



Empowering Agriculture Through Carbon Credits

*This editorial is based on [“Ways for India to realise carbon credits potential”](#) which was published in *The Hindu Business Line* on 08/10/2024. It emphasizes the need to maximize India's carbon credit potential by tackling market challenges, promoting sustainable agriculture, and ensuring transparency and accountability in carbon credit issuance.*

For Prelims: [Kyoto Protocol](#), [Agriculture](#), [Climate-resilient agriculture](#), [carbon credits \(CC\)](#), [carbon sequestration](#), [climate change](#), [Net Zero goals](#), [carbon credit markets](#), [greenhouse gas \(GHG\)](#), [Renewable energy facilities](#), [greenhouse gas \(GHG\)](#).

For Mains: Importance of Carbon Credit-Based Farming for Agricultural Practices.

The [Kyoto Protocol](#) laid the foundation for [carbon credits \(CC\)](#) as a financial innovation aimed at reducing [greenhouse gas \(GHG\)](#). Carbon markets allow corporations to purchase CC from projects that mitigate emissions through various means, including afforestation, renewable energy, and methane capture.

Each CC purchased allows an emitter to emit **one tonne of greenhouse gasses**, enabling them to market themselves as **carbon neutral**. [Agriculture](#) is highlighted as a major contributor to India's emissions, with the potential for reduced emissions through natural farming practices.

Shifting to these methods can reduce farmers' input costs and enhance [soil health](#), qualifying them to receive carbon credits. However, there are challenges in developing a **viable agricultural project** that generates carbon credits, including high costs and extended timelines for implementation.

Note:

- **The Kyoto Protocol :**
 - It provides for **three mechanisms** that enable countries, or operators in developed countries, to acquire greenhouse gas reduction credits:
 - Under **Joint Implementation (JI)**, a developed country with relatively high costs of domestic greenhouse reduction would set up a project in another developed country.
 - Under the **Clean Development Mechanism (CDM)**, a developed country can “sponsor” a greenhouse gas reduction project in a developing country where the cost of greenhouse gas reduction project activities is usually much lower, but the atmospheric effect is globally equivalent. The developed country would be given credits for meeting its emission reduction targets, while the developing country would receive capital investment and clean technology or beneficial change in land use.
 - Under **International Emissions Trading (IET)**, countries can trade in the

international carbon credit market to cover their shortfall in Assigned Amount Units (AAUs). Countries with surplus units can sell them to countries that are exceeding their emission targets under Annex B of the Kyoto Protocol.

What is Carbon Credit?

- **About:** A carbon credit also referred to as a **carbon offset**, represents a **credit for greenhouse gas emissions** that have been reduced or removed from the atmosphere through an emission reduction project.
 - These credits can be utilized by governments, industries, or individuals to offset the emissions they produce elsewhere. Entities that find it challenging to reduce their emissions can continue operations, albeit at a higher financial cost.
- **Key Features:** Carbon credits are part of **cap-and-trade systems**, where governments set a cap on total greenhouse gas emissions. Companies that reduce their emissions below the cap can sell their excess credits to other companies that exceed their limits.
- **Types of Markets:**
 - **Compliance Market:** Governed by national or international legislation, such as the **European Union Emissions Trading Scheme (EU ETS)**, where companies are mandated to adhere to emission limits.
 - **Voluntary Markets:** Allow individuals and companies to purchase carbon credits voluntarily to offset their emissions. This is often pursued for **corporate social responsibility (CSR)** initiatives or to achieve sustainability goals.
- **Importance of Carbon Credits:**
 - **Mitigation of Climate Change:** Carbon credits create economic incentives for reducing **greenhouse gas emissions**, contributing to international efforts to combat climate change and achieve targets set in agreements such as the **Paris Agreement**.
 - **Funding Sustainable Development:** The revenues generated from the sale of carbon credits can be reinvested in sustainable practices, renewable energy projects, and other initiatives that promote environmental conservation and resilience.
 - **Economic Opportunities:** The carbon credit market offers new business opportunities for companies specializing in environmental services, renewable energy, and sustainable agriculture.

What is the Role of Carbon Credits in Agriculture?

- **Economic Incentives for Farmers:** According to **NITI Aayog**, Indian agriculture contributes **13%** of a nation's gross emissions. By adopting sustainable practices that reduce emissions or enhance **carbon sequestration**, farmers can earn carbon credits.
- **Market Opportunities:** The global carbon credit market is growing, with prices for carbon credits ranging from **USD 15 to USD 50 per ton**. This presents a lucrative opportunity for farmers to monetize their sustainability efforts.
- **Promotion of Eco-Friendly Farming:** Carbon credit programs encourage farmers to implement sustainable agricultural practices such as **agroforestry, cover cropping, reduced tillage, and organic farming**. These practices not only generate carbon credits but also improve biodiversity and soil health.
 - **Sustainable agricultural practices:** It has the potential to sequester substantial amounts of **carbon dioxide (CO₂)** from the atmosphere, helping to offset emissions produced in other sectors.
 - **Soil Health Improvement:** Practices associated with carbon credit generation often enhance soil organic matter, leading to healthier soils that can support higher crop yields.
- **Support for National Commitments:** India has set an ambitious target of achieving net **zero emissions by 2070**. Carbon credits offer a mechanism for the agricultural sector to play a vital role in meeting these commitments.
- Many countries, including India, have committed to reducing their greenhouse gas emissions under **international agreements like the Paris Agreement**. Carbon credits provide a mechanism for the agricultural sector to contribute to these commitments.

What are Global Carbon Farming Initiatives?

- **Carbon Trading:** In certain nations such as the US, Australia, New Zealand, and Canada, voluntary carbon markets are emerging.
 - These platforms enable farmers to earn extra income by engaging in verified carbon sequestration endeavours, thereby encouraging the uptake of carbon farming techniques.
- **Other Global Efforts:** Initiatives like the '4 per 1000' initiative.
 - **Kenya's Agricultural Carbon Project (backed by the World Bank)** was introduced at the 2015 United Nations Climate Change Conference (COP21) in Paris.
 - Australia's Carbon Farming Initiative, advocate for carbon farming on a global scale.
- **India's Legal Framework:** The Government of India passed an **amendment in 2022 to the Energy Conservation Act 2001**, which lays the foundation for the Indian Carbon Market. Following this, the **Council On Energy, Environment And Water (CEEW)** conducted an industry stakeholder discussion to understand their concerns and perspectives.
 - This issue briefly deconstructs the two key typologies of carbon markets - project-based/offset and **Emission Trading Scheme (ETS)** markets and outlines their key features that determine their environmental integrity and functional boundaries.

What are the Challenges of Carbon Credits in Agriculture?

- **Complexity of Carbon Accounting:** Accurately measuring carbon sequestration and emissions reductions in agriculture is challenging due to variations in soil, weather, and farming techniques.
 - The lack of standardized methodologies causes discrepancies in credit valuation, and the [United Nations Development Program \(UNDP\)](#) has raised concerns about double counting and greenwashing in the process.
- **Fund Requirements:** Transitioning to sustainable practices that generate carbon credits often requires significant upfront investment in technology, training, and infrastructure, which may be a barrier for smallholder farmers.
 - Moreover, adopting such practices may initially lead to losses; for example, Sri Lanka's shift to organic farming resulted in a severe food crisis
- **Market Access and Participation:** Many farmers are **unaware of carbon credit programs** and how to participate, which restricts their access to potential revenue. Additionally, they face challenges in entering carbon markets due to **administrative burdens, limited resources**, and difficulties meeting project scale requirements.
- **Regulatory and Policy Uncertainty:** Changes in government policies and regulations related to carbon credits can create uncertainty for farmers and investors, potentially discouraging participation in carbon credit programs.
- **Impact of Climate Variability:** Extreme weather events and climate change can affect the ability of agricultural practices to sequester carbon effectively, jeopardizing credit generation.
 - **For example**, Soil erosion from heavy rains or extreme temperatures **can reduce the soil's ability to sequester carbon**, increasing uncertainty in the value and reliability of carbon credits from agricultural practices.

How Can Carbon Credits Be Effectively Adopted in Agriculture?

- **Access to Financial Resources:**
 - **Microfinance and Grants:** Facilitate access to microloans, grants, or subsidies for farmers looking to invest in sustainable practices that generate carbon credits.
 - **For example**, farmers in Kenya have accessed microloans through programs like the African Agricultural Capital Fund, enabling them to implement practices that improve soil carbon sequestration.
 - **Incentives for Participation:** Governments can offer financial incentives for farmers adopting practices that contribute to carbon credit generation.
 - **In December 2023**, the Government of India introduced the **Carbon Credit Trading Scheme** to implement a carbon trading mechanism and promote the Voluntary Carbon Market (VCM) in the agricultural sector.

- Programs like these can provide additional revenue streams to incentivize participation.
- **Standardization and Certification:**
 - **Establish Clear Methodologies:** Develop standardized methodologies for measuring and verifying carbon sequestration and emissions reductions in agriculture, making it easier for farmers to participate in carbon credit programs.
 - **Certification Bodies:** Establishing reputable certification bodies is key for transparency and credibility. For example, **Verra's Verified Carbon Standard (VCS)** certifies agricultural carbon credits, ensuring they meet strict quality and reporting standards.
- **Integration with Existing Agricultural Policies:**
 - **Align Carbon Credit Programs with National Policies:** Integrate carbon credit initiatives into existing agricultural and environmental policies to ensure coherent support and alignment with national goals.
 - **Promote Sustainability Goals:** Encourage farmers to adopt carbon credit practices as part of broader sustainability objectives, such as improving soil health and biodiversity.
- **Community Engagement and Participation:**
 - **Involve Local Communities:** Encourage **community-based initiatives** that empower farmers to collectively engage in carbon credit programs, sharing resources and knowledge.
 - **Stakeholder Collaboration:** Foster collaboration among farmers, government agencies, NGOs, and private sector players to create a supportive ecosystem for carbon credit adoption.

Drishti Mains Question:

What strategies can be adopted to ensure the successful implementation of carbon trading in the agricultural sector, thereby reducing greenhouse gas emissions and promoting sustainable farming practices?

UPSC Civil Services Examination Previous Year Question:

Prelims

Q.1 Which one of the following statements best the term 'Social Cost of Carbon'? (2020)

It is a measure, in monetary value, of the -

- (a) long-term damage done by a tonne of CO₂ emissions in a given year.
- (b) requirement of fossil fuels for a country to provide goods and services to its citizens, based on the burning of those fuels.
- (c) efforts put in by a climate refugee to adapt to live in a new place.
- (d) contribution of an individual person to the carbon footprint on the planet Earth.

Ans: (a)

Q2. Regarding "carbon credits", which one of the following statements is not correct? (2011)

- (a) The carbon credit system was ratified in conjunction with the Kyoto Protocol
- (b) Carbon credits are awarded to countries or groups that have reduced greenhouse gases below their emission quota
- (c) The goal of the carbon credit system is to limit the increase of carbon dioxide emission
- (d) Carbon credits are traded at a price fixed from time to time by the United Nations Environment Programme.

Ans: (d)

Mains

Q. Should the pursuit of carbon credits and clean development mechanisms set up under UNFCCC be maintained even though there has been a massive slide in the value of a carbon credit? Discuss with respect to India's energy needs for economic growth. **(2014)**

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