

OUTCOME REPORT 2018



Bonsucro Outcome Report 2018

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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.

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Executive Summary

The 2017-18 season was a year of expansion, innovation and continuous improvement for Bonsucro, as we continued on our journey towards a sustainable sugarcane sector with thriving producer communities and responsible, resilient supply chains. The sector as a whole continues to face multiple challenges, including climate change, water scarcity and sugar price volatility. As the sector makes strides towards raising productivity sustainably to feed the growing global population, it is also diversifying to support the circular economy by contributing to innovative fuels and bio materials.

Bonsucro certification remains vital to improving Bonsucro producers' performance and livelihoods, particularly among smallholder farmers, who represent the majority of the world's sugar farmers. More than 160,000 people are employed by Bonsucro producers globally, of which 66% work on farms. We estimate that by 2018, 27% of the world's sugarcane land was engaged in the Bonsucro platform.

Membership growth

Membership of Bonsucro grew by 5.2% between 2017 and 2018, reaching a record high, with 540 members in 43 countries, as the sector stepped up its commitment and Bonsucro gained momentum as the major global platform for collective action on sustainability. Our industrial membership saw the largest increase, growing by 23.8%, while producers still account for 85% of all members.

Production levels and market uptake

As the number of certified mills and farms continues to grow, with a record 26 certificates issued in 8 countries in 2018, Bonsucro producers are increasing their certified production volumes. There are now 94 Bonsucro-certified mills, a 30% increase year on year, and over 1 million hectares of Bonsucro-certified farms. The thirteen countries with certified operations generated, in 2017-18, more than 4 million tonnes of Bonsucro-certified sugar. Brazilian farmers cultivated the majority, producing 79% of total certified volumes, however, production is growing in diverse countries, and 2018 also marked the first certifications in Bolivia and China.

The production and sales of Bonsucro-certified sugar have both increased for the fourth year running. Sales have increased 30%, outstripping the rate of production growth (6%). Overall, uptake of certified sugar has increased to a record 23% in relation to production. Indeed, 282,098 tonnes of sugar credits and 694,351 tonnes of physical sugar were sold respectively, the highest level to date. Sales of Bonsucro-certified physical product accounted for 71% of the total sales of Bonsucro-certified material in 2017-18, with 29% being bought as sugar credits.

This expansion is both driven by growing interest among buyers in sourcing sustainable materials, and by the growing awareness among farmers and mills of the benefits of adopting sustainable practices, as Bonsucro extends its reach.

Capacity building and continuous improvement

Importantly, we continue to scale up our capacity building initiatives, expand access to the standard to smallholders, and explore ways to enable more and better-quality training through partners and licensed trainers. We now trained 460 people worldwide to deliver Bonsucro training and provide advice on standard implementation, and 69 qualified auditors conduct

audits against the Bonsucro Production Standard. We have also explored opportunities to enable more remote access through online training, with the launch of the Bonsucro Academy

As a result, in 2017-18, Bonsucro producers continued to make progress on improving the efficiency of their practices and reducing their costs, while exceeding their target yields and making improved use of land and natural resources. This focus on continuous improvement towards greater efficiency was vital in a year when the global sugar price decreased by a further 23.3%, intensifying pressure on farms and mills to do more with less.

In particular, mills that have held Bonsucro certification for longer are better able to manage and reduce production costs, achieving a production cost to sales ratio of below 50%, compared to an average exceeding 50% for those mills certified for a shorter time.

We also made significant progress on our Accelerator plans, industry-wide programmes that support farmers and mills in addressing their challenges and promote sustainable production. We are currently helping to implement two Accelerator Plans in India and Thailand and collaborating to develop programmes in Mexico and Brazil. In 2017-18, five leading Thai mills achieved Bonsucro certification, bringing the total to seven mills, representing 12% of the country's sugarcane mills. In India, 12 of the country's largest mill groups joined the programme in 2017-18, bringing the total to 13 participating mills.

Transparency and Chain of Custody Certification

We are also seeing growing interest in Bonsucro Chain of Custody Certification, as we support our members in improving transparency in their supply chains and demonstrating the sustainability credentials of their sourcing policies. Certifications increased by 21% between 2017 and 2018, reaching 40 certifications in 16 countries. Overall, 19 new companies – both traders and brands and retailers – became chain of custody-certified in 2017-18.

Protecting the environment while raising productivity

By gaining Bonsucro certification, farms and mills learn to reduce the impact of their activities on the climate and environment, while reducing their costs, raising their yields and improving their livelihoods.

Greenhouse gas emissions

Certified Bonsucro producers continued to improve their GHG footprint by managing their energy use more efficiently. 2017-18 saw a decrease in greenhouse gas (GHG) emissions among Bonsucro producers, largely due to mills exporting more renewable electricity to national grids, avoiding the need for fossil fuels. This helped to partially offset the slight increase in GHG emissions from farms. Indeed, global emissions from sugarcane production are halved when mills are taken into consideration – from 0.45 tonnes CO₂/tonnes sugar to 0.16 tonnes CO₂/tonnes sugar. Overall, Bonsucro producers saved a total of 1.7m tonnes of CO₂ compared to 2013, enabling buyers to purchase sugar with a diminishing carbon footprint.

Water use

Water use at mill level continued to decrease, often outperforming

the Standard's requirements. The 2017/18 season saw a slight increase among Bonsucro producers overall, reaching 1.5 m3 water/tonnes of finished products. Mills in 'dry' climatic zones made particular progress in reducing their water consumption, achieving a lower than the average level of 1.18m3 water/tonne of finished products. Millers saved 13 million m3 of water in [2017-18], compared to 2013.

Fertilisers and pesticides

A precision approach to applying fertilisers is helping Bonsucro farmers to use fewer synthetic fertilisers. In particular, farmers who have held Bonsucro certification since 2011 and 2012 are using fewer synthetic fertilisers to meet their demand in plant nutrition (85% versus an average of 89% in 2017). Further analysis would be required to understand whether this is due to increased use of organic alternatives or farmers using fewer fertilisers generally.

Bonsucro is also helping farmers to reduce their pesticide and herbicide use, including through on-the-ground training and partnering with scientists to identify the latest best practices. We continue to support the cross-sector Integrated Pest Management Coalition, including its new mobile application, launched in 2018, which helps farmers to understand legal requirements around harmful substances and identify more sustainable alternatives.

Sugarcane as a raw material of the future

For Bonsucro, sugarcane is a highly resilient plant with a key role to play in a sustainable and circular economy. Bonsucro-certified ethanol maintained a level of 136m litres in 2017-18 for the second year running. 99.5% of certified volumes are produced in Brazil. The credibility and integrity of our ethanol certification was also recognised again by the European Commission (EC), which estimates the potential carbon savings from sugarcane ethanol to be up to 70%, compared to fossil fuels.

In 2017-18, Bonsucro members in Thailand collaborated to conserve natural resources and promote the circular economy by converting sugarcane into bioplastics. Corbion, together with millers Mitr Phol and Thai Roong Ruang (TRR) are helping to create a versatile, sustainable material with equivalent performance to conventional, oil-based plastics while generating fewer carbon emissions.

Labour rights

Bonsucro producers maintained a strong focus on respecting and improving labour rights in 2017-18. In particular, all 94 Bonsucro-certified mills demonstrated the absence of child and forced labour in their operations, and workers at Bonsucro-certified mills and farms received, on average, 22% above the minimum wage threshold for their country.

Notably, mills and farms are continuously acting to improve health and safety. The longer farms have been certified, the lower the number of accidents they experience, helping to protect workers and lower the risk of disruption to productivity.

Broader positive impacts of certification

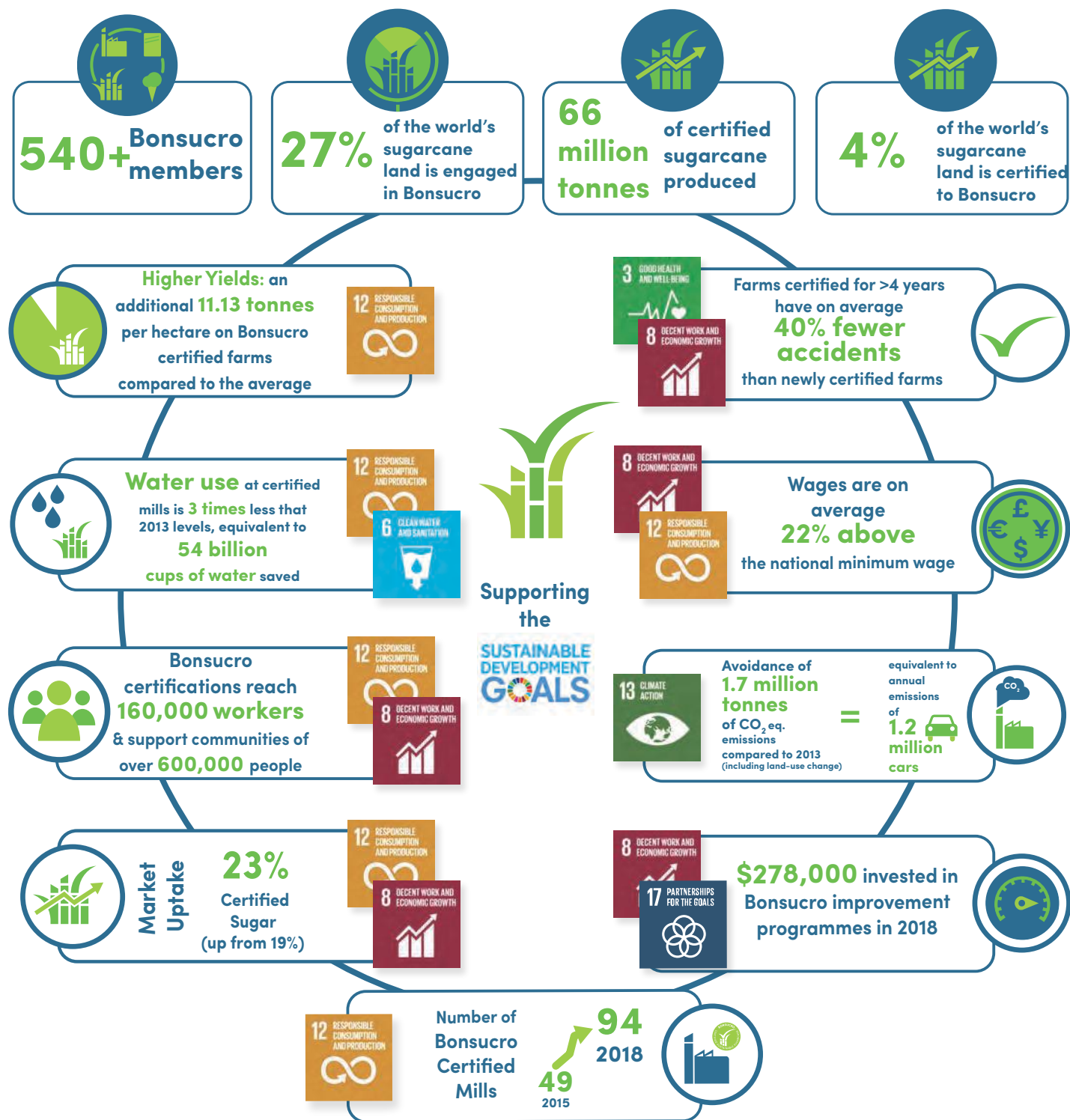
Increasingly, sustainability standards, including Bonsucro's, are contributing to broader, positive impacts for producer communities. Nearly all Bonsucro-certified mills have developed corporate responsibility programmes to support local communities, including by investing in health services, education and sports facilities. Additionally, in Central America, Bonsucro

has collaborated with multiple stakeholders to form the Adelante Initiative, in order to protect workers' health by developing safer working practices.

Looking ahead

We will continue to support farms and mills in adopting sustainable practices and improving their livelihoods. At an industry level, we will continue to engage with local and global buyers, helping Bonsucro-certified material to gain further momentum, expanding its share in the global market and improving the sustainability of the sugarcane supply chain.

In Numbers



Impact Stories

Harnessing industry collaboration to accelerate progress towards sustainable sugarcane

To achieve a sustainable sugarcane sector with thriving producer communities and responsible, resilient supply chains, Bonsucro is taking action to scale up its outreach to farmers, accelerate the pace of progress and increase the impact of the programme in key production countries. Through several technical events and through our Accelerator Plans in India

and Thailand, we raise awareness of the benefits of joining Bonsucro among farmers and mills, and build the capacity of farmers and mill owners to adopt sustainable practices. We develop nationally relevant plans by collaborating with key industry stakeholders, helping to protect people and the environment and improve livelihoods, while increasing the volumes of Bonsucro-certified product available on the market.

Building the Capacity of Mills and Smallholders in India

India is the second largest producer of sugarcane in the world. It provides employment to over 1 million people directly or indirectly besides contributing significantly to the national exchequer. In 2017-18, the area under sugarcane was 5.4 million hectares and, according to ISMA (Indian Sugar Mills Association) sugar produced was 411 million tonnes. India exported 464 thousand Mt of sugar and 525 mills were operational in the same year. Uttar Pradesh is the leading state with 2.3 million hectares under sugarcane production. This followed by the state of Maharashtra, Karnataka and Tamil Nadu, followed by Andhra Pradesh, Punjab, Haryana, Gujrat and Bihar. Sugarcane farmers and their families constitute around 30 million which is close to 7% of the rural population.

In particular, through our on-the-ground partners, we are also delivering training to help farmers and mill owners develop a better understanding of Bonsucro's sustainability standards, including how to better monitor and report their progress in a standardised way. We are also supporting research and development in sugarcane mills and farms, in order to help shine a light on the latest affordable, sustainable practices.

To scale up the numbers of farmers producing Bonsucro-certified sugar, we introduced the Bonsucro Production Standard for Smallholders in India in 2018. The standard has been adapted from our original Production Standard to be more accessible to smallholders, responding to their particular challenges while maintaining the same rigour in promoting continuous improvement towards key social, environmental and economic goals.

We also engaged regularly with stakeholders, including prominent

buyers. For example, as part of its commitment to our Buyer Accelerator Group, PepsiCo has invested in building capacity of farmers and mills. The funding was directed to projects delivered by our implementing partners on specific environmental and social issues identified as priorities at five key mills and the farms supplying their sugarcane.

In just two years, the India Accelerator Plan has succeeded in increasing interest in Bonsucro certification among farmers and mill owners, with more smallholders committing to cultivate sugar in line with Bonsucro's Smallholder Standard. Industrial membership of Bonsucro also increased by 71% in 2018 (compared to 2016), with 12 of the country's largest mill groups joining the programme. Currently, 13 sugarcane mills are participating, and commodity giant Olam's India mill achieved Bonsucro Production certification in 2018.





Extension worker in fields near Saraburi Sugar Mill, Thailand
Photo: Joe Woodruff / Bonsucro

Engaging the Sugarcane Industry in a Sustainable Future in Thailand

Sugarcane production is accelerating rapidly in Thailand, the world's second largest sugar exporter, with production increasing by 8% annually since 2010, and 51 sugarcane mills processing cane grown by predominantly small and medium-sized farmers. The sector contributes significantly to the country's economy, yet it also faces multiple challenges, including water scarcity, soil degradation, disease pressure and uncertainties over land rights.

To address these issues and catalyse progress towards sustainable sugarcane, we developed the Thai Accelerator Plan in March 2018, focusing on farmer performance, land and water

tenure, water management, and labour rights. The plan arose directly from an industry summit held by Bonsucro in Thailand to discuss the key challenges facing the sector and agree the most effective strategy to address these issues. Leading mill groups such as Mitr Phol, TRR, TRR (Saraburi), Khon Kaen, KI Sugar, KTIS, Eastern Sugar and Cane, Kaset Phol Sugar, and Khonburi Sugar joined the summit, together with traders and a broad range of Bonsucro partners.

Working closely with buyers, mills and government agencies, we aim to reach a total of 80,000 farmers and 20 mills representing 50% of Thailand's milled sugar by 2020 and increase the quantity

of certified sugar to 3 million tonnes in Thailand. Within this time, we aim for half of these mills to achieved Bonsucro certification, with 20,000 farmers supplying these mills complying with the Bonsucro Smallholder Standard.

To achieve this, we are exchanging knowledge and best practice in scaling up the production of Bonsucro-certified sugarcane in Thailand and developing and implementing impact projects to help address farmers' particular challenges. In addition, we aim to help facilitate clear communication around sustainability performance expectations from buyers to mills, seeking funding from financial institutions and partnering with a range of professionals – from training institutes to agronomists to technical and labour rights advisors – to help mills and farmers gain the support they need to adopt sustainable practices.

PepsiCo is supporting the Accelerator Plan. PepsiCo and Nestlé are working in partnership to reach their sustainability and responsible sourcing goals for cane sugar in Thailand.

Progress to date

In 2018, five leading Thai mills achieved the Bonsucro Production Standard certification (BoThong Vorachai, Eastern Sugar mill, Mittr Phu Viang, Saraburi Sugar Co, and Surin Sugar Co. Ltd), bringing the total to seven mills across the country, representing 12% of the country's sugarcane mills. Overall, the Accelerator Plan is gaining momentum in Thailand, with key industry players committing to achieve continuous improvement.

Looking ahead

In 2019, we will encourage more mills and farms to join the accelerator plan and invite more buyer members to support the expansion of the programme by buying credits or investing directly in the programme. In this way, we will continue to scale up our activities by continuing to reach more farmers and expand our capacity building efforts. In particular, we will seek to make a strong business case for farmers to join, including by demonstrating an increasing and verifiable market share for Bonsucro-certified sugar.

To strengthen our knowledge of the latest, locally relevant sustainable practices, we will partner with leading research

organisations in India on issues including water and soil health. Finally, we will grant access to our cloud-based tool Bonsucro Connect for participating mills and farms, and help to improve lives in farming communities by promoting education on health and wellbeing among women and children.



Empowering Farmers and Mills of all Sizes to Manage Land Responsibly

Smallholder farmers and small-scale mills often lack access to the knowledge, finance and resources they need to adopt sustainable practices and raise productivity. In addition, some farmers in production countries, including in sub-Saharan Africa, face land and water tenure issues. To empower all farmers and mills to participate in the journey towards sustainable sugarcane, Bonsucro partnered with sustainability technology consultancy TMP Systems on a responsible land use project.

Together, we established a two-year pilot project in 2016 in six southern African countries - Tanzania, Malawi, Zambia, Mozambique, Eswatini and South Africa - harnessing grant

funding from the UK government's Department for International Development (DfID) through its global Land: Enhancing Governance for Economic Development (LEGEND) Challenge fund. LEGEND supports the development and testing of innovative approaches and partnerships to help promote inclusive economic development by encouraging responsible private investment in land and robust land governance.

"All industry partners, large and small, can improve the environmental, social and economic sustainability of the sector by carefully monitoring the impacts of their activities," says Danielle Morley, CEO, Bonsucro. "As a global platform for

sustainable sugarcane, we seek to help identify the best options for effective, affordable monitoring methods for all segments of the industry.”

Through our pilot project, we worked with four smallholder bodies (cooperatives and associations), a large commercial farm, a small miller, and a water users’ district, a governing body that oversees the abstraction of water along the Komati River, from Maguga Dam to the South African border.

We set out to develop cost-effective, user-friendly data management solutions for smallholders and millers with access to fewer resources, helping them to better monitor their activities and keep a more accurate record of their land area. In this way, smallholders and millers can identify key issues, and work towards targeted improvements to reduce their impact on the environment and help safeguard natural resources, including water, for local communities. Promoting more effective record-keeping also helps to reduce smallholders’ credit risk profile, helping them gain access to finance.

Each site selected the environmental indicators they would measure, and designed and built electronic surveys with guidance from the Bonsucro-TMP Systems project team, using smartphones to collect data in the field. We worked closely with partners at each site to help ensure that the surveys we designed supported the sites’ individual needs and challenges. We also delivered training on using the devices, highlighting the type of data to capture, as well as best practice in collecting and analysing the information.

The best results were achieved by sites that chose to focus in depth on a small number of issues. For example, a smallholder trust in

Zambia chose to focus entirely on monitoring the prevalence of one pest: the Yellow Sugarcane Aphid, which has caused significant damage to yields and livelihoods in smallholder communities.

The trust, which supports three farmer associations and a mill, developed specific instructions for pest scouts, who used their smartphones to map their routes using GPS technology and collected survey data on aphid numbers and distribution, uploading the information directly to the government’s agronomy department. This helped to improve the farmers’ understanding of how far the pest had spread, and develop a more precise, targeted approach to spraying, reducing costs and improving the effectiveness of the pesticide application.

The project has already influenced the way in which major millers in southern Africa encourage their growers to manage their environmental and land use data. Some millers are also developing their own surveys for use on their own estates, and sharing them with on-the-ground teams supporting farmers, helping to both improve data collection and monitoring, and provide valuable training to farmers and mill workers.

“Collaborating with diverse, knowledgeable organisations through this project reinforced our view that partnership is vital to designing systems that help farmers and mills make robust progress towards sustainable sugarcane,” concludes Boudewijn Goossens, Bonsucro Director for Africa & Middle East “We look forward to further leveraging this work to promote responsible land use and environmental management in sugar production countries across Africa.”



Photos: Top right – Richa Sinha, KPMG. All others: Jessica Joubert / Bonsucro



Sugarcane cutters and support workers, Ingenio San Antonio, Nicaragua
Photo: Joe Woodruff / Bonsucro

Adelante Initiative: Collaborating to Improve Worker Health

Sustainability standards, such as Bonsucro, go far beyond improving agricultural practices to create broader positive impacts for people in farming communities. This is the landmark finding of a new white paper commissioned by global sustainability standard association ISEAL and WWF, which reveals the ripple effect of systemic changes that occur when agricultural sectors adopt sustainability standards. In particular, the ability of standards to create dialogue and promote collaboration among partners across the supply chain catalyses vital pathways to change.

In Central America, for example, Bonsucro, an ISEAL member, has brought together multiple stakeholders to help improve the lives of workers suffering with Chronic Kidney Disease of undetermined causes (CKDu), a health epidemic predominantly affecting workers from vulnerable communities, including farm workers. Together, the partners have forged a co-ordinated, strategic partnership – the Adelante Initiative – to help protect workers' health by developing safer working practices.

Through the Adelante Initiative, agricultural producers and health organisations use a dedicated shared platform to better understand and address the causes of the disease, which causes fatal kidney deterioration, with 20,000 lives lost in Central America alone in one decade. In the sugar sector, this includes identifying risks posed by existing production practices and identifying ways to both improve safety and raise productivity, in order to slow progression of the disease and help to prevent its onset among the workforce. Additionally, the initiative seeks to influence policy, raise public awareness of the epidemic, and expand access to treatment for those suffering from the disease.

"People often perceive that sustainability standard systems like Bonsucro only focus on certification, but the impacts and value they deliver can be much broader," explains Miguel Hernández, Bonsucro's Regional Director for Latin America. "The Adelante Initiative is a prime example, and forms part of Bonsucro's efforts to achieve sustainable change at scale by promoting collective action across the sugar industry."

To prepare the ground for change, Bonsucro encouraged sugar producers to meet with global CKDu and occupational health organisation La Isla Network to discuss their differing views on CKDu and its causes. By taking a collaborative approach, we helped to accelerate industry discussions on a disease that has received little global attention and can be complex and time-consuming to understand. The collective understanding and agreement forged through these meetings led Bonsucro and our founding partners – La Isla Network, Nicaragua Sugar Estates Limited and the Nicaraguan Sugar Producers Association (CNPA) – directly to the creation of the Adelante Initiative.

"Entrenched positions on the drivers of CKDu had led to delayed progress in supporting workers," says La Isla Network's CEO, Jason Glaser. "Engaging in focused stakeholder discussions enabled us to agree that we all wanted the same thing: to understand and quantify the impact of heat stress on the progression and onset of the disease."

"We are developing and validating practical, on-the-ground initiatives to protect workers from undue heat stress and help prevent those already suffering from CKDu from experiencing rapid deterioration, while strengthening our understanding of the underlying causes."

To move from dialogue to action, the partners combined La Isla Network's health research expertise with the on-the-ground capabilities of leading Nicaraguan sugarcane mill Ingenio San Antonio (ISA), and Bonsucro and CNPA's ability to reach many farmers and producers, Glaser explains.

ISA's Denis Chavarria, who coordinates the preventive health programme for sugarcane workers at the ISA sugarcane mill, agrees. "Participating in the Adelante Initiative has taken our efforts to improve occupational health in the sugarcane industry to the next level," he says. "We're creating a practical, economically viable strategy that other sugarcane mills can follow to help protect sugarcane field workers from the risks associated with CKDu."

Chavarria and the ISA team have collaborated with La Isla Network's research network through the Adelante Initiative to identify best practice policies designed to improve conditions for sugarcane field workers, such as providing regular drinking water, rest and shade. They will also help to ensure that those impacted by heat stress or dehydration receive appropriate treatment, with effective monitoring. They are also contributing to adapt their own technological tools to the supervision in the field to mitigate the effects that climate change can have on the health of workers exposed to heat. The team is sharing all findings through the Adelante platform twice a year, allowing all Bonsucro producer members to learn from its efforts and adopt safer, more productive practices.

The Adelante story is just one example of the power of collaborative sustainability standards to build trust, shift perceptions and empower all stakeholders in an inclusive way. The ISEAL and WWF white paper, which aims to fill the gap in research on the wider benefits of voluntary sustainability standards, also identifies further systemic impacts, including: improving knowledge on sustainable practices, developing shared tools and training resources, promoting investment in capacity building, and influencing policies, public opinion and corporate behaviour.

"Voluntary sustainability standards have the potential to deliver impacts that go beyond individual supply chains and certified areas of operation," concludes ISEAL's Joshua Wickerham. This is clearly demonstrated by the Adelante Initiative, he believes. To help Adelante and other such initiatives build momentum, Wickerham recommends stepping up efforts to monitor broader systemic impacts, in order to help inform future strategies.





First delivery of Bonsucro certified Thai sugar from Saraburi Sugar to Corbion
Photo: Corbion

Corbion: Collaborating with Thai millers to transform sugar into bioplastics

As the global population grows to nearly 10 billion in 2050, it is vital that resources are used more efficiently within a regenerative, circular economy. In the agricultural sector, crops such as sugarcane can be transformed into bioplastics, avoiding the need for oil-based plastic and reducing carbon emissions. In Thailand's Rayong province, Bonsucro member and biotechnology and food ingredient specialist Corbion is converting renewable, Bonsucro-certified sugar supplied by major Thai sugarcane milling groups and exporters Mitr Phol and Saraburi Mill from Thai Roong Ruang (TRR) group into lactic acid which is converted into polylactic acid (PLA) bioplastics by Total Corbion PLA. Together, these Bonsucro members are helping to conserve natural resources, protect the environment and improve smallholder farmers' livelihoods.

"Through Bonsucro's membership network, Corbion has found two trusted suppliers of renewable feedstock for its pioneering bioplastics venture," says Rick Lyu, Bonsucro's Regional Director for Asia. "Producing innovative materials from sugarcane demonstrates the value of sugarcane plantations as a contributor not only to feeding the world but also as a modern, sustainable commodity within a circular economy."

Creating the world's first bioplastics from Bonsucro-certified sugar

Introducing polylactic acid

The global bioplastics market is predicted to grow by nearly 25% in the five years from 2018 to 2023, as demand for sustainable

materials rises. Versatile polymers such as PLA are developed using biomass feedstocks such as sugarcane, providing equivalent performance to conventional, oil-based plastics while generating fewer carbon emissions. They can be used for products including packaging, consumer goods and automotive components, and have the potential to be recycled into raw materials for new products or decompose back into the environment.

A new, circular collaboration

In 2017, Netherlands-based Corbion established a joint venture with oil and gas company Total to create Total Corbion PLA. At Corbion's lactic acid manufacturing site in Rayong, Thailand, cane sugar is fermented to produce lactic acid. This lactic acid in turn is used to make PLA bioplastic pellets in the recently opened Total Corbion PLA plant that is co-located with the Corbion facilities. Committed to sourcing sustainable raw materials and creating positive social and environmental impacts, Corbion sought a reliable, sustainable source of materials to create lactic acid. It forged an agreement with Mitr Phol, which runs three Bonsucro-certified mills, with the Thai miller becoming the first supplier to provide the plant with Bonsucro-certified sugar in September 2017.

In this way, the partners brought commercially viable biopolymer resins made from Bonsucro-certified sugarcane to the global bioplastics market. To demonstrate the credibility of bioplastic products to customers, Corbion and Total Corbion PLA have also achieved Bonsucro Chain of Custody certification for its sugar-

derived bioplastics, and developed and implemented its own sugarcane Code of Conduct for its suppliers, based on Bonsucro's definitions for sustainable sugarcane and derived products.

"An innovative company basing its plant in Thailand is testament to the Thai sugarcane industry's drive to become a leader in sustainability and contribute to the country's efforts to become a leading bio-based economy," says Lyu.

"With Bonsucro certification, we can now offer our customers the guarantee that the biomass used to produce PLA was grown supporting the principles of sustainable agriculture," adds Total Corbion's François de Bie.

Supporting smallholder farmers

Sugarcane is one of Thailand's most important crops and its production is vital to the country's economy. More than 300,000 smallholder farmers cultivate sugarcane, facing challenges including water scarcity, soil degradation and disease pressure, all of which could be intensified by climate change. Many live in poverty and lack access to the knowledge, finance and resources to optimise productivity or improve working conditions.

In October 2018, Corbion forged a partnership with a second Thai miller, the Saraburi Sugar Company, which had just become the first mill globally to achieve Bonsucro certification to the new Bonsucro Smallholder Standard (BSS). Adapted from our

original production standard, the BSS is designed to help make Bonsucro's Production Principles and Criteria more accessible to smallholders and respond to their practical, on-the-ground challenges, while maintaining the same rigour and encouraging continuous improvement towards the same social, environmental and economic goals.

TRR's Saraburi mill is supplied by more than 2,500 farmers, who deliver sugarcane from a 50-kilometre radius around the mill. It promotes capacity building among small groups of farmers to help accelerate the uptake of sustainable practices. Reaching out to farmers on the basis of the BSS is enabling Saraburi to encourage more farmers to commit to working towards Bonsucro certification.

"The Bonsucro Smallholder Standard is working well with our farmers, and this has already been reflected in the improved quality of the sugarcane," says TRR Sugar Group's Nicha Asadatorn.

Her colleague Techanit Onaree, adds: "By monitoring their use of inputs and adopting simple, sustainable practices, such as analysing soil health and using biological fertiliser, smallholders are already reducing their costs and improving productivity."



Photos: Top left – Corbion. All others – Joe Woodruff / Bonsucro

Using Bonsucro credit trades to power sustainable production

Major global companies are using Bonsucro credit trades to support the production of sustainable sugarcane and advance their sustainable sourcing goals - without physically buying sugar. By purchasing a Bonsucro credit,¹ which is equivalent to one tonne of sugar or ethanol, they also pay a small fee to Bonsucro (\$1.30/per credit), half of which is invested directly in on-the-ground initiatives to help farms and mills adopt more sustainable practices. In particular, the funds are directed to [Bonsucro's Accelerator Programmes \(see pages 9-11\)](#) in

Thailand and India, where we are taking action to accelerate progress by reaching more smallholder sugarcane farmers and building their capacity to address key social and environmental challenges.

Members purchase credits from Bonsucro-certified mills or through an intermediary, such as commodity trading specialist ACT commodities or a Bonsucro member trader. In return, companies can promote their involvement with sustainable

1 Credit prices vary, but typically vary between \$1 and \$5 per credit.

sugarcane production, helping to enhance their reputation and engage stakeholders with their corporate responsibility commitments. In 2018, global companies including PepsiCo and Shell took advantage of the Bonsucro Credit Trading System to strengthen their sustainable sourcing activities.

"Bonsucro credit trades complement physical sales of Bonsucro-certified sugar, representing an important additional way for us to help advance the pace of change on the ground and hasten progress towards positive impacts for producer communities and sugar supply chains," says Nicolas Viart, Director, Standards & Innovation, Bonsucro.

PepsiCo: Putting sustainable agriculture at the heart of sourcing

PepsiCo's is aiming for 100% of its cane sugar to be sustainably sourced by 2020. By focusing on building the capacity of farmers and raising their awareness of Bonsucro certification, the company sourced 58% of its cane sugar sustainably in 2018, up from 34 % in 2017. The mechanism provided by credit purchases provides the opportunity to establish resources that can be directed to sourcing regions to address systemic challenges and create a pathway towards sustainable production of sugarcane.

"PepsiCo believes in the vital importance of collaboration in understanding and addressing the systemic challenges present in some parts of the cane sugar industry," says Natasha Schwarzbach, Sustainable Commodities, PepsiCo Global Sustainability. "It is only by working together, through focused programs, that we can develop long-term solutions that improve social and environmental outcomes and support the inclusion of smallholders in our supply chain.

"We're committed to working with Bonsucro members pre-competitively to increase the supply of sustainable volumes at the point of origin and boost our positive impact," she concludes.

Shell: Working on meeting sustainability goals

Shell increased its Bonsucro credit purchases in 2018 as it progressed towards its goal of having 100% certified sugarcane ethanol by 2020. One of the groups supplying Bonsucro credits to Shell is Adecoagro, which owns 3 sugarcane mills in Brazil, which benefit from resources obtained from credit operations to strengthen its sustainability activities, improve its operations and invest in the latest best practices.

"Our partnership with Shell strengthens our commitment to continuously improve our processes, taking care of the environment and our employees, supporting regional economies and generating positive results for stakeholders," says Juari Farias, Health, Safety and Environment Manager of Adecoagro.

"We purchased a larger quantity of Bonsucro credits in 2018 in order to meet our increasing target of 100% certified cane ethanol by 2020. We have always supported the approach of using credits as a good way to support farmers and mills on their sustainability journey," adds Michelle Morton, New Fuels Sustainability Manager, New Energies at Shell International.

A mill perspective

Brazilian mill Usina Sonora was the single largest seller of Bonsucro Credits in 2018, and harnesses the credits as an additional source of income for multiple improvement projects. These include improving production processes, taking further steps to address its environmental footprint, raising health and

safety standards or investing in community projects. All these activities strengthen its adherence to the Bonsucro Standard.

"The more businesses recognise the value of Bonsucro credit trades, the more we'll be able to raise our performance, protect the environment and improve the livelihoods of mill workers and farmers," says Iraci Oliveira, Usina Sonora. "We aim to set a leading example for other mills to follow in the coming years."

For more information on Bonsucro's Credit Trading System, see [here](#).

Bonsucro around the World

Mexico & Central America



6 certified mills



33 mills working towards certification



Current programmes:

- Mexico accelerator
- Adelante Initiative

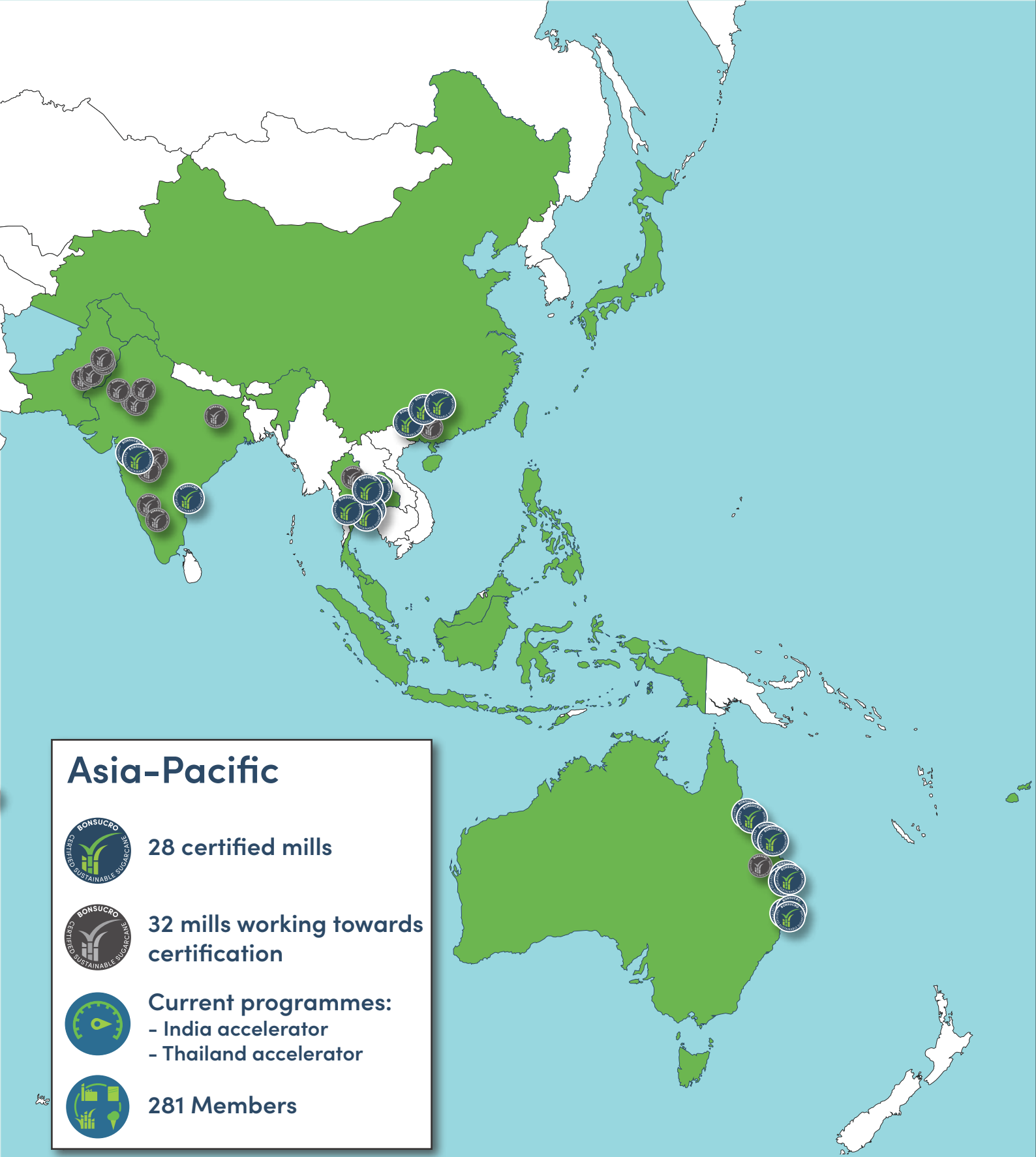


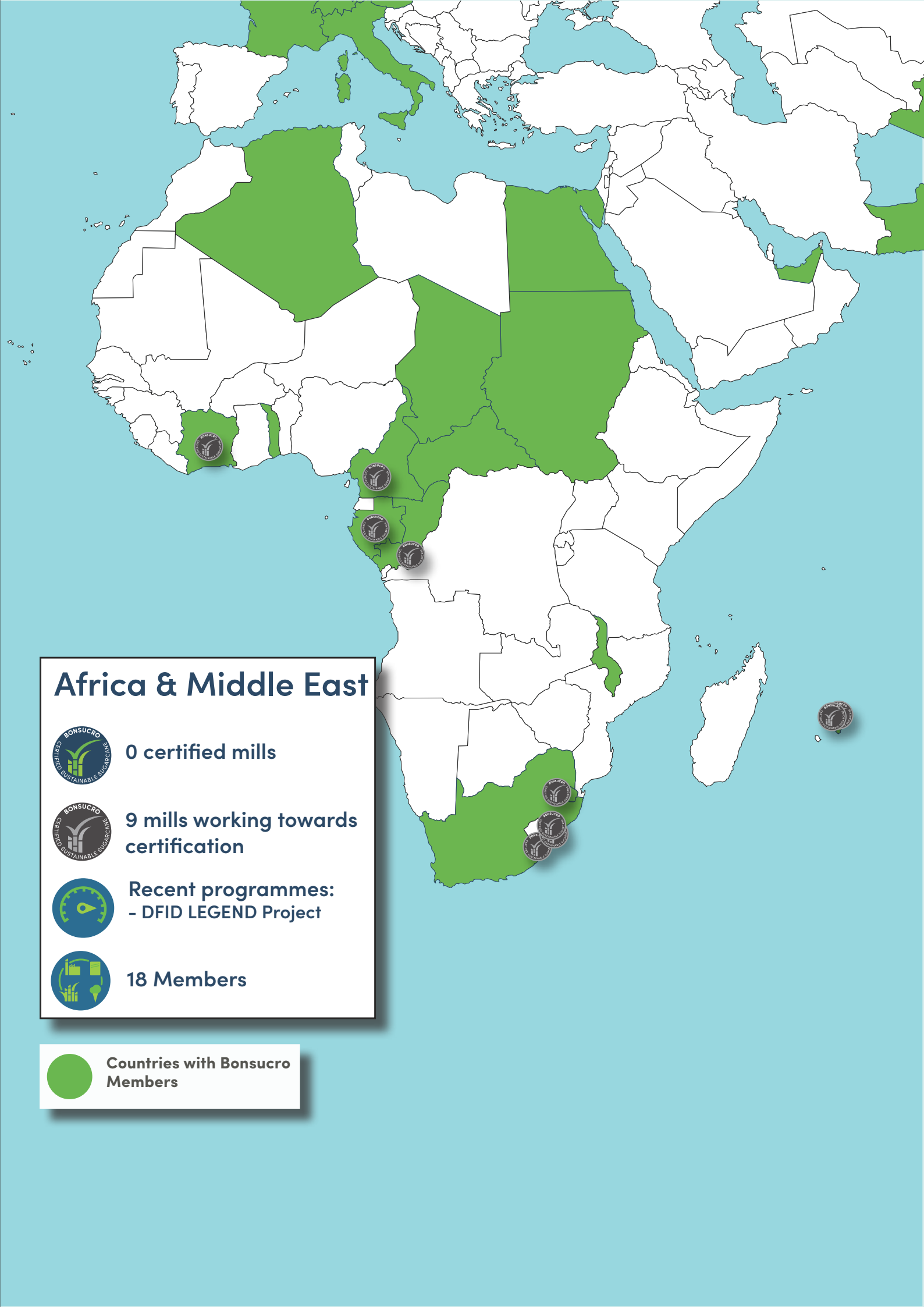
32 Members



Countries with Bonsucro Members







Africa & Middle East



0 certified mills



9 mills working towards certification



Recent programmes:
- DFID LEGEND Project



18 Members



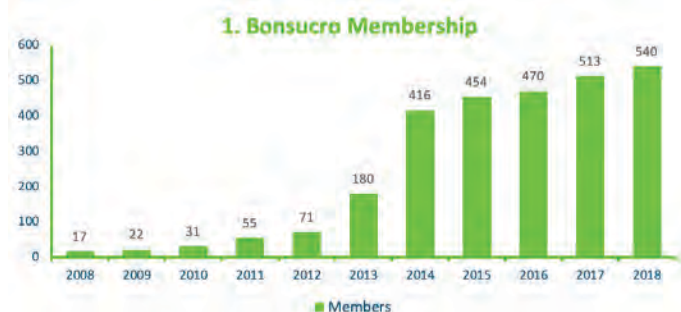
Countries with Bonsucro
Members



Report Findings

Membership

The growing membership of Bonsucro demonstrates increasing rates of adoption within the sugarcane sector, as we continue our global expansion. It highlights both the convening power of Bonsucro as the global platform for sugarcane and the sector's commitment to sustainability. We estimate that by the end of 2017, approximately 27% of the world's sugarcane land was already engaged in the Bonsucro platform. Membership numbers have increased consistently since Bonsucro was established in 2008, growing by 9% between 2016 and 2017, and by 5.2% between 2017 and 2018. Membership has now reached a record high, with 540 members in 43 countries in 2018.



Our industrial membership (sugarcane mills) saw the largest increase, growing by 23.8% between 2017 and 2018. Producers (mills, farms and their associations) still account for the vast majority of Bonsucro members, representing 85% of all members. The latest increase in producer membership indicates that Bonsucro's revised strategy has helped to refresh the sector's interest in sustainability, and that producers see real value in adopting Bonsucro's Standards.



The importance of certifications in enabling independently verified sustainable production

Certification is central to Bonsucro's offer to the sector, as it enables Bonsucro producers (mills and farms with Bonsucro certification) to achieve independent assurance of their sustainability performance. In this way, it helps to drive change and improvement in the sugarcane sector. Importantly, the volume of certifications also helps us to measure the level of commitment and performance improvements across farms, mills, and supply chains.

At a global level, certifications have become increasingly consistent since 2011, improving the availability of certified material (sugar, ethanol, molasses, etc) in the market and enabling more supply chains and buyers to uphold their sustainability commitments and take action on their sustainable procurement targets.

The number of Bonsucro-certified mills increased by 30% between 2017 and 2018, reaching 94 certified mills in 13 countries. With producers in Latin America and Asia strengthening their commitment, 2018 marked the first certifications in Bolivia and China.

Bonsucro works actively with mills by providing technical support in implementing the standard. Gaining a first-hand perspective on progress towards certification allows us to be fully transparent regarding future certifications and expected volumes.

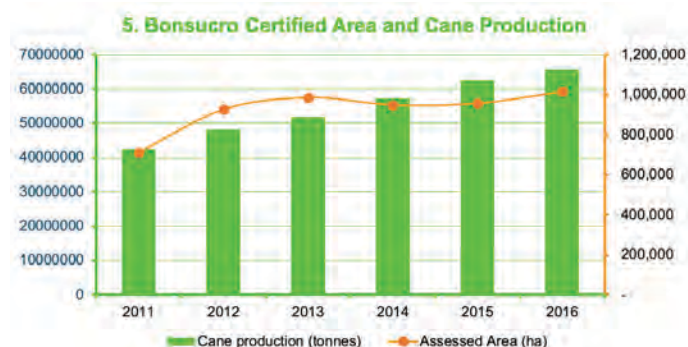


The maps on the previous pages show countries with Bonsucro members, current certified mills and the mills currently working towards certification in the countries where Bonsucro operates

In the same way, Bonsucro Chain of Custody Certifications have increased by 21% between 2017 and 2018, reaching 40 certifications in 16 countries.¹ Chain of custody certifications help to ensure the effective management and traceability of the supply chain, all the way from refineries and manufacturers to brands and retailers.



Similarly, both the areas of land certified and the volumes of certified sugarcane produced have increased considerably. Between 2015 and 2016, there was a 6% increase in the land area certified by Bonsucro and a 5.2% increase in the production of sugarcane, reaching a record of 65.8 million tonnes of cane.²



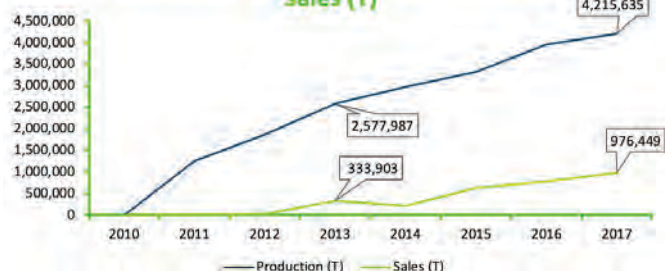
¹ It is important to note that each individual certification may cover several different sites in different countries, but for the purposes of reporting, Bonsucro considers only the countries where the companies' headquarters are.

² Data is presented up to 2016, since 2017 data is currently being confirmed and received by Bonsucro through the 2018/19 audit cycle.

Promoting assured supply chains is leading to increased market uptake

Bonsucro-certified sugar production

6. Bonsucro certified sugar production and sales (T)



In the 2017/18 season, Bonsucro-certified producers continued to increase their production volumes, generating more than 4 million tonnes of Bonsucro-certified sugar. The increased volumes are directly related to the growing number of certified entities, as new mills and farms gain certificates. 2018 saw the highest level of new certifications to date, with 26 certificates issued in 8 countries.

7. Number of new certificates per country

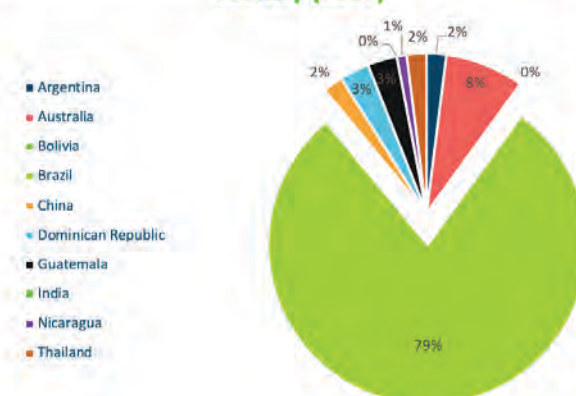


8. Number of Valid Certificates (Mills Only)



Brazil still represents the majority of certificate holders and is still therefore the largest producer of Bonsucro-certified volumes. Brazilian producers cultivate 79% of the total volumes produced in line with our sustainability standard. As certification progresses in more production countries, the production of Bonsucro-certified sugar will gradually become more evenly distributed across the world, making it more easily accessible to supply chains worldwide.

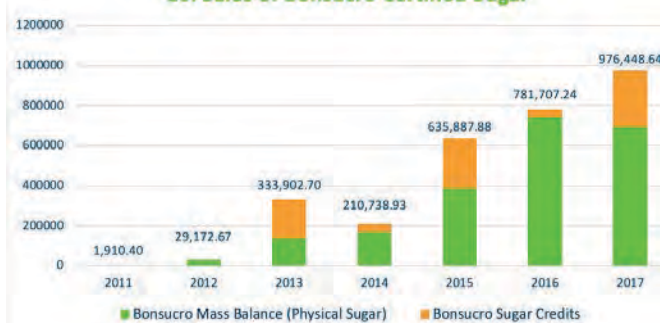
9. Global Production of Bonsucro Certified Sugar Per Country (2017)



Achieving record sales

Both the production and sales of Bonsucro-certified sugar have increased four years running. The rate of sales growth (30%) has in fact far outstripped the rate of production growth (6%), with overall uptake increasing to 23% of production from 19% the previous year. Combining Bonsucro-certified physical sugar sales from mills with credit sales, certified mills sold nearly 1 million tonnes of Bonsucro-certified sugar in the 2017/2018 season, the highest level to date.

10. Sales of Bonsucro Certified Sugar



Sales of Bonsucro-certified sugar to supply chain actors accounted for 71% of the sales of Bonsucro certified material. Indeed, sales of credits and sales through mass balance reached their highest level in 2017/18, with 282,098 tonnes of sugar credits and 694,351 tonnes of physical sugar sold respectively. While prices have fluctuated significantly over the past two years, as shown below, this has not demonstrably had a negative impact on the trade of certified sugar. Market signals from industry, together with Bonsucro's continuous engagement with trader and buyer members, have made a strong contribution to increasing sales.

11. Price sugar #11 - US\$/lb



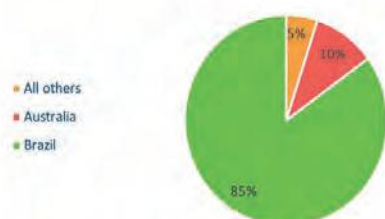
Source: investor.com

The increased physical trade in Bonsucro-certified sugar was also prompted by a growing number of companies gaining Bonsucro Chain of Custody Certification. In 2017, 12 new companies became chain of custody-certified and in 2018, 7 companies gained the certification, bringing the total to 40 by the end of 2018. Initially, nearly half of the new companies were traders (ED&F Man Molasses, United Molasses, LDC, Queensland Commodity Services, Wilmar Sugar Pte, Czarnikow). In 2018, we saw growing interest among traders and brands, with both new trader members (CSC, SudDen) and brands such as Barry Callebaut and the Hershey Company becoming chain of custody-certified.

This was the result of brands working under the Bonsucro umbrella to map their supply chains and achieve greater supply chain transparency, in line with their sustainable sourcing goals.

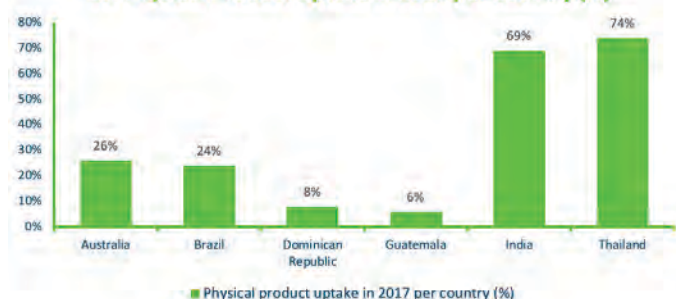
In 2017, producers in 8 countries reported sales of Bonsucro-certified sugar. Brazil represented 79% of production volumes and captured 85% of the sales, either through physical trades or credits. Of the 13 production countries, 6 reported sales of Bonsucro-certified sugar (Brazil, Australia, Guatemala, Thailand and India) and 3 reported credit trades (Brazil, Australia and Republic Dominican). While Brazil remains the leader in sugar sustainability, the fact that other Bonsucro producers have successfully traded should provide positive encouragement for newly certified entities.

12. Sales per Country as a Proportion of Total Sales (2017)



In 2017, Thailand and India maximised their return on certification by benefitting from market demand and selling more than two thirds of their production as Bonsucro-certified sugar. However, in terms of volume, the output of these countries is still limited compared to production volumes in Brazil or Australia. On average, producers across all 8 production countries with

13. Physical Product Uptake in 2017 per Country (%)



Bonsucro will continue to use its local and global presence to raise the profile of smaller mills and farms among global sugar supply chains and encourage local buyers of sugar to participate more actively in transforming the industry.

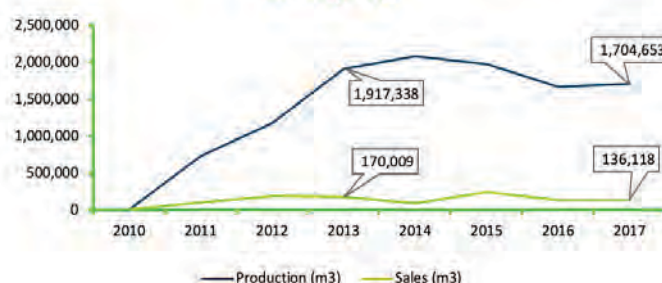
Bonsucro will also further support uptake by engaging more supply chain actors and encouraging buyers to develop and implement sourcing commitments. Of the 24 chain of custody-certified entities which gained certification recently, only 18 have reported

trades in 2017. Some brands and retailers have undertaken to ensure physical traceability within their supply chains, but few of them participate in the trade of Bonsucro-certified sugar. To engage these supply chains with sustainable practices, Bonsucro will approach industrial buyers both globally and increasingly locally. In this way, we will raise buyers' awareness of the benefits of purchasing and trading in Bonsucro-certified sugar, such as reducing sourcing risks and improving supply chain resilience.

Bonsucro-certified ethanol

Bonsucro has maintained European Commission (EC) recognition by re-submitting its certification system for evaluation against the requirements of the European Union's (EU) Renewable Energy Directive, which regulates import of liquid biofuels into the EU. Overall, the market for Bonsucro-certified ethanol has remained stable over the past two years at 136 million litres, or nearly 10% of total production (1,600 million litres), representing a slight increase compared to 2016. 99.5% of certified volumes are produced in Brazil.

14. Bonsucro certified ethanol production and sales (m3)



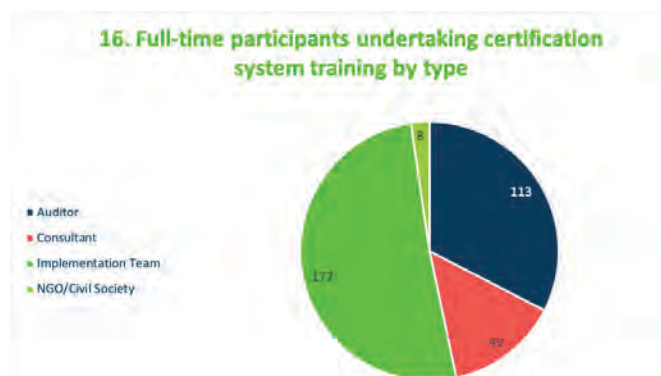
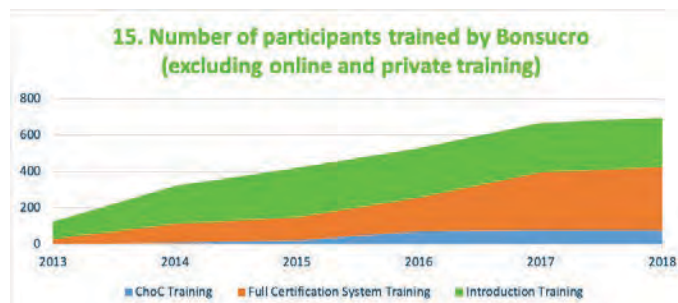
Other sugarcane-derived products

Sugarcane can be transformed into many products, and there is a considerable amount of research taking place to identify all the potential of the crop. Therefore, while sugar and ethanol remain the principle outputs, it is important to highlight sales of other products. Bonsucro certification covers all sustainably produced items cultivated or made by participating farmers and millers, including molasses (the third most important output of the sugarcane milling process), bagasse, lysine, yeasts, cream of yeast, paper, bioplastics and many others. In order to report these volumes, Bonsucro is working in partnership with technology provider SupplyShift to develop a simple and flexible tracking platform whereby Bonsucro-certified companies will be able to register, trade and report their trades of certified products. Increasing visibility on the state of the market stands to encourage companies to further participate, ultimately increasing traded volumes.

Increasing global knowledge of sustainable practices through training and capacity building

Delivering training to farmers and mills is central to our vision to transform the sugarcane sector. In particular, it helps to raise awareness of the benefits of adopting sustainable practices and builds the capacity of farms and mills to achieve continuous improvement and positive impacts.

One of the key roles of the Bonsucro platform is therefore to offer and promote training and capacity building on our standards, certification system and sugarcane sustainability in general. We do this either directly or through on-the-ground partners or Licensed Training Providers. Since we formed our new strategy in 2015, Bonsucro has been investigating ways to enable more and better-quality training through partners and licensed trainers. We have also explored opportunities to minimise costs to farmers and mills and enable more remote access through online training, with the launch of the Bonsucro Academy hosted on Moodle, an online education tool.



As a result, the number of Bonsucro physical training sessions has decreased, which in turn has led to a smaller increase in the number of qualified individuals compared to 2017. However, the number of qualified auditors across Bonsucro production countries has continued to increase consistently. There are currently 69 qualified auditors who can conduct audits against the Bonsucro Production Standard in 14 countries.



The ongoing rise in the number of qualified auditors indicates a continued interest in Bonsucro certification. The Secretariat is working to both expand our network of qualified auditors and license more certification bodies, in order to enable certification in new markets.

Using Accelerator Plans to support producers in improving their performance

Through its new strategy, Bonsucro is striving to become a global platform for change in the sugarcane sector. In particular, our new strategy will help to achieve scale by expanding access to smallholder farmers, helping farms and mills of all sizes to benefit from adopting sustainable practices.

We have therefore increased our investment in industry-wide programmes that support farmers and mills in addressing their particular challenges and promote sustainable production, without necessarily requiring them to achieve certification. We call these programmes Accelerator Plans.

Through Accelerator Plans, we or our on-the-ground partners typically assess the farms' and mills' current sustainability performance, identify key challenges and propose initiatives to achieve progress, in particular through the provision of training and advice. Based on members' feedback and priorities, Bonsucro focused initially on four countries: Brazil, India, Mexico, and Thailand. We are currently helping to implement two Accelerator Plans in India and Thailand and collaborating to develop programmes in Mexico and Brazil.

Bonsucro is continuously building its knowledge, and the programmes are gradually increasing in scope and attracting more partners. While these Accelerator Plans are still in their very early stages, we have considerable hopes and expectations for the potential of these schemes to extend opportunities to farmers and mills that were not previously engaged with Bonsucro.

INDICATOR	BASELINE (2017)	CURRENT (2018)
Number of companies engaged in Accelerator Plans	Mexico – 0 Thailand – 0 India – 3 mills, 1 end user	Mexico – 2 mills, 1 end user Thailand – 20 mills, 4 end users India – 13 mills, 2 end users
Members' investments in Accelerator Plans	£0	Mexico – £22,000 Thailand – £140,000 India – £50,000
Independent and smallholder farmers certified ¹	142 (2017)	168 (2018)

Analysing certified farms and mills' performance

In this section, we share our analysis of the 2011–2017 results reported by certified farms and mills in the key areas of interest for monitoring and evaluation (see annexes for methodology and details). The results achieved highlight the positive social, environmental and economic impacts experienced by producers and their communities, when producers implement the Bonsucro

Production Standard.

We have analysed information provided by 98 companies (94 certified mills and 4 certified independent farms) in the period between June 2011 and December 2017, with a total of 351 observations.

Land rights

Establishing a formal, legal system that determine who owns land, who can use the land, under what conditions and for how long is integral to promoting security and improving quality of life and livelihoods for the millions of people who rely on farming to survive. Major global goals, principles and guidelines have all emphasised the importance of these issues, including The Voluntary Guidelines on the Responsible Governance of Tenure (VGGT), the UN Sustainable Development Goals, The Universal Declaration of Human Rights and the UN Guiding Principles on Business and Human Rights.

All certified mills and farms are required to provide evidence of their lawful ownership and/or use of the land on which sugarcane is grown, and disclose any ownership claims or open court cases brought by traditional or indigenous people contesting the use of land.

This criterion is a core requirement of the Standard, and it is compulsory to comply in order to achieve certification. Therefore, all certified mills and farms have provided sufficient evidence regarding their lawful ownership or use of land.

Enterprise resilience

Enterprise resilience, the ability to effectively manage risks and cope with unexpected shocks, is central to helping producers and cane-growing communities to achieve sustainable economic development. We measure enterprise resilience by exploring the value created by sugarcane for mills and farmers, as well as production efficiencies that enable increased production with fewer resources.

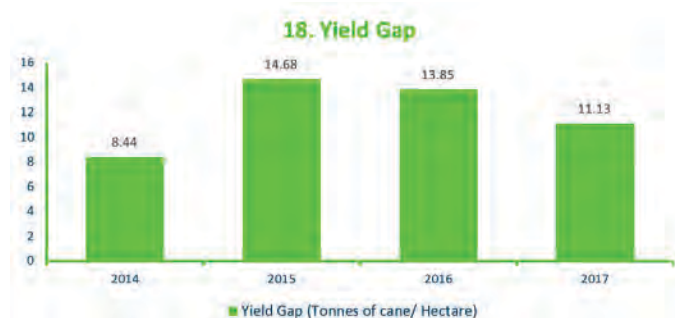
Yields

The Bonsucro Production Standard defines several objectives on yields that help guide farmers towards increasing the efficiency of their practices. In collaboration with Dr. Kate Brauman's team at the University of Minnesota's Institute of Environment, we defined the targets using background data on raising yields effectively achieved by farmers around the globe, split per climatic zone, and considering their efficiency in water usage.

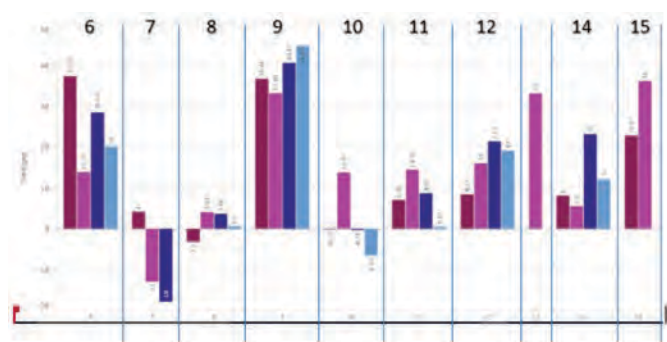
In this way, it is now possible to evaluate how farmers perform against these targets and calculate any gaps between the Standard and reported yields. The average gap for farms within a given country has been reported on the world map below (noting that there might be several climatic zones in one country). In terms of yields, Colombia leads the world of certified sugarcane production with 46.5 Tc/ha above its local targets. Importantly, Bonsucro-certified operations globally exceed their target yields.



Productivity that exceeds the targets set out in the Standard indicates improved use of the land and available resources. Overall, yield gaps are declining on Bonsucro-certified land globally, following an initial improvement in 2014 (yield standards were introduced in version 3 of the Bonsucro Standard, dated 2014).



Yield gaps vary according to [climatic zone](#). Climatic zone 9 has the highest yield gap, and this gap has increased since 2014. The same is true for producers in climatic zone 12, to a lesser extent (19 Tc/ha in 2017 vs 44.67 Tc/ha for producers in zone 9). Producers in climatic 7 and 10 have experienced a sharp decrease in their yield gap, with producers in zone 7 are under-performing.



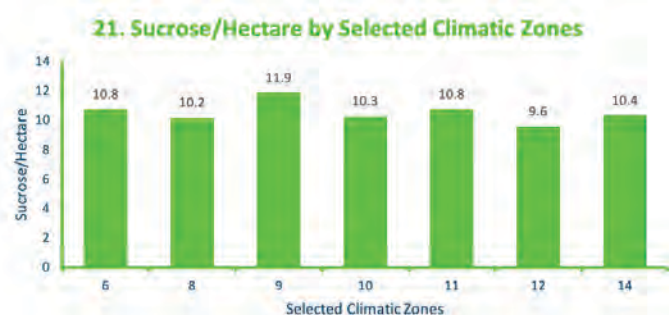
By recording yields and assessing gaps in performances, Bonsucro informs its certified members of opportunities for improvement. This encourages farmers to overcome their challenges and raise their yields in a sustainable way, by making changes to their production practices and nutrient management, variety selection and disease control. It also helps Bonsucro and its stakeholders to develop specific initiatives to support Bonsucro-certified mills and farms.

With sugar the principle output of sugarcane, it is also vital to assess sugar yields. These have been decreasing for the past two years, following a period of continuous increase and a peak in 2015, when 12.7 tonnes of sucrose were produced per hectare. In comparison, the sugar beet yields are around 6 tonnes of sucrose per hectare.



Sucrose content is influenced by the variety of sugarcane developed and planted. Countries develop strategies to favour one variety against another, largely in order to achieve the volumes required for the intended use – whether it is electricity, biofuel production or sugar production. Colombia and Australia report the highest sugar content at over 15 tonnes of sucrose per hectare, whereas Thailand, Argentina and Dominican Republic have not yet reached 10 tonnes of sucrose per hectare.

Similar to the sugarcane yield gap, there are differences among climatic zones, as shown in the graph below. Zone 9 shows the highest sugar yield at 11.9 tonnes of sucrose per hectare, whereas the least productive area is in zone 12 (9.6 tonnes of sucrose per hectare). Bonsucro has not yet set a standard for sucrose content. We would only do so after consulting with stakeholders to evaluate the relevance of introducing such an indicator to the Production Standard, in order to understand whether it would help to raise overall crop productivity.



Leaving aside Brazil, where the industry has diversified into energy generation, it is possible to evaluate the potential impact companies and countries' representative bodies on raising yields by developing and implementing dedicated policies and initiatives. In Thailand and China, for example, certified mills operate very efficiently. Their processes are designed to extract a high level of sucrose from crushed cane (with a performance index over 110%, represented below). This is slightly under Australian mills, which are performing at very high level (120%). However, sucrose yields in Thailand and China are still quite low (around 10 tonnes of sucrose per hectare) compared to Australia (15 tonnes per hectare).



By targeting and directing their efforts towards increasing sucrose yields, which is central to achieving improvement, Thailand and China could significantly increase their sugar output. As China is primarily a sugar importing country, this would benefit the country's farming and production communities.

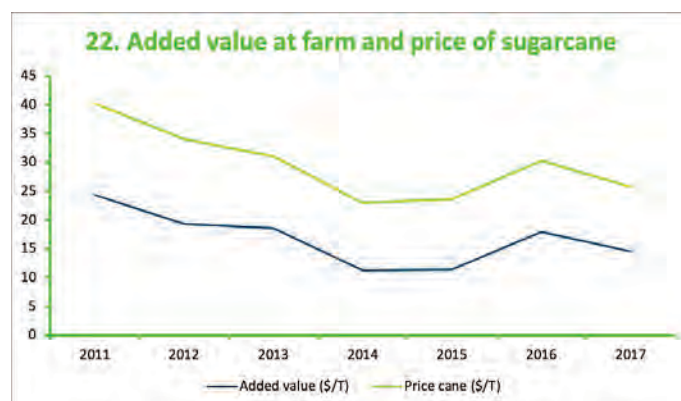
Bonsucro is developing country plans that focus specifically on increasing the sustainability performance of smallholders, who represent the majority of sugarcane producers not only in China and Thailand but also in a vast majority of countries. By partnering with innovative local partners, Bonsucro aims to

identify opportunities for improvement to deliver on its mission of achieving thriving cane-producing communities. Additionally, Bonsucro's Production Standard includes requirements on the level of investment that lead operators and other stakeholders should direct to research and development, in order to help them achieve their goals.

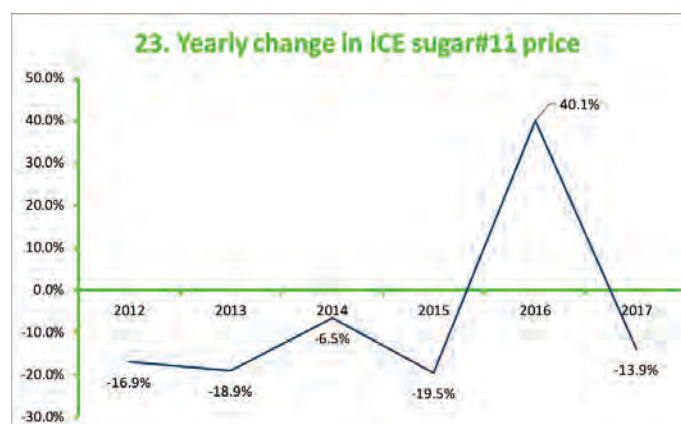
Creating added value

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.

Season 2016/17 ended with a positive outcome, as added value at farms and mills was rising, closely mirroring the evolution of reported sugarcane and sugar prices. Therefore, any rise in sugar price is likely to have positive impact on creating additional value for mills and farms. Conversely, a drop in sugar prices 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, there has been negative consequences on Bonsucro producers' added value which dropped by 19%.



The sugarcane sector has experienced several economic challenges over the past few years, as shown by the volatility of sugar price on the international market (ICE Sugar#11), and consistent decreases in price (every year since 2012, except in 2016 when sugar price increased by 40%). The graph below represents the evolution of the annual average price of sugar since 2011.



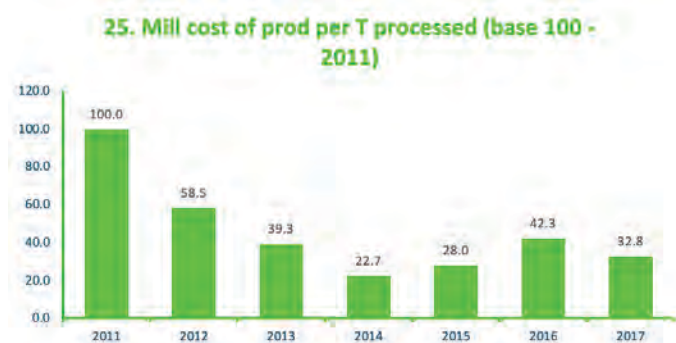
In 2018, the price of sugar decreased by a further 23.3%. Farms and mills have therefore had to manage their finances carefully and pay extra attention to production costs. The Bonsucro Standard provides several indicators that can help farm and mill operations and management teams to manage their finances effectively.

Cost of production

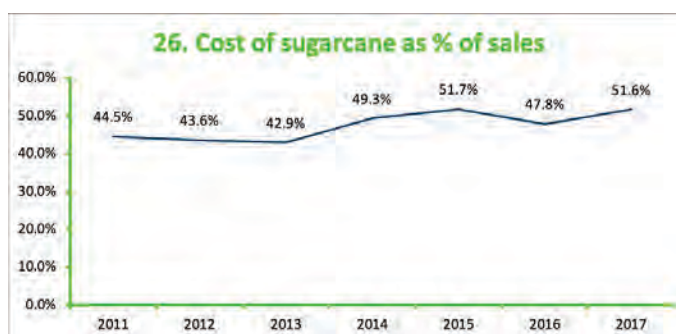
Farmers have adapted their management practices in response to the drop in sugarcane price. The reported cost of production per hectare has followed the same trend as the price of sugar. Using a base 100 as the production cost in 2011 (without payroll), producers have gradually reduced their cost of production to reach 57% of 2011 costs in the 2017/18 season.



Similarly, mills have worked on reducing and managing their production costs, which have reached 32.8 (base 100 in 2011).

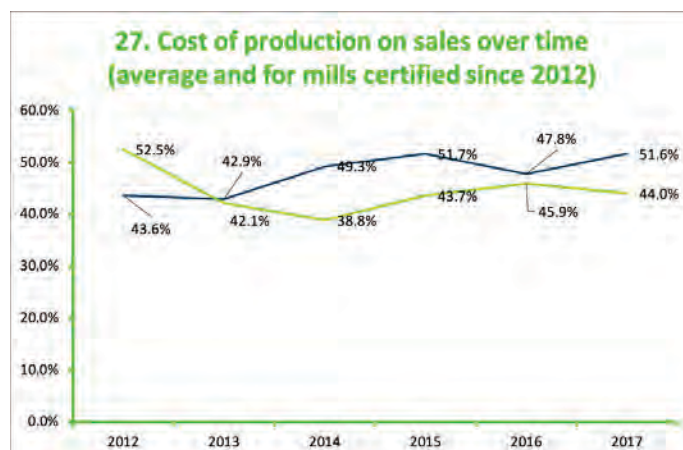


The pressure on mill and farm managers to react to market volatility and maintain low production costs requires the adoption of suitable strategies. Overall, mills have successfully maintained the ratio of cost of production to sales over the past five years (which has fluctuated between 43.6% and 51.6%).



Early findings indicate that mills with longstanding certifications benefit the most from better cost management strategies and/or more suitable sales strategies, as shown in the graph below. The ratio is below 50% for mills that have been certified since 2012, when the average ratio exceeded 50%. While the Bonsucro Standard provides indicators that might influence the costing and strategy of operations, Bonsucro has developed a market for certified material, which includes the credit trading platform launched in 2013. These are elements that could bring additional revenue to certified producers. As mentioned above, the market

for certified material is continuously expanding, and reached nearly 1,000,000 tonnes in 2017.

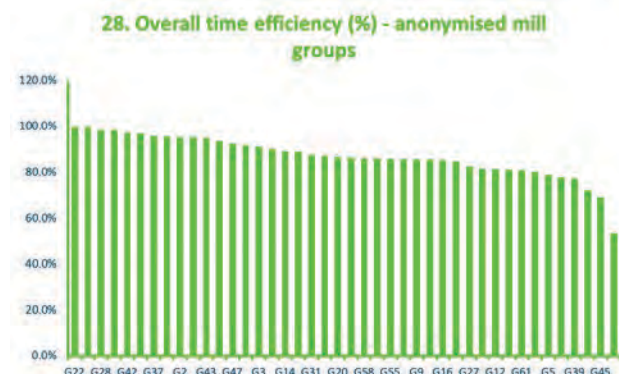


Time efficiency at mills

Overall time efficiency is calculated as the percentage of total time (during the crushing season) in which the mill was effectively crushing cane; the closer to 1 (100%) the result is, the better. The Bonsucro Production Standard requires a minimum of 0.75 for overall time efficiency, meaning that it requires mills to operate at least 75% of the time during the crushing season.

By sharing data collected through the certification process Bonsucro members have the opportunity to use Bonsucro's tools to benchmark their results with the pool of certified producers.

As shown in the graph below, the range of results is significant, varying from 53.5% to 99.0% with an average of 85.6%. Over the years, Bonsucro has built 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 to deliver value to members in their efforts to collect and report data. Bonsucro also encourages certified producers to share their achievements and best practices, in order to support producers with less experience to improve. This is one of the ways in which Bonsucro is contributing to the continuous improvement of the sugarcane sector.



Improving labour rights to help achieve safe, thriving producer communities

Respecting labour rights forms part of the Bonsucro's Standard Core Criteria. To achieve certification, producers must comply with these criteria, respect relevant labour laws and observe the International Labour Organization's Conventions on issues including child labour, forced labour, absence of discrimination, freedom of association, minimum wage adherence and worker safety.

Child labour is a serious concern in some parts of the sector. Health and safety hazards, in particular, also pose a risk to workers (see below). Every year all Bonsucro-certified mills demonstrate compliance with the requirements of the Bonsucro Production Standard with regard to the minimum age of workers, among other core criteria. By working with certified Bonsucro producers, supply chain actors have the additional assurance that their partners have been independently evaluated and that any labour rights issues, including child labour, have been identified and remediated. All of the 94 sugarcane mills certified against the Bonsucro Production Standard (considered in this section of the report) have demonstrated the absence of any form of child and forced labour in their operations.

Currently, Bonsucro certified mills and farms provide employment to over 160,000 direct and sub-contracted workers, of which 89% are men and 11% are women. 66% of them work on farms. Sub-contracted labour represented 17% of the total workforce in 2017. There are many differences across regions, with the agricultural workforce representing more than 70% of the total workforce in Central and Latin America. In these regions, only around 20% of the workforce is sub-contracted. In countries where cane is largely produced by smallholders, the reported agricultural workforce is very small, indicating that individual farmers carry out most of the work. By providing access to this critical information, Bonsucro's Standards and reporting tools give development organisations and civil society a clear picture of the challenges, enabling them to adapt their capacity building initiatives for optimum impact.

In the countries where Bonsucro-certified mills operate, there are nearly 4³ people per household. If one person per family works in a Bonsucro-certified mill, Bonsucro producers may have an important role in supporting over half a million people in their communities. These certified Bonsucro producers therefore play a central role in promoting sustainable development and social mobility in rural areas. Nearly all the certified mills have developed corporate responsibility programmes to support local communities, including by investing in health services, education and sports facilities. This contribution to sustainable development is an additional positive impact of certification, rather than a requirement of the Standard.

Worker safety

Working in sugarcane production may expose workers and smallholder farmers to health and safety hazards including injuries from equipment or heavy machinery, repetitive actions, exposure to harmful chemicals, sunlight, fire or smoke, heat and long working hours. Monitoring potential hazards and accidents is a key part of fulfilling Bonsucro's certification requirements and improving workplace safety. Enabling workers to perform

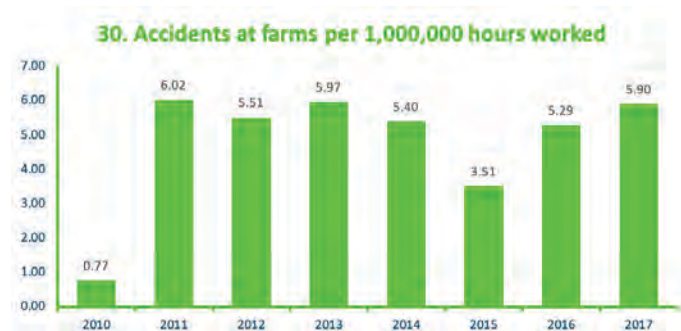
their roles safely also enables employers to raise their ethical performance and boost productivity.

In the sugarcane sector, achieving a safe environment means having free access to training and free, reliable and effective personal protective equipment (PPE), as well as information on key risks and emergency procedures and protocols. In the case of cane cutters in particular, regular breaks and access to potable water are vital. Certified Bonsucro producers are assessed by independent auditors to ensure that these issues are addressed effectively through a health and safety management plan, and that workers receive the requisite training at least once every five years. The auditors also verify whether workers have free access to PPE such as goggles, helmets, protection boots, ear plugs, and other necessary equipment to perform their roles.

There are several indicators in the Bonsucro Production Standard that relate to worker safety. In this report, we focus on accident rates at farms and mills. This is calculated as the number of accidents per million hours worked. The Bonsucro Standard requires that certified producers do not exceed 15 accidents per million hours worked in the mill and 45 in the field. We define accidents as events that result in workers not attending their subsequent shift. In such cases, either workers are covered by their colleagues, potentially resulting in overtime (up to legally acceptable levels) or a decrease in productivity.

Monitoring accident rate allows us to evaluate the efficiency of producers' health and safety plans. The plan must be adapted to their operations and reviewed annually. Auditors assess the plan, and how effectively it is managed and implemented, in line with the Bonsucro Certification Protocol. By rigorously scrutinising their health and safety strategies, Bonsucro encourages farms and mills to design plans that are efficient and effective. Importantly, we support them in developing these plans by making health and safety management a central component of the training programme we deliver during Bonsucro Technical Week, as well on through our online platform, the Bonsucro Academy. Finally, Bonsucro encourages the development of programmes orientated towards health and safety, such as the Adelante Initiative (see "Adelante Initiative: Collaborating to Improve Worker Health" on page 14).

2017 results show an increase in the global accident rate compared to 2016 at farm level (where most of the workers operate).



Further analysis reveals that the longer farms have been certified, the lower the number of accidents. We also observe that farms working in compliance with the Bonsucro Standard consistently

3 Calculated from latest available data per country (varies) from https://unstats.un.org/unsd/demographic/products/dyb/dyb_Household/4.pdf

reduce their accident rate over time. The same is true at mill level. Lowering the rate of accidents can significantly improve safety at certified operations and lower the risk of disruption and reduced productivity.



In particular, 85% of certified mills have complied with the requirements of the Standard, demonstrating a high level of professionalisation and attention to health and safety plans and procedures among Bonsucro-certified sugarcane producers. The mills that did not achieve the target are required to develop and implement time-bound corrective action plans to resolve key issues ahead of the next audit.

Minimum wage

The Bonsucro Production Standard requires that certified farms and mills must, as a basic requirement, follow the local or national minimum wage for all workers. This core condition applies to direct employees but also to any subcontracted workers who work on the premises of certified operations. Certified farms and mills report their lowest wage rate in relation to the national minimum wage, which is verified by independent auditors, who check payslips and other employment records.

Of the more than 160,000 workers employed in Bonsucro-certified operations, 75% as direct employees and 25% as contracted workers. The Bonsucro Production Standard requires that the same level of protection and support be provided to both direct and contracted workers. Bonsucro encourages its members to map their subcontracted operations and develop adequate training and contractual agreements with their suppliers to help ensure compliance.

On average, the lowest level of wages at Bonsucro-certified operations is 20% higher than the minimum wage at farm level and 24% higher at mill level. In 2017, wages paid both at agricultural and industrial operations of certified operations therefore remained, on average, at 22% above the minimum wage threshold. The wage at farm level typically varies more with changes in international sugar prices than wages at the mill level.



Conserving vital eco-system services by addressing climate change and protecting the environment

Climate change⁴

By 2050 the global population will reach nearly 10 billion⁵, and urbanisation will continue ever more rapidly. In order to feed this larger, more urban population, farmers must produce more food. This will mean increasing productivity per unit of land, water, and agrochemicals, while preserving natural habitats and conserving the environment. It will require a complete change in production practices. As they seek to respond to the expanding population's nutrition needs, producers also face the challenges of climate change, price volatility and increasing resource scarcity. In particular, climate change poses a major risk to agriculture, with rising temperatures and more frequent irregular and extreme weather generating significant impacts on agriculture, including on soil health and water availability. It is vital that smallholders build their resilience to climate change in order to meet global demands for sugar and maintain their livelihoods.

Additionally, it is important to reduce the impact of agriculture on the climate and environment. According to the US Environmental Protection Agency (EPA), agriculture and land use change accounted for 24% of total global carbon equivalent emissions in 2010. Farming also has substantial impacts on critical natural resources. Sustainable intensification is therefore the only way to achieve food security, mitigate climate change, conserve the environment and protect the world's smallholders.

Bonsucro strives to inform and promote learning and investments to support the sugarcane sector in lowering its contribution to climate change and playing a key role in addressing it. In particular, Bonsucro members are helping to decarbonise the energy sector by providing sugarcane to produce biofuels and renewable electricity, avoiding the need for fossil fuels in transportation and for energy generation.

Brazil promoted the domestic use of ethanol since the global petrol crisis of the 1970s, and ethanol is now a major car fuel in the country. The EPA recognises sugarcane-derived ethanol as an advanced biofuel, and the EC estimates the potential carbon savings from sugarcane ethanol to be up to 70%, compared to fossil fuels.

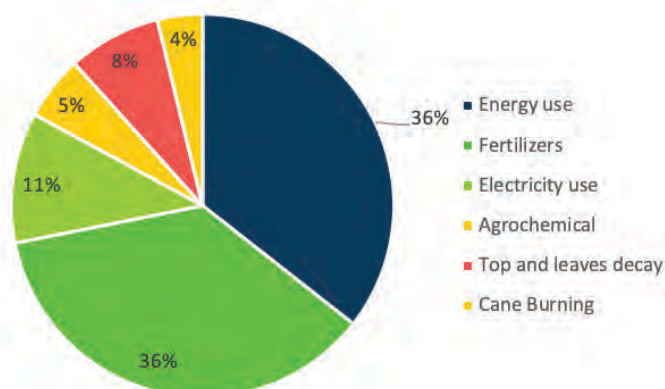
Finally, sugarcane mills have invested significantly in upgrading their facilities to convert sugarcane into electricity on site for exportation to national grids, a process called co-generation, which can help to reduce countries' reliance on fossil fuels.

GHG emissions

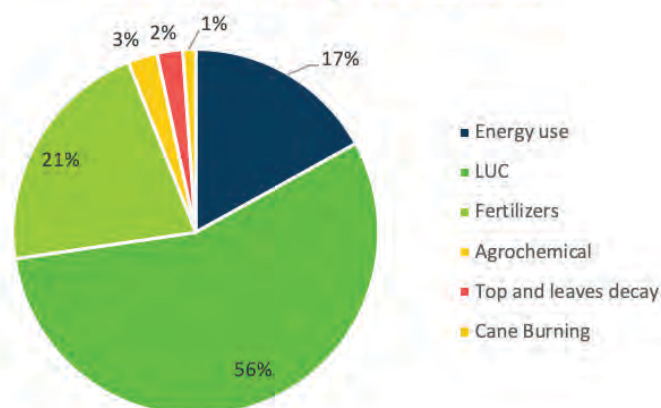
Sugarcane is an extraordinary plant that efficiently converts solar energy into biomass and energy. However, as referenced above, its cultivation can also contribute to climate change. In particular, the inputs used in agriculture, including machinery, fertilisers and pesticides, generate carbon emissions both in their manufacture and when used by farmers. Other farming practices that generate greenhouse gas (GHG) emissions include cane burning, effluents applied to the soil, decaying leaves and also land use change from various landscapes (such as orchards, pasture, woods and forests) to agricultural plantations. In the sugar sector, land use change has been recorded since 1st January 2008.

Sugarcane farming activities account for 80% of the emissions of finished products. Of these farming activities, fertilisers and energy use account for 72% of emissions when there has been no land use change. However, in cases where there has been land use change, the emissions arising from land use change account for 55% of emissions.

34. Share of GHG emissions with no land use change 2011-2017



35. Share of GHG emissions with land use change 2011-2017



As part of our efforts to encourage continuous improvement, we recommend that sugarcane cultivation linked to higher GHG emissions is gradually excluded from the sustainable production 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 the sugar supply chains.

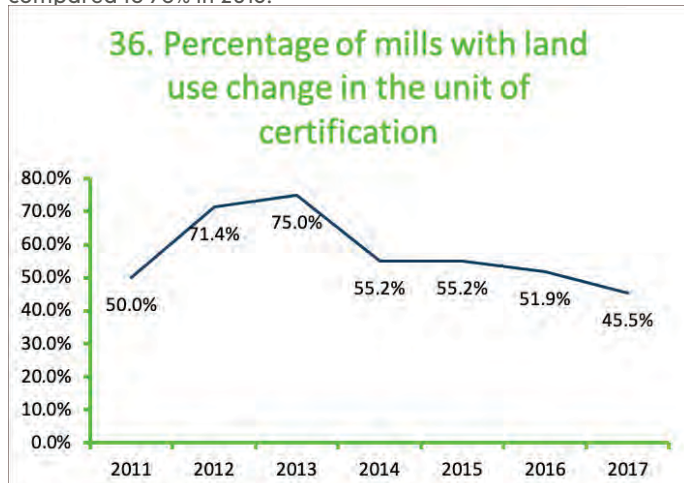
The emissions from land converted to sugarcane since 1st January 2008 are on average 2.8 times higher than cane production without land use change (23.57 kg CO₂ eq/Tc vs 66.44 kg CO₂ eq/Tc). The Bonsucro Standard threshold is set at 40 kg CO₂ eq/Tc. Sugarcane produced on land converted from another crop or landscape is therefore identified as non-compliant with the

⁴ Study realised with 70 mills, certified over the period 2010/11 to 2015/16, with the exclusion of 6 mills showing outliers across the years M2, M17, M18, M26, M40 and M50

⁵ <http://www.un.org/en/development/desa/news/population/2015-report.html>

Bonsucro Production Standard.

Since 2013, certified producers have included less land converted since 2008 in their certified areas. Today, only 46% of certified producers include converted lands in their unit of certification, compared to 75% in 2013.



The GHG emission profile of each certified producer also depends on how long farms have been working in a certified environment. The longer a farm is Bonsucro-certified, the lower their carbon footprint.

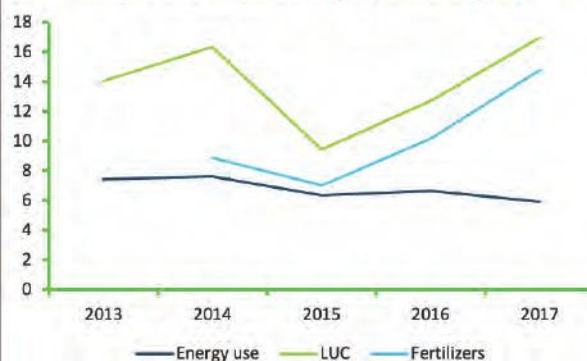
Since 2013, farms that have been certified since 2011 and 2012 report, on average, GHG emissions per tonne of sugarcane 1.2 times lower than farms that have been certified since 2016 (35 kg CO₂ eq/Tc versus 44 kg CO₂eq/Tc).

For farms that have been certified since 2011, the contribution of energy use to GHG emissions decreased by approximately 2kg CO₂ eq/Tc (from 8 to 6kg CO₂eq/Tc between 2014 and 2017), as shown below. However, the contribution from fertiliser application has continuously increased since 2014, and emissions from land use change rose again in the 2017-18 season. Consequently, it could be argued that certified producers who respect the Bonsucro Production Standard improve their GHG footprint by managing their energy use (fuel, electricity and gas) more efficiently.

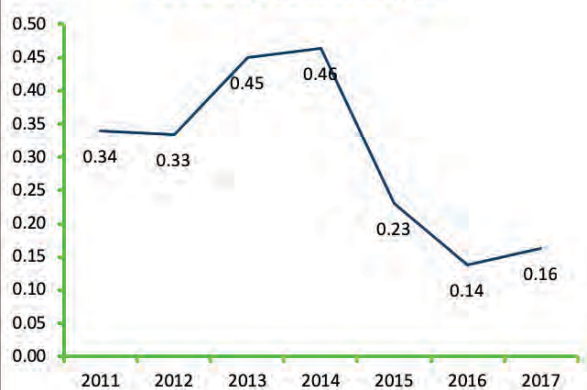
Bonsucro can further support the sector in its ambitions to better manage its greenhouse gas emissions by encouraging farms to focus their efforts on reducing their energy use and raising awareness around the impact of land conversions. Farmers could further reduce their footprint by excluding sugarcane cultivated on land converted since 2008, for example. Such efforts could have a meaningful impact on the greenhouse gas emissions of certified sugarcane.

The sugarcane sector is in part defined by the close relationship between farmers and millers. When assessing the life cycle of sugar production, it is necessary to consider the cycle from field to mill gate, including the partial offsetting of field-level GHG emissions through mills' onsite co-generation activities. **Indeed, it is important to highlight that global emissions from sugarcane production are halved when mills are taken into consideration – from 0.45 tonnes CO₂/tonnes sugar to 0.16 tonnes CO₂/tonnes sugar – while GHG emissions from farms have increased globally since 2013.**

37. Evolution of key contributors to GHG emissions (kg CO₂ eq/Tc)



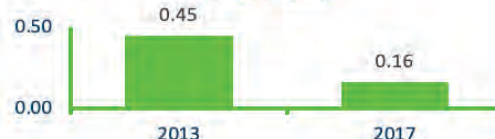
38. GHG emissions in tonnes CO₂ eq/tonne sugar



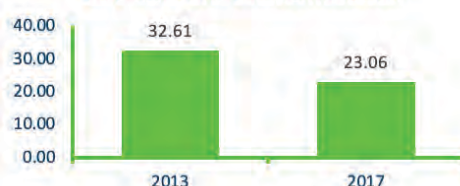
Therefore, in 2017, buyers of Bonsucro-certified sugar had access to sugar with a GHG footprint 2.5 times lower than in 2013. With a global production of 4 million tonnes in 2017, this represents a total of 1.16 million tonnes of CO₂ avoided compared to 2013 (0.29 tonnes CO₂/tonnes sugar). That is equivalent to removing 828,571 cars from the road.⁶ The increased exportation of renewable electricity by certified mills as well as the growing production of ethanol could have contributed to this trend.

The ethanol emission factor has reduced from 32.61g CO₂/MJ of ethanol in 2013 to 23.06g CO₂/MJ in 2017. At a global production of 2.5 million m³ of ethanol, this represents a total of 580,000 tonnes CO₂ avoided compared to 2013, equivalent to a further 414,285 cars removed from the road.

39. Sugar GHG emission reduction (T CO₂/T sugar)



40. Ethanol GHG emission reduction



⁶ Average UK car fuel consumption: <https://www.theguardian.com/business/2018/feb/27/co2-emissions-from-average-uk-new-car-rise-for-first-time-since-2000>. Average annual travel distance by car: <https://www.gov.uk/government/statistics/national-travel-survey-2016>

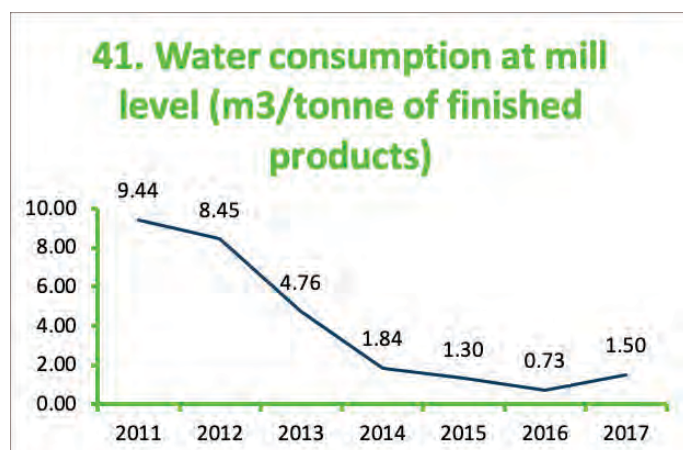
Water

Using water responsibly is also critical to protecting the environment. Sugarcane is an irrigated crop in several countries (Colombia, Guatemala, Honduras, India, Mexico, Swaziland, South Africa amongst others), and is known for being water-intensive when compared to other agricultural crops. Sugarcane requires between 1400 and 2500mm of water during the growing season (from sowing to harvesting).

Further, the milling process also involves a significant volume of water use for washing sugarcane, milling, and centrifugation as well as to produce vapour, an essential element in the processing sugarcane, where high temperatures are required (e.g. the concentration and crystallisation processes). Some mills discharge wastewater into the environment following certain treatment stages. Others, driven by water management objectives, have improved their processes to enable water recirculation and reuse.

The Bonsucro Production Standard sets maximum levels of water consumption per tonne of sugarcane cultivated by farmers and per tonne of sugarcane crushed by mills. In agriculture, the target water quantity is 130kg of water per kg of sugarcane crushed. Within industrial production, the calculations consider 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 2017/18 season saw a slight increase, reaching 1.5 m³/tonnes of finished products. In sugarcane-growing areas located in climatic zones considered as dry by the Standard (climatic zone 6 and 7), mills have also continuously decreased their water consumption to reach a lower than the average level: 1.18m³ water/tonne of finished products. Millers saved 13 million m³ of water in 2017, compared to 2013 water use levels, considering production 4 million tonnes of sugar.

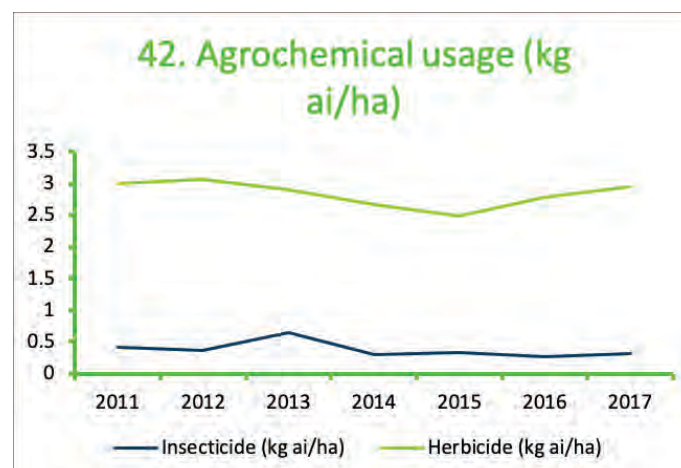


The results presented above show combined averages.

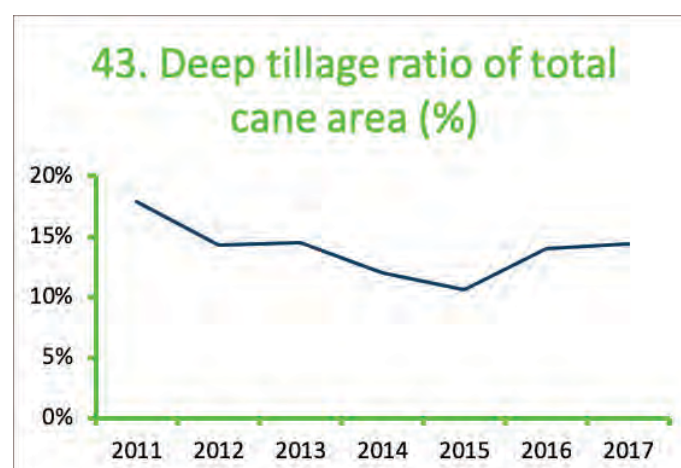
Agrochemical applications

Agrochemicals such as fertilisers, pesticides and herbicides are used at several stages of the sugarcane crop cycle. The majority of pesticide and herbicide usage relates to herbicides used to prevent the growth of invasive and competitive plants that could negatively impact yields. 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 agrochemical consumption. Bonsucro has also created a list of banned agrochemicals that producers are not allowed to use if they wish

to achieve Bonsucro certification. The use of agrochemicals has gradually decreased over time, however, the 2017-18 season saw an increase agrochemical use (largely herbicides).



There is also evidence to suggest that increased tillage activity leads to increased herbicide application, which could explain the rise in herbicide use.



Bonsucro is supporting farmers in achieving certification by identifying gaps in their practices and recommending courses of action to achieve compliance. In recent years, Bonsucro has supported farmers in reducing their agrochemical usage, in line with the Bonsucro Production Standard. To achieve this goal, farmers have partnered with their peers and local research centres to revise agrochemical practices and develop new solutions, in line with the Bonsucro Production Standard. The Bonsucro Technical Advisory Board is also providing technical support to the Secretariat and Bonsucro members. This has enabled new practices to be identified and implemented at scale, helping farmers to better manage their agrochemical inputs.

Additionally, Bonsucro researches and invests in innovative approaches to support producers in using agrochemicals in a more sustainable way. In 2014, Bonsucro collaborated with a number of ISEAL members including the Sustainable Agriculture Network (SAN) to establish the Integrated Pest Management (IPM) Coalition with the objective of promoting pest control with fewer negative environmental and human impacts.

Supported by ISEAL's Innovation Fund, the IPM Coalition was also able to develop a mobile application in 2018 aimed at farmers, agronomists, extension officers and field managers, which will help producers to navigate the complex legislation and practices surrounding agrochemicals. The application provides access to toxicity information from government authorities and clarifies

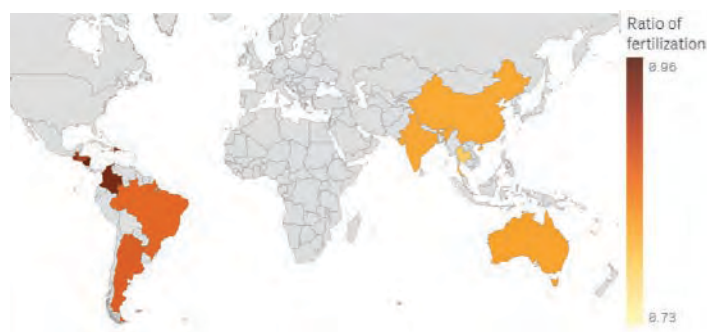
the restriction status of eight sustainability standards, including Bonsucro's, on more than 700 active ingredients. These are all registered agrochemicals used for crop varieties and pest species in Mexico, India, Brazil, Colombia and Kenya. The application also recommends non-chemical pest control alternatives from CABI for 2,700 pest species.

Fertiliser applications

Fertilisation is an important input in the production of sugarcane. The manufacture and use of fertilisers contribute to the GHG footprint of sugarcane production, however, fertiliser application is considered critical to cultivating healthy crops. If it is not applied correctly, it can harm the environment. Therefore, the Bonsucro Production Standard requires that farmers apply fertilisers according to professional recommendations. Farmers are required to calculate the exact amount of fertiliser they need and apply it with greater precision, according to the needs of the crop. They must also monitor their applications, which helps to promote a greater understanding of the production cycle.

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

44. Ratio of fertilisation across all farms



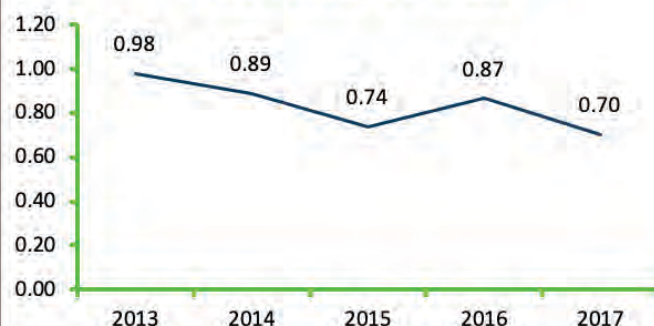
Producers certified since 2011 and 2012 have also adjusted their fertiliser usage and show a lower usage of artificial fertilisers compared to recommendations (85% versus an average of 89% in 2017). Further analysis would be required to understand if these farms make greater usage of organic fertilisation or whether they rely less on fertilisers altogether.

45. Ratio of fertilisation for farms certified since 2011 and 2012



Australia's sugarcane farmers are working actively to reduce their impact on the Great Barrier Reef, which is at risk from the increasing impacts of climate change and other environmental threats, including fertilisation practices. Since 2012, Australian sugarcane farmers have reduced their reliance on artificial fertilisers, using 30% less than recommended levels, the lowest to date.

46. Use of artificial fertiliser compared to recommendation - Australian farmers



In particular, Australian farmers have focused on managing their artificial phosphorus pentoxide (P₂O₅) fertilisation, which now stands at 60% of the recommendation (down from 85% in 2013), while artificial nitrogen (N) fertilisation has decreased from 99% to 89%. Importantly, yields have not been impacted by reducing fertiliser use. Indeed, yields reached 105.9 Tc/ha in 2017, an increase from 87.7 Tc/ha in 2013, while reliance on artificial fertilisers has decreased since 2013. Therefore, farmers working with the Bonsucro Production Standard can demonstrate that implementing practices to reduce the risk of fertiliser leaching in the Great Barrier Reef helps to improve productivity.

47. Yield Australian farmers



Biodiversity and High Conservation Value areas

Agriculture benefits significantly from ecosystem services. However, poor management of land can harm vital ecosystems and cause habitat loss, nutrient runoff, and the poisoning of non-target species with agrochemicals. By adopting sustainable practices, farmers should aim to protect biodiversity, while promoting and strengthening the resilience and quality of beneficial ecosystem services.

In the Bonsucro Production Standard, biodiversity is managed through an Environmental Management Plan and through an Environmental and Social Impact Assessment (ESIA), in the case of new sugarcane fields or mill expansions. **Certified farmers and mills must demonstrate that areas with High Conservation Value (HCV), such as tropical forests, are protected, and have not been affected by the expansion of milling operations and sugarcane farm lands. This also respects global goals and commitments on zero deforestation.**



Independent Research on Bonsucro

Bonsucro regularly monitors and promotes independent research on or relevant to Bonsucro. Below is the list of the latest publications identified (2018)

TITLE	AUTHORS	YEAR	JOURNAL/BOOK/ PUBLISHER	LINK
ESTUDO DE CASO SOBRE ETANOL DA CANA DE AÇÚCAR E PADRÕES DE SUSTENTABILIDADE COMO BONSUCRO (In Portuguese only)	Danielle Mendes Thame Denny	2018	Universidade Católica de Santos	http://biblioteca.unisantos.br:8181/bitstream/tede/4581/1/Danielle%20Mendes%20Thame%20Denny.pdf
Sugarcane Production Model & Sustainability Indicators	Manuel Regis L.V. Leal; Joao Guilherme Dal Bello Leite	2019	Sugarcane Bioenergy for Sustainable Development	https://books.google.co.uk/books?id=1_d1DwAAQBAJ&printsec=frontcover&hl=pt-BR&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false
Business strategy and environmental practices: Evidence in the sugarcane energy sector in Brazil	Melo, M. F. S., Sproesser, R. L., Campos-Silva, W. L., & Souza, R.	2018	African Journal of Business Management, 12(2), 44-57.	https://academicjournals.org/journal/AJBM/article-abstract/7C690C655866
Transnational Delegation, Accountability and the Administrative Governance of Biofuel Standards	Phillip Paiement	2018	TilburgUniversity	https://open.library.ubc.ca/cIRcle/collections/ubccommunityandpartnerspublicati/52387/items/1.0368850
Voluntary Sustainability Standards: A Squandered Opportunity to Improve Workers' Wages	Elizabeth A. Bennett	2017	Sustainable Development. Volume 26. Issue 1.	https://onlinelibrary.wiley.com/doi/full/10.1002/sd.1691
Applying Social Life Cycle Assessment in the Thai Sugar Industry: Challenges from the field	Jittima Prasara-A; Shabbir H.Gheewala	2018	Journal of Cleaner Production. Volume 172, Pages 335-346	https://www.sciencedirect.com/science/article/pii/S0959652617324198
Sugarcane farming and the Great Barrier Reef: the role of a principled approach to change	Felicity Deane et al	2018	Land Use Policy. Volume 78	https://www.sciencedirect.com/science/article/abs/pii/S0264837717310311

Highlight: Adopting Bonsucro's Sustainability Standard can halve sugarcane industry GHG emissions



With GHG emissions at their highest level in history, a new report highlights Bonsucro's ability to provide scalable solutions to tackle climate change and help achieve the UN's 2030 Sustainable Development Goals (SDGs). The study, published in the Proceedings of the National Academy of Sciences (PNAS) journal, and led by University of Minnesota in collaboration with companies including the Coca-Cola Company, reveals how global adoption of Bonsucro's voluntary sustainability standard (VSS) could halve greenhouse gas (GHG) emissions (51%) in sugarcane production.

The peer-reviewed study modelled the impacts of adopting the Bonsucro Standard across the sugarcane sector and found significant potential for generating environmental benefits. It also confirmed that sector-wide adoption of the stand could substantially increasing yields in parts of the world, while reducing total production area, water use and the quantity of excess nutrients entering ecosystems by 24%, 65% and 34 % respectively.

With climate change affecting every country and sugarcane demand expected to double, this scientific study suggests globally consistent sustainability standards such as Bonsucro, offer an effective roadmap to reducing negative impacts of sugarcane production.

Find out more about it [here](#).

Conclusions & Recommendations

For Bonsucro, the Outcome Report is a critical source of information about its performance and achievements and we use it to continuously improve our work. This year's report provides Bonsucro with key insights and suggested recommendations going forwards. Overall, the year has shown important successes for Bonsucro, which include consistent increase in number of certifications and stronger market for certified material. The new strategy which focused on extending Bonsucro's development and participation to programmes beyond certification is now fully operational with two running Accelerator Plans in India and Thailand. Nevertheless, there are still opportunities for improvement and further actions that can support the increase in scope and pace of change in the sugarcane sector.

Key recommendations to Bonsucro:

- Bonsucro must continue to use its local and global presence to raise the profile of smaller mills and farms among global sugar supply chains and encourage local buyers of sugar to participate more actively in transforming the industry.
- Bonsucro must also further support uptake of certified material by engaging more supply chain actors and encouraging buyers to develop and implement sustainable sourcing commitments aligned with Bonsucro.
- Bonsucro should continue to work in partnership with its technology provider SupplyShift to launch a simple and flexible tracking platform whereby Bonsucro-certified companies will be able to register and report their trades of certified products. Increasing visibility on the state of the market stands to encourage companies to further participate, ultimately increasing traded volumes.
- Bonsucro must continue to invest in studying and justifying the business case and social, environmental, and economic impacts of implementation of the Bonsucro Standard and the role of certification, and share information with the sector and its members.
- Bonsucro must accelerate investment and work around its Accelerator Plans, driving more collaborative projects and further implementation of sustainable production practices particularly in smallholder farms to achieve sustainability at a much larger scale.

Key recommendations to buyers of sugarcane products:

- As discussed before, buyers have a critical role to play in engaging suppliers in sustainability and transforming supply chains. Bonsucro should further engage with buyers and encourage a stronger level of commitments and transparency necessary to drive change and promote sustainable production.
- Buyers that are members of Bonsucro should consider their role in supporting the success of Bonsucro as well as investigate ways to improve inter-company and supplier communications to ensure alignment on expectations and to provide confidence to suppliers.
- Buyers must also consider how to further support Bonsucro's Accelerator Plans and projects on the ground (financially and/or otherwise).

Key recommendations to producers and sellers of sugarcane products:

- Although a "buyer pull" and market demand are critical to the success of certified production, producers can

also take a more prominent and active role in promoting sustainability and Bonsucro. Some of the case studies presented in the report demonstrate how actors at the beginning and middle of the supply chain (such as mills and traders) can have an important voice in creating awareness amongst their clients and promoting further uptake in the market.

- Certified mills should be compelled in sharing their success stories and evaluation of impact experienced during and after certification. Bonsucro's certified mills should consider their leadership role and become active promoters of sustainability.
- Certified mills and farms must continue to work towards Bonsucro implementation and to expand their scope of certification. Mills with independent smallholder suppliers should more actively engage with Bonsucro's Smallholder Standard and develop and share solutions for implementing sustainable practices at smallholder level.
- Bonsucro should reach out to mills and farms (or their representative bodies) that are either not ready or not interested in certification to further explain and justify how continuous improvement can be supported in their context. Dedicated support and/or events could be considered such as joining one of Bonsucro's Accelerator Plans and/or capacity building events.

Topic-specific recommendations:

- **Labour/Social Rights:** As known, labour and social indicators are probably the less metric indicators in the Bonsucro Production Standard. Nonetheless, an effort should be made to ensure that key labour and social indicators generate meaningful data that not only allow for benchmarking and learning but also provide further evidence and assurance around the performance of labour and social practices of sugarcane farms and mills. The Bonsucro Production Standard revision may be the right opportunity to have this discussion.
- **GHG Emissions:** Bonsucro can further support the sector in its ambitions to better manage its greenhouse gas emissions. The sector could be encouraged to publish a GHG reduction target. Bonsucro could also encourage farms to focus their efforts on reducing their energy use and raising awareness around the impact of land conversions. Farmers could further reduce their footprint by excluding sugarcane cultivated on land converted since 2008, for example. Mills should be supported in investing in co-generation and biomaterial production as a mean to further balance GHG emissions at farm level. Such efforts could have a meaningful impact on the greenhouse gas emissions of certified sugarcane.
- **Agrochemicals:** Bonsucro should further analyse the use of fertilisers in certified mills, and in particular, consider requiring data collection on organic/bio fertilisers in its Standards (something that can be discussed as part of the Production Standard revision in 2019).
- **Health & Safety:** Bonsucro should investigate further the practices implemented by mills that led to reduced accident rates at mill and farm level the longer operators are certified. Providing information on the reasons for
- change and success, and sharing them with Bonsucro's network.

Annex on Methodology

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

- **Business Effectiveness Manager:** Responsible for monitoring, gathering, and assessing independent research about Bonsucro; designing the members' annual report and analysing data; analysing certification data and preparing monitoring and evaluation (M&E) and outcome reports;
- **Director of Standards and Innovations:** Responsible for supervising the M&E system; supervising data collection and organisation, the data collection tool (Bonsucro Calculator), and the data analysis and M&E and outcome reports;
- **Standards Manager:** Support on data analyses;
- **Insights Analyst:** Support on data analyses.

Organisational performance data

Bonsucro's performance data is captured by multiple management systems used by the organisation. The responsibility for this data is shared across departments and used as reference by the Senior Management Team (composed of the CEO and heads of departments). Those indicators are reviewed regularly to support adaptive management and a rapid response to emerging trends. Some of these indicators are used in Bonsucro's publications such as this Outcome Report.

Independent research

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

Certification data

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

For a mill and cane supply area to become certified, the producer is required to complete the [Bonsucro Calculator](#), which is used to evaluate the producer's compliance with each indicator of the Bonsucro Production Standard. The Bonsucro calculator is

designed to collect and manage data, and is used to perform data analysis, both cross-sectional (comparing certified units' results) and longitudinal (understanding individual evolution over time).

Data verification is the responsibility of the licensed certification bodies, whose mission is to collect sufficient evidence to justify data entered in the tool. The guiding documents (above) clarify how indicators should be interpreted and what is expected from Bonsucro producers gathering data and auditors collecting and verifying them.

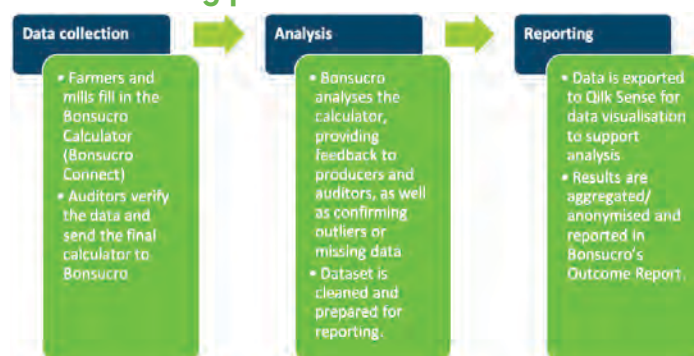
Every lead auditor assessing data is trained on the [Bonsucro Calculator](#) by Bonsucro's Standards and Innovation Team, and has the necessary technical knowledge to understand and verify information collected from farms and mills. Bonsucro's Certification Protocol entails different methods of verifying data, including interviews, sampling and document inspection, among others. As licensed certification bodies are entities with full on-the-ground access to the data and knowledge to perform audits, ensuring they are skilled, trained and competent increases the reliability of the data.

Audit results and Bonsucro calculators are sent to Bonsucro after validation by the certification body. In this way, Bonsucro obtains data of each certified mill through the certification body. Confidentiality is safeguarded via the confidentiality agreement existing between certification bodies and mills. Bonsucro aggregates the data and considers it anonymously for purposes of evaluation and communications.

Through its role as accreditation body, Bonsucro monitors the activity and the compliance of certification bodies with the Certification Protocol and verifies the quality of the auditors as data verifiers. This helps Bonsucro to gain increased confidence in the data received.

Following receipt of data from certification bodies, Bonsucro verifies the data sent and cleans it: for the purpose of M&E, outliers (data points that do not make technical sense, potentially from error in units reported) are removed. The dataset is then exported to Qlik Sense, a software for data processing, visualisation and analyses (see data process for collection, analysis and reporting below).

Data handling process



Key monitoring and evaluation indicators (Annex 3)

AREA	SHORT TO MEDIUM-TERM CHANGE	ISSUE	INDICATOR OF PRODUCTION STANDARD VERSION 4.1.1	INDICATOR	SHORT TO MEDIUM-TERM INDICATOR (AS PER BONSUCRO PRODUCTION STANDARD)	COMPLIANCE OUTCOME
Land Rights	All sugarcane is grown in legally-owned land, local communities are consulted and respected	Land Ownership	1.2.1	The right to use the land can be demonstrated	Yes	Land where sugarcane is grown is legally-owned and not contested by local communities
Enterprise Resilience	Producers add value to their work	Yields	3.1.2	Yield (tc/ha harvested/y)	Against target defined based on climatic zone	Yields are improved
		Value Added	5.9.1	USD \$/t cane	Mill > 4; Agric >2	Sustainable sugarcane adds value to farmers and mills
	Mills are technically efficient	Mill Efficiency	3.1.3	Mill overall time efficiency (processing time as percent of total time)	>75	Mills are efficient economic operators
Labour Rights	Workers work in a safe environment	Workers Safety	2.3.1	Lost time accident frequency (number per million hours worked)	Mill <15; Agric < 45	Workers engage safely in a professional activity in the sugarcane sector
	ILO Standards apply to all workers of the sugarcane sector	Wages*	2.4.1	Ratio of lowest entry level wage including benefits to minimum wage and benefits required by law (\$/\$)	≥1	National minimum wage is ensured
		Minimum Age of Workers*	2.1.1	Years (Minimum)	18 for hazardous work 15 for non-hazardous work	Child labour is eradicated in the sugarcane sector
		Workers' Rights* (regarding forced or compulsory labour, discrimination, and freedom of association)	2.1.1	To comply with ILO's Labour Conventions	Yes	ILO standards apply to all workers of the sugarcane sector
Climate Change	GHG emissions are contained	GHG Emissions	3.2.1	Net GHG emissions for sugar	<0.4 t CO ₂ eq/t sugar	Sugarcane industry does not contribute to climate change.

		GHG Emissions	3.2.2	Net GHG emissions for ethanol	<24 gCO ₂ eq/MJ	Sugarcane industry does not contribute to climate change.
Biodiversity & Natural Resources	Areas of High Conservation Value are preserved and mills mitigate their impacts on the environment	Water	5.2.1	Net water consumed per unit mass of product (kg/kg of product)	Mill, <20 kg/kg sugar; or <30 kg/kg of ethanol. Agric <130 kg/kg cane	Efficient use of water in agriculture and milling. Environmental burden of sugar milling is contained
		Environmental Impacts*	4.1.5	Agro-chemicals applied per hectare per year	<5 kg active ingredient/ha/y	Environmental impacts of sugarcane growing are managed
		Environmental Impacts*	4.1.6	Banned agro-chemicals applied per hectare per year	0 kg active ingredient/ha/y	Environmental impacts of sugarcane growing are managed
		Environmental Impacts*	4.1.4	Ratio of fertiliser N and P applied (expressed in eq. phosphate) to fertilizer N and P recommended by soil or leaf analysis (expressed in eq. phosphate)	<1,05	Impact on biodiversity of sugarcane growing is managed; Run-offs from fertiliser are reduced
		Biodiversity*	4.1.2	Percentage of areas defined internationally or nationally as legally protected or classified as of High Conservation Value planted to sugarcane after the cut-off date of 1 January 2008	0	Areas with high conservation values are protected

Footnotes

1 These are independent certificate holders, noting that there is a considerably higher number of individual farms within mills' certificates, which are not reported here.

