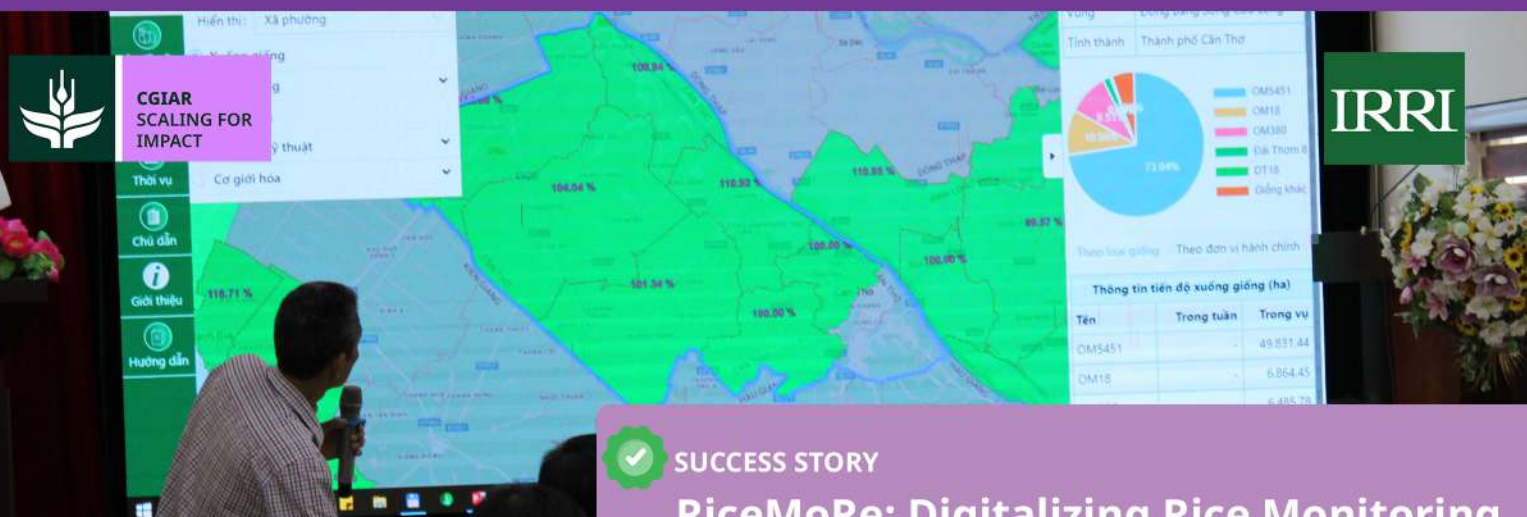




Innovation Name

Rice Activity Monitoring and Reporting System (RiceMoRe) website to allow multi-level data re-reporting and access to rice cropping maps for rice stakeholders in Vietnam

Location (Country/Region)

Vietnam



Lead centre

International Rice Research Institute

Contributing Initiative/s/ Bilateral project/s

Asian Mega-Deltas, Low Emission Food Systems, (NZAGRC, IFAD/EC, Global Methane Hub

Innovation Type

Service

Current Innovation Readiness Level



Uncontrolled Testing

Current Innovation Use Level



End-Users/Beneficiaries (II)

Scaling Dimensions Achieved

Scaling Out Scaling Up

Challenge Addressed

Knowledge & Information Systems
Data gaps or poor data quality

Enabling Environment Methods

Technical consultation with government officials at various administrative levels

SDG Targets



CGIAR Impact Areas



SUCCESS STORY

RiceMoRe: Digitalizing Rice Monitoring for Climate Action and Scalable Impact

The Rice Activity Monitoring and Reporting System (RiceMoRe) is a digital solution co-created and implemented in Vietnam from 2018 to 2024 to address critical challenges in monitoring, reporting, and verification (MRV) of rice activities, particularly concerning greenhouse gas (GHG) emissions. Previously, Vietnam lacked a digital system for tracking progress toward emission reduction targets, relying on manual, inconsistent, and often inaccurate reporting methods. This posed significant barriers to demonstrating climate mitigation achievements and accessing climate finance. RiceMoRe overcame this by digitizing the existing government reporting line, standardizing data entry, minimizing errors, and ensuring hierarchical quality controls. Developed on open-source platforms, it provides a low-cost, flexible, and replicable system. The primary outcome is the official adoption of RiceMoRe by Vietnam's Ministry of Agriculture and Rural Development (MARD), currently Ministry of Agriculture and Environment, scaling across approximately 75% of the country's rice planting areas, significantly enhancing the efficiency, accuracy, transparency, traceability, and accessibility of agricultural data for climate action and sustainable rice management.

Context

Southeast Asian countries, contributing significantly to global rice production and methane emissions, face a growing demand for robust MRV systems in the rice sector to support GHG emission reduction targets outlined in their Nationally Determined Contributions (NDCs). However, a primary enabling environment challenge has been the absence of applicable digital MRV systems at the national level. Existing MRV platforms are often unsuitable or too costly for large-scale applications. Technical limitations in advanced MRV technologies like remote sensing and simulation models, such as low spatial resolutions, cloud cover, data inconsistencies, and high upfront investment requirements, further hinder their widespread adoption, especially in smallholder systems. Moreover, crucial data for GHG estimation, like fertilizer types and straw management, are unobservable from satellites, and models demand extensive, high-quality training data that is largely unavailable at a national scale in many SEA countries. This technical and financial gap in digital MRV systems prevents countries from effectively demonstrating climate mitigation achievements and accessing climate finance opportunities.



“The use of RiceMoRe helps improve the accuracy and consistency of rice production information, while reducing the time required for data compilation and reporting of agricultural officers, thereby enabling timely advisory and decision-making.”

- **Le Thanh Tung**, former Deputy Director General of the Department of Crop Production

The objectives of the intervention were to develop and validate a low-cost, flexible, and replicable digital MRV system for rice management, improving the efficiency, accuracy, transparency, traceability, and accessibility of agricultural data to support GHG inventories, track progress on NDCs, facilitate carbon reduction at the farm/field level, and enable access to climate finance opportunities.

Creating the Enabling Environment for Scale

Many countries faced significant hurdles in MRV rice activity data due to the absence of digital systems at the national level, leading to reliance on manual, inconsistent, and often inaccurate reporting. This was compounded by the technical limitations and high costs associated with advanced MRV technologies like remote sensing and machine learning, which often presented issues with data quality and accessibility, particularly in resource-constrained regions. Consequently, inconsistent data formats and sources not only increased the workload for agricultural officers but also compromised the reliability of national greenhouse gas inventories. The overall lack of a standardized and transparent data flow further hindered the traceability essential for accountable agricultural practices and adherence to sustainability standards.

To address bottlenecks, RiceMoRe was developed on open-source platforms, offering a low-cost, replicable solution for Southeast Asia. The project digitized existing government reporting lines and standardized digital entry templates to improve data quality and efficiency, while also incorporating farm-level monitoring. This participatory and inclusive design led to RiceMoRe's official adoption by Vietnam's MARD, scaling its use across 75% of the country's rice planting areas.

The Intervention and Actions

The intervention focused on co-creating and implementing RiceMoRe as a digital solution to transform manual, inconsistent rice activity reporting into an efficient, accurate, and transparent system. A key

strategy was to integrate the system within Vietnam's existing government reporting lines, digitizing the workflow for thousands of local to national-level officials. This involved developing standardized digital entry templates to minimize human errors and ensure data quality, adhering to government norms and hierarchical controls. Research informed these actions by identifying the specific technical limitations and high costs associated with advanced MRV technologies for national-scale application, prompting the development of a low-cost, open-source alternative adaptable to diverse contexts.

An important “enabling innovation” was the participatory approach to development, involving technical consultation with government officials at various administrative levels throughout a six-step process, from needs assessment to institutionalization. This ensured the system's design was contextually relevant and met user requirements. Furthermore, the system was designed with inclusivity in mind, catering to both advanced government users and public users, including farmers, providing functionalities like a GHG emission estimation tool accessible without a login. This inclusive approach fostered broader engagement and utility. The financial support from the New Zealand Ministry for Primary Industries (NZAGRC) through CGIAR initiatives enabled the International Rice Research Institute to collaborate with national partners in Vietnam, facilitating the development and validation of RiceMoRe. The focus was not on new data collection technology but on optimizing data entry and management, streamlining workflows, and ensuring traceability for accountable agricultural practices.

Key actors crucial for scaling RiceMoRe included national government agencies like Vietnam's MARD, the Department of Crop Production (DCP), and the National Agricultural Extension Center (NAEC). Thousands of local government officials and extensionists were also involved, as RiceMoRe digitized their existing reporting lines. Direct users, such as farmers and project managers, played a vital role in reporting farm-level data, alongside international and national research partners, including IRRI and its

collaborators. Finally, donors, like NZAGRC, provided essential financial support.

Results and Impact

The implementation of RiceMoRe has yielded concrete and significant outcomes, transforming rice activity monitoring and reporting in Vietnam. The system has been officially adopted by MARD of Vietnam, a pivotal achievement demonstrating successful institutionalization and national-level buy-in. Subsequently, DCP and NAEC have scaled RiceMoRe across approximately 75% of Vietnam's rice planting areas, showcasing its widespread uptake and operational efficiency.

This scaling has led to enhanced efficiency, accuracy, transparency, traceability, and accessibility of agricultural data related to rice management. By digitizing manual reporting processes, RiceMoRe has minimized human-generated errors and ensured structured, quality-controlled data flows. For instance, the system now enables local officials to quickly update crucial information like planting/harvesting dates, varieties, farming practices, and yields in a national database using computers or smartphones. The linking of farm-level activity data with an independent calculation tool via an API provides automated estimates of GHG emissions, benchmarking farmers' performance against sustainable practices and facilitating progress tracking towards sustainable goals. Since it's license-free systems, RiceMoRe is highly replicable in other Southeast Asian countries with similar rice management structures, a fact confirmed by scoping studies in Cambodia and Lao PDR. This successful institutionalization and broad adoption in Vietnam provide compelling evidence for RiceMoRe's potential to standardize and digitize management data, forming a strong foundation for future integration with advanced technologies like remote sensing and machine learning for even more

accurate GHG inventories and transparent MRV at any scale.

Reflection and Learning

Key lessons learned from enabling the scaling of RiceMoRe include the critical importance of integrating digital solutions within existing institutional structures rather than creating entirely new ones. Digitizing established reporting lines, as done with Vietnam's government officials, significantly increases adoption and reduces resistance. A participatory development approach, involving technical consultations with diverse stakeholders from the outset, is crucial for ensuring the innovation is relevant, user-friendly, and aligns with operational needs. Developing the solution on open-source platforms ensures affordability and replicability, which are vital for scaling in resource-constrained environments. Furthermore, designing for inclusivity, catering to various user types (e.g., government officials and farmers), broadens the innovation's reach and impact. The official institutionalization by a key government ministry (MARD) is paramount for achieving national-level scale and sustainability beyond project cycles.

Affordability for Users

The innovation is affordable for intended end-users. Being developed on open-source platforms, RiceMoRe incurs no licensing fees, making it a low-cost solution for countries to adopt.

Financial Sustainability

Economies of scale were reached through the widespread adoption by MARD across 75% of Vietnam's rice areas. The use of the innovation is financially sustainable without continuous project subsidies due to its open-source nature and integration into existing government reporting mechanisms.

"The system showcases the nation's capacity to develop advanced, locally-tailored solutions that respond to the growing challenges faced by Vietnamese farmers."

- Mr. Nguyen Quoc Toan,
Director of the Center for Digital
Transformation and Agricultural
Statistics





Partners

- Ministry of Agriculture and Environment (formerly MARD)
- Department of Crop Production and Plant Protection (formerly DCP)
- Center for Digital Transformation and Agricultural Statistics
- National Agricultural Extension Center
- New Zealand Ministry for Primary Industries (NZAGRC)
- Provincial Department of Agriculture and Rural Development
- Provincial and district Crop Production and Protection officers
- TCSOFT



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Temporal and Environmental Sustainability

Key functions have been institutionalized through the official adoption by Vietnam's MARD and its scaling by the DCP and NAEC. This ensures long-term operation. The system directly supports environmental sustainability by enabling MRV for GHG inventory and tracking progress on NDCs and carbon reduction efforts in rice cultivation. There were no explicitly stated negative environmental trade-offs.

Inclusivity and Responsible Scaling (GenderUp Framework)

Stage 1 & 2: Exploring User Diversity: Beyond a simple male/female split, user diversity for RiceMoRe encompassed government officers, extensionists, project managers, and public users like farmers, researchers, policymakers, and development agencies. The system was designed to be inclusive, allowing public users to access functions even without an account, and various user groups were actively involved in decision-making through a participatory development approach.

Stage 3: Anticipating Differentiated Consequences: The system implicitly addressed the potential for excluding non-digitally literate users or those without internet access by offering limited functionality without a login and leveraging existing, familiar reporting lines. This approach empowered diverse user groups with a more efficient tool for data management and GHG emission estimation, fostering opportunities for co-creating sustainable rice farming solutions.

Stage 4: Mitigating Risks and Embracing Opportunities: To mitigate risks and embrace opportunities, strategies included a user-friendly design that optimizes data entry and management, alongside a flexible survey component for tailored development. Ensuring accessibility for public users, even without login accounts, fostered broader engagement. Moreover, the system's adaptable design allows for replication across various country contexts, collectively improving data management, supporting sustainable practices, and facilitating climate mitigation efforts for diverse user groups.

About the CGIAR Scaling for Impact Program

We will tackle global poverty, food insecurity, and climate risks by applying transdisciplinary science, fostering partnerships, generating evidence, and delivering integrated solutions to maximize impact and minimize duplication.

As the pioneering program fully dedicated to scaling land, food, and water systems innovations, we will ambitiously address critical challenges to meet pressing global needs. We will further establish CGIAR as a leader in agrifood systems innovation scaling – effectively fostering partnership synergies to deliver scalable, inclusive, and responsible innovation benefits.

Acknowledgements

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<https://www.cgiar.org/cgiar-research-portfolio-2025-2030/scaling-for-impact/>

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