

# Adapt and Reap Rewards

By promoting gender equality in shrimp farming, some provinces of Vietnam's Mekong Delta are finding innovations for adapting to climate change

Vietnam's largest deltaic region, the Mekong Delta offers great potential for rice production and aquaculture. With an area of 747,000 hectares in 2022, it is the country's largest shrimp-producing area. The shrimp-rice area covers nearly 190,000 hectares, accounting for 26.8 per cent of the total shrimp farming area in the Mekong Delta. The production of farmed shrimp of all kinds in 2022 reached 1,080,600 tonnes, an increase of 8.5 per cent over 2021; of this the rice-shrimp production reached about 120,000 tonnes.

The year 2022 also saw a significant increase in shrimp exports by 11.2 per

ecosystem conservation and community livelihood development. MCD's focus includes environment and natural resources management, community sustainable livelihood development, and communications and policy recommendations, in which climate change response, disaster risk reduction, and gender equality are cross-cutting issues. From 2015 to 2023, MCD successfully implemented the project Gender Transformative and Responsible Agribusiness Investments in Southeast Asia (GRAISEA), supported by OXFAM International. The objective of the project is to enhance the capacity of small-scale producers, particularly women, to obtain equal opportunities and benefits. To support businesses in improving their operational efficiency and implementing social responsibility standards within the shrimp value chain while adapting to climate change in Ca Mau province and the Mekong Delta region.

Under this project, MCD collaborated with the Department of Agriculture and Rural Development of Ca Mau, along with its partners. The objective was to implement and promote two sustainable models of shrimp-rice and shrimp-mangrove farming, with the main production being black tiger shrimp in Tri Luc commune in Thoi Binh district and Dat Mui commune in Ngoc Hien district. These models are economically efficient, which help reduce risks and diseases, and adapt to climate change more effectively compared to other aquaculture models.

## Synergy of nutrients

In Ca Mau, the shrimp-rice model dominates farming activities because of its high economic efficiency. Its feature is one shrimp crop and one rice crop in the same farming area. The main crop of rice-shrimp starts in early September

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cent compared to 2021, reaching US \$4.3 bn. The Ca Mau province is the second largest area in the Mekong Delta for shrimp-rice farming (after Kien Giang) with 40,000 hectares in 2020. Shrimp farming production here reached 145,000 tonnes in 2017, accounting for 29 per cent of the total production of the Mekong Delta and 22 per cent of the total national production. In recent years, however, climate change and natural disasters like drought and saltwater intrusion in the dry season have hit the productivity of rice-shrimp farming, reducing income for millions of farmers.

The Centre for Marinelife Conservation and Community Development (MCD) is a non-state science and technology organization in Vietnam that is active in coastal

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Shrimp harvesting in Tri Luc Commune, Ca Mau Province, Vietnam. In Ca Mau, the shrimp-rice model dominates farming activities because of its high economic efficiency

when farmers finish soil preparation and salt washing on the surface of the rice paddies. In this model, small-scale farmers use fresh water from the rainy season for growing rice. After, farmers start raising black tiger shrimp using brackish water in the dry season. The black tiger shrimp is fed on the food source in the rice fields. By minimizing the utilization of inorganic fertilizers and pesticides, this model produces safe products of high quality. It also meets the goal of the Tri Luc commune's agricultural and aquaculture sectors to develop sustainable and organic products.

The shrimp-mangrove model also benefits from the nutrients provided by the leaves of trees in the mangrove canopy, a food source for shrimp. Shrimp farming takes place continuously throughout the year, and the shrimp are harvested as per the production cycle. One advantage of this model is that the forest canopy provides significant pond coverage, helping minimize the impact of unpredictable

weather on the shrimp's living environment. It also helps regulate and limit fluctuations in salinity and temperature, ensuring more stable conditions for shrimp farming.

The international standards consist of several requirements, such as those of the US (USDA organic), Europe (organic aquaculture) and the Aquaculture Stewardship Council (ASC), as well as technical procedures for rice and shrimp farming. Organic practices for rice and shrimp production areas are encouraged, in accordance with the organic agricultural production development planning of Ca Mau province (2021-2025), to adapt with climate change and ensure market demand.

The implementation of these models has provided small-scale producers with opportunities to enhance income through diversification. Taking advantage of natural conditions while ensuring ecological balance and sustainability in resource use, they were mitigating impacts from

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abnormal physical conditions as in the case of drought or saltwater intrusion, especially in Thoi Binh district of Ca Mau. This area is heavily affected by climate change. In addition, the presence of natural food sources in shrimp ponds reduces the farming workload. This, in turn, facilitates women's economic empowerment and their increased participation in the family's economic activities.

Both the shrimp-rice and shrimp-mangrove models contribute notably to the reduction of greenhouse gas emissions from agriculture. A study conducted by the Vietnam Institute of Agricultural Environment shows that in the rice-shrimp model, CO<sub>2</sub> emissions from shrimp ponds account for about 4,585 kg, whereas the emissions from two rice crops in the field exceed 12,160 kg. This demonstrates a significant reduction in emissions through shrimp

production. Moreover, the shrimp-mangrove model is an effective response to climate change. Mangroves are well known for their carbon storage capabilities. They help mitigate CO<sub>2</sub> emissions.

MCD and its partners have implemented capacity-building efforts to address climate change impacts for local producer groups and individuals in Ca Mau. By 2023, a total of 1,073 participants from the communes of Tri Luc and Dat Mui have engaged in the shrimp-rice and shrimp-mangrove models; 812 were men and 261 women. The project has collaborated with the Minh Phu Social Enterprise to connect shrimp farming areas based on certification standards; this provided technical guidelines to improve production practices.

Up to 252 households participating in the shrimp-rice model had received the ASC standards certification by October 2022, covering 565 hectares. Their average rice yield was 5,518 kg/ha

and average black tiger shrimp yield was 341 kg/ha. The ASC-certified area was expected to exceed an estimated 1,200 hectares by the end of 2023. Due to the peculiarities of shrimp farming, the proportion of women participating in shrimp farming is a low 30 per cent. However, women have been mobilized to participate in this model and receive equal opportunities to access technical training and capacity building. MCD, OXFAM and local partners studied the economic, environmental and social benefits of the model. They investigated both the effects of training/guidance on gender mainstreaming in sustainable livelihood development and on sustainable production practices meeting international standards.

The project also organized policy consultation workshops at provincial and Mekong Delta levels to share research results. It was also meant to review and update the sustainable aquaculture development plans. In collaboration with the Sub-Department of Fisheries and OXFAM, MCD has taken the initiative to publish a comprehensive technical document titled 'Guidelines for Sustainable Organic Rice Production and Shrimp Farming for Community Application'. This document aims to provide valuable support to individuals in adopting the proposed models.

It promotes the practice of organic agriculture in order to reduce environmental impacts and ecosystem degradation; all the while, it enhances farmer resilience to the effects of climate change. The GRAISEA project provides technical training, capacity building and experiences on shrimp-rice and shrimp-mangrove models for co-operatives and local producer groups. It contributes to the development of organic shrimp farms according to international standards for climate-change adaptation with gender mainstreaming.

Co-operatives/local producer groups have been supported and promoted to develop sustainable shrimp-rice and shrimp-mangrove production practices. They also receive training to improve technical skills in farming, in accordance with the requirements of international





Tri Luc Rice Shrimp Cooperative Group, Vietnam. Co-operatives have been supported and promoted to develop sustainable shrimp-rice production practices

standards. The project helps connect shrimp farmers with associated enterprises in the value chain to ensure consistency in the quality of products produced to meet the strict standards of many markets. Contracts and comprehensive business models between co-operatives/local producer groups and small- and medium-sized enterprises are promoted, along with support in product marketing and expansion of consumption markets.

The project provides farming households with standard rice-shrimp farming techniques. It promotes linkages in collective production activities to comply with standards. Ten local producer groups were established in the Tri Luc commune, where members started raising shrimp to ASC standards. The project also supports the establishment of a rice-shrimp club for households to share experiences and learn from each other.

Farming households in the co-operative also have the opportunity to participate in field trips to learn from

successful models in other provinces and cities, such as the Hoi Quan model in Dong Thap and the Agro-Ecological Village Model in Son La. The project held many communication activities with the participation of co-operatives/local producer groups and local communities, such as a competition to follow ASC standards in farming activities.

The project supports agreements with management agencies and businesses to establish and expand groups of shrimp farmers applying ASC standards in Tri Luc and Dat Mui. This helps spread the success of the model and scale it up for other communes/localities with similar natural conditions. GRAISEA co-ordinates with businesses to support people in evaluating and improving shrimp farming practices according to ASC standards. In addition, through the establishment of the Vietnam Sustainable and Clean Shrimp Alliance (VSSA), MCD is promoting and connecting actors and stakeholders in the value chain.

### Organic waste

Shrimp farmers have stopped using probiotics and have shifted to using rice straw or mangrove trunks as natural food for shrimp. They also use organic waste products and by-products such as rice bran to grow mushrooms and vegetables to improve their incomes. Members of co-operatives and local producer groups have started keeping farm dairies, cleaning shrimp ponds, and planting trees and flowers along the village roads surrounding the farms. The project trained both men and women to help improve governance capacity for co-operatives/local producer groups, for small producers and shrimp farmers. The training included mapping markets and value chain analysis, as also business model planning to adapt to climate change.

Thanks to such efforts, the black tiger shrimp-rice method has been recognized as a typical model of climate change adaptation in Ca Mau. At the Workshop on promoting

group participated in the training courses on gender mainstreaming and economic empowerment, as also the Gender Action and Learning System (GALS). Study tours enhanced women's participation and capacity in leadership roles. Hoang Yen rice produced from the rice-shrimp model is the product of the women's livelihood group at Tri Luc, trained in planning and implementing business plans, in branding and product packaging. Livelihood initiatives not only generate additional income but also empower women, enhancing their self-determination and confidence in household and community activities. The project co-operated with the Commune Women's Union to organize cooking contests using local products.

Van Ngoc Dieu, a member of the Tri Luc Co-operative, is a typical case of comprehensive transformation in behaviour. From a woman who shied from participating in community activities, Dieu has now become confident and proactive. She actively participates and co-ordinates group business activities. She has encouraged other women in the group to affirm their voices and position in the family.

Truong Thi Kieu Diem, a co-operative member, has become more confident after participating in capacity building. With her new-found experience and knowledge, she has led her family's transition to shrimp-rice farming. Currently each hectare of rice and shrimp generates an annual income of more than 100 million Vietnamese Dong (VND), equal to about US \$4100 for her family. Before the initiative, women rarely participated in the cooperative. After the project, they have begun to boldly express their opinions. The project has significantly changed labour relations and divisions, increasing gender participation in both production and livelihood activities.

The risks from climate change are becoming increasingly apparent in Ca Mau. In 2020, the sowing time for rice was delayed and the crop was affected by high soil salinity; the productivity declined by 20 per cent. The adverse weather then hit the next shrimp stocking season, affecting shrimp quality. High salinity retards shrimp growth, decreasing productivity.

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the rice shrimp model and business linkages in the Mekong Delta, held in Bac Lieu in March 2023, the model was proposed as typical for the Mekong Delta and presented to the Ministry of Agriculture and Rural Development by the Institute of Policy and Strategy for Rural Development. Due to its high adaptability to the environment, in line with the increasingly obvious changes in weather patterns in the Mekong Delta, and considering the cyclical nature of farming, the black tiger shrimp-rice model has also been included in the sustainable agricultural development plan, the organic agricultural production development plan for the period 2020-2023, and the aquaculture plan for 2021-2030 of Ca Mau.

Along with other production groups participating in the project, the Tri Luc Co-operative and its women's livelihood



Van Ngoc Dieu and her husband are working on a rice-shrimp farm, Vietnam. Productivity challenges make it necessary that individual farmers join co-operatives or local producer groups, gaining from unified production processes

### Unified processes

Productivity challenges make it necessary that individual farmers join co-operatives or local producer groups, gaining from unified production processes. They receive training and awareness on farming activities and regulations. The effects of climate change include shifts in water flow and weather patterns, making farmed shrimp more susceptible to diseases. To solve this problem, it is necessary to maintain the model of sustainable shrimp-rice production and scale it up. Farming areas need a long-term strategy and plan to become certified organic areas. Aquaculture that meets international standards not only ensures sustainable output and livelihoods for farming households, it also constitutes a form of adaptation to climate change.

Stakeholders in the production chain need to work together to overcome unpredictable weather by stabilizing product values, organizing the on-site and on-demand procurement

guaranteed by the affiliated company. Since farming households here are still small, it is necessary to improve the management capacity of the co-operatives and strengthen the links between groups and enterprises.

The model of shrimp-rice and shrimp-mangrove farming in Ca Mau offers economic potential in the face of climate change. In order to develop and scale up the results achieved in Tri Luc and Dat Mui communes, MCD hopes to co-ordinate with stakeholders to supplement and update the impact/risk assessment and integrate it in adaptive interventions. Documenting of results and communication of good examples should be promoted for both climate change adaptation and positive spillover effects for producers, especially women. The support and unification of the overall development plan and strategy for the above models at the provincial level, especially within the irrigation and infrastructure network, is extremely important in adapting to climate change. 📌

#### For more



**Gender Transformative and Responsible Agribusiness Investments in Southeast Asia (GRAISEA)**

<https://graisea.github.io/>

**Centre for Marinelife Conservation and Community Development (MCD)**

<https://mcdvietnam.org/en/>

**Sustainability of the rice-shrimp farming system in Mekong Delta, Vietnam: a climate adaptive model**

<https://www.emerald.com/insight/content/doi/10.1108/JED-08-2019-0027/full/pdf?title=sustainability-of-the-rice-shrimp-farming-system-in-mekong-delta-vietnam-a-climate-adaptive-model>