

Modernizing agriculture through the Lao Digital Farmer Registry

Agriculture is vital to Lao PDR's socio-economic development, but the sector faces major challenges from climate change, limited market access, and high input costs. In response, the Government is implementing an integrated strategy to diversify agricultural practices, promote climate-resilient farming and improve water management. As part of this forward-thinking approach, OpenSPP is collaborating with the Ministry of Agriculture and Environment to establish a modern Digital Farmer Registry. Building on the progress made with the Project Monitoring Information System (ProMIS), this initiative will develop a dynamic registry designed to streamline agricultural management, optimize resource allocation, and contribute to the country's growing Digital Public Infrastructure (DPI).¹

KEY TAKEAWAYS

The Lao Digital Farmer Registry is fully supported by the Ministry of Agriculture and Environment (MAE), and was initially tested under the Partnerships for Irrigation and Commercialisation of Smallholder Agriculture (PICSA) project, a regional initiative supported by the International Fund for Agricultural Development (IFAD).

The pilot phase was funded by Co-Develop, a global non-profit helping countries accelerate their digital transformation journeys.

This initiative marks a transformative shift toward open, collaborative, and resilient digital infrastructure, and could become the first Digital Public Good (DPG)² in Lao PDR's agricultural sector, playing a key role in the country's Digital Public Infrastructure.

The Lao Digital Farmer Registry provides the MAE with a tool to consolidate accurate data to improve decision-making, resource allocation, and policy and program design, while enhancing the government's ability to respond to climate-related disasters and market changes.

The Lao Digital Farmer Registry pilot can easily be augmented with an interoperability layer to integrate other data sources such as the social registry, payment systems, and satellite data, as well as farmer-oriented features including price and weather alerts, or access to financial services.

Based on OpenSPP, the Lao Digital Farmer Registry is inclusive, culturally relevant, widely accessible, and user-friendly, helping to secure its long-term sustainability.

1. DPI refers to the foundational digital systems, platforms, and resources that support the delivery of public services and enable interactions between governments, citizens, and businesses.
2. DPGs are open-source software, open data, open AI systems, and open content collections that adhere to privacy and other applicable best practices, do no harm by design and are of high relevance for attainment of the United Nations 2030 Sustainable Development Goals (SDGs). DPGs may also be implemented as part of a country's Digital Public Infrastructure.

AGRICULTURE AS A KEY DRIVER OF LAO SOCIO-ECONOMIC DEVELOPMENT

Lao PDR, with a population of 7.5 million, is largely rural, with two-thirds living outside urban areas,³ and nearly 70% employed in agriculture.⁴ The country benefits from abundant arable land, making agricultural production and rural development central to its national socio-economic development plan.

While agricultural production holds great potential to support rural development, it is also highly vulnerable to climate change, with floods, droughts, and record-breaking temperatures increasing in frequency and severity. The financial shock which began with COVID-19 has continued to affect households, with rising food and fuel costs affecting the affordability of agricultural inputs.



Image 1: Map of Lao PDR with the provinces involved in the Lao Digital Farmer Registry pilot

To cope with rising costs, many low-income families sell assets, borrow money, or withdraw children from school,⁵ weakening their resilience to future crises. Women, who make up the majority of the agricultural workforce,⁶ communities in remote regions, and ethnic groups of the north-eastern and eastern borders with Viet Nam have been particularly impacted.⁷

Given the complex situation, the Government of Lao PDR is pursuing an integrated approach to improve agricultural production and rural development, including diversifying agricultural practices, promoting climate-resilient farming, enhancing water management, and strengthening the food supply chain. Additionally, offering nutrition education, and encouraging farmers to grow nutrient-dense foods will be key interventions for improving diets, particularly during times of crisis.⁸ A Digital Farmer Registry is a crucial tool for coordinating and effectively supporting these efforts.

LAO DIGITAL FARMER REGISTRY

Through its close collaboration with Lao PDR's Ministry of Agriculture and Environment (MAE) under the Partnerships for Irrigation and Commercialisation of Smallholder Agriculture (PICSA) project, a regional initiative supported by the International Fund for Agricultural Development (IFAD), OpenSPP carried out a technical proof of concept which demonstrated the value of developing a Lao Digital Farmer Registry. With financial support from Co-Develop Fund, the proof of concept was then followed up by a pilot across 6 provinces.

3. FAO (2021) FAOSTAT Lao People's Democratic Republic. Accessed 04/09/2024 <https://www.fao.org/faostat/en/#country/120>
4. ILO (2022) ILOSTAT Country profiles. Accessed 04/09/2024 <https://ilostat.ilo.org/data/country-profiles/>
5. World Bank Group (2023) Monitoring Household Welfare in the Lao PDR: Results Snapshot from a Rapid Monitoring Phone Survey of Households, June 2023
6. Lao People's Democratic Republic (2021) 9th Five-Year National Socio-Economic Development Plan (2021-2025)
7. IFAD (2023) Investing in rural people in the Lao People's Democratic Republic
8. Kawasaki et al (2024) Feeding Resilience: Unravelling the Asia-Pacific Food Crisis, WFP

The Lao Digital Farmer Registry has been developed based on the data of existing initiatives under the PICSA project focused on sustainable smallholder agriculture, and three new initiatives 1) Sustainable Rural Infrastructure (focused on enhancing irrigation systems and building climate-resilient infrastructure) 2) Nutrition (improving water management and sanitation, and diversifying food production) and 3) Emissions Reduction (promoting sustainable forest landscape management through deforestation-free agriculture and agroforestry).

Currently, these projects independently collect and store data, which has led to isolated operations and duplications, thus preventing the MAE from gaining a comprehensive sector overview. Data from these projects can now be transferred to the Lao Digital Farmer Registry, and it is proposed that, going forward, all ongoing and future projects under the MAE will use it as the central data repository.

OpenSPP delivers a Lao Digital Farmer Registry which is highly usable, culturally relevant, and widely accessible, ensuring long-term success and sustainability. This unique tool can provide an accurate and real-time picture of the state of agriculture in Lao PDR, the types of crops, the production yields, the progress towards nutrition targets, the number of farmers and areas participating in government programs. This data will also help to enhance policymaking, programmatic targeting, nutrition goals, climate-resilience promotion, amongst many other objectives. The Digital Farmer Registry can also be integrated with GIS, which allows for a better visualisation of the agricultural potential and its linkages, as well as enable further interoperability with other services and innovations.

The Lao Digital Farmer Registry has been translated into Laotian for broad access and is ready to be scaled up to integrate the close to 10,000 APGs in Lao PDR, as well as collect data related to villages and farming households. Through the development of ID PASS DataCollect, a separate offline application, it also enables data collection in remote locations with poor or no connectivity. This offline solution is open-source and offers offline data management for household and beneficiary data, allowing users to use multiple devices, including mobile phones, to record changes in APGs or households. It then synchronizes the new data with the Digital Farmer Registry, providing live data in the form of recent and up-to-date information for the implementation and monitoring of projects under the MAE.

Available in both Lao and English, DataCollect is ready for adoption by MAE officers across projects and can also support other government agencies that need to capture and collect data from beneficiaries. In order to strengthen government technical capacity, a local development team has been onboarded in OpenSPP and the Lao Digital Farmer Registry to support the MAE. With the Lao Digital Farmer Registry based on the Odoo ERP platform, customization support from Odoo's official Laotian partner will further enhance local capacity.

The Lao Digital Farmer Registry can facilitate more efficient, accurate and timely data collection, enabling advanced analytics that simplify monitoring, needs assessment, reduce project duplication and streamline resource allocation. This will improve decision-making capacity and result in the development of more effective policies, the strengthening of targeted agricultural programs, and increased financial support for farmers and their families. Additionally, it will enhance the MAE and Government's ability to respond to environmental shocks and market changes.

TRANSFORMATIVE APPROACH TO DIGITALIZATION

The Lao Digital Farmer Registry is ready to be used as an essential tool for agricultural production and rural development, but its implementation goes far beyond adding digital features to an existing system. OpenSPP took a transformative approach to digitalization by working closely with the government from the outset, ensuring a deep understanding of the operational context and specific needs. Only after this assessment did they propose solutions, conducted a technical proof of concept, and sought funding to implement the registry pilot. This collaboration promotes government ownership and buy-in, ensuring the system is relevant and aligned with local needs.

The DPG approach to developing the Digital Farmer Registry for Lao PDR further represents a transformative shift towards open, collaborative, and resilient digital infrastructure. Instead of being tied to a specific vendor or server and building a new database for each project, a registry developed using the DPG approach is designed to be adaptable and scalable for future needs. It could also play a key role in the development of the country's Digital Public Infrastructure (DPI).

With its transformative approach to digitalization, strong government collaboration, and the adaptability of the DPG framework, the Lao Digital Farmer Registry is well-positioned for long-term success. Its scalable design, alignment with local needs, and self-financing potential ensure that it will not only meet current demands but also support future agricultural and rural development in Lao PDR.

FUTURE DEVELOPMENTS: LAO DIGITAL FARMER REGISTRY AND BEYOND

Following the pilot project, the goal is to expand the registry nationwide and to create additional features which will directly assist farmers. This includes providing farmers with information and alerts, such as real-time updates on market prices, weather alerts, new suppliers or customers, and equipment rentals.

Information can also be provided to farmers about government programs, including eligibility and how to apply for subsidies, loans, or cash transfers. The Lao Digital Farmer Registry can also be integrated with other databases, such as the social registry,⁹ payment systems, financial services, and agricultural extension services. Integrating remote sensing tools and geographic information systems (GIS) would further add critical data on crop health, soil conditions, irrigation, land degradation, climate change or natural disasters, supporting anticipatory action, disaster risk reduction and response (see image 2). These potential integrations highlight the importance of the Lao Digital Farmer Registry within the country’s expanding Digital Public Infrastructure.

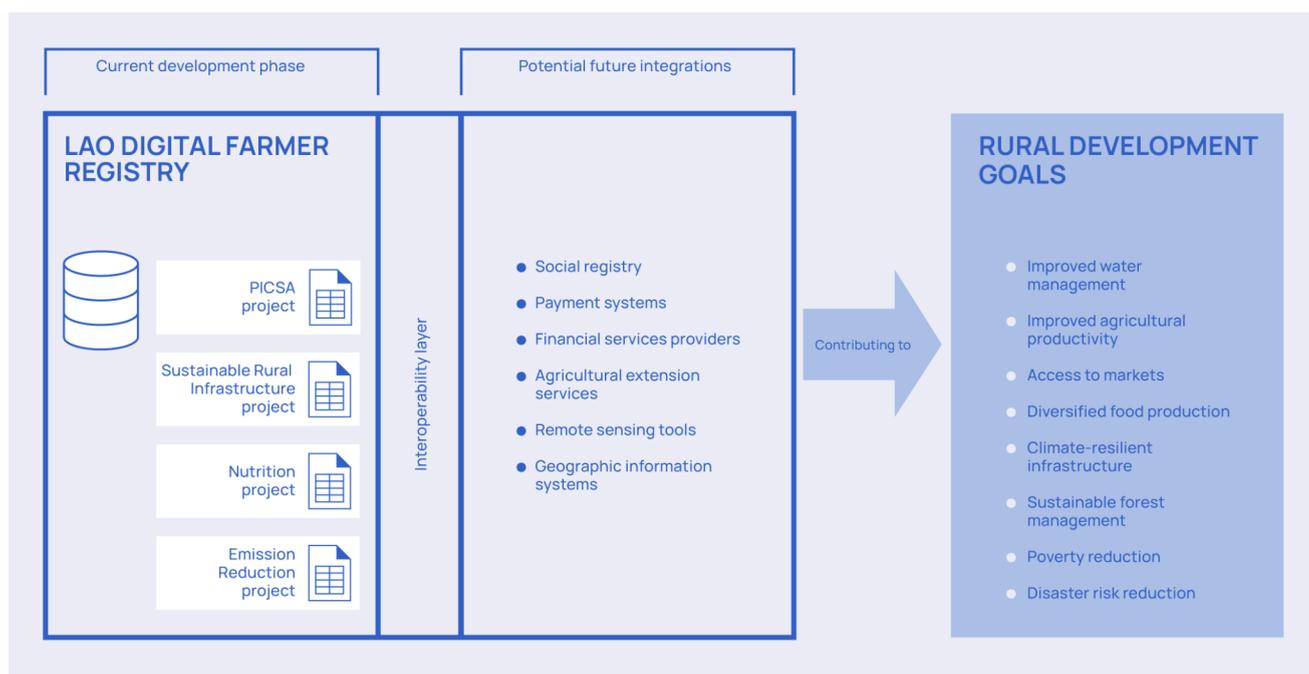


Image 2. Lao Digital Farmer Registry: Future integrations and contributions to rural development goals

9. In a parallel initiative to the Lao Digital Farmer Registry, OpenSPP’s social registry and SP-MIS will be deployed and tested to create a pilot social registry for Lao PDR’s Social Security Organization

CONCLUSION

The move towards open, collaborative and resilient digital infrastructure is a transformative step in modernizing agricultural management in Lao PDR. It not only enhances decision-making, resource allocation, and policy design for the MAE, but also offers flexibility and scalability, allowing the system to adapt to evolving needs and challenges.

Following the successful implementation of the pilot phase, the Digital Farmer Registry is expected to be scaled nationwide, with additional features developed to directly benefit farmers, including integration with other databases as a key part of Lao's Digital Public Infrastructure development. These capabilities will enable the Lao PDR Government to effectively support its population in the face of climate change, economic downturns, and major health crises, fostering a more resilient and responsive governance framework.

ABOUT OPENSPP

OpenSPP is a Digital Public Good (DPG) for social protection hosted by the Association pour la Coopération Numérique (ACN), a French non-profit organization, also known in English as the Association for Digital Cooperation.

The platform is open-source, modular and highly interoperable, offering a comprehensive management information system and dynamic registries, which can be easily adapted to a country's needs, goals, and existing systems.

OpenSPP was created by Newlogic, a software company that has worked with governments and humanitarian agencies to develop digital information systems for social protection for more than 8 years. These systems are currently in use in more than 50 countries.

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