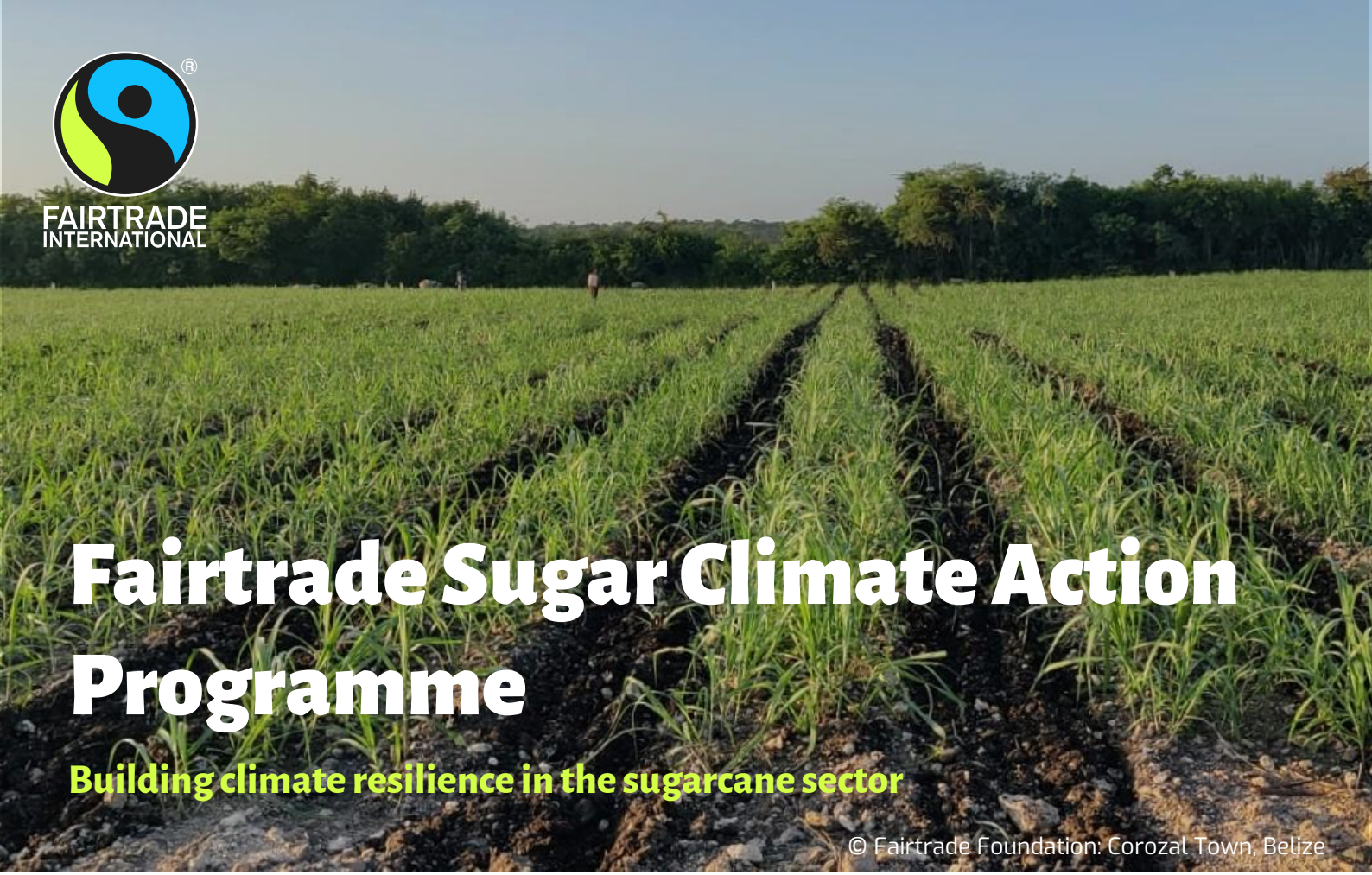

# Fairtrade Sugar Climate Action Programme

## Building climate resilience in the sugarcane sector

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## Introduction

Fairtrade International's Sugar Climate Action Programme is a global improvement initiative, based on a series of Carbon and Water (C&W) footprint studies carried out in seven key Fairtrade sugarcane producing countries since 2019, aimed at supporting key Fairtrade sugar producer organisations. The programme implements findings and recommendations from the C&W footprint studies, aiming to drive transformative change through projects tailored to each small-scale producer organisation (SPO).

Projects have multiple benefits: they stabilise supply chains in the face of decreasing yields and climate-induced extreme weather; support climate resilient cane production; reduce greenhouse gas emissions (GHGs); and provide up-to-date, robust data for Fairtrade sugar buyers.

### Driving change: key recommendations from C&W footprint studies

- **Solar-powered irrigation** to improve irrigation efficiency and reduce emissions from energy use.
- **Soil health revolution** to reduce emissions from imported fertilisers, which can account for up to 45 percent of all farm emissions. Local research institutes conducted soil analyses and suggested actions to improve soil health in most origins.
- **Water stewardship** to reduce the amount of water used for irrigation, which can account for 65 percent of water use in drought-prone regions.

Fairtrade sugarcane producers already tend to have low GHGs — in some cases approaching net zero at farm level. The programme aims to reduce GHGs even further, improve water management and boost the climate resilience of smallholder sugarcane producers. This factsheet provides an overview of projects on Fairtrade sugar SPOs in Belize, Eswatini, Fiji, India, Malawi and Mauritius implemented following C&W footprint studies.

## Scope of the programme

**Total amount invested from 2021 to date: €458,000 (supplemented by Fairtrade Premium investments and in-kind support from industry partners).**

| Country | Project | Farmer organisations reached |
|---|---|---|
| **Belize** | Introduction of solar-powered drip irrigation | 4<br>= all Fairtrade SPOs in the country, accounting for 90 percent of production |
| **Belize** | Farmpact (digital tool) – emissions measurement tool training and deployment, followed by a feasibility study | 4<br>= all Fairtrade SPOs in the country, accounting for 90 percent of production |
| **Eswatini** | Installation of irrigation software and solar-assisted drip systems | 7<br>= all Fairtrade SPOs in the country |
| **Eswatini** | Demonstrating the effectiveness of reducing carbon footprint | 7<br>= all Fairtrade SPOs in the country |
| **Fiji** | Improving soil health by the application of agricultural lime | 1<br>out of two Fairtrade SPOs in the country |
| **Fiji** | Drainage improvement | 1<br>out of two Fairtrade SPOs in the country |
| **India** | Managing organic nutrients to reduce emissions | 2<br>out of seven Fairtrade SPOs in the country |
| **Malawi** | Solar-powered irrigation and income diversification | 1<br>out of 3 Fairtrade SPOs in the country |
| **Malawi** | Enhancing economic and environmental resilience to natural disasters | 1<br>out of 3 Fairtrade SPOs in the country |
| **Mauritius** | Biofertiliser trials | 2<br>out of 25 Fairtrade SPOs in the country |
| **Mauritius** | Soil health trials | 3<br>out of 25 Fairtrade SPOs in the country |
| **Mauritius** | Follow-up project to improve soil health and limit erosion | 22<br>out of 25 Fairtrade SPOs in the country |

## Belize

In Belize, the C&W footprint study recommended improved irrigation to increase poor yields. Following comprehensive soil analyses which revealed very high infiltration rates (9.6 mm/min) requiring frequent, low-volume irrigation, the pilot project introduced solar-powered drip irrigation on all four Fairtrade-certified SPOs involving around 5,300 farmers. The test phase, carried out in partnership with the Sugar Industry Research and Development Institute (SIRDI), aims to save up to 60 percent of water.

A cultivator was modified to bury irrigation lines — saving 80 percent on the cost of a new one — and training provided on monitoring soil moisture and maintaining the system. Fusarium outbreaks and an extended rainy season led to some delays, but results from the Progressive Sugar Cane Producers Association (PSCPA) and the Corozal Sugar Cane Producers Association (CSCPA) are expected after the next harvest. The rising costs of pumps and solar panels — essential for reaching net zero — have also caused some budget challenges.

The fully functioning solar powered drip systems, strengthened agronomic management and improved data collection will allow reliable evaluation of irrigation performance and yield response in the upcoming harvest.

## Measuring emissions

Alongside the irrigation pilot, producer organisations in Belize (plus Costa Rica and El Salvador) received in-person training (in partnership with Sustainable AG and CLAC, the Fairtrade Producer Network for Latin America and the Caribbean) on farm level GHG accounting. Producers were trained to use the Farmpact tool, which was developed to measure sugarcane emissions specifically at small-scale producer level, to identify GHG sources and collect consistent field data.

Workshops, field visits and practical exercises showed how to establish reliable baselines and organise farms into representative layers — essential for accurately measuring and tracking performance and emission reductions in line with the Science Based Targets Initiative (SBTi). The resulting data will allow Belizean SPOs and their customers to understand the climate impact of sugarcane production more clearly, and to identify realistic, locally-appropriate measures for future emission reduction and carbon removal planning.

## Eswatini

The C&W footprint reduction project in Eswatini followed a 2022 study which found that 54 percent of the footprint consists of GHGs from sugarcane cultivation and transport to the mill. The trial sets out to significantly reduce emissions by using organic fertilisers, cover cropping and green cane harvesting. It's hoped that positive results will encourage farmers to adopt these practices across their entire production. Carbon emissions, performance, cost of inputs and management, and quality of yield are monitored and farmers will be encouraged to invest their own funds to further shrink their carbon footprint using a carbon reduction roadmap with targets.

Another project to come out of the study aims to reduce the C&W footprint of irrigation by using less energy, improving water efficiency and tracking carbon emissions. Irrigation scheduling software tracks energy and water use to establish whether solar powered irrigation costs less — early results suggest water volumes can fall by around 20 percent. Workshops and training for 42 producers from three Fairtrade-certified SPOs have been held to build understanding and secure buy-in. Together with other Fairtrade and non-Fairtrade sugar producers, the Eswatini Sugar Association (ESA) is also trialling the use of Farmpact to measure emissions and evaluate the impact of projects.

## Fiji

Following the Fiji C&W footprint study, producers initiated a project — supported by the Sugar Research Institute of Fiji (SRIF) and the industry— using agricultural lime to reduce soil acidity, improve nutrient absorption and increase crop yields. The project also promotes good land preparation, soil sampling and the use of personal protective equipment. Farmers were trained in planting methods, weed control and the use of mechanical planters.

Sugarcane has been planted on 20 demonstration plots. Preliminary soil testing, monitored by the SPO Environment Officer with help from the Fiji Sugar Corporation (FSC) and the SRIF, indicates a rise in pH levels from 4.5 to 5.8 on the plots where lime was applied. Farmers observed higher germination rates, easier field preparation and healthier crop growth, while harvested plots recorded substantial yield increases.

Participants noted that applying lime is more affordable and effective than relying on fertilisers to correct soil acidity. Seeing this, many farmers have already starting using lime on their own fields and the association is continuing to promote the method as a practical approach to improving soil health and cane yields.

## Water Management

The Lautoka Cane Producers Association began a project in 2023 to reduce waterlogging and increase sugarcane productivity in the Lautoka mill area by restoring drains, minimising soil erosion and improving access to cane fields.

A co-payment model encouraged participation and ownership by farmers — especially women farmers — who helped reclaim fallow lands and expanded the area under cultivation. Farmers report that waterlogging has fallen by up to 75 percent, resulting in improved germination, higher yields, fewer crop losses and easier access to fields.

Alongside the environmental benefits, the project strengthened community wellbeing and livelihoods through higher incomes, greater participation and reduced health risks from water-born diseases. Despite challenges from adverse weather and limited funds, participants viewed the project as a success — it has continued with strong support from farmers and has potential for roll-out across other flood-risk areas.

## India

Led by the University of Agricultural Sciences in Dharwad and commissioned by the Fairtrade Network of Asia and Pacific Producers (NAPP), the project aimed to reduce emissions from sugarcane farming and improve the resilience of organic crops. Two demonstration plots in Itagi (Karnataka) and Nagardale (Maharashtra) were established to compare conventional practices with different types of organic nutrients including vermicompost, farmyard and green manure.

Organic cultivation showed higher yields and better soil health, and the organic plots also recorded higher nutrient uptake and soil carbon sequestration, reducing GHGs by approximately 500 kg $CO_2e$ per hectare compared to conventionally farmed plots. Organic cultivation was more expensive as organic manure could only be bought in bulk, but the trials confirmed long-term benefits in improved soil health and reduced emissions.

Moisture stress and heavy rainfall in September and October 2023 affected the start the project, but vermicompost helped recover the crop. Plans are already in place to scale up organic cultivation using biofertilisers and green manuring to further reduce emissions and improve soil health.

## Malawi

Renewable energy is being trialled at the Phata Sugarcane Outgrowers' Cooperative, where 1,150 members produce around 6,000 tonnes of Fairtrade-certified sugar each year. The project aims to improve both productivity and community resilience, as power outages are frequent in Malawi and the cooperative relies on costly diesel generators.

The project — part of a larger grant agreement with GIZ initiated by Agricane — installed solar-powered irrigation pumps to eliminate power cuts which reduce annual yields by around ten percent. Detailed engineering designs have been finalised for irrigation booster pump stations, pre-qualifying suppliers identified and meetings arranged with farmers, traditional authorities and school leadership teams.

In a similar project begun in 2024 at the Lakeshore Cane Growers Association, sugarcane farmers are also using Fairtrade funded solar-powered irrigation to reduce climate vulnerability and boost productivity by moving from traditional rain-fed agriculture to year-round solar-irrigated farming. Solar pumps have been installed and farmers trained in sustainable water use and managing community-led irrigation.

Fairtrade Africa and Agricane are looking to connect the irrigation systems at both Phata and Kasinthula to the planned Shire Valley canal, which would further improve the energy efficiency of the irrigation systems.

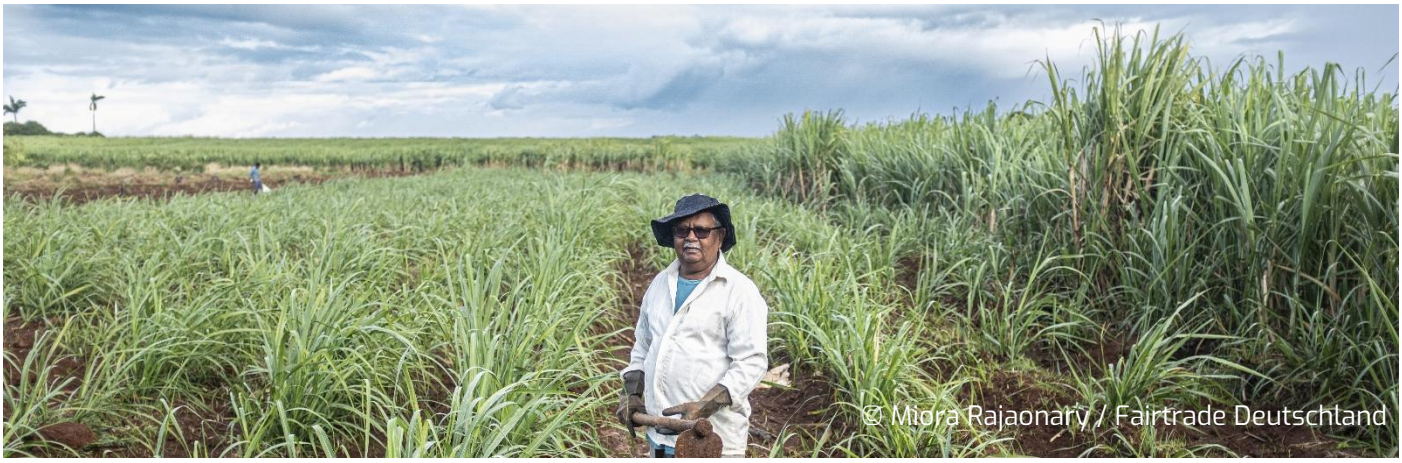
## Mauritius

The Mauritius C&W footprint study recommended treating and draining soil to improve productivity and quality. The Fairtrade Sugar Climate Action Programme funded pilot projects on three Fairtrade-certified cooperatives — Rose CCS, St. Pierre CCS and Surinam Souillac CCS — to reduce soil acidity and improve productivity. Covering 42.8 hectares of different soil types, the projects involved sampling soil and applying corrective measures such as agricultural lime.

After some weather and equipment delays, the initiative proved a success and has been extended to an additional 22 Fairtrade SPOs by the Mauritius Fairtrade Cooperative Federation.

The study also found that imported fertiliser is a significant contributor to GHGs on Mauritian SPOs. Funding was provided for a biofertiliser pilot at Pont Bon Dieu and Valton CCS where, helped by ideal weather conditions, yields rose by 1.5 tonnes per acre after applying Azofort and Phosfort. Microbial analysis confirmed nitrogen-fixing bacteria ($2.5\times10^7$ CFU/g) in treated soils, visual improvements of cane density and longer stalks by up to 0.5m. The project has now been extended to other cooperatives, financed by Fairtrade Belgium.

Together with other Fairtrade and non-Fairtrade sugar producers, the Mauritius Sugar Syndicate (MSS) is also trialling the use of Farmpact to measure emissions and evaluate the impact of projects.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## The path forward for Fairtrade sugar programmes

Projects funded under the Fairtrade's Sugar Climate Action Programme show that climate-resilient and sustainable sugarcane production requires localised, multi-faceted approaches. From irrigation in Belize to Eswatini's water tracking software, from community solar power in Malawi to soil improvement in Fiji and Mauritius, success comes down to producers taking action to reduce emissions whilst increasing their productivity, capacity to adapt and resilience to climate change.

The path forward lies in scaling up these pilot projects while at the same time tackling persistent challenges such as the cost of inputs, land management and technology take-up. As they evolve and spread, projects contribute not only to environmental sustainability, but to the economic resilience of smallholder sugarcane communities worldwide and the decarbonisation of global supply chains.

Sugar producers are under pressure from volatile markets, price fluctuations, climate-vulnerable crops, a relatively low Fairtrade Premium and the costs of compliance. Investment decisions depend on the income from each harvest. Therefore, this additional global Fairtrade funding is crucial for producers, and the achievements are remarkable. It funds two sugar programmes covering thousands of producers in key sugar countries

We welcome collaboration with businesses to co-fund projects which strengthen sugar supply chains, enhance producers' climate resilience and support sustainable livelihoods. Fairtrade's Sugar Climate Action Programme creates opportunities for businesses to increase sales, strengthen relationships with Fairtrade organisations and meet EU decarbonisation and sustainability requirements.

**Thank you to all three Fairtrade Producer Networks for their support and guidance as we implement the Sugar Climate Action Programme.**

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