

# The Agricultural Economic Situation in Vietnam's Mekong Delta and Development Solutions

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**Abstract:** The Mekong Delta is known as Vietnam's rice bowl; rice production accounts for 50% of total output, while seafood production accounts for 70% of total output. The region is critical to the country's socioeconomic development, particularly in the agriculture sector. Aside from opportunities and advantages, the region faces numerous difficulties and challenges; development is inadequate in comparison to its inherent potential and advantages. The purpose of this article is to assess the region's agricultural economic situation in order to propose development solutions.

**Keywords:** Agriculture development, the Mekong Delta, climate change, and sustainable development are some of the key terms.

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## 1. Introduction

The Mekong Delta is considered a region with an abundance of rivers and canals network, with an area of 39,700 square kilometers, accounting for 12.2 percent of the country's area, and a total population of more than 18 million people, equivalent to 19 percent of the country's population. Furthermore, the region has a sub-equatorial climate, making it ideal for agricultural development. It has the highest proportion of agricultural land (2,615.6 thousand hectares), accounting for 64.3 percent of the region's total land area, compared to the national average of 34.8 percent (Statistical Yearbook, 2020). Agriculture in the Mekong Delta has gradually and comprehensively developed, forming large-scale concentrated production areas, transforming the production structure towards the market, and employing 65 percent of the area's population. Every year, alluvial layers deposit in most of Delta, which is very fertile, particularly in the sweet alluvial strip along the Tien and Hau rivers and the interlaced network of rivers and canals, creating a good water supply for rice production. However, the Mekong Delta's agricultural economy still faces many difficulties, challenges, and development that are not commensurate with its inherent potential and advantages, particularly the impact of climate change, sea-level rise, and the risk of climate change, use of water resources in the Mekong River; once a fertile and fertile land, the Mekong Delta is now facing the situation of thirst and drought due to a lack of water; additionally, the fertility of the soil is declining. All of these factors are the causes of crop distribution and productivity problems, as well as the shrinking of agricultural land area. Prime Minister Pham Minh Chinh stated in the economic development strategy after 2022, "Agricultural Development in the

Mekong Delta must adapt to climate change and closely associate with industrial growth and epidemics." As a result, finding solutions for agricultural development in the Mekong Delta and overcoming current challenges is critical. Based on the foregoing, the author conducts the research and evaluation of the current agricultural economic situation in the Mekong Delta in order to propose appropriate solutions.

## 2. Methods of research

Data collection method: The author inherited and synthesized the documents and data in the article primarily from research published in newspapers, books, magazines, and significant websites, as well as relevant ministries and branches.

The author used a descriptive statistical method to describe the current state of agricultural economics in the Mekong Delta.

## 3. Findings from research

### 3.1. Examine the Mekong Delta's advantages in agricultural economic development.

*To begin with, in rice production:*

The area used for rice cultivation in the entire region is 1.5-1.6 million hectares, out of a total area of 36,000 square kilometers that can be cultivated.

The terrain in the Mekong Delta is relatively flat, with a 1cm slope over 1 km. The main tributaries supplying alluvium to the Mekong Delta are two branches of the Tien and Hau rivers, which run for more than 120 kilometers.

In the dry season, there is 0.1 kg of alluvium for every 1m<sup>3</sup> of water, and in the rainy season, there is 0.3 kg of alluvium for every 1m<sup>3</sup> of water. Furthermore, soil types in the Mekong Delta are diverse, rich, and have a high nutrient content. Alluvial soil covers 1,800.00 ha and is primarily supplied by the Tien and Hau rivers. The alkaline soil has a low PH concentration due to the primary influence of iron sulfate and aluminum sulfate.

The 320,000 ha of saline land (U Minh forest) contains a lot of organic matter.

*Second, consider aquaculture:*

The critical fishing ground of Ca Mau - Kien Giang is adjacent to a vast sea area with abundant seafood resources.

- With over 710 kilometers of coastline, many estuaries, tidal flats, and mangrove forests provide ideal conditions for brackish and saltwater aquaculture. The interior has many water surfaces suitable for freshwater aquaculture, including rivers, canals, ponds, and lakes.

- Abundant and diverse natural aquatic resources, including shrimp, fish, sea crabs, clams, and blood cockles...

- Food is relatively abundant due to agriculture and livestock.

- The Mekong Delta has a large and active labor force, and farmers have a long history and experience in aquaculture, fishing, and seafood processing.

*Third, regarding the planting of fruit trees:*

Fruit trees grow and develop with high quality and yield due to the specific advantages of land, climate, and water resources, and are preferred by domestic and foreign customers.

### 3.2. The current state of the Mekong Delta's agricultural economy

According to Vietnam General Statistics Office statistics for 2021, the Mekong Delta agricultural sector currently contributes more than 35% of the country's agricultural GDP, with rice export turnover accounting for approximately 80% of the country's export turnover. Fruit export turnover exceeds 65 percent of total country turnover, while seafood export turnover exceeds 60 percent of total country turnover.

The Mekong Delta continued to lead the country in rice, pangasius, shrimp, and fruit production in 2019, with an export turnover of \$8.34 billion USD. More adaptable to climate change, the market-oriented restructuring of production has ensured quality and improved competitiveness.

According to the Ministry of Agriculture and Rural Development (MARD), the Mekong Delta region's agricultural gross domestic product (GRDP) will grow by more than 1.6 percent in 2022; the region's agricultural sector's added value accounts for 32.2 percent of the region's GRDP and 31.37 percent of the country's agricultural GDP. Kien Giang province produces the most rice, accounting for 18.5 percent of the country's rice production (4,509 million tons) and 11,287 billion VND.

*In terms of rice production:*

As Southeast Asia's largest and most fertile Delta, the Mekong Delta is Vietnam's largest food production and export region, as well as its largest tropical fruit granary.

The area used for agricultural production in the region accounts for 62.9 percent of the region's total natural land area(4,092.2 thousand hectares of natural area).

The region's rice-growing area is always at the top of the country, accounting for an average of 52 percent of the country's rice-growing area.

With 3,945.8 thousand hectares in 2000, the rice-growing area accounted for 51.5 percent of the country's rice-growing area; in 2015, it increased to 4,301.5 thousand hectares, accounting for 55% of the country's rice-growing area; and by 2021, it will be 3,963.7 thousand hectares, accounting for 54.5 percent of the country's rice-growing area.

The Mekong Delta rice industry continues to use improved varieties, transitioning from low-yielding rice varieties yielding about 3 tons/ha to high-quality rice varieties yielding about 7 tons/ha. For the majority of the year, rice yields in the region exceed the national average. Increasing productivity by transitioning from 12 crops per year to three main rice crops per year, innovating production processes and seed structure, and shifting to intensive farming. As a result, the productivity of each crop in the region, as well as the overall annual yield, gradually increase over time. Rice yielded 59.5 quintals/ha in 2015, 1.9 quintals/ha more than the national yield; by 2021, 60.1 quintals/ha more, 1.4 quintals/ha more than the national yield.

According to the Vietnam Ministry of Agriculture and Rural Development's Department of Crop Production, Mekong Delta farmers transferred approximately 62,233 hectares of rice land, inefficient places to grow vegetables, fruit trees, and aquaculture... bringing a lot of value

*Table 1. Rice production in the Mekong Delta in the period 2019 – to 2021*

	2019	2020	2021
Mekong Delta			
- Area (1000 ha)	4,107.5	4,068.9	3,963.7
- Yield (quintal/ha)	59.7	59.7	60.1
- Production (million tons)	24.5	24.3	23.8
Compared with the whole country (Vietnam)			
- Area (%)	54.3	54.5	54.5
- Yield (quintal/ha)	1.5	1.5	1.4
- Production (%)	55.6	55.9	55.7

*Source: Vietnam General Statistics Office in 2021*

The data table shows that, while rice cultivation area tends to shrink due to crop and livestock restructuring, land use efficiency for rice cultivation has improved, and rice production has been

reasonably maintained. Farmers' average monthly income in the Mekong Delta, the country's vast rice bowl, is only 535 thousand VND, or half the minimum wage. Small-scale rice-producing households cannot support themselves solely through rice cultivation and must rely on income from livestock, fisheries, or other non-agricultural activities. Because rice cultivation efficiency is decreasing, many households have converted crops and aquaculture to rice land. Other crops and livestock, on the other hand, produce much higher profits. It explains why rice cultivation area has decreased from 4,107.5 thousand hectares in 2019 to 3,963.7 thousand hectares in 2021. The area under rice cultivation is expected to decrease further in 2022.

On the other hand, the seasonal shift from 1-2 crops per year to three primary rice crops per year, as well as the renovation of rice variety structure and production process toward intensive farming, will increase productivity. As a result, the rice yield of each crop and the entire year in the region gradually increased over time.

The winter-spring rice crop's success contributed significantly to rice production in the region. The Mekong Delta produced 10.94 million tons of winter-spring rice in 2021, an increase of 365.5 thousand tons over the previous winter-spring crop, accounting for 53.2 percent of the country's winter-spring rice production [Global Standard Organization, 2021].

In addition to improving rice varieties, improving acid drainage, irrigation, salt washing, fallow land, and active irrigation will lay the groundwork for the development of adaptive rice varieties, promote agricultural universalization, and increase farmer productivity. As a result, the Mekong Delta's rice production has increased slightly, reaching 23.8 million tons in 2021. Kien Giang, An Giang, and Dong Thap are three provinces that make significant contributions to Mekong Delta rice production. Rice production in these three provinces accounts for nearly half of total rice production in the region.

### *Regarding aquaculture:*

Export aquaculture is primarily concentrated in the Mekong Delta, where total pangasius production accounts for 95% and shrimp production accounts for 80%. The aquaculture area in the Mekong Delta increased by 2.6 percent per year on average. Aquaculture output increased by 9% per year on average, outpacing the country's overall output growth rate.

The Mekong Delta is the country's most densely populated shrimp farming region. Ca Mau province leads the way with a saltwater and brackish water shrimp farming area of approximately 280,000 hectares, with many types of farming, including super-intensive, intensive, semi-intensive, improved, and extensive, combined with extensive farming and farming shrimp models - the region's largest rice. Soc Trang is one of two provinces in the Ca Mau Peninsula region with 53,000 ha of intensive and semi-intensive brackish water shrimp farming. Many shrimp farms use high technology, accounting for 9 percent of all farms, resulting in high productivity and efficiency. The rate of shrimp farming losses has dropped to 6%. Shrimp production in 2022 is expected to reach 189,000 tons, with a brackish water shrimp export turnover of more than \$1 billion USD.

Aquaculture has become a production industry with high economic efficiency, which has a significant impact on changing the economic structure of the Mekong Delta while also creating jobs, increasing people's incomes, eradicating hunger, and reducing poverty. With an average growth rate of 2.6 percent, the aquaculture area increased rapidly from 659 thousand hectares in 2004 to 806 thousand hectares in 2021. Production of aquaculture increased from 1,622,000 tons in 2004 to 3,215 thousand tons in 2021 (up 1.98 times). The types of freshwater and saltwater products are extremely diverse, with pangasius and black tiger shrimp being the main products that generate output and farming area [General Fisheries Headquarters]

The Mekong Delta's strength is not only aquaculture, but also fishing. The catch in the region will be 1.48 million tons in 2021, accounting for 40.4 percent of the country's total fishing output. Mining

output increased at a 2% annual rate from 2004 to 2021. The total number of fishing boats in 2021 is 24,194 units, with motorboats accounting for 50% and offshore fishing boats accounting for 32.2 percent of the total number of fishing vessels operating on the country's high seas.

Table 2. Pangasius area and production in the Mekong Delta in the period of 2019 - 2021

	2019	2020	2021
Pangasius farming			
- Area (ha)	6.418	6.657	5.700
- Volume (million tons/ha)	1,42	1,58	1,56
- Export turnover (billion USD)	2,26	1,45	1,54

Source: Fisheries Directorate – Ministry of Agriculture and Rural Development, 2021

Pangasius farming is a regional strength in the Mekong Delta. The fish farming area in 2019 was 6,418 hectares, with an output of 1.42 million tons and an export value of 2.26 billion USD. The fish farming area will be 6,657 hectares in 2020, with a production of 1.58 million tons and an export value of 1.45 billion USD. However, due to the long-term effects of the Covid-19 epidemic, the pangasius could not be harvested, and farmers were forced to keep it in ponds until 2021; the pangasius farming area was reduced to 5,700 hectares, with a total output of 1.56 million tons. Although the pangasius farming area will be smaller in 2021 than in 2020, the export turnover will be higher, reaching \$1.54 billion. Brackish water shrimp farming in the Mekong Delta will reach approximately 742 thousand hectares in 2021, accounting for 92.6 percent of the country's brackish water shrimp farming area; output will be approximately 782 thousand tons, accounting for 84.2 percent of the country's farming output. Shrimp exports totaled \$3.37 billion USD, with the Mekong Delta accounting for more than 80% of the total. Pangasius farming area increased the most in the Mekong Delta provinces of Long An, Tra Vinh, Can Tho, and Soc Trang. Thousands of hectares of pangasius farming for meat and fingerlings are being developed in Long An. The entire region is estimated to have more than 20% of the spontaneous pangasius farming area.

With over 100 pangasius factories in Vietnam, the majority of which are located in the Mekong Delta, these facilities are primarily equipped with modern advanced equipment and technology, allowing for many stages in the manufacturing process and the production of value-added products. Pangasius products meet stringent international quality management and food safety standards, such as Global Good Agricultural Practices (GlobalGAP), BAP, and ASC.

*Regarding fruits:*

According to the Department of Crop Production, Ministry of Agriculture, and Rural Development, the Mekong Delta is the country's fruit basket. Many imported fruit trees grow in the Mekong Delta, including Chu mango, Hoa Loc sand mango, Thai mango, and Taiwanese mango; Ri 6 durian, Cai Mon, Mon Thong, Durian, Durian, Longan rambutan, and Java rambutan; Nam Roi pomelo, green skin pomelo, turmeric jackfruit, Lo Ren milk apple, Thai jackfruit... The market has accepted them, resulting in high economic efficiency. Most fruit tree farmers in this area practice intensive farming and are highly efficient. Farmers implement intensive farming techniques, use technological advances in production, fertilize correctly, prune branches, create a canopy, manage flowering and fruit set, and employ advanced technical measures...

By 2021, the total area of fruit trees will be 400,000 hectares, accounting for nearly 40% of the total country. Fruit production is 4.3 million tons, accounting for 60% of total output, with coconut production being the largest, at 1,505 million tons. Fruit tree production value is 48,651 billion VND, accounting for 48 percent of national fruit tree production value.

With all of its water resources, climate, and land, the Mekong Delta is entirely deserving of being the country's fruit bowl.

### ***3.3. Current agricultural development in the Mekong Delta is deficient***

*In term of fruits:* The heterogeneity of plant varieties, which causes fluctuations in fruit quality, is also a concern for Mekong Delta fruit tree production today. Safe fruit production has been established in fruit-growing areas according to Good Agricultural Practices (GAP), but the area under this process is minimal. Most areas have not used clean production processes such as Global GAP. In the context of increasingly stringent quality requirements, particularly for food safety in the fruit market, maintaining the fruit industry with high levels of trees and sustainable exports will be a significant challenge. Many gardeners and fruit businesses have been inconvenienced by problems such as short storage time, brittleness, high spoilage rate, poor processing conditions, and poor post-harvest techniques for many fruits.

In the processing environment, however, if the process is not fully implemented and well-controlled, and post-harvest technology is inadequate, it will have an impact on the effective productivity of gardeners and business enterprises. It is more difficult for fruits that have a short shelf life, are vulnerable, and have a high spoilage rate. The aforementioned disadvantages have hampered access to the region's fruit market, particularly in light of today's increasingly fierce competition.

The fragmented connection, lack of rigor, and lack of cooperation between enterprises producing and exporting fruit and food processing, as well as from fruit production, purchasing, processing, and consumption; as a result, the consumption volume is not stable, and the selling price decreases whenever the export fruit encounters difficulties.

*In terms of aquaculture and fishing:* the Covid-19 wave spread throughout the Mekong Delta in 2020, causing difficulties in the production, purchase, and processing of shrimp for export.

At the time, some areas began the shrimp farming season early; many households harvested farmed shrimp at the appropriate time, and the selling price was extremely reasonable and profitable. However, joy is accompanied by anxiety as the epidemic continues to linger and complicate developments.

Despite progress, marine aquaculture in the Mekong Delta is still fragmented on a small scale, so its full potential and inherent natural advantages have not been realized.

Technical progress, technology application in fisheries, particularly product preservation, and post-harvest loss reduction have all been gradually improved, but progress has been slow and has not kept pace with demand. Fishers' lifestyles and habits are slow to change and have not kept up with the modernization of fishing activities.

*In terms of rice production:* the rainy season in the Mekong River basin begins late in 2020, lasts only a short time, and the total annual flow is only medium-low. The flow to the Delta has decreased rapidly since the beginning of the dry season and is now at a deficient level when compared to the multi-year average document (TBNN) from 1980 to now.

The reserves in Tonle Sap and the flow to Kratie are two important upstream factors that will dominate the water source and saline intrusion (Saltwater intrusion) in the Mekong Delta during the 2020-2021 dry season (the beginning of the Mekong Delta). The flow to the Mekong Delta is significantly lower than the average watershed, even lower than the entire year 2015-2016 (the year when the occurrence of record water intrusion occurred). In the 2020-2021 dry season, it is the leading cause of early, deep, and prolonged saltwater intrusion.

### **4. Future agricultural development solutions for the Mekong Delta**

According to the master plan for sustainable agricultural development in the Mekong Delta region to adapt to climate change by 2030, with a vision to 2045, the rice cultivation area of the entire Mekong Delta will be 1.6 million hectares by 2030 (a decrease of about 300,000 hectares). To transition to fruit

production and aquaculture). The Mekong Delta's fruit tree area is expected to grow to approximately 650,000 hectares by 2030. As a result, based on the conclusions of other authors' studies and the above agricultural economic development strategy, the author summarizes and proposes the following solutions:

Localities in the Mekong Delta must actively seek partners to sign long-term and close cooperation contracts with gardeners, with a focus on purchasing products from quality gardens and producing safe food.

- In order to adapt to climate change and support the Mekong Delta's agricultural sector restructuring, it is necessary to change production according to science and promote organic fruit production for sustainable products.

- Market research activities, identifying target markets, and understanding consumer needs and tastes should be prioritized. This activity should be carried out by creating a database on the domestic fruit industry, based on surveys and the creation of a database on market distribution, market size, demand, and consumer tastes. It is especially important to thoroughly research the technical requirements and fruit standards for the global fruit import market.

- Establish and grow large-scale fruit tree farms. Apply information technology and advanced science to the operation and production of fruit trees. Furthermore, it is necessary to expand the growing areas with codes, as well as the circulation and distribution of commodity fruits.

However, for sustainable development, the cultivation and consumption of fruit trees in Mekong Delta provinces must overcome some shortcomings and limitations, such as: the situation of scattered production, the dispersion is still widespread; accounts for a large proportion due to development following the movement, not developing according to the planning, leading to the situation of "planting and then cutting"; intensive farming inputs are not suitable for the cultivation and consumption of fruit trees.

- Strengthening and renewing regional ties, perfecting institutions and policies for effective regional development coordination, promoting links between localities in the region, between the region and Ho Chi Minh City and the Southeast region, and expanding connections with ASEAN countries, particularly those in the Mekong Sub-region.

- Rice consuming enterprises must play an important role in connecting farmers and enterprises in input product consumption and input supply, improving infrastructure for rice production, preservation, and processing, and focusing on renovating and completing irrigation and traffic works. On the other hand, policies that encourage the use of mechanization in seed production, harvesting, processing, and preservation must be effectively implemented. Furthermore, to focus resources and critical investment funds on researching, selecting, breeding, planting, and developing new rice varieties with high yield, quality, and tolerance suitable for different growing regions; increasing the use of advanced agricultural technology in rice production; and lowering production and product costs. Climate change impacts on rice production, such as saline intrusion, floods, and droughts, are being studied. When severe drought and salinity occur, increase dredging of estuaries and canals to obtain fresh water, build dams to prevent saltwater intrusion, dig ponds to store water, install and operate field pumping stations, and prioritize fresh water for daily life, livestock, and crops, among other things.

- Credit policies for farmers, collective economic organizations, agricultural production, and business enterprises should be promoted along the value chain, with a focus on the high-tech, environmentally friendly, developed processing industry and logistics services to support agriculture.

- To serve more effectively the forecasting of flood control activities, freshwater sources, and so on, it is necessary to invest in the installation of modern monitoring systems and intelligent sensors, which aid

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in the accuracy and timeliness of forecasting work. The implementation of measures to respond to extreme weather in the region requires timeliness and urgency from time to time.

- Disseminate and propagate crop restructuring models to encourage investment in replicating crop restructuring models, giving priority to localities in the region facing difficulties in water treatment, localities frequently experiencing droughts, and saltwater intrusion into diversified agricultural development to meet the needs of domestic and export markets.

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