efficiency levels. Overall, time efficiencies rose to 93% two years after initial certification. As an example, for a season lasting 200 days, the implementation of the Bonsucro Standard triggers a number of improvement practices that lead to the reduction of unplanned stoppage by 96 hours (four days) the first year after certification, and an additional 48 hours the second year (two days). After two years, mills have typically managed to reduce the number of unplanned stoppages by 144 hours, increasing the total time crushing cane by six days.

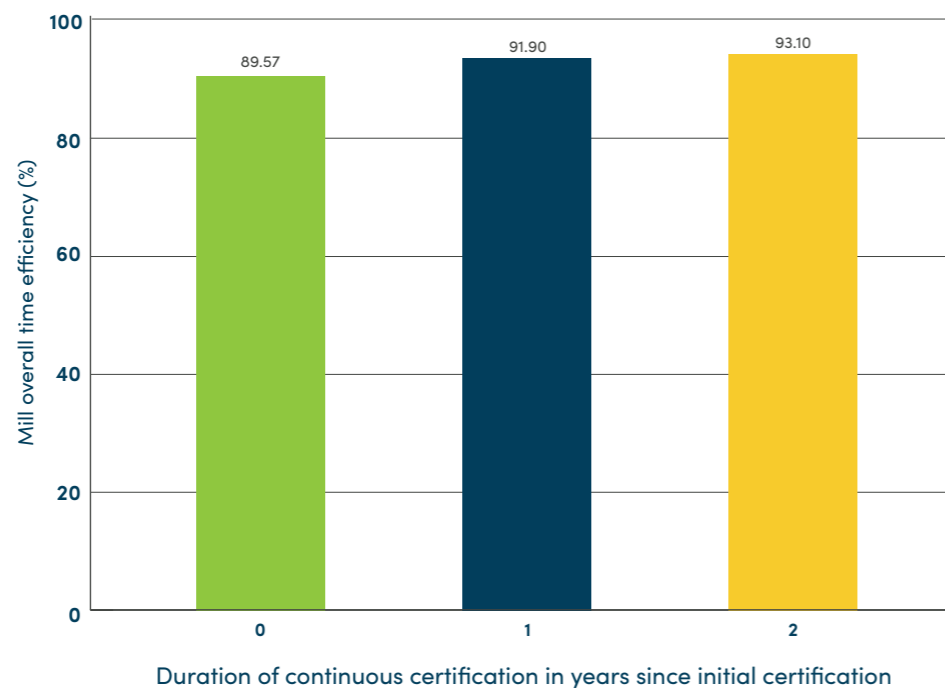


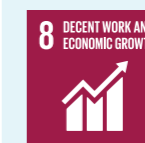
Figure 9. Mill overall time efficiency based on certification status (n_0: 107, n_1: 68, n_2: 53)

PROTECTING FARMERS' AND WORKERS' RIGHTS TO IMPROVE LIVES AND EMPOWER PRODUCER COMMUNITIES



emerged as a principal concern, with stakeholders seeking improvement and further guidance. Bonsucro certified members are required to improve knowledge on health and safety risks and design sufficient training materials to help farmers adopt effective management practices. In India and Central America, this process is also supported by external health and safety programmes.

There are several indicators in the Bonsucro Production Standard that relate to workers' safety. In this report, the analysis is focused on accident rates at farms and mills. This is calculated as the number of accidents per million hours worked. Note that this indicator supports:



SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

- Target 8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment. This is measured by indicator 8.8.1 – frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status.

Work safety

Working in sugarcane production, workers may experience risks including fire hazards, toxic substances, repetitive actions, heavy load lifting, overexposure to sunlight and heat stress. Protecting workers' human rights and promoting a healthy, safe workplace is a vital component of the Bonsucro Standard.

In the sugarcane sector, a safe environment means having free access to training and to free, reliable and effective personal protective equipment (PPE), as well as information on key risks and emergency procedures and protocols. In 2019, Bonsucro began revising its Production Standard by conducting an online survey to capture the expectations of different stakeholder groups, such as farmers, mills, NGOs, academics, auditors and traders. Health and safety

The Bonsucro calculator is a key tool to collect data and facilitate reporting. The Bonsucro accident rate indicator requires that certified producers do not exceed 15 accidents per million hours worked in the mill and 45 in the field. Bonsucro defines accidents as events that result in workers not attending their subsequent shift. In such cases, either workers' shifts are covered by their colleagues, potentially resulting in overtime (up to legally acceptable levels) or a decrease in productivity.

The longer mills have held Bonsucro certification, the lower the accident rate at farm and mill level. From the year of initial certification to five years after initial certification, accident rates dropped by 38% at farm level and by 48% at mill level.

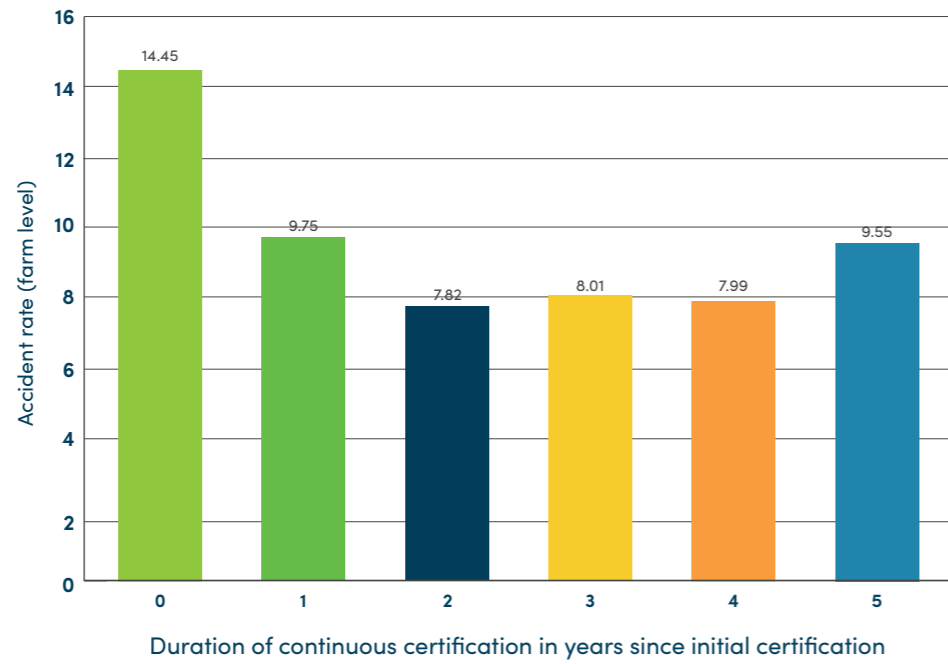


Figure 10. Accident rate at farm level based on certification status (n_0: 52, n_1: 52, n_2: 40, n_3: 28, n_4: 20, n_5: 13)

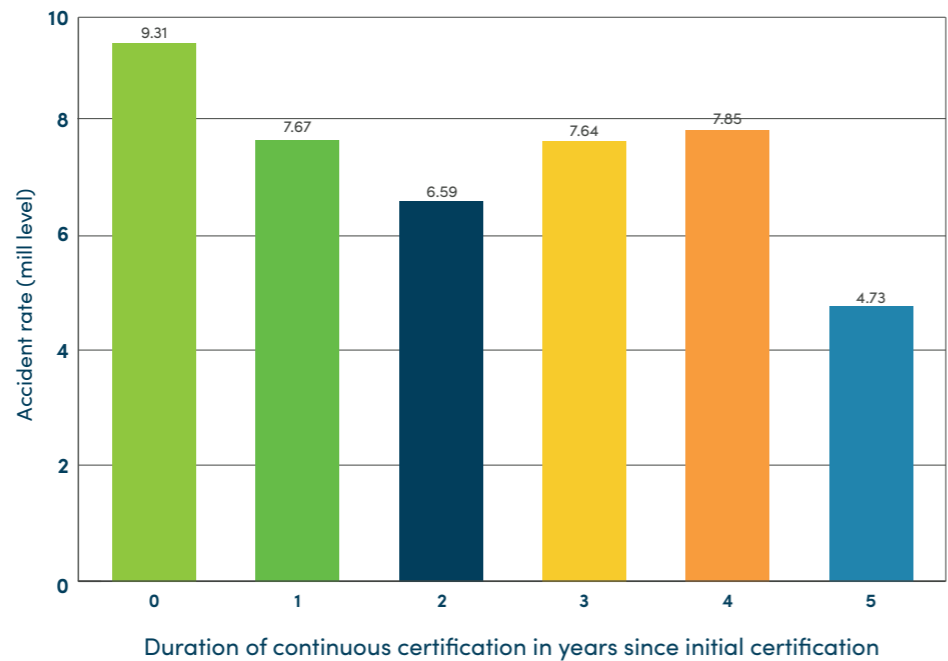


Figure 11. Accident rate at mill level based on certification status (n_0: 61, n_1: 61, n_2: 44, n_3: 31, n_4: 22, n_5: 11)

Overall, implementing the Bonsucro Standard has a positive effect on accident rates (accepting that a certain degree of variability may exist between participating producers). Monitoring progress and comparing it to their average performance helps mills and farms to evolve their practices to achieve better results. Bonsucro also encourages its members to share their successes and challenges in order to accelerate the transformation of the industry.

Minimum wage

The Bonsucro Production Standard requires that certified producers must, as a minimum, pay the local or national minimum wage for all workers. This core condition applies to direct employees but also to any subcontracted workers. Certified mills report their lowest wage rate in relation to the national minimum wage, which is checked by independent auditors through payslips and other records.

Bonsucro certification has an immediate impact on wages, with mills and farms increasing the minimum wage paid after initial certification. Minimum wages at farms remain relatively stable after certification, while minimum wages at mills tend to reduce but are still above the wages that workers received at the point of initial certification. The implementation of Bonsucro standard therefore has a direct impact for low-wage employees by promoting better wages (on average 20% above legal minima).



Figure 12. Wage ratio at farm level based on certification status (n_0: 109, n_1: 72, n_2: 56, n_3: 40, n_4: 31, n_5: 21)

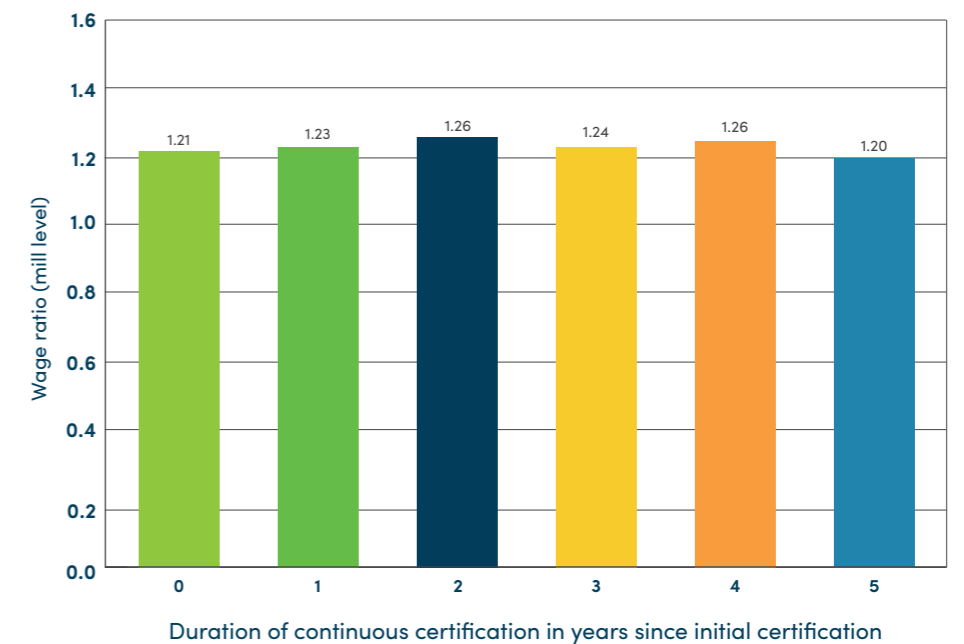


Figure 13. Wage ratio at mill level based on certification status (n_0: 106, n_1: 67, n_2: 52, n_3: 38, n_4: 29, n_5: 20)

Workplace gender composition

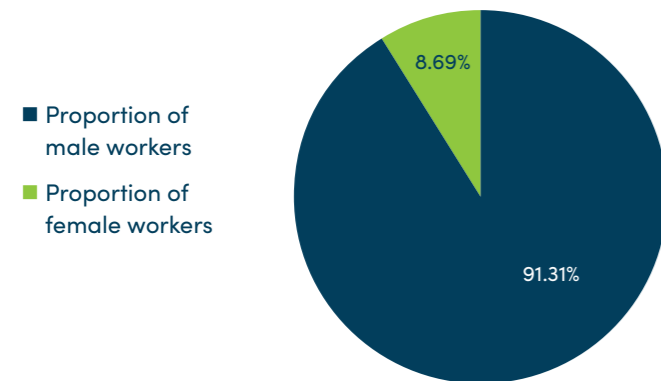
Women farmers and farm/mill workers in developing countries are particularly vulnerable to low paid, low-skilled work.

They often earn less money than men for the same work and face less economic security, with cultural traditions in some countries meaning they have few decision-making responsibilities and few opportunities to own or manage land. It is critical to improve gender balance in the sugarcane sector, with a focus on how standards and guidelines can contribute to women's economic empowerment.

Analysing a sample of 283 dataset from 2012 to 2018 reveals that women comprise 9% of the certified sugarcane farm workforce, while men workers account for 91%. The gender imbalance is less pronounced at the mill level but the workforce remains predominantly male. Male workers accounted for around 86% of workers at mills, while female workers represented just 14%.

Considering only the average value from 2017 to 2018, the proportion of women was 8.54%, while the female workers in the mill rose to 15.6% compared to the average value in total sample (+1.4%).

Gender statistics at farm level



Gender statistics at mill level

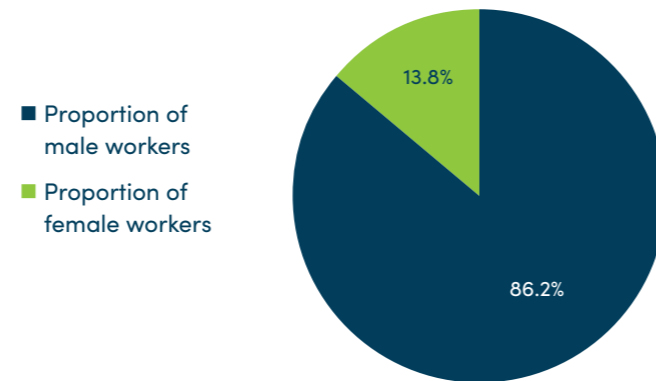


Figure 14. Gender composition at farms and mills from 2012 to 2018 (n: 349)

The graphs opposite show the proportions of female and male workers present on farms and mills in various sugar-producing countries. At the mill level, China shows the largest proportion of female workers (40.1%), followed by Thailand (27.8%). The majority of workers on farms are typically male, with the exception of India, where female workers account for 59.4% of the workforce. The second highest proportion of women on farms is in Thailand (47.2%). A study released by the University of Kasertsat, Thailand during the XXXI Congress of the International Society of Sugarcane Technologists demonstrated that female farmers were

more interested in sustainability and successful at implementing the Bonsucro Standard.

Data from Australian, Guatemalan, Colombian, Chinese and Thai Bonsucro certification holders shows that the proportion of female workers on farms improves continuously after certification. At the mill level, the proportion of women in El Salvador, China and the Dominican Republic has regularly increased since certification began, confirming that adherence to the Bonsucro Standard can empower vulnerable worker groups. More progress is required in order for this picture to be reflected at a global level.

Gender ratio at farm level

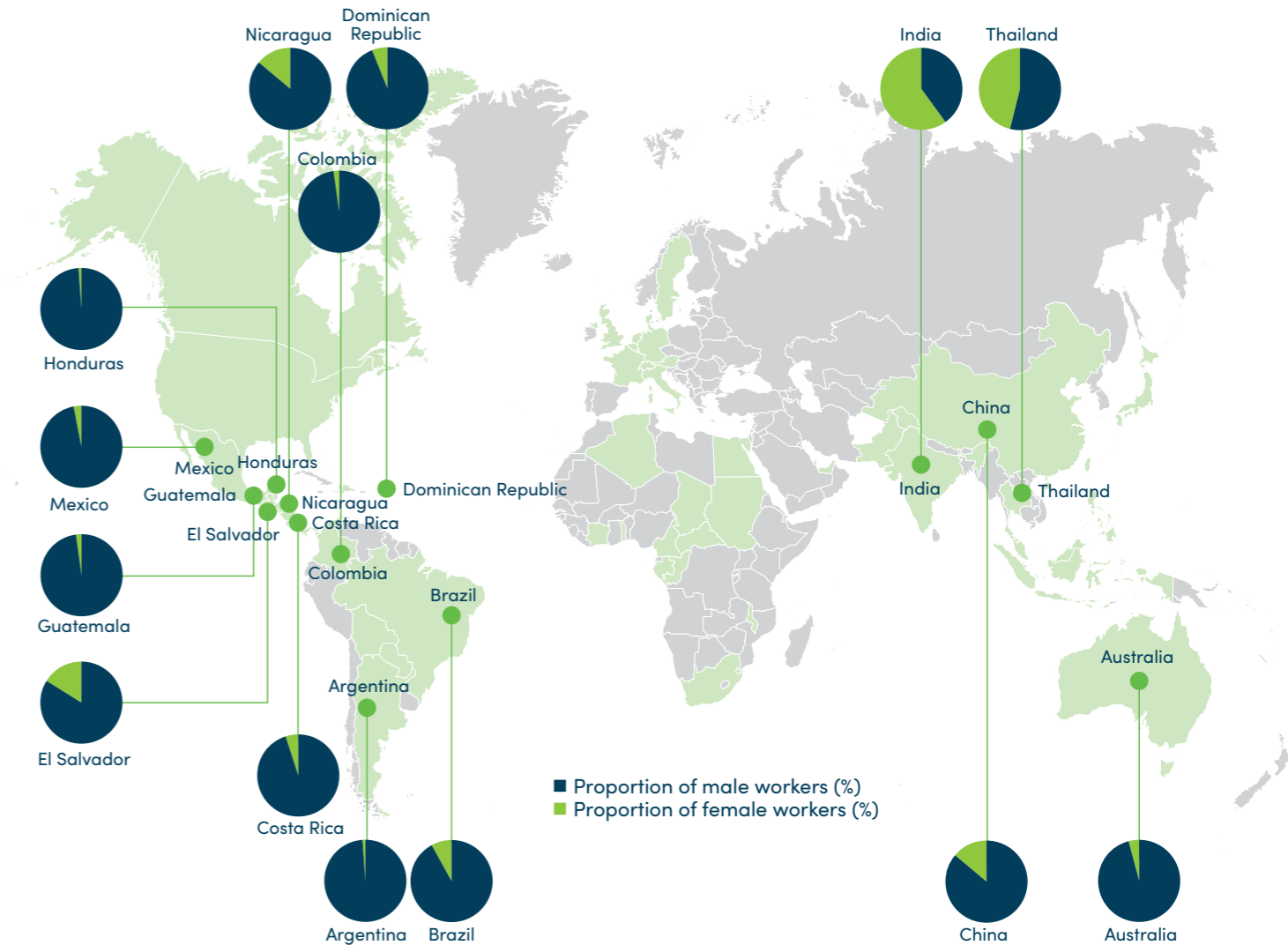


Figure 15. Gender ratio at farm level by country (n: 349)

Ratio of female workers at farm level with duration of certification

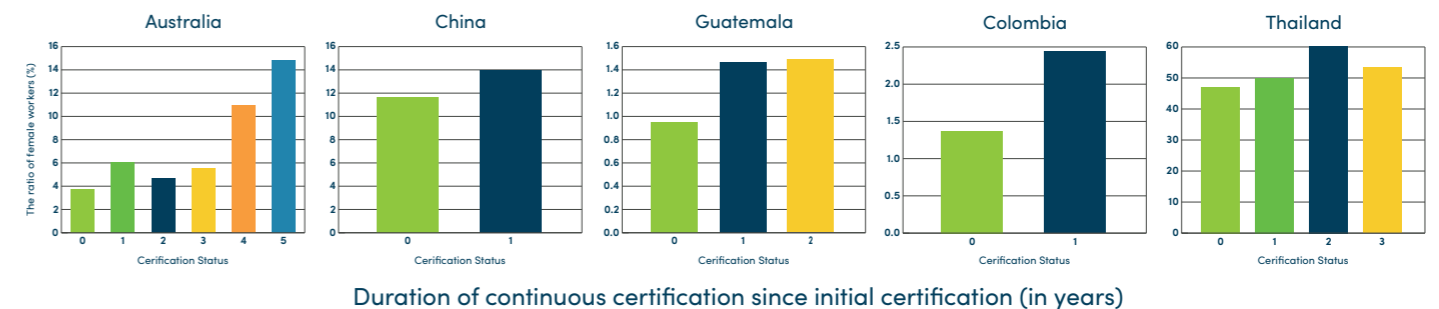


Figure 16. Evolution of ratio of female workers at farm level per year of continuous certification

Gender ratio at mill level

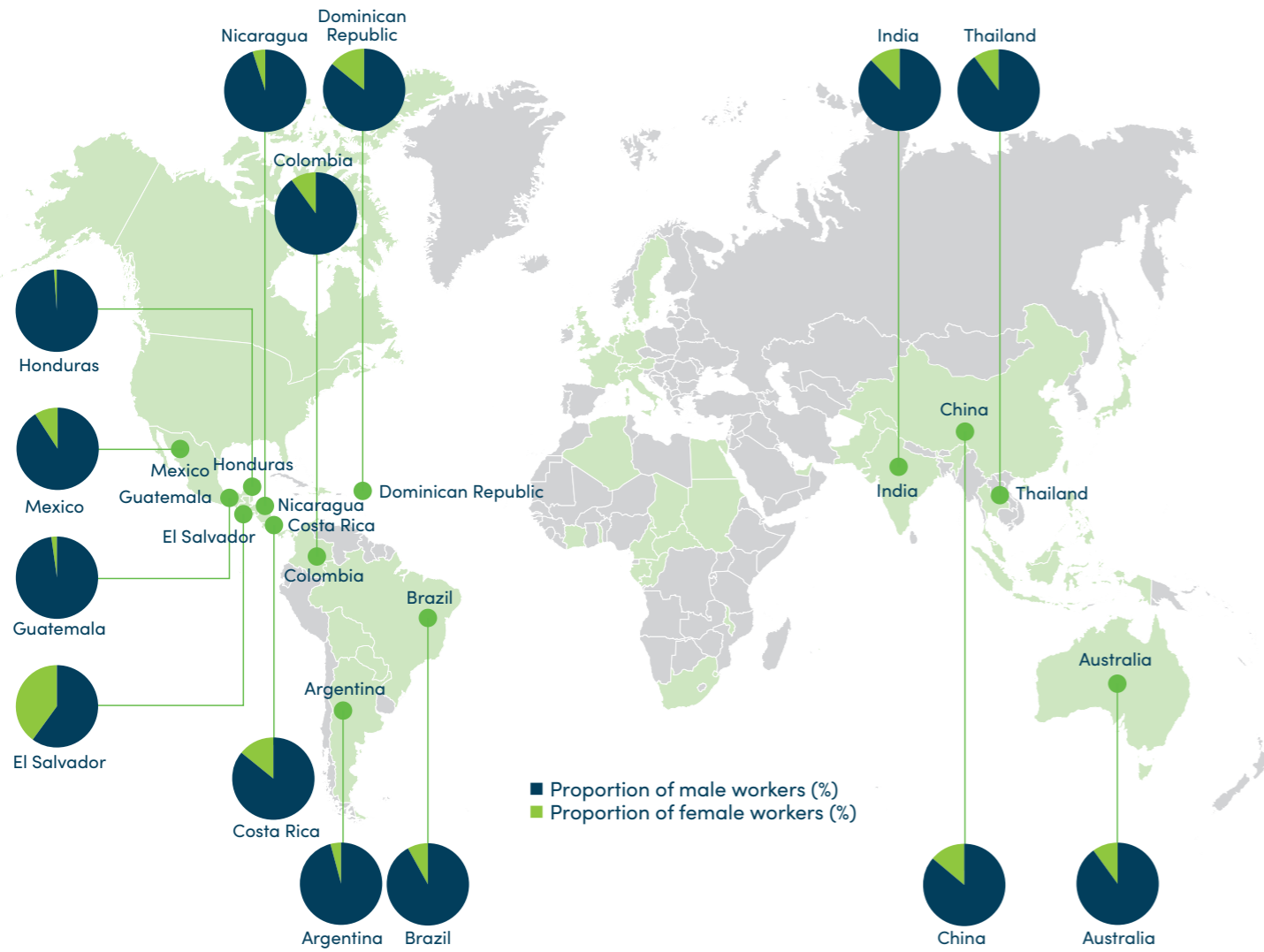


Figure 17. Gender ratio at mill level by country (n: 349)

Ratio of female workers at mill level with certification duration

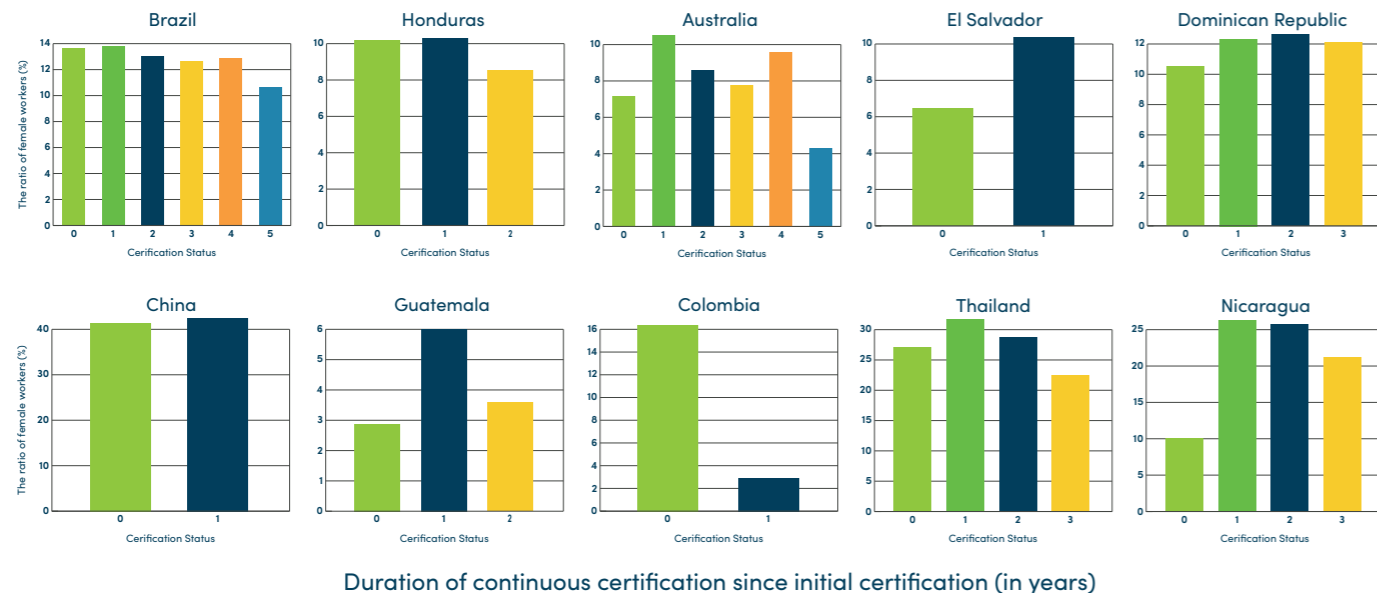


Figure 18. Evolution of ratio of female workers at farm level per year of continuous certification

HELPING THE SUGARCANE SECTOR TO BUILD CLIMATE RESILIENCE, PROTECT THE ENVIRONMENT AND PRESERVE VITAL ECOSYSTEM SERVICES



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Greenhouse gas emissions

Sugarcane is an extraordinary plant that converts solar energy efficiently into biomass and energy. However, its cultivation can also contribute to climate change. In particular, the inputs used in agriculture, including machinery, fertilisers and pesticides, generate greenhouse gas (GHG) emissions both in their manufacture and when used by farmers. Other farming practices that generate GHG emissions include cane burning, effluents applied to the soil, decaying leaves and land use change from various landscapes (such as orchards, pasture, perennial crops, woods and forests) to agricultural plantations.

As part of its efforts to encourage continuous improvement, Bonsucro recommends that sugarcane cultivation linked to higher GHG emissions is gradually excluded from sustainable supply chains. As the demand for certified, sustainable products increases, this will give the sugarcane sector further impetus to avoid converting land, which in turn will help reduce the carbon footprint of sugar supply chains.

The emissions from land converted to sugarcane from 2013 to 2018 are on average 3.2 times higher than cane production without land use change (24.35 kg CO₂ eq/Tc vs 78.78 kg CO₂ eq/Tc). The Bonsucro Standard threshold is set at 40 kg CO₂ eq/Tc. Sugarcane produced on land converted from another crop or landscape is therefore identified as non-compliant with the Bonsucro Production Standard.

Overall, land use change was the main source of emissions (66.5% of the total emissions from 2013 to 2018), followed by fertiliser usage (18.4%). Among certified mills with no land use change from 2013 to 2018, fertilisers contributed to the majority of emissions (46.9%) followed by energy usage at 26.4%.

Certified producers have converted less land since 2008 in their certified areas. Today, only 47% of certified producers include converted lands in their unit of certification, compared to 51% in 2013.

Share of GHG emissions (farm level) with land use change (2013-2018)

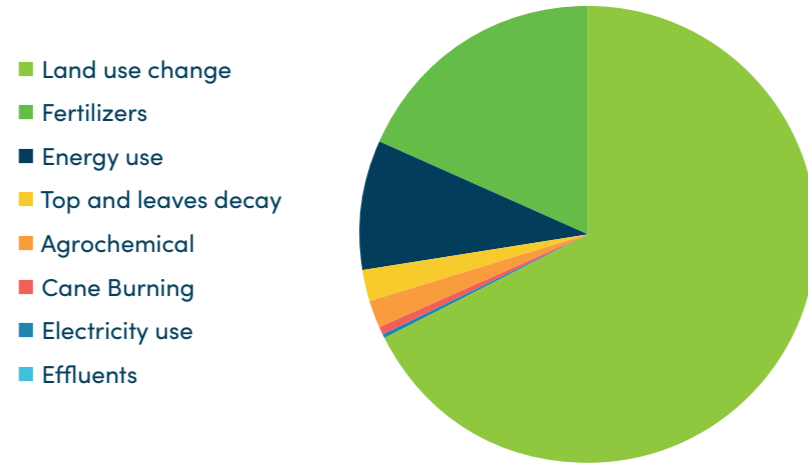


Figure 19. Composition of GHG emissions (farm level) (n: 378)

Share of GHG emissions (farm level) without land use change (2013-2018)

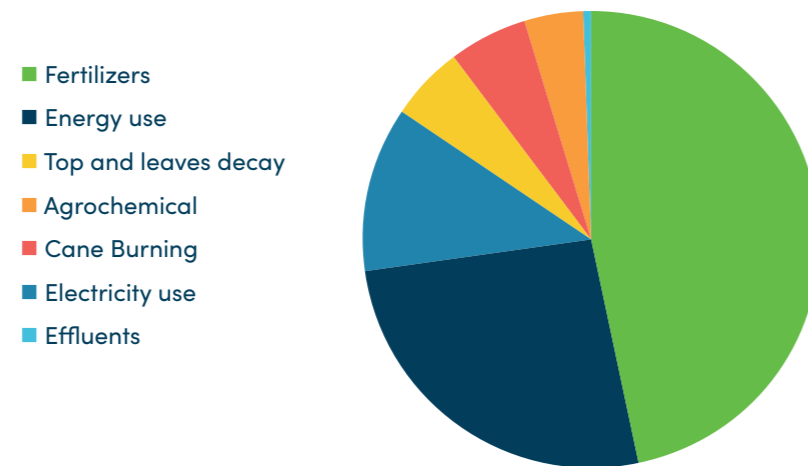


Figure 20. Composition of GHG emissions (farm level) without land use change (n: 215)

Percentage of certified mills with land use change

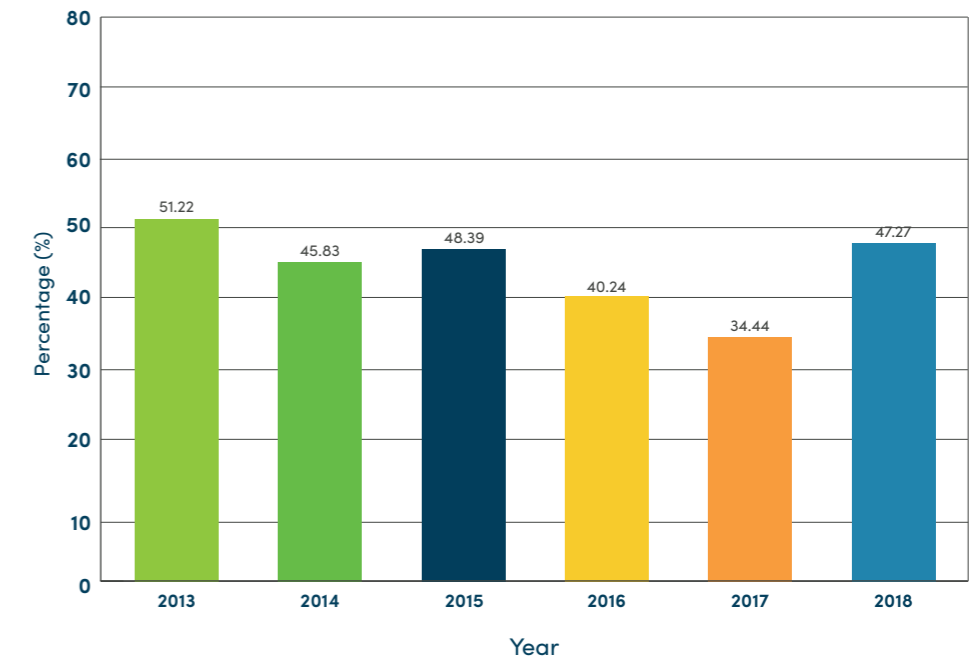


Figure 21. Percentage of certified mills with land use change from 2013 to 2018 (n_2013: 41, n_2014: 48, n_2015: 62, n_2016: 82, n_2017: 90, n_2018: 55)

The impact of certification on GHG emissions

In 2010, global food supply chains released approximately 13.7 billion metric tonnes of carbon dioxide equivalent (CO₂eq), 26% of GHG emissions produced by human activity. That is equivalent to the carbon emissions generated by the combustion of 5,956.52 billion litres of petrol in car engines, and stands to create a profound impact on natural ecosystems.

As pressure grows to shift to sustainable farming, 15 million hectares of crop production have been certified[1] globally according to voluntary sustainability standards (VSS). However, evidence is still required to demonstrate whether certification leads to more environmentally sustainable crops.

Bonsucro has established a series of indicators related to environmental impacts assessments (e.g. water consumption, energy consumption, GHG emissions etc) to help reduce the environmental impact of sugarcane production. Bonsucro is also working to identify tangible improvements linked to the cultivation of Bonsucro-certified sugar.

Here, we explore two case studies (of different sample sizes) exploring (1) the impact of GHG emissions before and after certification and (2) the impact of GHG emissions one year on from initial certification.

Case study 1: Bonsucro certification leads to reductions in CO₂ 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. Certified mills are saving 20.5 million kg of CO₂ from entering the atmosphere a year through the Bonsucro certification scheme. This can be equated to planting one million pine trees to absorb carbon dioxide[4].

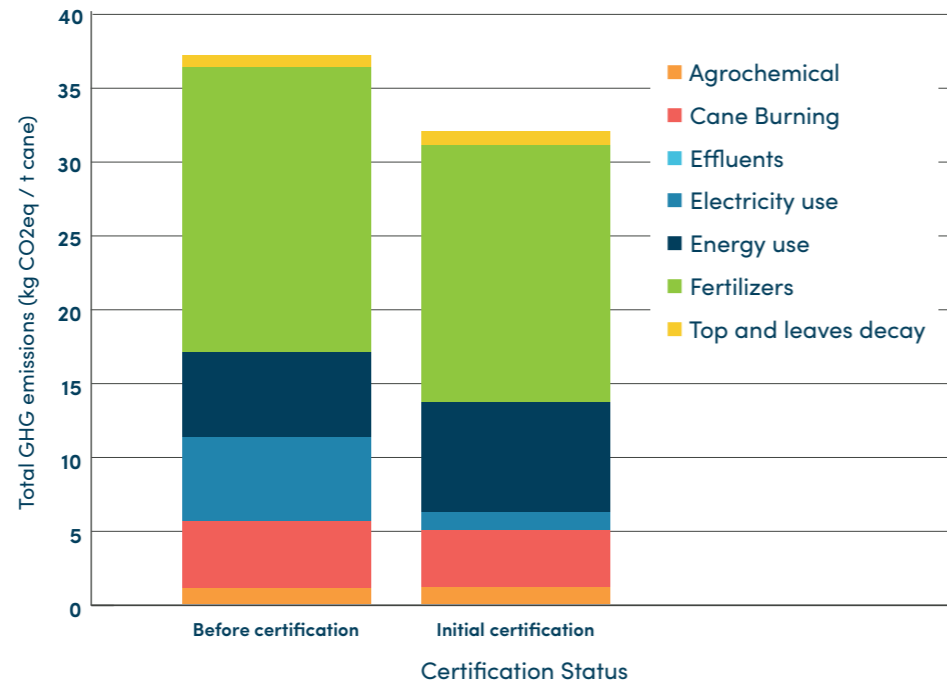


Figure 22. The key drivers of GHG emissions (farm level) before and after certification

Nitrous oxide (N₂O), one of the most powerful greenhouse gases (GHG) after methane and carbon dioxide, also contributes significantly to global climate change. In the agriculture sector, N₂O emissions are primarily associated with the application of nitrogen fertilisers. The amount of fertiliser used in sugarcane plantations may result in high N₂O emissions, leading to significant climate impact[5].

Among Bonsucro-certified entities, nitrogen fertiliser usage reduces slightly from 108.36 to 106.51 (kg per ha) after certification, which may reduce the total volume of GHG emissions at farm level. This is because fertilisers contribute the most GHG emissions in certified mills with no land use change, and account for the second highest proportion of GHG emissions in certified mills with land use change.

Case Study 2: GHG reductions one year on from initial certification

Here, we consider the impact of GHG emissions before and after certification in this report. Bonsucro found that entities after certification emitted 5.5% fewer GHG emissions at farm level than entities before certification.

Average GHG emissions generated (farm level) one year on from certification²



Figure 23. The impact of total GHG emissions (farm level) after certification

There are clear differences in GHG emissions released by non-certified entities and entities at initial certification, and entities one year on from initial certification (at farm level). The reductions in GHG emissions noted in both cases are likely to be the result of Bonsucro certification.

Water consumption at mill level

Water is used at almost every stage of sugarcane production. Efficient water use in the sugarcane industry is critical to protecting the environment, overcoming the challenges posed by water scarcity and helping to ensure access to water for all stakeholders in water-stressed areas. Sugarcane is an irrigated crop in several countries (including Colombia, Guatemala, Honduras, India, Mexico, Swaziland and South Africa), and is known for being water-intensive compared to other agricultural crops. It requires between 1,400 and 2,500mm of water during the growing season (from sowing to harvesting).

The milling process also involves a significant volume of water for cane washing, milling, centrifugation and producing vapour.

Some mills discharge wastewater into the environment after a degree of treatment. Mills adhering to the Bonsucro Production Standard set water management objectives, improving their processes to enable water recirculation and reuse. The Standard sets maximum levels of water consumption per tonne of sugarcane cultivated by farmers and per tonne of sugarcane crushed by mills. At farm level, the maximum water quantity is 130kg of water per kg of sugarcane. At mills, the Standard sets a maximum of 20kg of water per kg of sugar produced, or 30kg of water per kg of ethanol.

Water use at mill level has decreased continuously over the past few years. The results presented below show combined averages.

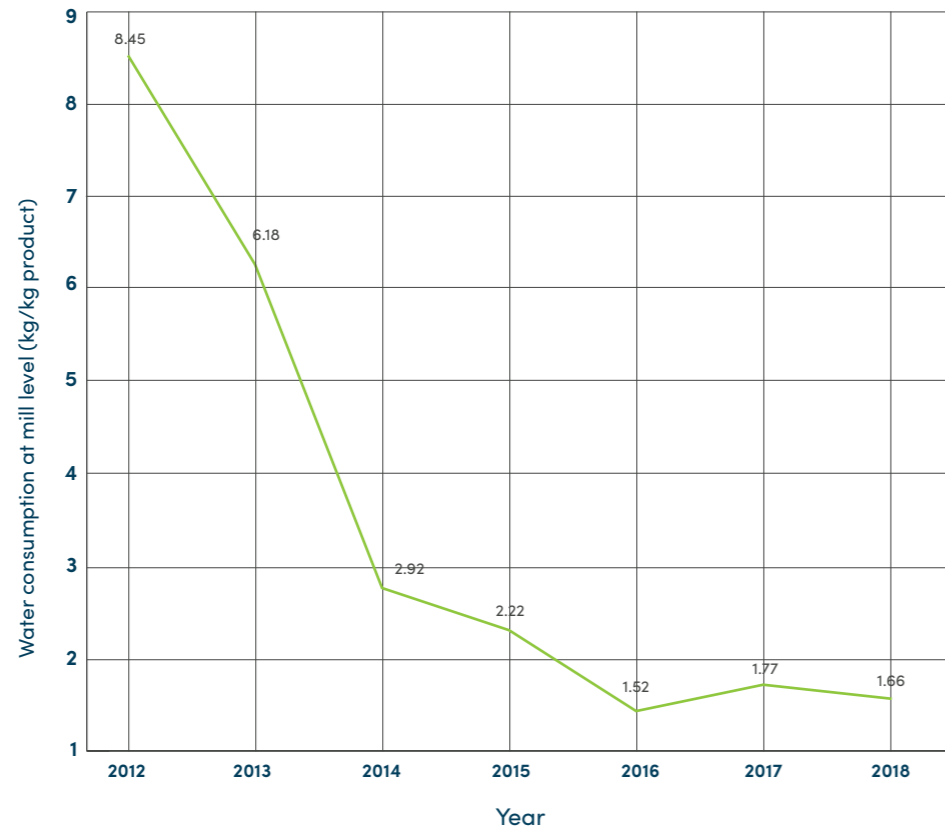


Figure 24. Water consumption (mill level) from 2012 to 2018 (n_2012: 27, _2013: 36, n_2014: 45, n_2015: 62, n_2016: 83, n_2017: 90, n_2018: 58)

The longer mills have been certified, the less water they consume. In particular, for each kilogramme of finished produce, certified mills consume 18% less water. In 2018, Bonsucro-certified mills produced 4.9 million tonnes of sugar using at least 2.2 million m³ less water than 2017, equivalent to around 900 Olympic swimming pools (seven per certified mill) or the water consumption of 4 million people in one year.

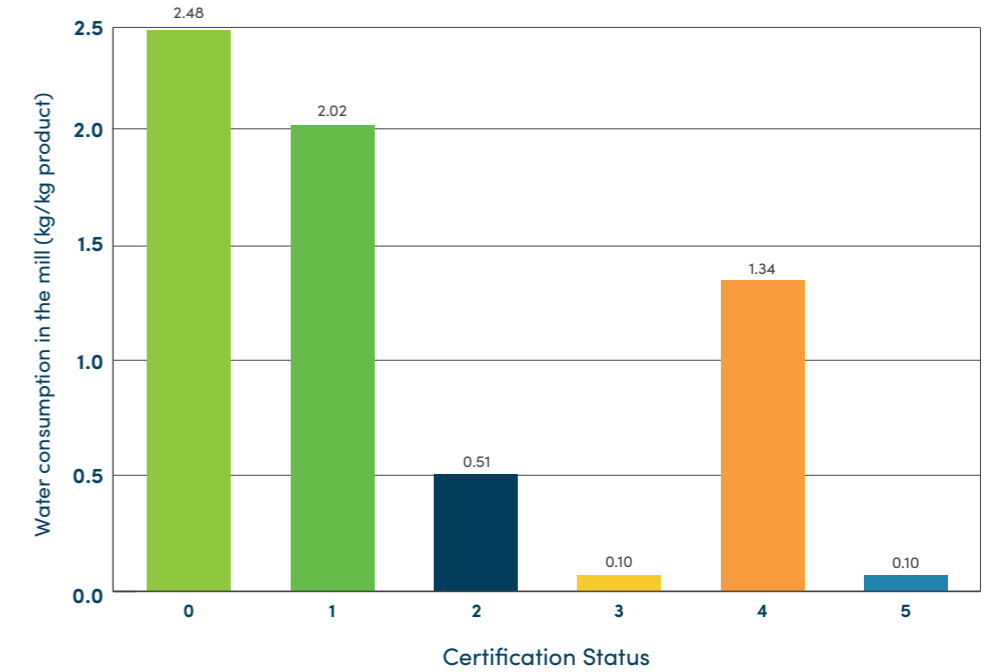


Figure 25. Water consumption (mill level) based on certification status (n_0: 72, n_1: 72, n_2: 54, n_3: 40, n_4: 31, n_5: 21)n_5: 20)

Fertiliser applications

Fertilisation is an important input in the production of sugarcane, however, the manufacture and use of fertilisers contribute to the GHG footprint of sugarcane production. If not applied correctly, fertilisers can also harm the environment. The Bonsucro Production Standard requires that farmers apply fertilisers according to science-based recommendations. Farmers must calculate the exact amount of fertilisers they need and apply it with precision. They are supported in this by the field-based experts who use soil and/or leaf samples to determine how much to apply and make relevant recommendations.

Farmers must also monitor their applications, which helps to promote a greater understanding of the production

cycle. Currently, 89% of recommended fertilisation requirements are covered using artificial fertiliser. There is currently no data available to evaluate whether producers are either under-fertilising or bridging this gap with organic fertilisers. There are also differences in Asia, Australia and the Americas.

Overall, the ratio of artificial fertilisers applied to recommended levels of fertiliser through soil or leaf analysis decreased between 2013 and 2018. Producers certified since 2013 have adjusted their fertiliser usage and show a lower usage of artificial fertilisers compared to recommendations (93% versus an average of 89% in 2018).

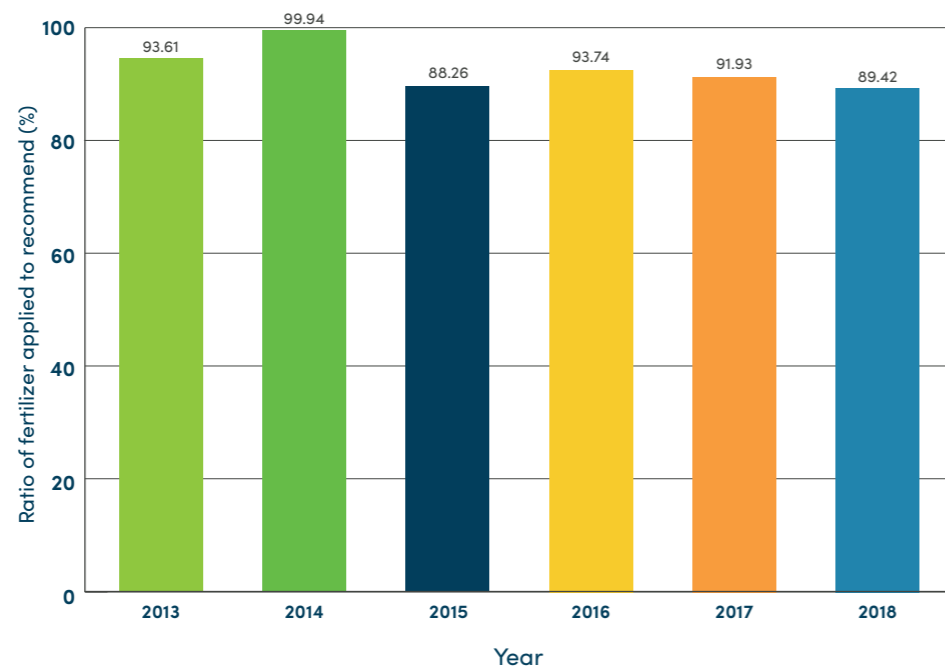


Figure 26. Ratio of fertiliser applied to recommended from 2013 to 2018 (n_2013: 10 n_2014: 42, n_2015: 60, n_2016: 81, n_2017: 90, n_2018: 53)n_2016: 83, n_2017: 90, n_2018: 58)

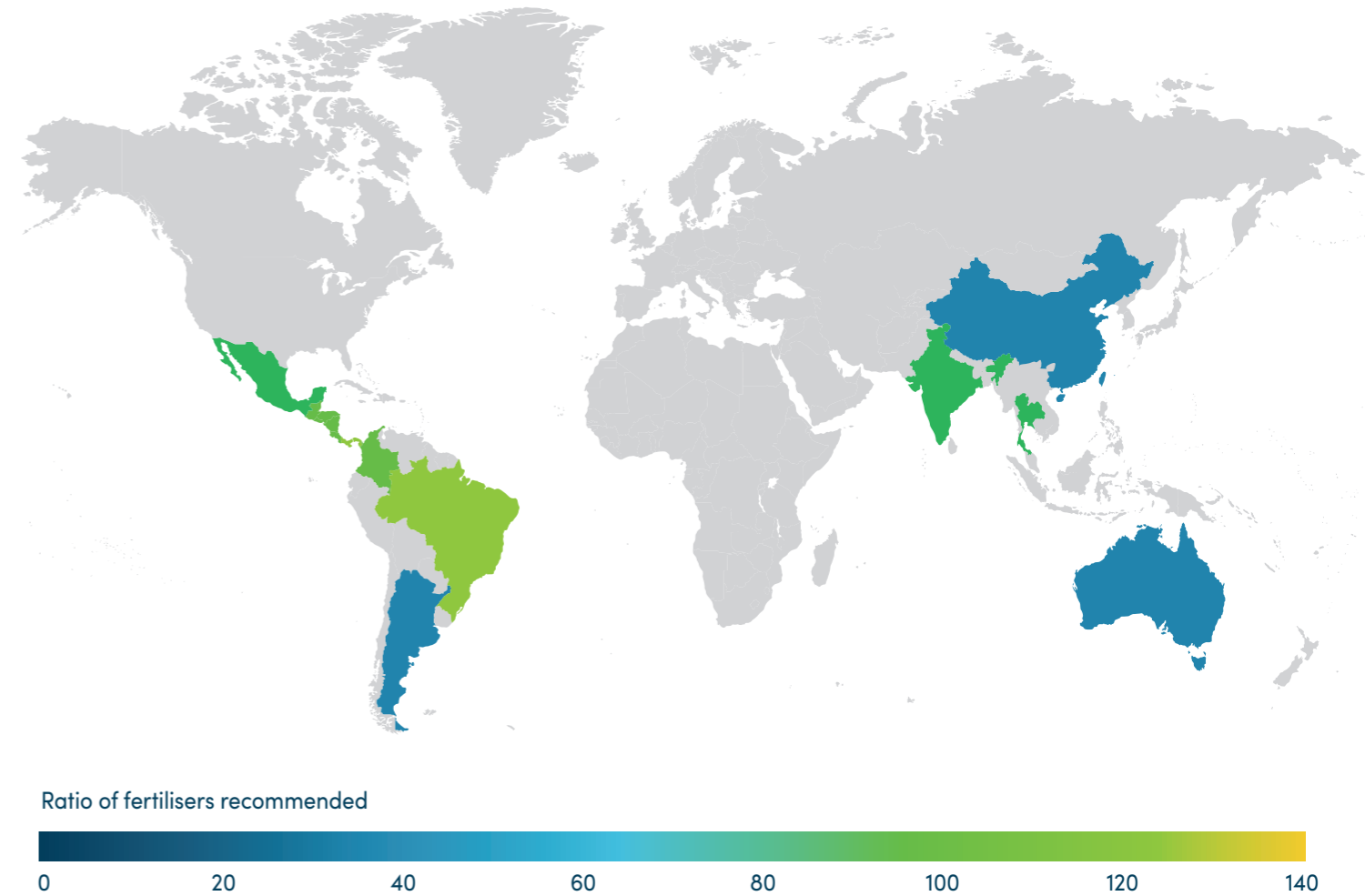


Figure 27. Global map of all certified mills on the ratio of fertiliser applied to recommended

The average value for the ratio applied to recommended fertilisation requirements is 92.45% from 2012 to 2018. Considering results across all sugarcane-producing countries can help to identify regions with greater potential for reducing usage of artificial fertilisers while noting the small number of samples available for some countries.

Pesticide and herbicide use

Chemicals such as pesticides and herbicides are used at several stages of the sugarcane crop cycle. Herbicides represent the majority of this usage and are used to prevent the growth of invasive and competitive plants that could negatively impact yields. While not eliminating the use of agrochemicals, nor encouraging it, Bonsucro requires that producers use less than 5kg of active ingredient per hectare. By implementing the Bonsucro Production Standard, producers

must monitor, measure and, where required, reduce their use of pesticides and herbicides. Bonsucro has also created a list of banned agrochemicals that producers must not use if they wish to achieve Bonsucro certification. The annual average of agrochemical used across certified farms has evolved along the years, impacted by the number of newly certified entities and changing climatic conditions. However, the use of such chemicals gradually decreases over the time of certification.

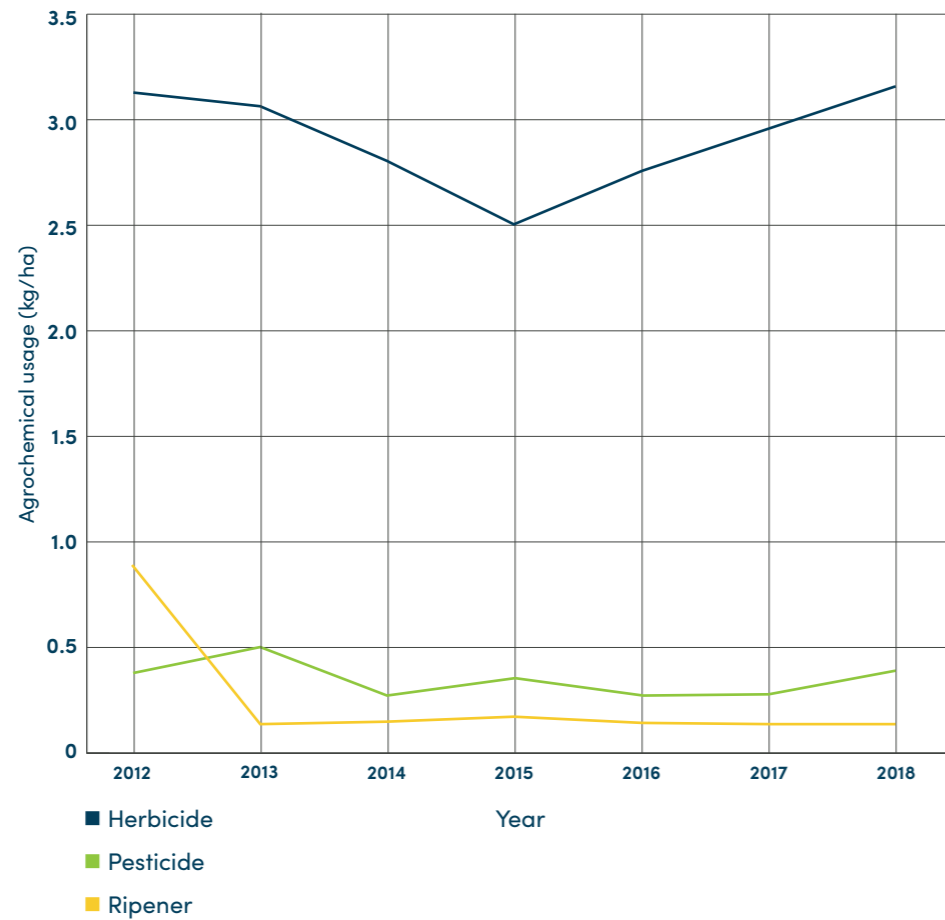


Figure 28. Agrochemical usage from 2012 to 2018 (n₂₀₁₂: 27, n₂₀₁₃: 36, n₂₀₁₄: 43, n₂₀₁₅: 59, n₂₀₁₆: 79, n₂₀₁₇: 91, n₂₀₁₈: 53)

The use of all three chemicals applied in sugarcane production (pesticides, herbicides and ripener) reduces over four years of certification (4) compared to usage levels at initial certification. Implementing the Bonsucro Production Standard therefore has a positive impact on the amount of chemical usage, which also lowers risks to workers and the environment.

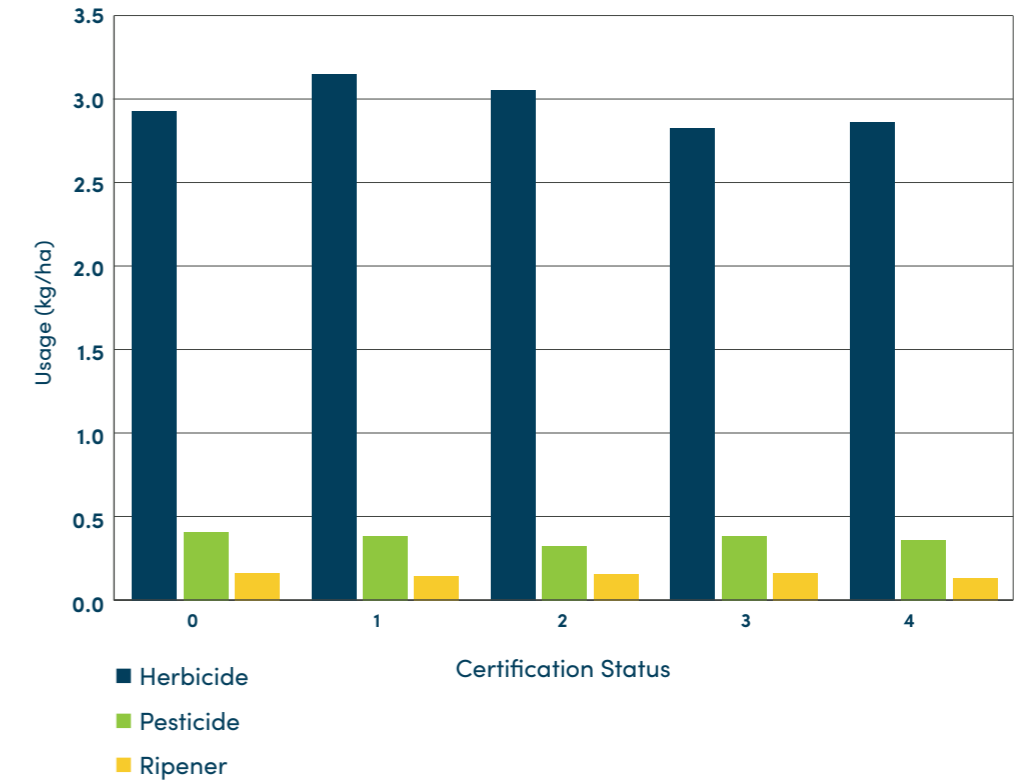


Figure 29. Agrochemical usage based on certification status

Sample size of herbicide where n: number of mills included in analysis (n₀: 114, n₁: 76, n₂: 63, n₃: 48, n₄: 37)

Sample size of pesticide where n: number of mills included in analysis (n₀: 98, n₁: 68, n₂: 57, n₃: 46, n₄: 35)

Sample size of ripener where n: number of mills included in analysis (n₀: 77, n₁: 56, n₂: 44, n₃: 31, n₄: 17)

Since 2017, Bonsucro has worked more closely with potential members and farms working toward certification. Guided by the Bonsucro Production Standard, these producers have made considerable efforts to review and amend their pesticide and herbicide choices. Notably, in Mauritius, the sugarcane industry joined forces with the Mauritius Sugar Research Institute (MSRI) to revise its guidelines in pesticide and herbicide application, with the core objective of meeting Bonsucro's requirements. Following comprehensive field tests, MSRI has published new guidelines that were implemented by Omnicane in preparation for its certification process (see case study 7).

CONCLUSIONS AND RECOMMENDATIONS

Bonsucro's outcome report is a valuable tool to step back and examine impact – both directly through its own activities and indirectly through its members. Once again, Bonsucro has increased its engagement with the sugarcane sector and expanded its reach.

As an organisation, it continues to leverage data and feedback from members to assess its strengths and opportunities for improvement. The Outcome Report remains a useful tool for evaluating the year in review and creating recommendations for the future.

Bonsucro should increase the number of farmer and mill associations as well as civil society members, and grow its membership across a greater number of regions.

Smallholder participation has increased through the creation of targeted programmes and continued support from regional teams. However, the scale of growth could be accelerated by attracting more financial support and a higher number of participating mills, as well as encouraging the creation of more programmes.

To encourage more mills to pursue certification, Bonsucro has engaged with leading mills that hosted events or visits by peers. It will be important for the organisation to engage with exemplary farmers in a similar way in order to engage with more farmers worldwide.

In 2019, Bonsucro focused on developing improvement programmes – more than doubling the number of programmes year on year. This demonstrates the sector's appetite for programmes promoting sustainable production, in addition to Bonsucro's efforts to catalyse ideas, finance and interest for programme implementation. The range of programmes is currently fairly extensive, but could benefit from becoming more focused on specific sustainability challenges and setting clear, measurable goals. This would allow more resources to be directed to existing projects to deliver greater impact.

In early 2019, a ground-breaking study on the potential impact of the Bonsucro Production Standard's large-scale adoption was published in the Proceedings of the National Academy of Sciences of the United States of America (PNAS). The study established the basis for a roadmap of actions and activities to deliver impact and tackle priority risks. Bonsucro should better integrate the

findings of the study into its work plan to help inform impact-driven programme development and collaboration.

Performance analysis continues to confirm that producers who have implemented the Bonsucro Production Standard are experiencing performance improvements in terms of GHG emissions, water use and worker health and safety. Bonsucro must continue to analyse the performance results and identify tangible improvements relating to the implementation of the Standard. Through this analysis, refined benchmarks of performance (against which any producer can compare themselves) are also identified and could be shared with the wider sector. Bonsucro should also develop a work plan to respond to shortfalls in performance among producers against certain indicators, with a view to potentially revising its approach to driving change and sector transformation.

In 2018, Bonsucro launched its Smallholder Production Standard. In 2019, five farmer groups achieved certification. While the certification process requires data to be collected and shared with Bonsucro, the organisation is still working on developing a system to manage the data centrally and track smallholders' performance improvement. Extending Bonsucro's current database to include smallholder data would provide a better insight into the sugarcane sector.

Bonsucro has maintained a significant focus on building capacity among farmers and support organisations in order to help them gain the skills, knowledge and tools to become sustainable producers. Investment in training should continue, with Bonsucro also monitoring the adoption of sustainable practices at farm level and evaluating the transformation of farming communities over the long term.

The number of mills achieving Bonsucro certification continued to grow in 2019. Bonsucro Global Week, held in Thailand, appears to have had a positive impact in engaging Thai sugar mills in pursuing certification. Looking ahead, Bonsucro could use Bonsucro Global Week as a part of its growth strategy in certain countries or regions.



Over the last decade, Bonsucro has collected a significant amount of data, which may represent the largest database of sugarcane operations available globally. With limited resources, Bonsucro has yet to fully exploit the knowledge that could be derived from this database. To move further towards this aim, the organisation has recruited a data manager and established a data working group to design a data strategy that will enable Bonsucro to exploit and extract shareable knowledge on the sustainability performance of the sector.

Buyers have been instrumental in expanding the development and reach of the organisation and its certification scheme. In particular, as more buyers require their suppliers to implement the Bonsucro Production Standard or achieve certification, more entities pursue certification. This is a powerful driver for change. However, buyers continue to evaluate whether such a commitment is realistic, beneficial and economically viable. Bonsucro should focus on developing a business case for certification, including increasing the number of independent impact studies, in order to increase buyers' confidence in Bonsucro

as the leader in sustainability solutions for the sugarcane sector.

In 2019, through the SECO/ISEAL funded programme 'Better Practice, Better Finance', Bonsucro joined forces with fellow ISEAL members and the financial sector to better understand how collaboration with financial institutions could expand access to finance for producers. It will be important to continue this work in 2020 to help ensure the financial sector is able to incentivise and drive change in the sugarcane sector.

Bonsucro will develop a new accelerator programme in Mexico with seed funding. Programmes of this kind are vital in fostering trust among stakeholders, securing a long-term presence and delivering a platform for lasting collaboration. Establishing a national platform of this kind requires commitment and resources. To strengthen the set-up and development of the Mexico accelerator programme and all future accelerators, Bonsucro must define a clear roadmap and promote high levels of participation and commitment among all stakeholders, particularly mills and farms.

Appendix A: Methodology

Unless otherwise stated, all figures and results presented in the body of this report are based on audit data and results from impact studies taken from the Bonsucro's official reporting period: 1st January 2019 – 31st December 2019 or extracted from Bonsucro's database of results. However, due to reporting timeframe, the sales data is reported a year in arrears (and therefore 2018 trade data is reported within this report).

It should be noted that production values are reported for 12 months periods, but these periods do not always coincide with the calendar year. Total production values reported for each year are based on the updated production volume data for each certified entity in each year, even if the reporting period for this production volume falls partially outside of the corresponding calendar year. As such, volume figures should be treated as approximate.

The Bonsucro database was the source of time-series data on the different types of information, e.g. the number of certificates, sugarcane cultivation hectares, diesel usage at farms, mill energy usage etc. The certificate database is updated when certificates are added, suspended, terminated, or renewed. See data process for collection, analysis and reporting below.

1. Data collection

- Farmers and mills complete the Bonsucro Calculator.
- Auditors verify the data and send the final calculator to Bonsucro.

2. Data cleaning and analysis

- Bonsucro analyses the calculator, providing feedback to producers and auditors.
- For the purpose of monitoring and evaluation, outliers (data points that do not make technical sense, potentially due to errors in units reported) and missing data are detected and removed.
- Datasets are cleaned and prepared for reporting.

3. Reporting

- Data is exported to Power Bi and Python for data visualisation to support analysis.
- Results are aggregated, anonymised and reported in Bonsucro's Outcome Report.

The Wilcoxon signed-rank test was employed for the impact analysis of GHG emissions, where statistical significance is reported for p-value < 0.05.

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Bonsucro membership update

Bonsucro regularly improves its systems and processes – taking internal and external feedback into consideration. Since this report went into production, Bonsucro undertook an internal review of its membership categories. The team reviewed the farmer members category and realised that many of the 312 individual farmers who were added as non-paying, non-certified members had never engaged. The Secretariat reached out to locate and engage with a large cohort of farmers in India and a smaller group in Brazil. Despite best efforts many of them could not be located or contacted and have therefore been removed from the membership. Others were located and remain in membership, either as individuals or under the associations that represent them. The thorough check ensured that farmers who belong to farmer associations are not considered twice in the overall number. Despite this reduction in overall numbers, Bonsucro continues to grow membership in all other categories.

The new numbers are not reflected in this report but are reflected on Bonsucro's website.



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