

SUSTAINABLE AGRICULTURAL DEVELOPMENT POLICIES IN THE MEKONG DELTA

¹Truong Anh Tuan, ^{2*}Tran Hoang Khai

¹Ca Mau Political School, Vietnam.

²People's Committee of Vinh Hau commune, Vietnam.

*Corresponding Author

DOI: <https://doi.org/10.51193/IJAER.2025.11422>

Received: 25 Jul. 2025 / Accepted: 08 Aug. 2025 / Published: 19 Aug. 2025

ABSTRACT

This study examined policies related to sustainable agricultural development in the Mekong Delta by reviewing relevant regulatory documents and synthesizing findings from existing research. Agriculture in the region possesses significant advantages, including diverse and abundant natural resources, potential for restructuring crop and livestock systems, and strong institutional support through preferential policies at multiple administrative levels.

The region also benefits from external opportunities such as growing global food demand, increased international economic integration, advances in science and technology, and the expansion of tourism and post-harvest processing industries.

Despite these strengths, several constraints hinder sustainable development, including inefficient resource management, a shortage of skilled labor, limited financial investment, and low adoption of technological innovations. Moreover, the region faces mounting challenges such as the impacts of climate change (e.g., sea level rise, salinity intrusion), fluctuating and competitive agricultural markets, and pressures from rapid urbanization and land-use change.

Based on a SWOT (Strengths–Weaknesses–Opportunities–Threats) analysis, the study proposed a set of strategic directions and policy recommendations to enhance the sustainability and resilience of agriculture in the Mekong Delta in the coming decades.

Keywords: Sustainable agriculture, Mekong Delta, SWOT

1. INTRODUCTION

Sustainable agricultural development involves managing and sustaining organizational, technical, and institutional transformations to meet both current and future demands for agricultural products and services (FAO, 1992). In recent years, Vietnam's agricultural sector has demonstrated growth in both quality and quantity across all sub-sectors, including crop production, livestock, forestry, and fisheries. Moreover, the country is shifting toward modern agricultural models aligned with global trends, such as clean and organic farming. The Fourth Industrial Revolution plays a critical role in enhancing production efficiency, reducing labor costs, conserving resources, and mitigating negative environmental impacts (Javaid et al., 2022). In 2021, the Vietnamese Prime Minister approved the "Strategy for Sustainable Agriculture and Rural Development to 2030 with a Vision to 2050," which lays the foundation for promoting sustainable agriculture nationwide, particularly in the Mekong Delta.

The Mekong Delta is one of Southeast Asia's largest and most fertile river deltas. It serves as a key region for food production, agricultural exports, and tropical fruit cultivation in Vietnam. The total natural area of the Mekong Delta is approximately 4.09 million hectares, of which about 2.58 million hectares (62.9%) are used for agricultural production (VGSO, 2021). In recent years, both regional and local governments have implemented various policies related to finance, science and technology, and land-use restructuring to foster agricultural development. However, significant challenges remain. These include low-income levels for the majority of farmers, stark disparities between urban and rural areas, and uneven rural development (Vien, 2020); shortcomings in management, logistics, and agricultural trade infrastructure (Son, 2022); and rising emissions leading to environmental pollution (Ministry of Natural Resources and Environment, 2014, 2019; UNDP-Vietnam, 2010).

At its core, sustainable agriculture seeks to balance food production needs with ecosystem preservation. It also aims to ensure economic stability for farmers and enhance their quality of life (Velten et al., 2015). Achieving sustainable development and ensuring food security remain urgent priorities for all nations (Pawlak & Kołodziejczak, 2020). Therefore, this study was conducted to assess the current state of agricultural development and to analyze policies supporting sustainable agriculture in the Mekong Delta. Based on this assessment, the study proposes policy recommendations to improve the effectiveness and resilience of sustainable agricultural development in the region.

2. METHODS

This study employed a qualitative research approach, combining document analysis with strategic assessment tools. Data were collected from multiple official sources, including:

- ⇒ Annual agricultural statistics and statistical yearbooks published by the General Statistics Office (GSO);
- ⇒ Agricultural land use planning documents from the Ministry of Agriculture and Rural Development (MARD);
- ⇒ Reports and planning documents from the Departments of Agriculture and Rural Development (DARD) of the provinces in the Mekong Delta;
- ⇒ Peer-reviewed articles and published research related to sustainable agricultural development.

The collected data were used to evaluate the current status of agricultural development in the Mekong Delta, focusing on cultivated area, productivity, and key challenges. In parallel, existing policies related to agricultural finance, science and technology, and land use structure were analyzed to determine their role and effectiveness in promoting sustainable agriculture.

To identify internal and external factors influencing sustainable agricultural development in the region, a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis was conducted, following the framework of Humphrey and Albert (2005). The analysis integrated internal factors (derived from institutional, technical, and resource-related evaluations) and external factors (including policy environments, market dynamics, and environmental challenges) in a structured and strategic manner (Yichuan & Lei, 2004).

The results of the SWOT analysis served as the basis for proposing strategic directions and policy recommendations aimed at enhancing the effectiveness and resilience of sustainable agricultural development in the Mekong Delta.

3. RESULTS AND DISCUSSION

3.1 Agricultural Development in the Mekong Delta: Current Performance and Structure

The Mekong Delta continues to play a central role in Vietnam's agricultural sector. The region contributes approximately 40% of the country's total agricultural production value. It produces around 50% of Vietnam's rice output, 65% of aquaculture output, and 70% of fruit production. Notably, it accounts for up to 90% of the country's rice exports, underscoring its significance in national food security and export strategy (Planning Department, 2023).

Fruit Cultivation

The Mekong Delta is the largest fruit-producing region in the country, with an annual output of approximately 4 million tons of fruit, representing 50% of the national fruit cultivation area and 60% of total fruit production (MARD, 2011). Major fruit-producing provinces include Tien Giang, Vinh Long, Hau Giang, Soc Trang, Ben Tre, and Dong Thap.

As of 2020, the total area designated for the cultivation of twelve key fruit crops in southern Vietnam reached 257,000 hectares, of which 185,100 hectares were located in the Mekong Delta (MARD, 2013). The primary crops cultivated in large areas include *mango* (31,600 ha), *longan* (26,300 ha), *orange* (26,250 ha), and *grapefruit* (25,000 ha).

Fruit cultivation has expanded significantly due to the conversion of low-yielding rice fields and mixed gardens into high-value fruit orchards. Despite requiring higher initial investment—particularly for seedlings, pesticides, and labor—the economic returns are substantial. According to Minh et al. (2022), the average investment cost for specialized fruit cultivation is around 62 million VND/ha/year, yielding an estimated net profit of 294 million VND/ha/year. Labor demand is relatively moderate at approximately 65 labor days/ha/year, with 41 days typically met by family labor and 23 days by hired workers.

Grain Crop Production

Grain crop production remains a core component of the regional agricultural economy. The provinces with the largest grain cultivation areas are Kien Giang (7,001 ha), An Giang (6,105 ha), and Long An (5,094 ha), with rice and corn as the primary crops. The Mekong Delta accounts for more than 70% of Vietnam's total rice production (VGSO, 2021), maintaining the country's global competitiveness in rice exports.

In recent years, rice production in the region has not only increased in volume but also improved in quality. Several high-yield and specialty varieties have been introduced, such as IR64, OM1490, OM2031, VND95–20, MTC250, and IR62032. Among these, the ST (Soc Trang) rice varieties have received multiple international awards, significantly enhancing the brand value and export potential of Vietnamese rice.

Table 1: Production of Grain Crops in the Mekong Delta from 2018-2022

Year	2018	2020	Preliminary 2022
Mekong Delta	4,140.8	4,100.6	3,991.2
Long An	5,126	5,069	5,030
Tien Giang	2,060	1,882	1,394
Ben Tre	523	478	222
Tra Vinh	2,271	2,280	2,088
Vinh Long	1,635	1,570	1,472
Dong Thap	5,247	5,268	5,191
An Giang	6,306	6,322	6,429
Kien Giang	7,287	7,222	7,262
Can Tho	2,384	2,260	2,239
Hau Giang	1,978	1,993	2,012
Soc Trang	3,560	3,606	3,565
Bac Lieu	1,852	1,894	1,878
Ca Mau	1,179	1,162	1,113

(Vietnam General Statistics Office, 2022)

Table 2: Rice area and productivity from 2018 to 2022 in the Mekong Delta

Year	2018	2019	2020	2021	Preliminary 2022
Production (thousand tons)	24,506.9	24,310.0	23,827.6	24,327.3	23,536.3
Area (ha)	41,075	40,693	39,637	38,986	38,026
Productivity (quintals/ha)	597	597	601	624	619

(Vietnam General Statistics Office, 2022)

Fisheries

The Mekong Delta serves as the primary center for aquaculture and fisheries production in Vietnam. In 2022, the total aquaculture area in the region was estimated at 7,790 thousand hectares, with a production output of approximately 5.1 million tons. The Mekong Delta alone accounted for 70.9% of the national aquaculture area and contributed about 56% of the country's total aquaculture output.

The region's aquaculture is dominated by two major product categories: freshwater species, primarily *pangasius* (catfish), and brackish water species, especially *shrimp*. These two products serve as the economic backbone of the region's fisheries sector (Table 3).

Shrimp, in particular, is one of Vietnam's key aquatic export commodities. The coastal provinces of the Mekong Delta play a vital role in supplying both the domestic market and international markets. In 2016, Vietnam exported shrimp to over 90 countries, generating an export value exceeding USD 3.15 billion (Minh Khoa et al., 2022). The Ministry of Agriculture and Rural Development (MARD) has set strategic goals to sustain exports to traditional markets such as the United States, European Union, and Japan, while actively expanding into emerging markets to diversify risk and enhance competitiveness.

Between 2018 and 2022, the aquaculture area in the Mekong Delta showed slight fluctuations, peaking at 8,216 thousand hectares in 2019, followed by a gradual decline to 7,724 thousand hectares in 2021. Preliminary figures for 2022 indicate a modest recovery to 7,790 thousand hectares.

Despite this slight reduction in area, aquaculture production steadily increased, rising from 4,444.2 thousand tons in 2018 to 5,097.7 thousand tons in 2022, reflecting an approximate 14.7% growth. This trend indicates improved productivity and intensification of aquaculture practices within the region.

Table 3: Aquaculture area and production in the Mekong Delta

Year	2018	2019	2020	2021	Preliminary 2022
Area (thousand ha)	8,071	8,216	8,013	7,724	7,790
Production (thousand tons)	4,444.2	4,779.2	4,834.2	4,918.6	5,097.7

(Vietnam General Statistics Office, 2022)

Shrimp farming in the Mekong Delta primarily includes brackish water shrimp farmed extensively in coastal provinces and has become a major commodity of the delta. The main shrimp species farmed are black tiger shrimp and white-leg shrimp, both of which are key export items. Black tiger shrimp, an indigenous species, started artificial breeding and farming in the early 1980s. White-leg shrimp has developed in recent years (introduced in Vietnam in 1998) and has gradually become an important farmed species with farming areas expanding (replacing black tiger shrimp). Most shrimp farming areas are in coastal provinces with brackish water ecosystems.

3.2 Challenges and Limitations in Agricultural Development in the Mekong Delta

Agricultural exports have contributed significantly to improving the income of people in the Mekong Delta. However, the sector faces intense competition from products of other countries, making quality assurance and post-harvest preservation critical issues for sustaining export markets (Nhung et al., 2017). The fruit tree sector also experiences unstable market conditions, where farmers often confront either oversupply leading to low prices or limited supply accompanied by high prices but low yields (Fruit Institute, 2019).

Currently, only about 10–15% of the fruit tree cultivation area in the region applies safe production standards such as GlobalGAP or VietGAP. The regional transportation infrastructure remains underdeveloped, with inadequate specialized transport vehicles. Consequently, logistics costs are high, and shipping rates are expensive (VietnamCredit, 2020). Furthermore, the fragmentation of production areas—few designated zones and scattered farms—hinders efficient collection and transportation of products.

Saltwater intrusion is occurring on a large scale across the Mekong Delta, significantly reducing the availability of freshwater resources. Management measures to address this issue have so far been limited to advocacy and advisory efforts, lacking comprehensive enforcement and long-term strategic solutions (Be et al., 2017). This situation severely impacts both agricultural productivity and the livelihoods of local communities.

Another critical challenge is the inefficient utilization of agricultural waste resources. Straw residue is commonly removed from fields through plowing or composted, but a substantial portion is still burned in situ. This practice results in the loss of valuable organic carbon and releases significant amounts of harmful pollutants, including smoke and greenhouse gases such as CO₂, CO, CH₄, SO₂, and NO_x. In 2020, emissions from straw burning were estimated using ALU software to be approximately 11,236 thousand tons of CO, 1,159 thousand tons of CH₄, 275 thousand tons of NO_x, and 0.8 thousand tons of N₂O. When converted to global warming potential equivalents, CH₄ and N₂O emissions correspond to about 34,636 thousand tons of CO₂ equivalent, representing approximately 39% of greenhouse gas emissions from the agricultural sector (Ministry of Natural Resources and Environment, 2014).

3.3 Current Agricultural Development Policies in the Mekong Delta

Financial Policies

Financial policies play a vital role in providing capital for agricultural development while promoting sustainable production through effective investment. According to VCCI (2008), Vietnam's commitments upon joining the WTO include various forms of government support for agricultural production and consumption. These supports are implemented through direct

monetary aid from the state budget, tax exemptions or reductions, and preferential government procurement of goods and services for enterprises.

Key financial policies for sustainable agriculture include:

Credit policies: The government has introduced numerous policies to channel credit capital into agriculture, such as interest rate subsidies on commercial loans for short-, medium-, and long-term investments in machinery and equipment to reduce agricultural losses (Prime Minister, 2013). Pilot loan programs support linked production-consumption models and high-tech applications in agriculture. Specialized credit schemes target agricultural and rural development (Anh, 2016).

Tax incentives: Tax regulations provide significant incentives to encourage and facilitate agricultural production and business activities, easing financial burdens for farmers (Hue, 2021). Preferential tax policies cover a wide range of taxes including value-added tax, land use tax, export-import tax, environmental protection tax, resource tax, corporate income tax, and personal income tax, all of which contribute to sustainable agricultural development (Government, 2019).

Investment capital: The government mandates allocation of at least 5% of the annual central and local budgets for agricultural development investments (Government, 2018). Furthermore, socio-economic development funds and legally established funds can be integrated to support enterprises in agriculture. Policies encouraging public and private investments in agriculture and rural areas have been issued to improve investment effectiveness.

Despite these efforts, financial policies face several limitations, including weak linkages between enterprises and farmers, lack of clear regulations to govern contractual compliance in production-consumption linkages (Anh, 2016), limited preferential support for local agricultural processing groups, complex administrative procedures for farmers (Ha, 2023), and ineffective implementation. Notably, risk management mechanisms remain underdeveloped, as agricultural insurance policies are not widely adopted (Anh, 2016).

Policies on Science and Technology

The development of science and technology (S&T) for modern, sustainable agriculture has been institutionalized through a range of legal documents. Between 2008 and 2018, the Ministry of Science and Technology, in collaboration with other ministries, developed and submitted four laws to the National Assembly, three government decrees, and 28 guiding circulars addressing agricultural, rural, and farmer-related S&T activities. The government also approved 17 agricultural programs and projects during this period (Huong, 2019). These initiatives aim to promote S&T to support agriculture, farmers, and rural development.

Provincial land investigation and assessment activities, including soil sampling, data analysis, monitoring, and mapping, provide essential information on soil quality, land potential, and land use efficiency. These efforts underpin policy formulation for attracting investments and form the foundation for research, education, and training activities (Giang et al., 2021).

Scientific research and technological applications have facilitated the adoption of intensive aquaculture, high-density farming, and safe production practices, enhancing product quality while minimizing environmental impacts. Advanced technologies such as precision agriculture, organic farming, and development of new crop varieties and livestock breeds have improved productivity and quality, significantly contributing to the agricultural value chain and enhancing the competitiveness of Mekong Delta agriculture in both domestic and international markets.

Policy on Land Use Structure

Local authorities have recently implemented policies aimed at diversifying agricultural products, increasing the value of export commodities, and transferring high-yield, high-quality technologies in crop production. This includes reducing inefficient annual crop areas and transitioning to crops with higher economic value, such as replacing drought-affected, saline-intruded, or low-efficiency rice fields with vegetable crops, perennial industrial crops, and fruit trees. These crops respond better to market demands both domestically and internationally, offering greater economic returns compared to rice cultivation.

For each crop type, the area has been restructured, and suitable high-yield, high-quality varieties introduced. As a result, production efficiency per hectare has continuously increased, with the crop value per hectare rising from 826 million VND in 2015 to 971 million VND in 2019. In 2015, annual crops represented 78.3% of the total crop area, while perennial crops accounted for 21.7%, including fruit trees at 5.5%. By 2020, the annual crop area declined to 75.1%, with perennial crops increasing to 24.9% and fruit trees to 7.8%.

Table 4: Crop structure over the years

Year	Total %	Annual crops %	Rice %	Other annual crops %	Perennial crops %	Fruit trees %
2010	100	79.8	53.3	26.5	20.2	14.3
2015	100	79.3	52.4	26.9	21.7	14.4
2016	100	78.1	51.2	26.9	21.9	15.5
2017	100	77.2	51.7	25.5	22.8	14.9
2018	100	76.3	51.3	25.1	23.7	15.0
2019	100	75.9	50.8	25.1	24.1	14.9
Estimated 2020	100	75.1	50.3	24.8	24.9	15.1

(Source: General Statistics Office 2021)

For each crop type, land area has been restructured, and suitable high-yielding, high-quality varieties have been introduced. As a result, production efficiency per unit area has steadily improved over the years, with the value of agricultural output per hectare increasing from 826 million VND/ha in 2015 to 971 million VND/ha in 2019. In 2015, annual crops accounted for 78.3% of the total crop area, while perennial crops represented 21.7%, including fruit trees at 5.5%. By 2020, the proportion of annual crops decreased to 75.1%, whereas perennial crops increased to 24.9%, with fruit trees comprising 7.8% of the total crop area.

4. CONCLUSIONS

This study has assessed the policies supporting sustainable agricultural development in the Mekong Delta. The region's agriculture benefits from abundant land and water resources, diverse crop and livestock varieties, appropriate land use structure transformations, and strong attention from management levels in issuing preferential policies.

Key opportunities include high and growing demand for food security, deepening international economic integration, numerous scientific and technological advancements, as well as the development of tourism and post-harvest processing industries.

Nevertheless, the Mekong Delta faces several limitations, including inefficient resource utilization, a shortage of high-quality human resources, limited investment capital, and suboptimal application of science and technology. Additionally, sustainable agricultural development is challenged by the adverse impacts of climate change, volatile and highly competitive consumption markets, and rapid urbanization.

The study proposes strategies and solutions to enhance sustainable agricultural development in the near future. To ensure robustness and reliability, it is necessary to gather expert opinions and conduct interviews to validate the identified strengths, weaknesses, opportunities, and threats. Furthermore, integrating SWOT analysis with the Analytic Hierarchy Process (AHP) during expert consultations will enable prioritization of solutions effectively and systematically.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper. This study was conducted collecting data before July 1, 2025.

ACKNOWLEDGEMENT

We gratefully acknowledge the support of the research team members for their assistance in conducting field surveys and collecting data for this study.

REFERENCES

- [1]. Anh, T. (2016). Pilot agricultural lending still has many risks. Institute of Strategy and Financial Policy, Ministry of Finance.
- [2]. Bé, N. V., Trí, V. P. Đ., Hằng, T. T. L., & Ân, N. T. (2017). Impact of saline intrusion on water resource management in agricultural production in Long Phu district, Soc Trang province. *Can Tho University Journal of Science*, Issue 52, 104-112.
- [3]. Beckers, V., Poelmans, L., Van Rompaey, A., & Dendoncker, N. (2020). The impact of urbanization on agricultural dynamics: A case study in Belgium. *Journal of Land Use Science*, 15(5), 626-643.
- [4]. Ministry of Agriculture and Rural Development. (2011). 4th Agricultural Extension Forum—Special Issue on Coconut Trees in Southern Provinces. Vietnam Books.
- [5]. Ministry of Agriculture and Rural Development. (2013). Decision No. 1648/QĐ-BNN-TT: Planning for key fruit tree areas in Southern Vietnam until 2020. Ministry of Agriculture and Rural Development.
- [6]. Ministry of Natural Resources and Environment. (2014). Vietnam’s first biennial update report to the UN Framework Convention on Climate Change. Vietnam Natural Resources and Environment Publishing House.
- [7]. Ministry of Natural Resources and Environment. (2019). Mekong Delta: Agricultural wastewater alert. *Natural Resources and Environment Newspaper*.
- [8]. Government. (2014). Circular No. 35/2014/TT-BTNMT of the Ministry of Natural Resources and Environment: Regulations on land evaluation investigation.
- [9]. Government. (2018). Decree No. 57/2018/NĐ-CP: Policies to encourage enterprises to invest in agriculture and rural areas.
- [10]. Government. (2019). Tax policies to support clean agricultural development in Vietnam.
- [11]. Government. (2021, July 19). Decree No. 57/2018/NĐ-CP: Policies to encourage enterprises to invest in agriculture and rural areas. *Government Newspaper*.
- [12]. Government. (2022). Decision No. 150/QĐ-TTg of the Prime Minister: Approving the Strategy for Sustainable Agricultural and Rural Development for the period 2021 - 2030 with a vision to 2050.
- [13]. Government. (2023, June 6). Enhancing farmers' capacity with knowledge and skills. *Government Newspaper*.
- [14]. Dong. (2021, August 20). Tien Giang: Adapting crop conversion to climate change. *Ethnicity - Religion - Natural Resources and Environment Newspaper*.
- [15]. FAO. (1992). *Sustainable development and the environment*.
- [16]. Ha, M. (2023, September 9). Resolutely remove difficulties for people and businesses to promote production and business. *Financial Magazine*.
- [17]. Hoa, D. T. K., Lam, B. T., Tuynh, N. T., & Tru, N. A. (2022). Developing the science and

- technology market in agriculture in Vietnam. Vietnam Journal of Science & Technology.
- [18]. Hue, T. K. (2021). Financial policies for sustainable agricultural development in Vietnam: Current situation and solutions. Institute of Strategy and Financial Policy, Ministry of Finance.
- [19]. Humphrey & Albert. (2005). SWOT Analysis for Management Consulting (pdf). Sri Alumni Newsletter. Sri International.
- [20]. Hung, L. (2018). Hau Giang: Restructuring crops and livestock to adapt to climate change | News | Climate Change Department. Climate Change Department.