Rice Science FOR DECISION-MAKERS

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POLICY IMPERATIVES FOR CARBON TRADING IN THE PHILIPPINE RICE SECTOR

KEY POINTS

- Carbon trading is a mechanism that allows parties to sell carbon credits to other parties (countries or organizations) by employing practices or technologies that mitigate greenhouse gas emissions. The goal is reducing emissions and preventing the 1.5^{0}C increase in the earth's surface temperature, the level that most climate scientists consider as the point of no return.
- Equipping farmers with technologies that reduce greenhouse gas emissions can motivate them to sell carbon credits.
- There is a need to strengthen policies and support mechanisms so farmers can fully participate and optimize benefits from carbon trading.

INTRODUCTION

Climate change is a key threat in the agriculture sector, which itself also contributes significantly to worsening climate change impacts. At the global level, the agriculture sector accounts for 27% of all the greenhouse gas (GHG) emissions (ASEAN CRN, 2023). In the Philippines, the sector is the second largest GHG emitter. Rice cultivation represents the largest source accounting for 52% of the total agriculture emissions (NICCDIES, 2024). Hence, rectifying certain practices in rice cultivation can substantially help reduce GHG emissions.

The Philippines, by and large, is not a major polluter as it accounts only for 0.48% share of all the emissions (UNDP, 2024). Mitigating GHG emissions, however, is a global target with global benefits.

Under Article 6 of the Paris Agreement, carbon trading is among the mechanisms approved to achieve emission targets. Essentially, it is a mechanism in which parties can sell carbon credits to other parties (countries or organizations) by employing GHG emission practices or technologies (World Bank, 2022). The goal is to reduce the overall emissions and prevent the increase in the Earth's surface temperature by 1.5^{0}C, which most climate scientists regard as the point of no return.

In the rice sector, alternate wetting and drying (AWD), direct-seeded rice, and aerobic rice are among the technologies identified that can help achieve this result. Studies have also shown that improving crop residue management, like incorporating compost rather than fresh stubbles/straw, can reduce GHG emissions. How does this happen? In the case of AWD, it is known that methane, a GHG, is produced by the bacteria in flooded soils, not by the rice plant (IRRI, 2023), but can be released to the atmosphere through plant-mediated transport. Experiments have shown that by effectively managing water in the paddy fields, methane emissions could be reduced by up to 50%. With this, it is only sensible that farmers who employ AWD should be able to sell carbon credits, and thus, make money from it.

POLICY CONTEXT

The Philippines has committed to 75% GHG emission reduction under its Nationally Determined Contribution targets (UNDP, 2024). Much of it (72.29%) is conditional, meaning the attainment of the target must be covered by resources from outside the country; non-conditional (2.71%) — the resources of the country must be used to achieve the target (AMIA, n.d.).

Most technologies have been developed primarily as adaptation strategies, but they also offer considerable mitigation effects as co-benefits. According to the DA's Climate-Resilient Agriculture Office (DA-CRAO), the sustainable mechanisms include AWD, the use of renewable energy, and other similar practices.

In the ASEAN Region, where rice is grown in most member countries, there are plenty of intervention points to optimize farmers' participation in carbon markets. Among these are the lack of regulatory framework, the inadequacy of the cadre of professionals to link farmers to the carbon markets, the lack of information on how carbon trading works, and the absence of credible methodologies for monitoring, reporting, and verification. There are pilot cases on carbon trading in the following countries (ASEAN CRN, 2023, p.12):

- **Indonesia:** The Jakarta Emissions Trading Scheme (JETS) is a GHG emission reduction effort in their transportation sector. It operates on a cap-and-trade system. The companies that emit less earn credits, which they can sell to those that emit more.

- **Thailand:** The Partnership for Clean Fuels and Vehicles (PCFV) is a voluntary program on GHG emission from vehicles and fuel. It uses a credit trading system where companies that produce or import cleaner fuels or vehicles receive credits that they can sell to companies that practice the opposite.

- **Singapore:** The Carbon Tax imposes penalties on major emitters.

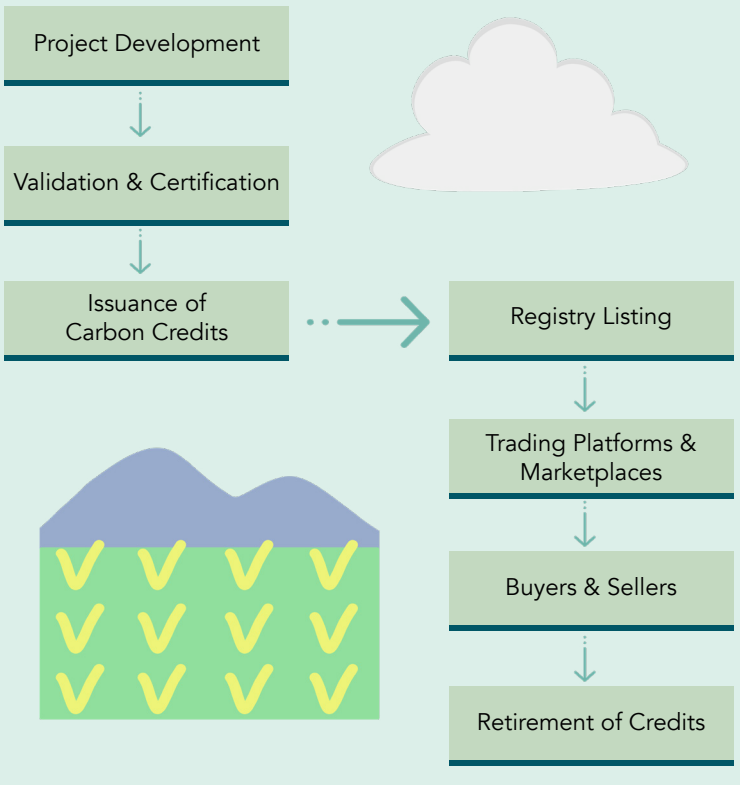
- **Vietnam:** Involves independent global entities that verify and issue carbon credits based on available evidence, such as Verra and Gold Standards. Vietnam works on a number of carbon credit projects.

The Philippines has registered multiple projects and even issued carbon credits under the Clean Development Mechanism (CDM) of the Kyoto Protocol, focusing on the treatment of animal waste and the utilization of agricultural residues for electricity generation, and harnessing wind energy to reduce GHG emissions. Also, it has registered several projects focusing on the energy and transport sector under the Joint Crediting Mechanism (JCM) of the Paris Agreement Article 6, promoting bilateral offset crediting.

However, there seems to be a gap in the rice sector, where no actual carbon credit trading or registered project has been reported despite several technologies that can reduce GHG emissions. Only recently has the AWD method gained traction as a potential technology for generating carbon credits. This development could mark the first instance of carbon credit trading in the agricultural sector.

The short story is that while farmers may benefit significantly from carbon trading, there remain plenty of tasks to do for that to be realized. By the looks of it, farmers will be incentivized along the way by employing GHG emissions-reducing practices. The question is how do we get there?

HOW CARBON TRADING HAPPENS



There are carbon crediting standards that issue carbon credits. From these programs, mostly private entities could buy carbon credits to offset their emissions, especially if they are high emitters. Projects apply to these standards where their target emission reductions are verified. Once verified, they are issued carbon credits that are valid for a certain duration. These platforms have evaluators to ensure that target reductions are being achieved. The actual trading happens when the verified carbon units issued are registered, and then traded or bought by companies from various industries (e.g. Shell, Jollibee, etc), tech companies (e.g., Microsoft, Google), manufacturing firms, airlines, and retail chains seeking to offset their carbon emissions or as part of their CSR. Information from all projects that were given carbon credits is posted on a publicly available system registry. Examples of these carbon crediting programs are as follows:

- **Verra Carbon Standard (VCS).** Being the world's largest voluntary GHG program, US-based VCS has a set of methods for accounting for GHG reductions for every project. It works on a wide range of projects such as forestry, agriculture, and renewable energy. As of this writing, VCS claims to have reduced more than 1.2B tons of GHGs from more than 2,100 projects implemented in 95 countries. In the Philippines, there are 10 listed VCS projects. More information is available from this link: https://registry.verra.org/

- **Gold Standard (GS)**. It operates like the VCS but focuses on renewable energy. Also a voluntary program, GS is based in Switzerland. As of this writing, GS claims to have removed 321M tons of carbon through the more than 3,500 projects implemented in 106 countries. The Philippines has eight listed projects under GS. More information about GS is available from this link: https://www.goldstandard.org/

- **J-credit.** It is a facility in Japan that certifies the amount of GHGs reduced or removed. They have a platform where local or foreign entities in Japan can open an account to hold, buy, sell, and retire credits. More information about J-Credit is available from this link: https://japancredit.go.jp/english/

- **Joint Crediting Mechanism.** This Japan-based mechanism sponsors projects that can reduce GHGs in partner countries. These projects can either be products, services, or infrastructure. The reductions gained help Japan realize its nationally determined contribution under the Paris Agreement. In doing this, Japan extends assistance to partner countries. In agriculture, they do this through technical cooperation and government-commissioned projects. More information about JCM from this link: https://www.jcm.go.jp/opt/all/about/202311_JCM_goj_eng.pdf

CALL FOR ACTION

- **Strengthen local support structures, such as cooperatives or farmer groups, to facilitate collective action and embolden farmers' negotiating power in carbon trading markets.** Many technical aspects of carbon trading may be difficult to understand for ordinary farmers or even researchers. Hence, massive information dissemination must be undertaken so farmers and other players will know how to optimize benefits from carbon trading.

- **Optimize partnerships with the private sector. At the global level, the private sector has many players in carbon trading.** To optimize benefits, it would be strategic to know these players and see how emission targets could be achieved through productive carbon trading. An enabling environment must be created by framing clear regulatory frameworks and supportive policies that magnet private sector investment.

- **Ease access and participation in existing carbon markets.** This can be done by providing the necessary support, resources, and information. With the existing international markets, we can leverage established infrastructure, benefiting from proven methodologies and accessing a broader pool of potential buyers.

- **Create and organize carbon markets.** Currently, it is not yet very clear how things will go for the rice sector, let alone how trading will transpire. It is imperative that the overall structure, along with component standards, be put in place to help stakeholders know how to play their cards. Establishing pilot runs patterned after what the neighboring countries have done would be useful at this point. The downside of creating a new national carbon market is that it would require huge investment from the government. The advantage is that it could provide more tailored support for local projects, enhance national regulatory control, and foster domestic investment in sustainable practices.

- **Support behavior-changing communication on carbon-reducing technologies.** To be successful in carbon trading, farmers must embrace carbon-reducing practices and technologies. This becomes tricky because adoption and adaptation of rice technologies is a recurring struggle in the whole agriculture sector. Useful technologies may not end up being used by farmers. For example, AWD has been promoted for over a decade; yet, it has no critical mass of users at least in the Philippines. This means that a focused, well-funded intervention to scale these technologies is needed so farmers may benefit from carbon trading.

- **Invest in research for development to gather evidence about identified carbon-reducing technologies.** Considering that several technologies and practices may be successful in obtaining carbon credits, robust evidence of their efficacy is needed. This can be achieved through verification studies.

- **Step up carbon trading-related research. Issues such as 'double counting' and establishing a 'climate warehouse' are being discussed at the global level.** Research should focus on developing standardized protocols in monitoring, reporting, and verification, leveraging innovative technologies such as remote sensing (e.g., verifying the presence or absence of water in AWD); GHG direct measurements and equipment; blockchain technology; and enhancing the capacity of local institutions to implement these strategies.

- **Develop a cadre of carbon trading professionals.** Only a few professionals as of yet can competently talk about carbon trading. The demand for carbon trading communicators and coaches will be high if a national program on this field is to be rolled out. Therefore, training people to perform these roles is a step in the right direction.

- **Establish a clear benefit-sharing framework between developers and farmers involved in carbon trading projects.** The framework should outline a transparent and equitable distribution of financial returns from carbon credits, ensuring that farmers receive a fair share of the benefits proportional to their contributions. It should also include provisions for covering initial costs, providing technical support, and enhancing farmers' capacity to participate effectively in such projects.

- **Accelerate farmer uptake of the carbon trading-fitted technologies.** A potential pathway is the incentivized use of digital banks or wallets. For example, rice sector champions can partner with GCash to expand its GForest concept, like GRice. Here, climate action with farmers would increase with GRice. In the GForest tool, GCash transactions earn green energy points that fund nationwide tree-planting efforts. Adapting the concept to GRice, the earned points could then fund efforts that expedite farmers' adoption of rice varieties that perform better when direct-seeded than when transplanted. Seed supply in areas already practicing direct seeding could also be funded. This track integrates the rice sector into the GCash system. Alternatively, GCash may be invited to integrate into the rice sector's online platforms where website visits, downloads of e-materials and apps, publication citations, social media engagement, and sharing of posts could be incentivized with green energy points.

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ABOUT THE MATERIAL

Rice Science for Decision-Makers is published by the Department of Agriculture-Philippine Rice Research Institute (PhilRice). It synthesizes findings in rice science to help craft decisions relating to rice production and technology adoption and adaptation. It also provides recommendations that may offer policy triggers to relevant rice stakeholders in search of opportunities to share their knowledge on rice-related products.

The articles featured here aim to improve the competitiveness of the Filipino rice farmers and the Philippine rice industry through policy research and advocacy.

This issue of RS4DM introduces policymakers to carbon trading, a mechanism to reduce GHG emissions through the selling and buying of carbon credits. It is a mechanism that could potentially benefit farmers if structural reforms are put in place.

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