# Sustainable farming practices can drive higher incomes and climate resilience

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Climate crisis(Shutterstock)

In the heart of Telangana, rice farmers of Vallapuram village offer a compelling example of how agriculture can become a frontline advocate for carbon reduction. By adopting simple practices like Direct Seeded Rice (DSR) and Alternate Wetting and Drying (AWD), farmers have embraced a cultivation method that not only boosts profitability but also contributes to environmental sustainability. DSR has minimised water usage and enabled early harvests for these farmers, reducing methane emissions, a major contributor to agriculture's carbon footprint.

This transformation in Vallapuram emphasises the potential of innovative farming techniques to align agricultural productivity with climate action. As water availability dwindles and natural resources grow increasingly constrained, the need for sustainable agricultural practices becomes more urgent. For water-intensive crops like rice, innovative techniques such as DSR and advanced water management methods like AWD provide a sustainable pathway to conserve resources, enhance yields, optimise soil organic carbon management, and ensure long-term economic viability for farmers.

Smallholder farmers are integral to sustainable agriculture, contributing to climate mitigation through soil carbon sequestration, methane reduction, and agroforestry. Techniques like AWD and DSR further enhance emission reductions while generating higher rice yields and incentives. Equipping these farmers with the necessary tools, knowledge, and market access is crucial to turning challenges into opportunities.

As of 2022, Global agrifood systems emitted 16.2 billion tonnes of carbon dioxide equivalent (Gt $CO_2$eq), marking a 10% increase since 2000, with rice farming being a significant source of methane. However, emerging technologies and sustainable farming methods offer pathways for emission reduction and farmer empowerment. Voluntary carbon markets, valued at $2.4 billion in 2023, highlight the growing recognition of nature-based solutions like sustainable agriculture as a key component in combating the climate crisis.

Advanced farming resources, digital platforms, and market access initiatives are driving this shift by empowering

farmers to adopt climate-smart practices. Additionally, deployment of advanced technologies like remote sensing, Artificial Intelligence (AI), and machine learning (ML), ensures transparent validation of carbon credits, enhancing market trust. Such innovations enable smallholder farmers to participate effectively in carbon markets, creating credible, high-quality credits that contribute to global climate goals.

Carbon markets allow trading of carbon credits, each representing one tonne of $CO_2$ or equivalent reduced, sequestered, or avoided. Despite some progress, the world faces a formidable challenge. Developing countries like India will require up to $6 trillion by 2030 to finance less than half of their climate action goals (as listed in their Nationally Determined Contributions, or NDCs).

To drive and finance the transformation needed to address the climate crisis, many countries are looking to carbon markets as part of the answer.

India’s leadership in the voluntary carbon market, with over 1,400 projects worth $1.2 billion, underscores the potential for scaling sustainable practices. However, challenges like fraudulent or low-quality credits threaten the integrity of these markets. Establishing robust certification standards and transparent verification mechanisms is essential to maintaining credibility and attracting both buyers and investors.

Simplifying processes for farmers to register and participate in carbon credit programmes is critical. Aligning these initiatives with existing agricultural support schemes and providing financial and technical resources can further

enhance their reach. Capacity-building efforts through training programs and awareness campaigns will also play a key role in educating farmers about sustainable practices that qualify for carbon credits.

Unlocking the full potential of carbon markets for smallholder farmers requires a comprehensive policy framework. Simplifying registration processes, aligning programmes with agricultural support schemes, and introducing financial incentives are vital steps. Farmer Producer Organisations (FPOs) can aggregate carbon credit projects, enhancing their scalability and market appeal. Policies that encourage the formation of cooperatives and provide technical assistance for monitoring, reporting, and verification (MRV) processes are equally important.

Leveraging digital platforms to connect farmers with carbon credit buyers can ensure transparency and ease of transactions. Mobile advisory services offering real-time guidance on sustainable practices, weather updates, and market conditions can further support farmers in their transition to eco-friendly methods.

Collaboration is the cornerstone of advancing carbon markets and supporting smallholder farmers. Partnerships with governments, non-governmental organisations (NGOs), and private stakeholders can ensure transparency, build trust, and expand market access. By aligning efforts with national and global sustainability goals, these collaborations can amplify the impact across the agricultural value chain.

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