THE NEXT 5 YEARS

Driving climate action in the sugarcane sector is a priority in our 2021-2026 Strategic Plan.

We will facilitate mitigation efforts through certification with the aim that certified producers will reduce their scope 1 and scope 2 emissions by 30% over five years.

We will convene the sugarcane sector to develop shared sector-wide methodologies, metrics, and commitments to science-based targets for GHG emissions to meet the UNFCCC Paris Agreement 2030 targets.

To achieve these targets, we set out some priority actions in our strategic plan, such as:

- Develop a roadmap in collaboration with members to establish collective commitments of GHG reduction aligned with UNFCCC Paris Agreement by 2030.
- Customise the certification database so that GHG and ESG metrics can be disclosed in coordination with our members' targets.
- Support buyers to measure their Scope 3 emissions through certification and the Bonsucro calculator.
- Increase the number of certified operators.
- Finance projects that drive climate mitigation and adaptation through our Bonsucro Impact Fund, including more support for independent and smallholder farmers.
- Foster public-private partnerships and policies that accelerate transition in the sugarcane sector.
- Promote members' initiatives that support the sugarcane sector to tackle climate change.
- Facilitate sustainable finance opportunities for our members.
- Produce mitigation and adaptation-related tools and guidance for sugarcane farmers and millers with focus on heat and water stress.

GET INVOLVED

Help us meet these targets - join Bonsucro to accelerate the transition to a decarbonised economy with certified sustainable sugarcane.

Visit **www.bonsucro.com** for more information

ENABLING CLIMATE ADAPTATION

Bonsucro certified sugarcane producers must create annual objectives, internal policies, procedures and monitoring practices for topics such as land use change, agrochemicals, fuel use, burning, and biodiversity preservation.

The maintenance of a management system means producers are more prepared to deal with environmental risks and the potential impacts of climate change. To support the sector to adapt and reduce its environmental impact, we have developed practical and unique tools:

Woman operating mechanical sugarcane harvester in Brazil

Bonsucro calculator

The Bonsucro calculator enables producers to collect production data and monitor environmental performance against all criteria in the Production Standard, including GHG emissions. The data is invaluable for climate action interventions as it's possible to undertake a gap analysis and see which areas of production comply and which areas need to adapt to make improvements.

Smallholder farm diaries

To meet the Smallholder Standard, producers need to create a farm diary where they gradually add data on environmental criteria, including on sources of GHG emissions, such as agrochemicals, water for irrigation, and transportation. It's on a smaller scale than the calculator to make it more accessible.

Sugar Mapping

Designed to work in conjunction with certification, this digital tool helps companies improve sustainable sugarcane sourcing by mapping and assessing suppliers against key environmental, human rights, and value chain performance indicators. It helps buyers identify risks in their supply chain and support producers to become more sustainable.

DECARBONISATION WITH SUGARCANE

Sugarcane is a versatile crop and plays a role in developing a low carbon economy. It is a source of renewable energy in the form of bioethanol, biogas, biomass and as a raw material for bioplastics and biomaterials.

As a clean, affordable and low-carbon biofuel, sugarcane ethanol has emerged as a leading renewable fuel for the transportation sector. Ethanol contributes to decarbonising transport when it is used in its pure form but also when it is blended with gasoline. Ethanol produces up to 90% less GHG emissions compared to fossil fuels, performing better than any other liquid biofuel produced today on a commercial scale. Sugarcane ethanol has been a mainstream fuel in Brazil since the 1970's and replaced over 3.20 billion barrels of gasoline between 1975 and 2020[10]. Other countries are now establishing ethanol mandates towards a cleaner energy matrix for transport, such as China and India.

With the best farming and milling practices, exemplified in the Bonsucro Production Standard, sugarcane can also help to decarbonise the **Agriculture** and **Land Use Change and Forestry** sectors.

HOW BONSUCRO DRIVES INNOVATION

Beyond driving sustainability through standards and certification, we have a unique convening role for the sector, enabling pre-competitive collaboration and cross-sector partnering through:

Impact projects

Our projects span key origins and cover diverse issues, like payment for environmental services and child labour. We are currently developing a methodology in South Africa using data from Bonsucro, the Better Cotton Initiative and the Alliance for Water Stewardship to inform decision makers at banks on the sustainability profiles of their clients, enabling them to reward sustainable business practices.

Collaborations

We are a founding member of the Adelante Initiative, a programme to raise awareness of, and ways to, mitigate the impact of heat stress on field workers- made worse by climate change. We are also aligning our assurance system with RenovaBio, the Brazilian biofuel policy, to boost sustainable farming practices, reduce GHG emissions and promote biofuels.

Sharing knowledge

We support buyer members to calculate their scope 3 GHG emissions data from their certified suppliers and help them identify where they can create a roadmap to make reductions. We deliver webinars on topical issues such as how to mitigate the risk of COVID-19, and how to prevent child labour in the supply chain.

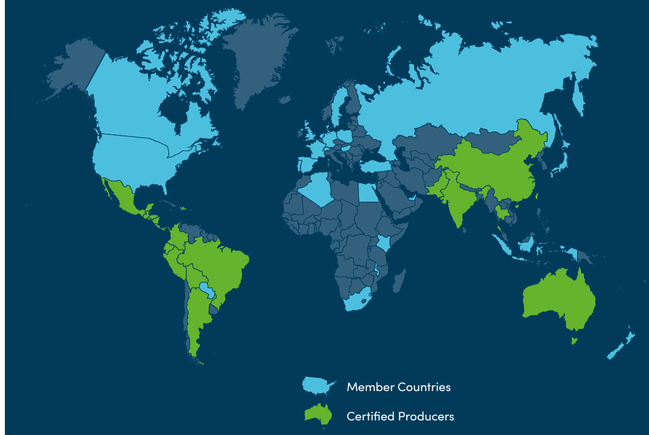
[10] UNICA, 2021

CLIMATE ACTION IN SUGARCANE

BON SUCRO
The global sugarcane platform

Bonsucro is the leading global sustainability platform and standard for sugarcane, one of the world's most important crops. Our purpose is to collectively accelerate the sustainable production and uses of sugarcane.

We convene over 270 members from more than 50 countries to address critical challenges in the sugarcane sector and drive both performance and impact. We work across all sugarcane products and derivatives – sugar, ethanol, molasses, and bagasse in traditional and newer market sectors, from sugar and alcohol to biofuels and bioplastics.



HOW WILL CLIMATE CHANGE IMPACT SUGARCANE?

Sugarcane is grown in more than 100 countries, it's vital to many national economies and millions of people depend on it for their livelihood. The crop and its derivatives form products we use every day – food, drinks, plastics, fuel, and alcoholic drinks. Key origins include Brazil, India, China, Thailand, Pakistan, Mexico, and South Africa.

Sugarcane production will be affected by more frequent and extreme environmental conditions due to climate change, and many origins are already experiencing the impact. The IPCC interactive atlas[1] shows that some key sugarcane regions will suffer from more consecutive dry days, days with temperature above 35 degrees and less precipitation. Research by International Sugar Organization (ISO)[2] shows that there are varying conclusions on how an increase in air temperature or atmospheric carbon dioxide levels could impact the production of sugarcane in different regions, with different predictions of positive, negative or neutral impact on yields. However, there is no current definitive global study yet concluded using the latest climatic science[3].

Alongside changes to production, there are significant risks for farmers too. Cutting sugarcane requires high physical exertion from workers under intense heat, which is a big health risk. Occupational heat stress is a growing problem due to climate change, causing kidney disease and in many cases, death[4].

As science shows, water depletion and pollution pose major risks in certain sugarcane origins, and these are exacerbated by climate change. Reductions at sugarcane yields could force people out of work which could lead to migration and poverty, in addition to driving up prices of food and fuel, disrupting entire supply chains.

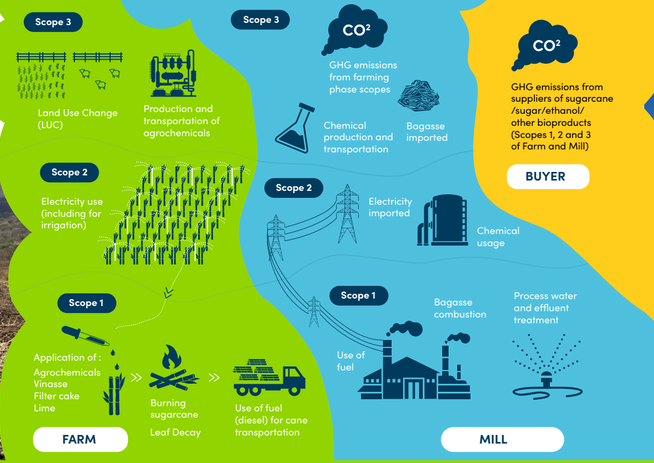
Workers harvesting sugarcane in Nicaragua
Photo credit: Ed Kashi

GHG EMISSIONS IN THE SUGARCANE VALUE CHAIN

Growing sugarcane is the biggest contributor to greenhouse gas (GHG) emissions in the sugarcane value chain, accounting for 400 million tons of CO2 equivalent annually[5]. The sugarcane farming phase represents around 77% of total GHG emissions of the two sugarcane productive stages (farming and processing), according to our certification database. The use of machinery, fertilisers and pesticides, and practices such as burning cane, applying effluents to soil, irrigation, decaying leaves and land use change are the biggest contributors.

During the **processing phase,** emissions from processing and transporting chemical inputs, treating water/effluents, and burning bagasse, a fibrous material left from crushing the cane, are the main sources of GHG emissions. The Bonsucro certification database[6] shows that the processing phase accounts for an average of 23% of all GHG emissions of sugarcane production.

Emissions generated in the sugarcane production and processing phases should be accounted for as Scope 3, when **manufacturing products** using sugarcane or any of its by-products.



HOW BONSUCRO MAKES A DIFFERENCE

Bonsucro has helped decarbonise the sugarcane sector over the past 10 years as a voluntary sustainability **certification system** and as a **change platform**.

STANDARDS & CERTIFICATION DRIVES CHANGE

Bonsucro Production Standard apply to sugarcane farming and milling, and compliance is assessed by third party licensed auditors. Environmental issues cover water usage, soil health, safeguarding sensitive ecosystems and biodiversity hotspots, climate resilience, use of agrochemical and fertilisers. The social priorities relate to labour, workers' safety and living conditions, non-discrimination, wages and more.

The Chain of Custody Standard ensures the traceability of sustainability claims along the supply chain from farm to end user. It provides proof of responsible sourcing and trading.

Ethanol tanking area
Photo credit: Raizen

Field workers on a sugarcane farm in Brazil

GHG MITIGATION IN BONSUCRO CERTIFIED FARMS AND MILLS

Scientific models indicate that global adoption of the Bonsucro Standard would halve GHG emissions, reduce water use by **65%** and nutrient loading by **34%**. Although universal Bonsucro certification may not be achievable, the data provides insights for a roadmap to reduce environmental impact with the Bonsucro Standard[7].

Over 130 mills have implemented Bonsucro Standards over the last 10 years and are certified. Collectively they have significantly reduced key sources of GHG emissions in sugarcane production and processing.

Audit data from Bonsucro-certified producers indicates year-on-year reductions in GHG emissions and water use. This is supported by third-party research. One study[8] that uses a sample of Bonsucro-certified mills and farmers in Brazil indicated a **31%** reduction in GHG emissions at farm level and **20%** in mills over the first four years of certification. The same study showed that certification also leads to reductions in water, fertiliser and herbicide use and pre-harvest sugarcane burning.

Bonsucro certification data[9] shows that on average, mills reduce their CO_2 emissions by **5.5%** after just one year of certification. Bonsucro has also found that certified operators collectively avoided approximately **200 million** kg CO_2 from entering the atmosphere during their first year of certification – which equates to planting 10 million pine trees to absorb carbon dioxide.

Bonsucro-certified operations globally exceed their target yields by an average of **8.65** additional tonnes of sugarcane per hectare. This means more productivity within the same sugarcane land, avoiding new GHG emissions caused by land use change.

[1]IPCC, 2021, [2]Noriega, A.G., 2021, [3]Zhao and Li, 2015, [4]Wesseling et al., 2020

[5]Xu et al., 2021, [6]Bonsucro, 2021

[7]Smith et al., 2019 [8]Bonsucro, 2020 [9]Bonsucro, 2020