

Green Growth in Agriculture in Vietnam: Awareness and Strategy for Development

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Abstract: Green growth in agriculture plays a crucial role in the ongoing economic restructuring towards sustainability, given its specific approach to resource utilization to fulfill developmental needs. Vietnam has implemented various solutions to foster green growth in agriculture, yielding tangible results. However, a number of issues need to be resolved, namely the awareness of converting green growth models in agriculture among managers and producers, the collection and treatment of waste, the fear of applying microbial organic fertilizers widely, the legal system on green growth in agriculture, the ineffective implementation of the policy of land consolidation, land exchange, and forming consolidated large-scale fields. This study aims to elucidate key aspects related to awareness, strategy, and the capacity to actualize green growth initiatives in agriculture, drawing insights from both domestic and foreign organizational documents. Consequently, there is a need to enhance awareness and strategy, supplemented by refining institutions and policies, and a focus on investing in resource development to meet the demands of green growth in Vietnamese agriculture.

Keywords: Green growth, agriculture, green growth in agriculture, Vietnam.

Subject classification: Economics.

1. Introduction

Green growth, as defined by the Organization for Economic Cooperation and Development (OECD) in 2014, entails promoting economic growth and development while ensuring the continued provision of essential resources and environmental services. Essentially, it involves adjusting the growth model and restructuring economic activities to enhance efficiency, competitiveness, and environmental protection, thereby fostering sustainable development. For Vietnam, green growth is a pivotal aspect of sustainable development, contributing significantly to the implementation of the National Strategy on Climate Change. The National Strategy on Green Growth for the period 2021-2030, with a vision for 2050, emphasizes economic restructuring, innovation in growth models, and increased competitiveness.

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This strategy aligns with the 10-year Socio-Economic Development Strategy 2021-2030, national planning systems, and industry and sector development strategies. Green growth serves as a pathway to sustainable development, directly reducing greenhouse gas emissions and promoting a long-term carbon-neutral economy. It aims to reduce human vulnerability to climate change, foster responsible individual lifestyles, cultivate a green living culture for future generations, and build a civilized, modern society in harmony with nature. The strategy encourages investment in advanced technology, digital transformation, smart and sustainable infrastructure, fostering private investment in the green economy through innovation and a commitment to national prosperity and sustainability.

The strategy outlines four crucial goals: (i) reducing greenhouse gas emissions and promoting clean and renewable energy use; (ii) greening economic sectors; (iii) promoting sustainable consumption and lifestyles; and (iv) facilitating the transition process with principles of equality, inclusion, and enhanced resilience. Achieving these goals requires concerted efforts from all sectors to transition and restructure, enhancing resource efficiency, minimizing environmental pollution, and improving competitiveness.

In the context of agriculture, green growth is considered an effective development model that ensures economic growth while responsibly exploiting development resources and addressing environmental concerns. The agricultural sector aims to transform its development model towards an environmentally friendly, low-emission green model. Although progress has been made, this transformation necessitates substantial investments in technology and human resources. Limited national resources pose challenges, including the lack of effective government guidance and public initiative in the transformation process.

This article focuses on exploring awareness, strategies, and the capacity to implement green growth in agriculture. Based on the findings, it proposes solutions to promote green growth in Vietnam's agricultural sector.

2. Promoting green growth in agriculture

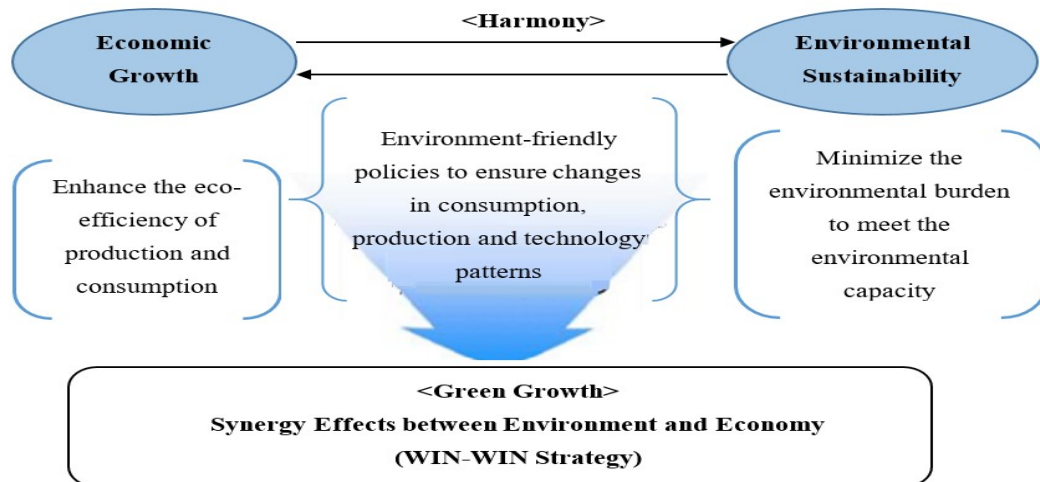
Green growth is considered a crucial component of sustainable development, emerging as a developmental trend in many countries by redirecting the economy towards “green” and environmentally responsible objectives (OECD, 2019; Seyni Salack et al., 2022; UNEP, 2012; World Bank, 2012).

The concept of green growth revolves around mitigating conflicts between economic growth and environmental quality, making it particularly pertinent to the agricultural sector, given its heavy reliance on natural capital, utilizing 60% of global ecosystems (Armand Kasztelan et al., 2019; FAO, 2012; OECD, 2013). The OECD asserts that green growth presents opportunities to contribute to sustainable economic, social, and environmental development. Green growth within the agricultural sector is a crucial endeavor to effectively address climate change, progress towards a sustainable society, and meet the demands of the economic system. To supplement the green growth initiative, there is a distinct set of assessment indicators for the agricultural sector, comprising five groups of criteria: Resource

productivity and environmental quality; the impact of agricultural activities on natural resources and habitat; agricultural economic efficiency; green growth policy; and economic opportunities in agriculture (Kasztelan et al., 2019; OECD, 2010; OECD, 2017).

Getting to understand green growth in the agricultural sector involves a growth process that ensures a balance between economic benefits and the potential of the environment, i.e., maintaining the capacity of the agricultural ecosystem. This can be approached from a 3P (People – Planet – Profit) perspective, emphasizing the role of humans in choosing appropriate production and consumption methods to preserve the human capital and natural assets of people and agro-ecological systems. It involves maintaining economic efficiency, addressing the need to improve living standards, and reducing poverty through enhanced management capacity, policy support, and innovation in green technology. Southeast Asian countries are pursuing a green growth strategy to counter the consequences of rapid yet unsustainable growth, with key messages including: (i) Green growth is not a separate strategy from economic development; (ii) Now it is the time to act in Southeast Asia; (iii) Political leadership is key to implementing sound policies and institutions (ADB, 2017; Chang-Gil Kim et al., 2011; Monika Szudy, 2015; OECD, 2014). The Korean government is implementing a low-carbon green growth strategy, concentrating on restructuring the agricultural economy through the sixth agricultural industrialization. It aims to develop a knowledge-based agriculture and food industry to maximize ecological efficiency in resource use while minimizing negative impacts on the environment (Korea Green Growth Trust Fund, 2021).

Figure 1. Green Growth System – Ensuring Harmonious Development between the Economy and Environment



Source: Chang-Gil Kim et al., 2011.

Thus, for the agricultural sector, green growth initiatives have been expressed in agricultural and rural development policies of countries, with the basic principle of ensuring a healthy ecosystem and economy through the conversion to environmentally friendly agricultural farming methods. This includes considering the carrying capacity and environmental capacity of each territory. Simultaneously, it prioritizes investment and integration to improve energy efficiency, apply new technology, and promote the transformation of green and environmentally friendly value chains.

In Vietnam, after 35 years of implementing the “Đổi mới” (Renovation) process, the agricultural sector has undergone significant changes. The growth model has gradually deepened in association with the process of restructuring the agricultural sector. In 2022, agriculture continued to play a vital role in the economy, contributing 11.88% of Vietnam’s GDP, an increase of 3.36% compared to 2021. In that year, it contributed 5.11% to the total added value of the entire economy and employs 27.5% of the population, equivalent to 13.9 million jobs in 2022. It has become one of the industries with a high trade surplus, reaching USD 8.5 billion – an increase of 30% compared to 2021 (General Statistics Office, 2022; Ministry of Agriculture and Rural Development, 2022a).

Awareness of green growth in agriculture has positively improved, gradually changing production and consumption behavior associated with the implementation of the Scheme on Restructuring the Agricultural Sector, Developing a Comprehensive Agriculture towards Modernity. In modern times, the economic structure is shifting towards promoting advantages, being suitable for the market, and adapting to climate change. Green growth investment has been integrated into the socioeconomic development plans of localities and the development strategy of the agricultural sector. As a result, many green, clean, safe production models have been replicated, with production activities conducted in line with GlobalGap, VietGAP standards, etc., and have gradually become familiar to farmers. In 2022, 463,000 hectares of crops in Vietnam were certified with the VietGAP and equivalent standards, of which vegetables grown according VietGAP accounted for over 10%. The number of units certified with VietGAP was 8,304. In aquaculture, 16,991 hectares were certified with the VietGAP and equivalent standards (an increase of 1,158 hectares compared to those in 2020); 924 farms and 1,249 livestock households were VietGAP certified. 5,282/8,267 communes (63.9%) in the country had met standards of “new rural areas”, including criteria to ensure food safety (60.8% in 2020). In addition, there were approx. 240,000 hectares of organic farming, with the participation of nearly 20,000 workers in 46 provinces and cities. In addition, there were about 160 manufacturing enterprises. 63/63 provinces and centrally run cities had implemented the establishment and development of a safe agricultural and food supply chain model with 1,702 controlled chains (Ministry of Agriculture and Rural Development, 2021c; 2023).

Comparison drawn among (versions of) national strategies on green growth shows that awareness of green growth in the period 2021-2030, vision to 2050 is more inclusive than in that of the period 2011-2020. The one of the 2021-2030 period combines promoting the application of the circular economy green growth model through effective exploitation and use of natural resources and energy based on science and technology. It also involves developing sustainable infrastructure to improve the quality of growth and development, maximizing competitive advantage, and minimizing negative impacts on the environment. The circular economy is related to emissions in general, emphasizing material cycling, the role of product design, and waste treatment towards regenerating natural systems. To compare: the green growth approach for the period 2011-2020 focused more on greenhouse gas emissions, efforts to prevent environmental degradation, and moving towards a low-carbon economy.

Agricultural development has recently posed multiple potential challenges. Most production models rely on overexploitation of natural resources, leading to natural resource degradation, environmental pollution, and negative impacts on the environment, affecting the quality of growth and people's lives. Unplanned production causes infrastructure overload, excess supply of products, leading to the situation of “good harvest causing plummeting selling price”. The domains of production, aquaculture, and husbandry that meet VietGap are still quite modest compared to the national production scale. In addition, the lack of consumer awareness and transparency of product information, as well as a shortage of mandatory regulations for selling VietGAP products, make green and safe processed products difficult to expand. Appropriate awareness of the nature of the circular economy from design to implementation in localities, agricultural sector, people, and the management is needed to issue sufficient legal frameworks. The skills and knowledge in implementing green and circular production processes often take place spontaneously; therefore, they do not significantly motivate the transition process. The circular economy in agriculture actually appeared in the 1980s with the Garden - Pond - Barn model, and fuel was later added with the development of large-scale biogas tanks in farming households. Up to now, developing agriculture on an increasingly large scale, associated with increasing production value through the application of science and technology, should be newer circular agriculture models and newer approaches (ADB, 2017; Ministry of Agriculture and Rural Development, 2020, 2022b; Nguyễn Thị Miên, 2021).

Given the experience of the transitional periods in other countries and requirements of the reality, Vietnam needs to accelerate investment to transform its growth model towards a green and sustainable one. Promoting the circular economy model, including the agricultural economy industry, has been emphasized on in the Documents of the 13th Party Congress, and is required to be concretized in the development policies of sectors and

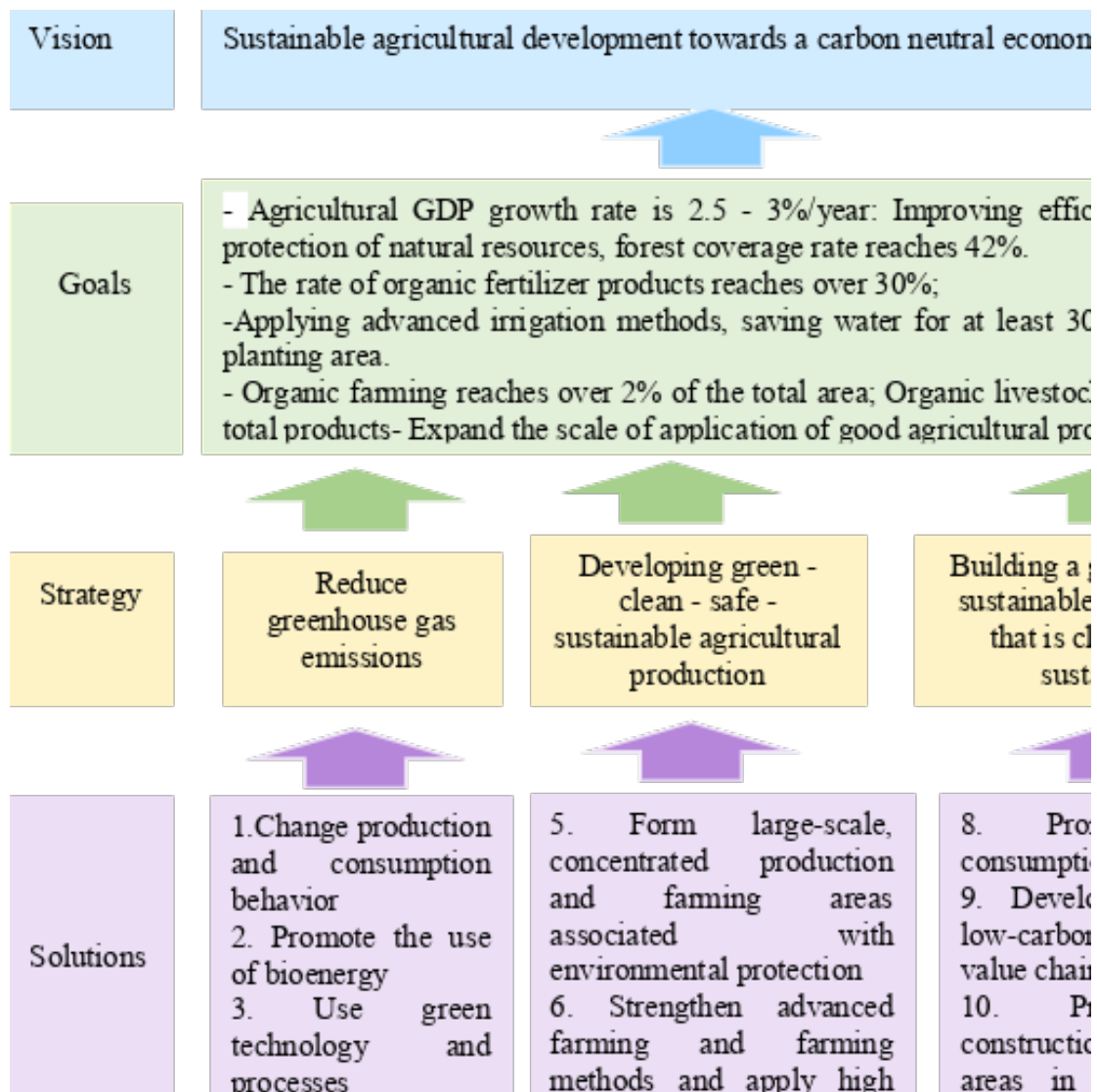
localities according to Decision No.687/QĐ-TTg dated June 7, 2022, of the Prime Minister. The Prime Minister approved the Scheme on Circular Economy Development in Vietnam and assigned the People's Committees of provinces and cities to proactively develop and implement a roadmap, tasks, and solutions to facilitate models and projects of the scheme, including agricultural activities, locally. Typically, Đà Nẵng city has developed a circular economy development roadmap for the period 2022-2030, with a vision to 2045 with the three phases of: (i) Commencement (2022-2025) with an emphasis on dissemination, transmission, and education of awareness, knowledge, skills, and preparation of the initial premises to enter the subsequent Development stage; (ii) Development (2025-2030): initiating action and implementing pilot projects in priority areas to show the level of impact and spread when applying the circular economy. Priority areas for development in that period will include solid waste management, raw materials, energy, eco-industrial parks, and green consumption by citizens; (iii) Acceleration (2030-2045): circular economy becomes the mainstream trend, so that, by the end of 2045, the city will have basically met the criteria of a circular city (People's Committee of Đà Nẵng City, 2022).

3. Strategy to promote green growth in agriculture in Vietnam

To create a legal foundation for the green growth process towards sustainable development of the country, the Government has issued national strategies on green growth for the periods 2011-2020 and 2021-2030 with solutions to reduce greenhouse gas emissions, boost green production and lifestyle, and promote sustainable consumption.

Encouraging and promoting green growth in agriculture are among the solutions to ensure sustainable agricultural development on the basis of managing resources of natural capital, reducing negative impacts on the environment throughout the entire chain of ecology, enhancing the provision of environmental services and conserving biodiversity. At the same time, enhance the ability to access and benefit comprehensively and equally in society. Concretizing the green growth policy in agriculture, the Ministry of Agriculture and Rural Development has issued an action plan to implement the National Strategy on Green Growth of the period 2021-2030 in line with Decision No.3444/QĐ-BNN-KH dated September 12, 2022 with the goal of developing agriculture in an ecological, organic, circular, low carbon emission direction to improve the quality of agriculture growth, added value, competitiveness and sustainable development; reducing agricultural and rural environmental pollution, effectively and economically use energy and natural resources towards a carbon-neutral economy by 2050.

Figure 2. Vietnam's Green Growth Strategy in Agriculture



Source: Ministry of Agriculture and Rural Development, 2022a.

Green growth policies in agriculture contribute to concretizing and motivating the implementation of green measures in practice. They ensure a balance between the environment and economic growth through various economic measures, techniques, and monitoring of farming and animal husbandry processes and methods. This includes measures to promote research, development, technology application, dissemination, and awareness raising, among others.

Table 1: Classification of Some Policy Measures for Green Growth in Agriculture in Vietnam

No	Classification	Measure
1	Economic measures	<ul style="list-style-type: none"> - Tax policy on environmental protection and natural resources tax. - Fees related to greenhouse gas emissions (CH₄, CO₂, and N₂O) including environmental protection fees for wastewater, emissions, and hazardous waste treatment. - State budget spending prioritizes national target programs for environmental protection. - Green credit for environmental protection, energy saving, and clean technology projects.
2	Direct regulation	Regulations on fertilization, animal feed, farming density, and food safety regulations.
3	Voluntary regulation	More suitable farming standards, TCVN 11041 on Organic Agriculture; TCVN 12134:2017 on requirements for organizations certifying organic agricultural products. Criteria for high-tech VietGAP standard applied in agriculture.
4	Research, development and expansion	Research programs, technology development programs, pilot projects.
5	The program that provides information	Monitoring GHG, supporting the implementation of emission reduction projects. Testing fertilizers for annual crops. National standard for determining fertilizer content.

Source: Author overview, 2023.

Policy support for green growth is gradually improving, with a focus on encouraging investments and eco-friendly production. The aim is to raise awareness and gradually shift the behavior of both producers and consumers while innovating farming and animal husbandry methods in accordance with green standards. The strategy for promoting green growth is integrated into programs and plans aimed at developing the agricultural sector and localities. This includes the implementation of agricultural restructuring and a shift in the growth model towards quality and increased value. These measures are crucial for agriculture to maintain its role in the context of climate change and the 4th industrial revolution.

4. Possibility to realize green growth strategy in agriculture

4.1. Opportunities to implement green growth in agriculture

Affirming the right direction and timing of the policy to transform the growth model towards green: After more than 10 years of implementing the green growth strategy, the agricultural sector has progressively improved its system of legal documents, giving importance to “green” standards and criteria in production and consumption. Many green production models and good agricultural practices that ensure environmentally friendly principles and reduce greenhouse gas emissions have been successfully replicated. There is an increasing focus on financial and human resources, improving and mobilizing participation from all economic sectors in agricultural development towards green growth. This provides a solid foundation for continuing to maintain and improve policies that promote green growth in agriculture (Ministry of Agriculture and Rural Development, 2022b; Ministry of Planning and Investment, 2018).

Furthermore, the strategies and plans for socioeconomic development in the period 2021-2025 all affirm the importance of transforming the growth model of the economy towards green, circular, and sustainable practices. Emphasis is placed on applying high-tech organic solutions in agriculture to meet common food safety standards and adapt to climate change and international economic integration. It is crucial to promote the transformation of the green growth model, focusing on quality and efficiency, and effectively leveraging the opportunities presented by the industrial revolution and digital transformation. This is considered a decisive factor in improving productivity, quality, efficiency, and competitiveness (Communist Party of Vietnam, 2021; Ministry of Agriculture and Rural Development, 2022a).

Opportunities from trade agreements: Vietnam is participating increasingly deeply in the process of international integration with comprehensive bilateral and multilateral trade agreements on free trade of goods, contributing to promoting trade growth and diversifying markets for most agricultural products. This includes the free trade agreement between Vietnam and the European Union (EVFTA), which is seen as an opportunity to create significant momentum for the agricultural sector. It helps Vietnamese agricultural products expand their development space, improve their access to technology and competitiveness, and enhance their management capacity. This, in turn, increases agricultural exports, contributes to restructuring and production development towards effective resource utilization, and brings advantages and increased income for workers. Additionally, the trend of green consumption and the use of environmentally friendly agricultural products, combined with the state’s incentives for the application of green solutions in production, present opportunities to promote green growth in agriculture.

Taking advantage of the achievements of the fourth technological revolution: The world is witnessing the emergence of breakthrough technologies in physics, biotechnology, and

artificial intelligence. These advancements form the basis for changing management and production organizing methods to effectively exploit production capital sources and improve the productivity and quality in the economy, including agricultural economic activities. Promoting the application of science and technology in agricultural production is considered a key solution to create breakthroughs, improving productivity and quality while addressing challenges such as the decline of productive capital and the shift of labor resources to non-agricultural economic sectors. Applying new and green technology to production and focusing on innovating management solutions to reduce costs present opportunities to enhance productivity, reduce costs, and improve the competitiveness of agricultural products in the market.

Opportunities to promote transformation of agricultural growth models from the emergence of the COVID-19 pandemic and the impact of climate change: The COVID-19 pandemic has impacted all social aspects and created a widespread crisis. Therefore, the top priority for all countries has been to find solutions to limit the impact and recover. With the increasingly serious impact of climate change, appropriate adaptation solutions are required to reduce vulnerability. This is considered an opportunity to reevaluate the development model, raise awareness of environmental and health issues, and promoting agricultural restructuring in a "green" and "adaptive" direction to unusual changes in epidemics and weather. Prioritizing the development of models capable of ensuring food security as well as expanding export space to regions moving towards a carbon-neutral economy, such as the EU – the market attracting many ASEAN countries, should be considered.

4.2. Challenges in implementing green growth in agriculture

Though there are domestic and international opportunities that Vietnam's agricultural sector can take advantage of to make breakthroughs and effectively deploy solutions towards “green” goals in agricultural development, its transformation towards the model of green growth in agriculture still faces difficulties, as follows:

The awareness of converting green growth models in agriculture among managers and producers have been changed not much. This is reflected in the results of agricultural development, which still maintains a growth model that follows the abuse of chemicals and overexploitation of resources, leading to ecological imbalance. Every year, up to 50-70% of inorganic fertilizers are not absorbed by plants and are released into the environment. Additionally, the collection and treatment of waste still contain multiple shortcomings. 4,096 communes in the country are without collection points for bottles and pesticide packaging, accounting for 49.37% of the total number of communes in rural areas. Livestock waste contains toxic substances, such as N₂O, CO₂, CH₄, etc., causing greenhouse effects and the risk of environmental pollution if used without proper technical collection and treatment measures. Lack of awareness and implementation, combined with the impact of climate change, will be a major obstacle to the process of transforming the

growth model (General Statistics Office, 2021; Ministry of Agriculture and Rural Development, 2022b; Ministry of Natural Resources and Environment, 2021).

Survey results in the North Central and Central Coast regions show that some people are still afraid and have not actively applied the use of microbial organic fertilizers widely. This hesitation is due to the limited use of micro-organic fertilizers, and biofertilizers having a slower effect and being more labor-intensive than inorganic fertilizers. Most farming households maintain traditional agricultural models, focusing on using fertilizers and pesticides from inorganic roots to increase productivity, not strictly following the safety principles of using pesticides “Right drug - Right dose - Right time - Right way”, affecting the quality of agricultural products, health, and the environment (Trần Thị Tuyết, 2023; Lương Tình et al., 2021).

The legal system on green growth in agriculture is still in the process of being completed, and some policies are not effectively implemented. The organization and implementation of transforming the agricultural growth model are mainly at local level, so it has not been able to mobilize all sectors of society to participate in the process. There are state policies and a number of small pilot models, but they have not become a driving force for the development of the entire industry. Agriculture has to compete fiercely with other industries and fields in getting resources for growth, in which financial resources to implement green growth solutions in agriculture mainly depend on the state budget. The concretization and implementation of policies to support production and business, linking production with consumption of safe agricultural products and foods are still slow, and output and scale are limited. The staff in charge of managing agricultural and fishery activities at district and commune levels are insufficient in number and quality, leading to multiple difficulties in directing, administering, and implementing policies and mechanisms (Ministry of Agriculture and Rural Development, 2022a; Ministry of Agriculture and Rural Development, 2022b; Nguyễn Xuân Cường, 2020).

The scale of agricultural production is small, mainly based on households (99.8% of production units). There are 9.1 million agricultural production households with nearly 26 million plots of land, or about 5.6m² per household on average. The ineffective implementation of the policy of land consolidation, land exchange, and forming large fields poses challenges that cause difficulties to the process of reorganizing production and the ability to apply scientific and technological advances to form raw material areas for processing and consumption lines. For example, in raising economically valuable aquatic species, specialty species, and intensive farming, cage farming is still spontaneous, the technique skill of fish farmers is still low, farming is on a small scale, input costs are high, and the consumer market system is unstable (General Statistics Office, 2021).

One of the solutions to get rid of fragmented and small production is a collective economic model with the core being a cooperative developed based on the private ownership of members and common ownership of the collective. It has important significance in forming concentrated production areas, consolidated large-scale fields, and

linked production chains. Decision No.255/QĐ-TTg on Approving of the Plan to Restructure the Agricultural Sector for the period 2021-2025 issued by the Prime Minister on September 25, February 2021 aims to contribute to restructuring the agricultural sector towards sustainable development, improving the quality, added value, and competitiveness of agricultural products, environmental protection, and increasing income for people in rural areas. Apart from achievements, the collective economy still has many limitations, and its development is not commensurate with its potential and advantages due to a lack of resources to implement policies, and some policies being inconsistent with the situation. Conditions for accessing and complicated procedures lead to a low rate of agricultural cooperatives accessing the benefits from the policy. Typically, infrastructure support policies, credit policies, and land support and incentive policies for agricultural cooperatives of each type see only from 0.5% to less than 2% of cooperatives accessing the policy recently. Therefore, many cooperatives lack capital and are not supported with land to use for housing their headquarters, warehouses, and factories to organize production, especially for preliminary processing. That is still very popularly seen (Ministry of Agriculture and Rural Development, 2021b).

The capacity to apply science and technology in production is limited due to low labor quality, with untrained workers accounting for nearly 90% of the whole workforce (12.6 million people). The scale of the application is still limited, with only about 50 enterprises, 12 regions, and 11 agricultural and forestry zones applying technologies recognized by the government and local administrations. Equipment used in agricultural production is outdated and lacks uniformity. On average, devices are often two to three “generations” (equivalent to 20-30 years) out of date. In fact, high-tech applications are mainly concentrated at the household and cooperative scale, and they have not been able to attract businesses to invest in. Vietnam's transfer and sharing of scientific and technological data are still limited, leading to reduced effectiveness of the policymaking process. As regards mechanization, it focuses on tilling land (reaching about 93%) and also focuses on rice cultivation. In other stages and other crops, the level of mechanization is still very low. The rate of effective and sustainable agricultural land area is not high, being only about 38% (General Statistics Office, 2021; Hoàng Văn Phai et al., 2022; Department of Science, Technology and Environment, 2021).

Difficulties resulting from the trade agreement: If the agricultural sector does not transform its production process and raw material sources to meet the high standards of the agreement, it will be difficult to expand the market in countries with strict conditions such as the EU member states. At the same time, it will lose its competitive advantage in the domestic market because imported agricultural products have high-quality and competitive prices. The root cause of this situation is mainly Vietnam's small and spontaneous production scale. Most of the country's enterprises are small- and medium-sized ones, accounting for 95%. On the contrary, production in developed countries are fundamentally

large-scale and centralized, strictly following processes and standards, so the quality of their agricultural products is highly uniform. In addition, the organizational apparatus for the management, quality control, and food safety of agriculture, forestry, and fisheries in Vietnamese localities witness fluctuations and inconsistency. For example, the organization and apparatus have been restructured in line with Resolution No.18-NQ/TW (requesting for the Department of Quality Management of Agriculture, Forestry, and Fisheries to be dissolved or merged with another division under the Department of Agriculture and Rural Development or even the Department of Health, for example, the case of Cà Mau province), resulting in conflicts with current legal documents and inconsistencies among localities, causing difficulties for the Ministry of Agriculture and Rural Development in its implementing tasks and securing food quality and safety of agricultural, forestry, and fishery products in the new situation. Organizations and officials at district and commune levels who conduct quality management and food safety are usually not sufficient. Resources at localities are not sufficient for the full conducting of food safety management and of inspection as assigned and decentralized to. Effective forms of production organization and linkage are not really stable. Linkages across the value chain to promote mechanization and apply high technology to reduce intermediate costs and increase added value are not yet popular. Inter-regional and inter-industry connections in many localities and industries are still fragmented. There are multiple difficulties regarding input materials and output from abroad, and increased prices of food and fertilizers. The fishery sector faces difficulties due to increased gasoline prices, leading to high production costs that affect the income and livelihoods of producers. Some localities are still following the “movement” of “one commune, one product (OCOP)” in a manner which is not substantial, not paying attention to the effectiveness of the program, especially in “awakening” the potential and advantages of rural areas (Ministry of Agriculture and Rural Development, 2022b; 2021a).

The above-mentioned main challenges are significant barriers in the process of transforming the growth model in agriculture to a green one. Therefore, in the future, the agricultural sector needs to take advantage of every opportunity to accelerate the transformation process, prioritize restructuring, and form centralized raw material areas based on environment- friendly agricultural models to improve productivity, quality, and competitiveness of agricultural products, securing the rapid and sustainable development of the agricultural economy.

4.3. Some solutions to promote green growth in agriculture in Vietnam

To capitalize on opportunities for promoting green growth in agriculture and addressing existing challenges, it is essential to implement comprehensive solutions aimed at enhancing growth quality and competitiveness towards a carbon-neutral economy by 2050.

One key solution involves a shift in awareness and thinking regarding agricultural economic development, facilitating deep integration. This entails the gradual transition from small, unfocused economic models to farm economic models and production of cooperatives. The foundation for reshaping the agricultural economic structure lies in farm economy and cooperatives, leading to the establishment of specialized areas based on the access to green landscape. This approach fosters the development of the processing industry and agricultural production services, serving as a driving force for building new rural areas. Consequently, that contributes to an increase in the number of affluent households in rural areas and generates positive spreading effects in economic development.

This transformation can serve as an example for households on how to organize and manage production and businesses along the commodity chain, playing a crucial role in the agricultural product value chain. That, in turn, contributes to altering workers' awareness of production and consumption. To realize these goals, the agricultural sector must integrate the outcomes of training, career changes, agricultural restructuring, investment in infrastructure, utilization of capital, and adoption of advanced techniques in agricultural cultivation, animal husbandry, and aquaculture. Step by step, it should support and collaborate with enterprises involved in processing and consumption of products linked with service and production systems along the market value chain.

Improving the institutional and policy frameworks, with a particular emphasis on prioritizing breakthrough policies, is crucial to creating a “green” and “circular” investment and business environment. Resource optimization, including investment in green science and technologies, is necessary to promote the application of new scientific and technological achievements in production, enhancing productivity while preserving environmental resources. The establishment of mechanisms to enforce production processes adhering to ecological, organic, circular, and low carbon emissions standards and regulations is imperative.

Proactive investment of financial resources in green growth in agriculture is pivotal. This involves the creation of mechanisms to mobilize private financial resources and deeply involve the private sector's participation in the transformation into a green growth model. Additionally, mechanisms ensuring effective investment in agricultural and rural development, aligned with local capacity and available resources, are crucial. Priority solutions include the promotion of agricultural insurance, increased investment capital for developing production infrastructure, support for transitioning farming methods and agricultural restructuring, and integrating vocational training with support to the people's livelihoods.

5. Conclusion

Green growth is an imminent trend in national economic development, encompassing agricultural economic activities. Vietnam has implemented several solutions, yielded practical

results and formed the foundation for economic growth aligned with environmental protection. Nevertheless, challenges persist due to a lack of proactive and effective awareness and actions. To advance the green growth plan for the period 2021-2030 with a vision to 2050, robust actions based on the effective implementation of fundamental solutions with appropriate roadmaps are necessary. Seizing the opportunity will facilitate profound changes in the agricultural growth model, steering it towards a green and sustainable direction.

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