BUSINESS PARTNERSHIPS PLATFORM

Impact spotlight

Incentivising low emissions rice production through satellite technology in Vietnam

Partners: CarbonFarm, Rikolto in Vietnam, the International Rice Research Institute (IRRI) and the Australian Government

CarbonFarm rikolto CGIAR IRRI Australian Government

Timeframe

November 2022 – April 2025

CARBON MARKETS

FUNDING

DFAT	Partners	TOTAL
$820,529	$1,218,395	$2,038,924

A BPP partnership between CarbonFarm, Rikolto in Vietnam, the International Rice Research Institute (IRRI) and the Australian Government has supported Vietnam's smallholder rice farmers access carbon markets and reduce emissions.

Together, they piloted a world-first satellite-based Monitoring, Reporting and Verification (MRV) system across 900 hectares in the Mekong Delta provinces of Dong Thap, Can Tho and Kien Giang. Using artificial intelligence, remote sensing and IoT water sensors, the system can remotely detect water-saving practices and quantify methane reductions at field level, significantly lowering verification costs and making carbon market participation possible for even the smallest farmers.

More than 1,200 smallholder households, including many women farmers, were trained by Rikolto in sustainable rice practices such as Alternate Wetting and Drying (AWD). This technique can halve methane emissions and improve irrigation efficiency by 30 percent. IRRI provided scientific validation, while the Australian Government supported with funding and policy advice.

By combining digital innovation with on-the-ground capacity building, the partnership is creating new income opportunities for farmers while supporting Vietnam's goal to apply AWD across 1.2 million hectares and cut methane emissions by 30 percent by 2030, helping build a low-emission, climate-smart future for the country's rice sector.

Highlights

Building capacity for farmers
Trained and onboarded 1,200+ smallholder households in Dong Thap, Can Tho and Kien Giang in climate-smart practices, especially Alternate Wetting and Drying (AWD).

Pioneering breakthrough technology Piloted a world-first satellite MRV system for rice, combining satellite imagery, IoT water-level sensors and machine learning to detect AWD and quantify methane reductions.

Digitising farmer tools
Upgraded a farm-log app with offline mode, photo uploads and multilingual support to streamline data reporting and strengthen trust in carbon credit systems.

Ground-truthing with science
Completed two rounds of methane chamber testing with IRRI/CLRRI in Kien Giang.

Progressing carbon market access Enabling Gold Standard readiness with a registered project account and ID, moving documentation forward pending stakeholder consultation. The project, once registered, has the capacity to reduce 14,000 tCO2e per year across 2500-3000 hectares.

Promoting inclusive participation
Working with the Vietnam Women's Union to adapt training formats and actively engage women farmers, ensuring their voices and roles were central to the transition.

Climate Impact

This partnership demonstrated the potential for rice farming to play a major role in cutting greenhouse gas emissions and saving water, while building a stronger evidence base for carbon credit generation.

- Piloted AWD on **900+** hectares of rice fields in Dong Thap, Can Tho and Kien Giang
- Achieved **20 to 30%** lower methane emissions per hectare through improved water management
- Reduced irrigation demand by an estimated **4 million** cubic metres of freshwater saved per year
- Laid the technical foundation for **14,000** tCO_2e in reductions annually across 2500-3000 hectares, with projected cumulative savings of **70,000 to 280,000** credits over the next 5 to 20 years.

Socio-Economic Impact

By making carbon markets more accessible, the partnership helped smallholder farmers cut costs, increase resilience and prepare for future income from carbon credits.

- Trained more than **1,200** rice farming households in sustainable practices
- Farmers reported lower water and fertiliser costs, boosting net incomes even before credit revenues begin
- Farm-log app upgraded with offline functions and multilingual support, making it easier for farmers to document practices and access future carbon payments
- Preliminary benefit-sharing model developed, targeting 40–50% of net carbon revenue for farming communities.

Gender Impact

Women play a central role in rice farming but are often excluded from technical and financial opportunities. This partnership worked to close that gap.

- More than **100** women farmers trained in AWD and climate-smart practices
- Women's Union engaged to support outreach and to ensure women's voices were heard in consultations
- Gender-sensitive training times and formats introduced, increasing women's participation and visibility
- Women farmers began taking on leadership roles in demonstration plots and farmer groups.

Catalytic Impact

BPP support enabled innovation at scale, de-risking new technology and creating pathways for future investment.

- Pioneered the world's **first** satellite and IoT-based MRV system tailored for rice cultivation
- Conducted **two** rounds of methane chamber testing with IRRI and CLRRI to validate the remote system
- Progressed project registration with Gold Standard, creating a unique project ID and preparing documentation
- Established credibility with government and investors, strengthening prospects for future financing and scaling
- Piloting the digital MRV system through Gold Standard's MRV pilot program.

Satellite innovation opens doors for Vietnam's rice farmers

A world-first digital Monitoring, Reporting and Verification (MRV) system for rice cultivation is transforming how farmers in Vietnam engage in climate-smart agriculture. Powered by satellite data and machine learning, the system delivers field-level insights that make it easier for smallholders to adopt low-emission practices and access carbon markets.

The innovation is being piloted with 1,200 rice farmers in the Mekong Delta region, where rice cultivation is both a way of life and a significant source of greenhouse gas emissions. By simplifying how methane reductions are tracked and verified, the system lowers barriers for smallholders to participate in carbon markets and benefit from new income streams.

> Our vision is a world where land stewards are rewarded not only for food production but also for their environmental impact. Through this BPP partnership we piloted that vision with rice farmers in Vietnam, where satellite-verified carbon credits can lower barriers and accelerate the adoption of sustainable practices worldwide.
>
> **Vassily Carantino**
> Co-Founder of CarbonFarm

What's next?

The partners aim to:

- Register the rice carbon project with Gold Standard and advance stakeholder consultations.
- Expand training to more cooperatives and provinces, bringing additional smallholder farmers into the program.
- Scale the satellite-based MRV system across larger areas of the Mekong Delta to cut costs and boost credibility.
- Strengthen benefit-sharing models so farmers gain fair value from carbon credits.
- Attract climate finance and private investment to support wider adoption of climate-smart rice production.
- Continue to pilot the MRV system through Gold Standard's pilot program for MRV that aims to digitise carbon project certification.