Leveraging Carbon Credit Systems to Enhance Farmers

Introduction

Climate change and rural poverty are intertwined challenges that often exacerbate the other. Hazards related to climate change disproportionately affect rural livelihoods by reducing suitable growing areas of key crops and decreasing crop yields. This causes the agricultural sector is more likely to employ less sustainable practices to keep up with high food demand, creating a potential cycle of damage.

In the Philippines, these two issues pose large, interconnected developmental problems that require cross-sectoral solutions.

Climate Change in the Philippines

Climate Change poses a major risk for the country, as its geography makes it more prone to natural disasters. As of 2024, The Philippines ranks the highest in the World Risk Index due in part to the increased exposure and vulnerability to climate-related risks, and a general lack of adaptive capacities to such hazards (Bündnis Entwicklung Hilft, 2024). As a result, climate change may reduce the GDP of the country by as much as 13.6% by 2040 in economic and human costs (World Bank Group, 2022).

While the Philippines is a relatively low emitter of greenhouse gases (GHGs), total emissions are steadily growing. Carbon emissions are expected to increase by 96% between 2020 to 2030, emitting a total of 399 MtCO2e by 2030 (World Bank Group, 2022).

Rural Poverty in the Philippines

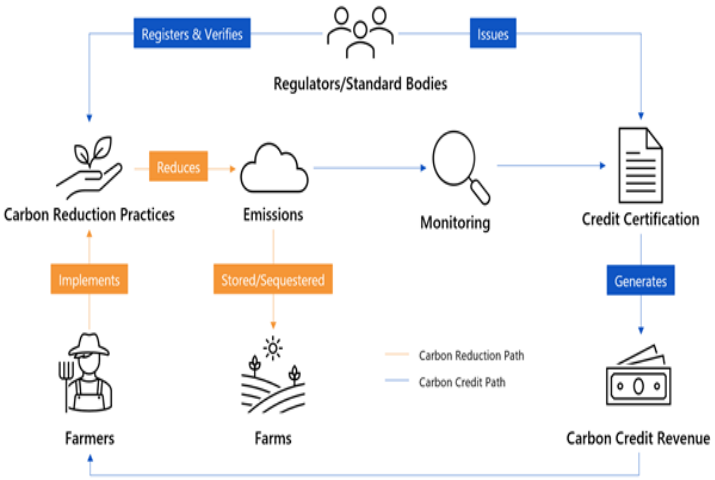
Rural poverty represents another major developmental issue in the Philippines. In 2023, rural areas surveyed for a poverty incidence of 22.1%, compared to the 10.3% poverty incidence rate in urban areas. Farmers in particular experience the third-highest poverty incidence (27.0%) across sectors, signifying the need for policy that could further benefit this group (Philippine Statistics Authority, 2023).

The Potential Solution: Carbon Credit Projects & Sustainable Farming Projects

Carbon Credit Systems are a key discussion point in the future of climate policy. Following COP29's consensus on Article 6 of the Paris Agreement, countries will be allowed to exchange emission reduction units through both bilateral and multilateral agreements (Mahul & Azizova, 2024). This opens new possibilities in

the way nations and corporations across the globe can engage carbon trading.

One emerging emission reduction scheme is using **local farms** to create carbon reduction units, which are then sold to corporations or states, eventually resulting in additional revenues for individual farmers.



While the concept is still in development, it is being tested all over the world and shows great promise in addressing both **Climate Change** & **Rural Poverty**.

Defining Carbon Credit Markets

Around the world, governments and corporations alike are recognizing the importance of reducing carbon emissions for long-term sustainable development and have created various **carbon pricing schemes** [ES1] [ID2] to incentivize reduction in their economies. Today, the main carbon pricing methods include **carbon taxes**, **government-sponsored emissions trading systems,** and **voluntary carbon reduction markets**.

Voluntary Carbon Credit Systems (VCM)

Voluntary credit systems are non-obligatory carbon markets wherein participants trade emissions without being under formal commitments.

In this system, projects that have the potential to reduce or remove GHG emissions are screened & validated by standard bodies using the body's approved methodologies. Project developers submit their verified reduction reports and the standard body issues equivalent credits that buyers can purchase to offset their emissions.

Government-Operated Carbon Credit Markets

Governments may use Emissions Trading Systems (ETS) or Government Administered Offset Programs to reduce national emissions.

As of 2025, ETS are the most common type of government-operated emissions reduction scheme. Offset Programs operate like VCMs but are instead operated by a centralized government body

	Voluntary Carbon Credit Systems	Government-Operated Carbon Credit Markets	
		Emissions Trading System	*Offset Programs*
Typical market system	**Buy-and-offset.** Project developers create projects that reduce or remove greenhouse gas emissions and "sell" these emission reductions to buyers	**Cap-and-trade.** Governments set a total limit on emissions allowed from regulated entities. Corporations that emit less than their allowances can sell their surplus to other parties.	**Buy-and-offset.** Project developers create projects that reduce or remove greenhouse gas emissions and "sell" these emission reductions to buyers
Participants	Private organizations, governments, individuals, and investors that voluntarily participate	Large, high-emitting businesses and organizations	Private organizations, governments, individuals, and investors. Depending on the system, participation may be voluntary or mandatory.
Overseeing body	Independent, non-governmental standard bodies	Governmental regulator or international agreements	
Emission unit	**Carbon Credits** (equivalent to the reduction or removal of 1 ton of CO2e)	**Emission allowances** (or permits), which grant the right to emit 1 ton of CO2e	**Carbon Credits** (equivalent to the reduction or removal of 1 ton of CO2e)
Average price/unit (World Bank, 2025)	US$6.53 (2023)	US$31.37 (2025)	US$17.29-33.40 J-Credit: US$10.27-67.00
Emissions caps	No caps	Set by overseeing body	Typically, no caps are set May work in tandem with a national ETS system that imposes caps
Examples	Standard Bodies • Verra • Gold Standard	European Union Emissions Trading Systems (EU ETS) California Cap-and-Trade Program	Japan J-Credit Scheme Australia Emissions Reduction Fund

Case Studies of Carbon Credit Mechanisms in Agriculture

Currently, few fully established Agricultural Carbon Credit Mechanisms are available to study and examine, due to the novelty of the concept around the world. In this section, we briefly discuss two case studies based in the Southeast Asian region.

Voluntary: Green Carbon AWD Project (Vietnam)

Green Carbon, a Carbon Credit Generation and Sales Firm based in Japan, currently operates an emissions removal project in rice plantations in northern Vietnam. The project uses the **Alternate Wetting and Drying (AWD)** method to reduce methane from rice paddies, by deliberating limiting the activity of methane-producing bacteria. This type of bacteria thrives in wet, flooded conditions. The introduction of dry periods throughout the planting cycle reduces the overall activity of the bacteria and further reduces methane emissions.

This rice cultivation-based project will be eligible for crediting between 2025 and 2032. And by 2032, the project is expected to expand to over 116,000 hectares of land and is estimated to remove up to 4,124,780 tCO2e (Green Carbon, 2024).

Other than the removal of greenhouse gasses, participating farms can observe benefits to their main business operations. Farmers have observed an **increase in crop yields** during the first phase of this project, due to reduced flooding risks.

The project is also projected to increase participating farmers' income by +500 USD/hectare/year, or a 9% increase in annual income.

Government Operated: Sri Trang Rubber and Plantation Co. (Thailand)

The Southeast Asian region has also seen the rise of government-operated carbon markets. In

Thailand, the **Thailand Voluntary Emission Reduction Program (T-VER)**, regulated by the Thailand Greenhouse Gas Management Organization Committee (TGO) operates their own registry for projects and credits.

While most T-VER trading is facilitated by brokers or direct agreements, the Federation of Thai Industries renewable Energy and Carbon Exchange Program is building an over-the-counter domestic carbon trading platform, that also aims to support international trading in the future.

Launched in 2022, T-VER's Sri Trang Rubber and Plantation Project uses **Soil Carbon Sequestration** to reduce greenhouse gasses. This removal project is being implemented in various Rubber plantations across the Chiang Mai Province in Thailand. Rubber plantations have been studied to store 30-100 tons of carbon per hectare and are seen as high-potential crops for carbon removals (Tiko, et al., 2025). As of 2025, this project has resulted in over 14,450 (tCO2eq) T-VER credits, and will be eligible for crediting until 2029 (Greenhouse Gas Mitigation Mechanism, 2025).

Despite most major farm-based carbon reduction programs being studied in larger, developed, Western nations, these examples demonstrate the potential of agriculture-based carbon reduction projects in Southeast Asia. These projects can continue to be observed as key case studies for future implementation.

Potential of Carbon Credit Projects in Philippine Farms

While Carbon Credit projects may be new to the Philippine context, directing these initiatives to the agricultural sector may provide benefits to both farmers and the environment at large.

Challenges

As of 2025, there are no recognized agriculture-based carbon removal initiatives based in the Philippines. While this is likely due to the overall novelty of the concept, the Philippines also presents unique challenges that may delay the implementation of such projects.

As most farms in the Philippines are small-scale, farmers may face the following challenges when adopting carbon credits into their business model:

- **High Upfront Costs & Lack of Infrastructure.** Adopting carbon removal methods may require small farms to invest in new equipment (ex. Monitoring equipment, new irrigation systems). The cost to remove carbon ranges from US$10-$220, depending on the methodology.

- **Low & Volatile Payouts.** Farmers across other carbon programs have expressed that payouts were too low and unpredictable to adequately incentivize farmers to adopt new farming practices. This is especially true for small-scale farms who only cover a few hectares (Barbato & Strong, 2023).
- **Monitoring, Reporting, and Verification (MRV) Burdens.** Existing methodologies for verifying carbon are based largely on industrial monocrop farming. This does not yet include the local, diverse, farming practices in the Philippines.

Existing Methodologies
• Large, industrial-scale (>10 hectares) • Monocrop farms • Western-staple crops (ex. Soy, wheat)

Filipino Farms
• Small-scale family farms (< 3 hectares) • Mix of monocrop and diversified farms • Uses local commodity crops (ex. Coconuts, bananas)

- **Land Concerns & Small Farm Sizes.** Farmers often face land ownership issues that can lead to contentions on carbon credit ownership. Small farm sizes also limit the volume of total CO2 removal (Barbato & Strong, 2023).
- **Climate Change, Extreme Weather Events, and Natural Disasters.** The Philippines is vulnerable to climate-change related disasters, which disproportionately affect small farms. This potential for damage makes it difficult to participate in carbon markets.

Opportunities

Regardless of these challenges, developing an agriculture-based carbon credit market in the Philippines may improve the overall economic contributions of the agricultural sector, and introduce resilient farming practices.

- **Increased Income for Participating Farmers.** Estimates from US Corn & Soy farming studies show a potential income of $49-148/hectare of farmland when adopting carbon-reducing farming practices. This additional income comes from sequestered carbon sales, reduced water use, and increased potential from soil productivity (McKinsey & Company, 2019). This is due to a combination of both direct income from carbon trading, and savings from water use reduction and increased farmland value.

- **Resilience to Weather-Related Risks.** Soil carbon sequestration increases Soil Organic Carbon (SOC) and Soil Organic Matter (SOM). This improves the structure of soil and enhances water retention. This makes farms more resilient to different extremes of weather events, such as droughts and floods.
- **Higher Crop Yields and Reduced Fertilization Costs.** SOC serves as a reservoir for nutrients used by plants such as Nitrogen, Phosphorus, and Sulfur. These nutrients are used to provide a steady supply for plants, increasing yields and reducing reliance on artificial fertilizers.

Conclusion

By simultaneously reducing carbon emissions and providing additional revenue for farm owners, agriculture-based carbon reduction programs offer a potential solution to the "dual" problems of climate change and rural poverty.

However, key policy enablers must be put in place to address the unique challenges in the Philippines. On the policy side, clear regulations regarding engagement in Carbon Markets and the creation of carbon-reduction projects must be made to guide this potential industry. In addition, reforms that clarify land ownership and farmer employment is also essential to ensure that carbon-based income is being returned to the correct individuals. This should be done in conjunction with education programs that guide farmers and landowners through the highly technical language of international carbon markets.

On the scientific end, methodologies that are more suited for Filipino farms must be developed to reflect the local agricultural practices. Studies that are based on small, farms are needed to reduce MRV burdens.

Lastly, participation of the private sector is essential in being able to meet the high upfront costs of carbon-reducing methods in agriculture.

Overall, the use of Carbon Credit Systems to enhance the income of farmers is still a new, and uncertain method. However, its potential to solve cross-sectoral issues makes the concept worth watching and studying further.

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