

# Viet Nam

## Experience in policy action on climate resilience and a low-carbon rice value chain

### Context

Viet Nam had transitioned from a substantially agrarian society to a more diversified “modern industrial economy” and attained middle-income-country status over two decades ago. While in this transition process the agricultural sector had also made enormous progress, there are concerns related to quality and sustainability of the sector’s growth and its patterns of development. In particular, the government is concerned about the modest incomes of many smallholder farm



families, low or inconsistent performance on product quality and food safety, significant post-harvest losses and a slowing pace of productivity improvements. It was also becoming increasingly evident that parts of the country’s agricultural growth were coming at the expense of the environment in the forms of deforestation, biodiversity loss, land degradation, water pollution and increased greenhouse gas (GHG) emissions. Despite all its successes, agriculture is the third-highest emitting sector, accounting for about 19% of total national emissions (in 2020). About half (48%) of the agricultural sector emissions and over 75% of methane emissions come from one single commodity, rice.<sup>1</sup>

Recognizing the urgent need for a new agricultural development model, the government has implemented a series of policy and regulatory reforms since the early 2010s. In June 2013, the Prime Minister approved the Agricultural Restructuring Plan of the Ministry of Agriculture and Rural Development (MARD). The plan was updated in 2017, incorporating lessons learned from the initial years of implementation. In January 2022, MARD adopted a new Strategy for Sustainable Agriculture and Rural Development for 2021–2030, with a Vision to 2050. An action plan to implement this strategy was launched in September 2022. The government approved the first-ever Mekong Delta (MKD) Regional Master Plan in June 2022. In early 2023, another action plan, the “National Action Plan on Food Systems Transformation in Viet Nam towards Transparency, Responsibility, and Sustainability by 2030”, was approved by the government. Most recently, the Prime Minister endorsed the “1 Million Hectares High Quality and Low-Carbon Rice Program” and announced it at COP28. These reforms established core principles for the sector’s development: (a) promoting environmentally friendly, climate-resilient, adaptive and low-carbon emission agriculture; (b) shifting towards

<sup>1</sup> World Bank. 2022. *Spearheading Vietnam’s Green Agricultural Transformation: Moving to Low-Carbon Rice*. Washington, DC, USA: World Bank.

market-led and consumer-driven practices over state-directed and production-led methods; and (c) transitioning the government's role from primary investor/service provider to facilitator of investments and services from the private sector, community organizations, research institutions and others.

Unsustainable growth trajectories and the need for a reorientation in the role of the state moving forward became apparent in two of the largest subsectors, rice and coffee. Much of the growth and dynamism in these subsectors had occurred in the MKD and the Central Highlands regions. The MKD region had grown to account for 55% of national rice production and 90% of its rice exports<sup>2</sup>. However, productivity and export gains were no longer translating into improved living standards for most of the MKD's 1.4 million rice-growing households due to their very small farm sizes, excessive input use and a fragmented value chain that yielded unnecessary logistical and handling costs and did not reward farmers for product quality. Exporting low-quality rice was not generating wealth, least of all for the smallholder suppliers. Production practices were resulting in substantial environmental costs, including localized land and water pollution and GHG emissions.

## Rationale

The fundamental premise of the government's Agricultural Restructuring Plan strategic pillar has been to "generate more from less" by achieving more economic value – and farmer and consumer welfare – using less natural and human capital and less harmful intermediate inputs. The government focused on supporting farmers through various programmes to improve their farming practices and value chains for rice and coffee and reduce the environmental footprint of agriculture.

## Approach

The support to rice farmers included public investments in upgrading irrigation and road infrastructure and research and extension services to enable them to adopt climate-resilient practices, as well as support for value chain development. With the support of the International Rice Research Institute and the World Bank, agricultural extension services have promoted new approaches to rice cultivation. They started by promoting "Three Reductions, Three Gains" (3R3G), which evolved from the promotion of integrated pest management practices and aimed to reduce input requirements without sacrificing yield. The three reductions encompass a reduction of seed rate, fertilizer use and insecticide spraying. The three gains are an increase in yield, quality of farm produce and net farm profit. In 2021, when more farmers gained experience in 3R3G, the government launched the "One Must Do, Five Reductions" (1M5R) campaign. 1M5R is an integrated technology package that aims to promote best management practices in lowland rice cultivation. It was developed using the requirements specified in the 3R3G practice, whereby the package promotes the use of certified seeds, which is the "One Must Do", combined with five reductions: the reduction of seed rate, fertilizer use, pesticide use, water use and post-harvest losses. Also in 2021, MARD

---

<sup>2</sup> World Bank, 2023. *Vietnam Sustainable Agriculture Transformation Project. Implementation and Completion Results Report*. Available at: <https://documents1.worldbank.org/curated/en/099051123091518844/pdf/BOSIB02c6d17970450bc81069953a0323ea.pdf>

approved a technical procedure for an effective and sustainable rice cultivation protocol that combined the goals of the 3R3G and 1M5R campaigns.

The support of farmers through extension services has been complemented by public investments in: (a) irrigation upgrades to enable alternative wetting and drying irrigation techniques; (b) rural roads and storage infrastructure to improve rural connectivity and connect farmer organizations with rice processors; and (c) credit line for crowding-in private investments to help modernize rice mills and value chains. Significant technical assistance was also provided to strengthen farmer cooperatives.

## Experience and results achieved

The initial results are encouraging. As a result of the support to low-carbon rice production during 2015–22, about 209,000 ha of rice farming were put under sustainable farming practices as measured by reductions in pesticide and fertilizer use, including 185,000 ha under 3R3G practices. About half of the sustainable farming practices area was under contract farming arrangements with agribusinesses, promoting the reduction in food losses and waste. The reduction in GHG emissions from improved rice farming practices across 184,643 ha of rice land in the MKD was estimated at 1,582,299 tons per year.<sup>3</sup> Support for low-carbon rice production also improved the capacity of farmer groups, value chain development and the quality and reputation of Vietnamese rice. The 1M5R package promotes the application of proper seed densities (by reducing the current seeding rates by 30–40%), which helps reduce the amount of inorganic nitrogen application accordingly. Applying alternative wetting and drying and irrigating at the right time of the growth of rice plants helps save considerable freshwater irrigation and flooded time for paddy. Reducing post-harvest losses and better recycling of rice straws helps reduce the amount of straw burning. These techniques together reduce overall GHG emissions.

## Lessons learned

Providing a comprehensive package that is both “climate and business smart” can provide the experiences, knowledge and good practices needed to encourage the high adoption of low-carbon cultivation technologies among farmers. On the one hand, the approach should be holistic by focusing on training, technical assistance, public investments in infrastructure, credit policy and other public regulation support, including the carbon market. On the other hand, to roll out this climate-resilient, low-carbon rice cultivation model, farmers should also benefit from increased profitability. In Viet Nam's case, these included reduced production costs through the efficient use of inputs while maintaining (and even increasing) production yield and quality.

This is one in a set of country case studies demonstrating policy action that individual countries are taking with the aim of transition to sustainable agriculture. They are country owned and do not represent wider views of the Policy Dialogue participants.

---

<sup>3</sup> World Bank, 2023. *Vietnam Sustainable Agriculture Transformation Project. Implementation and Completion Results Report*. Available at: <https://documents1.worldbank.org/curated/en/099051123091518844/pdf/BOSIB02c6d17970450bc81069953a0323ea.pdf>