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SUSTAINABLE AGRICULTURAL ECONOMIC DEVELOPMENT IN RESPONSE TO CLIMATE CHANGE: EXPERIENCES FROM SELECTED COUNTRIES AND LESSONS LEARNED FOR VIETNAM

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Abstract:

After nearly 15 years of implementing the Resolution of the 7th Party Central Committee, term X on agriculture, farmers, rural areas, and the agricultural sector, the agricultural economy in Vietnam has seen positive changes. However, there are still certain limitations such as not fully exploiting applied technology in the development of the agricultural economy, the scale of agricultural production is still small and fragmented, and it is still difficult for farmers to access with funding from credit institutions. Poverty rates are reported mainly among rural residents, with over 90% of poor households nationwide in rural areas, with the majority belonging to ethnic minority and mountainous areas (Luong Quoc Toan, 2021). From there, the article will focus on clarifying some experiences of sustainable agricultural economic development in the context of the industrial revolution and climate change adaptation in some countries such as India, China, and Thailand. Lan, Israel. At the same time, draw lessons from experience that can be implemented in Vietnam, aiming to develop a sustainable agricultural economy in the context of climate change in the current period.

Keywords:

Agricultural economics, international experience, agricultural policy, climate change

1. Research methods

To clarify the research issues, the author applies the methodology of dialectical materialism and historical materialism of Marxism-Leninism to study the issue in a state of constant movement and change, and placed in the overall relationship and interaction between the phenomenon to be studied and other phenomena. Furthermore, the research object is considered and evaluated in a "dynamic" state..., making research issues rich and diverse, both traditional and modern. In addition, the author also uses the following research methods:

- Analytical method: The method is deployed and used throughout the article, when evaluating agricultural economic development mechanisms in some countries and Vietnam.
- Statistical and synthetic method: This method is used by the author to statistically and synthesize important and necessary documents directly related to the scope of the research topic. For example: synthesizing experience in a number of countries, providing comparative data to clearly see the economic development in the agricultural sector in a number of developed countries.
- Comparative jurisprudence method: in the content, the authors have used this research method in content related to comparing institutions, legal policies and economic development between countries. From there, there is an objective perspective and assessment of the analyzed issues. Based on this method, the experience will be summarized as a premise to propose amendments and improvements to the law in the relevant contents of recommendations and proposals.

2. Introduction

Agricultural production depends greatly on climatic conditions, the direct and long-term challenge to agricultural production is the impact of climate change - Vietnam is in the group of countries most heavily affected by climate change. climate change. Because if the sea level rises by 1m without effective prevention measures, about 40% of the Mekong Delta area, 11% of the Red River Delta area and 3% of the area of other provinces in the region will Coastal areas will be affected by



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flooding. This could impact nearly 50% of agricultural land in the Mekong Delta that is no longer viable for cultivation (Quyen Dinh Ha, 2017). Besides, according to forecasts from scientists, the Central Highlands and Central provinces will suffer more drought; The number of cold, cold, and harmful air waves will appear more frequently in the Northern and North Central provinces. Storms and floods will cause more and more severe impacts on the entire country. Water resources will be affected by changes. amount of rain; Rising sea levels lead to shrinking production areas, especially in the Red River Delta and Mekong Delta (Ministry of Natural Resources and Environment, 2016).

Even though it belongs to the group of agricultural producing countries, the labor productivity of Vietnamese farmers is still among the lowest in Asia. Agricultural, forestry and fishery production has a high average labor productivity growth rate, with 5.2%/year in the period 2011-2018, higher than the average growth rate of the industrial and construction sectors (3%/year) and the service sector (3.1%/year), however this area still has the lowest labor productivity level among economic sectors, by 2018 only equal to 38.9% of labor productivity. Labor productivity of the entire economy is equal to 30.4% of the labor productivity of the industrial and construction sector, equal to 33.7% of the service sector (Tung Dinh, 2020). The main reason why the labor productivity of Vietnam's agricultural sector is still low in the Asian region is due to the small scale of production, fragmentation, and the limited expertise and professionalism of farmers. mechanism..., Small-scale production is shown through the perspective of average cultivated area ranging from 0.2 to 2 hectares/household and only reaching 0.34 hectares/worker. Survey results on land use scale of farming households over a period of 10 years, 2006-2016, show that land scale is small, changes little, the number of households not directly using land increased from 18.23% to 21 38%, the number of households using from 0.2 to less than 0.5 hectares decreased from 32.29% to 27.11%, the number of households with less than 0.2 hectares of agricultural land only increased from 21 17% to 22.49%, the number of households with agricultural land size from 0.5 to less than 1 hectare increased only from 16.44% to 16.75%; Only about 5% of farming households have land size of over 3 hectares, etc. (Nguyen Thi Tu, 2017). The average area of agricultural land per person in Vietnam continues to decrease and is at the lowest level in the world. In 2016, more than 50% of households still had an area of less than 0.5 hectares; That has been directly affecting the limitations in applying science and technology to production, exploiting advantages of scale, as well as the implementation of advanced agricultural models (Tran Duc Vien, 2020). Recent studies show that small farming areas limit growth in the agricultural sector (Ayerst et al., 2020). From the above issue, consulting experiences in agricultural economic development from countries around the world will be a premise to promote economic development in Vietnam in general and agricultural economy in Vietnam in particular.

3. Experience in agricultural economic development in modern trends in some countries 3.1. Experience from India

With the second largest population in the world, India always places its national responsibility on ensuring food security. To carry out this task, India has promoted an increase in food production, and since 1963 began implementing the "green revolution". Some key issues in this revolution are:

Firstly, invest in research and breeding of highly adaptable rice varieties, improve the dyke system, and seek to import quality fertilizer sources. With the nation's efforts, India has risen from the group of countries with the largest proportion of food imports in the world to being in the second group of food exporters in the world. In the 1970s, India continued to implement the "white revolution" by promoting farm construction, improving and caring for grasslands, and importing many high-quality dairy breeds. In order to protect cow's milk beverage products in the domestic market, the Government has approved import tax adjustments for products originating from cow's milk, and also tightened the import licensing process. exports of products derived from cow's milk. Since then, India has become one of the leading cow milk producing and exporting countries in the world.

Secondly, the orientation is to strengthen and promote the application of new technology and farming techniques applied to agricultural production. At this stage, India has a systematic selection of crop varieties that can adapt to climate change and resist epidemics. At the same time, to minimize post-harvest damage, the government has invested in building cold storage warehouses, each warehouse can store 1.2 million tons, with a maintenance fee of 16 billion USD/year for these measures. measures to protect agricultural products, this helps ensure food for the country in harsh conditions where production cannot be carried out due to climate impacts.



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One of the policies in the second revolution is to renovate, avoid the situation of fallow land, and reclaim land areas that have not been put into use. To accomplish this goal, the government has invested in land reclamation. Invest 10 million dollars to implement the plan. Aiming to boost production in the context of climate change, India has established National Crop Forecasting Centers, the main task of which is to predict the obstacles that may be encountered if cultivating a crop. somehow. Accordingly, some recommendations will be given for cultivating this variety (type) of tree, instead of that tree, at certain seasons. One of the policies implemented by India is the program: "National agricultural insurance", in the first phase the program will be mandatory for most farmers when borrowing capital for the purpose of agricultural production purposes. Accordingly, the insurance participation fee rate is from 1.5-3%/total loan capital when farmers have the purpose of cultivating food crops and oil crops. Agricultural insurance packages will mostly focus on the case of Climate change leads to crop failure and inability to harvest. Compensation norms for crops will correspond to 60-90% based on the output of that crop at the time of the previous year (I.J. Ahluwai Fund & I.M.D.Little, 2012).

Thirdly, to promote these policies in rural areas, India promoted the establishment of social policy banks in rural areas. As of 2004, there were 32,178 branches in this area, accounting for 47.8% of the total number of banks nationwide (Vu Trong Hung and Quach Thi Hue, 2019). Since 2000, India has implemented its second comprehensive economic reform; set an average growth rate of 4%/year. Accordingly, to achieve this goal, it is necessary to complete agricultural adjustment policies such as removing trade barriers. In response to the above requirements, the Government has promulgated the Essential Goods Law, this law officially Remove previous restrictions such as: allowing transportation and exchange of agricultural products between states, removing restrictions on cooperatives in rural areas..., issuing decrees guiding the establishment of research zones. Research for agriculture, in terms of function, these research areas have produced genetically modified crop varieties that are resistant to herbicides..... Through the above policies, India has almost completely resolved hunger nationwide. At the same time, India has become the world's number one producer of rice and milk, and second in sugarcane production. fruit; ranked third in tobacco and sixth in fish and coffee. ..., According to the World Bank, India will grow at 7.3% in the period 2018-2019, in 2019-2020 it will grow at 7.5%, India will become the fastest growing country in the world, including agricultural economic function (Nguyen Duc Chinh, 2017, p.54).

3.2 China's experience

According to the principle, a country cannot grow strong if farmers are not rich. The Chinese government has promoted investment of 3,000 billion yuan in the period 2016-2020, aiming to transform the agricultural economic structure towards modernity. The period when China officially joined the WTO marked a major turning point in reforming the country's agricultural economy such as:

Firstly, officially reformed tax-related policies in rural areas in 2000. With these reforms, many taxes in rural areas were eliminated. Accordingly, only three basic types of taxes and fees are retained: (i) Agricultural taxes, (ii) administrative fees, (iii) fees for performing general tasks. In addition, in 2004, we initially piloted tax reductions for some rural areas and completely eliminated taxes for the northeast region, along with 10 provinces and cities designated as key areas for agricultural economic development. Karma. This has led to a shortage of budget revenue in some localities. To solve this problem, the Central Government has decided on expenditures to compensate for these shortages. In addition, in order to provide enough food for the country, as well as export, China gradually narrows down small business models in the agricultural sector, because it believes that these models are labor-intensive but has not met the set expectations. To complete the goal of reforming the agricultural economy, it requires gradually expanding large-scale agricultural business in terms of both capital and technology. Because these models will change the country's agricultural structure (Nguyen Thu Ha, 2017, p.27).

Secondly, deploy the establishment of food risk funds, whereby the recipients of official support are farmers. This fund focuses support for agriculture on three main groups of issues: (i) direct support to food growers; (ii) support the replication of high-yield bred plant varieties; (iii) support for machinery and tools for large-scale agricultural cultivation. Among them, the largest support is direct support for farmers, in the period 2004-2006 the government spent 11,6000 yuan. At the same time, laws also issued that directly regulate agriculture and land management to serve the process of agricultural innovation. Accordingly, in 1994, the Basic Agricultural Land Protection Law was issued, thereby determining the



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area of agricultural land that needs to be permanently protected, not allowing conversion for other purposes, in the 1999 period. The government continues to promulgate the Law on Administrative Management of Land, aiming to strictly and systematically manage unused agricultural land areas that have not been put into use (Trinh Anh Tuan, 2017, p. 44).

Thirdly, promote the development of high-tech agriculture, promulgate many laws to promote the development of the agricultural insurance market. Since the 1990s, China has focused on developing high-tech agricultural zones. Accordingly, 405 high-tech zones were developed in 1998-2006. Of these, there is one national-level zone, 42 provincial-level zones, and 362 city-level zones. These zones contribute over 40% of the added value of agricultural production (Tran Thanh Tung, 2020, p.83). In addition, for farming households directly engaged in agricultural production, tuition will be exempted. From 2006, poor farming households with children of school age will be given free textbooks and financial allowances. accommodation costs at boarding schools. In addition, financial institutions must set aside a certain amount of capital for rural economic development, for poor farming households with children studying. Notably, since 2015, China has implemented the "3 supports" policy, which includes: food support; comprehensive agricultural support; breed support. The overall combination of these elements will constitute the policy: "agricultural support and protection" (Nguyen Thi Tu, 2017, p.69).

3.3. Thailand's experience

Within the framework of the agricultural restructuring program in Thailand, the government has proposed a policy to reduce rice production, reduce rice cultivation in seasonal crops, and encourage the growing of other crops. This is within the scope of the national food strategy, reducing rice growing area and increasing fruit and vegetable production. Strategically, this policy will help keep rice prices stable, avoiding cases where rice output skyrockets but the market is volatile. Looking at the policies to restructure the agricultural economy in Thailand, we can see some outstanding policies such as:

Firstly, price subsidy policy for agricultural products; Strengthen agricultural insurance for farmers. In addition to the above financial policies, agricultural taxes are gradually abolished. To solve the problem of output for post-harvest or processed agricultural products, the government conducts marketing of domestic products to the world market. world through "government to government" contracts. On the other hand, agricultural economic reform will be implemented on the basis of unification of policies, synchronization of implementation among agencies and sectors in management, cultivation, production, product consumption, This minimizes production risks for farmers. Grasping the needs of each country, the government has issued policies setting out farming orientations suitable for each potential country. In addition, the Thai government has provided price support for key, competitive fruit products such as durian, longan, lychee, mangosteen, and rambutan. Towards ensuring output, the government has issued policies, implemented by a team of experts who closely monitor all stages of production, distribution, processing, price, consolidation and finding markets. new export. For food producers such as paddy, rice, etc., they will receive incentives at low prices when there is a price subsidy from the government, at the same time free transportation to the cultivation site, and sponsorship for pilot planting of agricultural products. new varieties, low interest loans from agricultural banks.

Secondly, to avoid duplication in farming, leading to reduced product value, the government has regulated this issue through the program "one tambo, one product - OTOP". According to this program, each village will have to focus on producing one typical product based on the region's strengths. To synchronously implement the program, each village will be allocated a budget of 1 million baht called the "Village Fund Proram". This funding is loaned by the government without interest, for the purpose of socio-economic development within the village. Statistics show that more than 75,000 villages in Thailand have received this loan (Nguyen Thi Tu, 2017). In addition, Thailand has established smart farm models, applying electronic technology and information technology to increase productivity and quality of agricultural products. This model focuses on the country's main products such as wheat, cassava, rubber, and sugar cane.

3.4. Israel's experience

Is a country in the Middle East region, with a subtropical climate, with an area of about 20,000 km2, but more than 50% of the area is desert. Although the agricultural population only accounts for about 2.5%, it is among the world's leading agricultural exporters, with about 3 billion USD. After more than 70 years of establishment, agricultural production output has grown 15 times, 3 times higher than population growth. Becoming a major exporter of fresh seafood in the world, and also a country in the



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leading group of applied techniques to develop the agricultural economy. To achieve these achievements, the Government has implemented specific measures such as:

Firstly, focus on converting traditional production to a form of farming applying advanced technology, following the trend of reducing labor, minimizing water use through drip irrigation technology, because of the Due to the lack of water sources for cultivation, this country has deployed the application of Tal-Ya technology, which allows collecting water from dew and water vapor in the air in an accumulation method to provide water for plants, with This feature will reduce the amount of water for plants by about 50%. In addition, aiming to reduce the flow of chemicals for agricultural production, scientists have bred groups of beneficial insects to help control pests, following the principles of natural ecology. To do this, the technology transfer company of Hebrew University cooperates with Makhteshim to conduct research on herbicides that slowly spread into the soil, or pesticides that do not harm plants. Useful insects. In addition, because this country promotes greenhouse farming, scientists have also bred specialized insect breeds such as bees that can pollinate in greenhouse environments (Nguyen Thi Huong and Ngo Van Quyen, 2015, p.60). To achieve this goal, the state has invested in developing innovative and CNC agriculture, in which each year costs related to agricultural research and development account for about 17% of the state budget.

Secondly, management related to agricultural development will be assigned to the Ministry of Agriculture, which is responsible for maintaining animal and plant health standards; Organize and maintain the activities of agencies involved in supervising food safety when imported into this country. These agencies include: Israel Standards Institute (SII), Veterinary Authority and Veterinary Services (JVAHS); Plant protection and inspection services (PPIS) and FCS are part of the Ministry of Health. In 2016, in order to implement commitments in free trade agreements, the government was forced to reduce taxes on imported agricultural products. This leads to domestic agricultural products competing with export products. Understanding these difficulties, the Government has turned to direct support for farmers. Israel has developed synchronous policies that closely link agricultural economic development and technology application. In this country, agriculture will be intertwined with tourism, which will help farmers have additional sources of income outside of livestock and crop farming activities. The country's highlight in agricultural economic development lies in promoting the application of science and technology in a focused way. When investing in developing greenhouse technology for the crop industry, it is possible to apply new techniques. This technique applies to both poultry farming and high desert mariculture.

Thirdly, deploy agricultural economic development based on the interconnected relationship between the "5 houses". Accordingly, the design of building a "5-house" agricultural economy includes: (i) The State plays a general guiding role, (ii) Consultants will study the market and come up with development ideas. agricultural economics, (iii) researchers based on ideas will come up with the most optimal measures to implement these ideas, (iv) the company is the organizing unit to deploy the ideas, and at the same time responsible for trading with the world market, (v) farmers are the direct subjects of production based on ideas. It can be seen that one of the breakthroughs in building and developing the agricultural economy in Israel is also the participation of "consultants", this is identified as a group of subjects with a role in orienting market demand. market, as well as promoting the distribution of the country's agricultural products to meet the world's needs (An Nhu Hai, 2018).

4. Lessons learned in agricultural economic development in Vietnam amid climate change

From the successes of some countries around the world in structuring and promoting the development of the agricultural economy in the context of many changes in the world, agriculture faces many difficulties due to widespread climate change. Globally, Vietnam has referenced some experiences in agricultural economic development in the following positive aspects:

Firstly, with experience from India to minimize the problem of post-harvest damage, as well as ensure food security and price stability in a volatile market context, Vietnam can proceed with implementation. Build cold storage warehouses to store agricultural products. At the same time, propose measures to improve degraded and abandoned land areas, as well as invest funds to improve this land area. Although in Vietnam there are sanctions for administrative violations against the act of abandoning land in Decree 91/2019/ND-CP, in general there are still no measures to invest in renovating and identifying land waste. Identify key characteristics of the region to develop agricultural products associated with the locality. Besides, our country has not yet been able to deploy the National Crop



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Forecasting Center, which can predict the risks when conducting farming in the current context or if insurance packages have not been deployed. agriculture, this will minimize possible losses if investing in agricultural development in the context of climate change.

Second, in the context that the Mekong Delta is heavily impacted by climate change, fresh water is gradually becoming scarce due to saline intrusion. Through this, it is necessary to research and apply "drip irrigation" technology that takes advantage of water from dew drops, or humidity in the air for irrigation like Israel, or building greenhouse technology is a problem. possible considerations. Besides, to solve the problem of "good harvest but devaluation" like our country today, it is necessary to establish and implement agricultural economic development based on the foundation of coordination between "industries" and together. Accordingly, consultation from a "consultant" is needed. This is valuable experience from Israel, when the consultant will have the function of consulting on farming experience, suggesting ideas for improving quality, and building a model. farming form. This will also be one of the subjects that plays a role in trade promotion, bringing agricultural products to markets in need based on the initial ideas proposed (Nguyen Thi Huong and Ngo Van Quyen, 2015).

Thirdly, with experience from China in promoting agricultural economic development, it is recognized that there are some characteristics that can be considered and learned such as: (i) eliminating many different taxes related to agriculture, (ii) direct capital, technical, and plant seed support to farmers, (iii) promulgate laws such as the Law on Basic Agricultural Land Protection like in China, although in Vietnam Mechanisms to protect agricultural land have been established, but in general they are still scattered or exist in legal documents. Therefore, regulations related to cultivation and agricultural land have not yet been unified and completely summarized, (iv) investment in developing high-tech agriculture, and the agricultural insurance market, (iv) v) propose support policies for children of farmers who are farming in difficult circumstances.

Fourthly, with the experience of agricultural restructuring in Thailand, we see that the government has made plans to rotate crop production with rice land, instead of specializing in farming as before. Similar to experiences in some other countries, the Thai Government also has policies to subsidize agricultural prices, provide capital incentives, as well as increase agricultural insurance for farmers. Notably, the government will provide price support for farmers cultivating key fruits; To ensure output, the government has issued policies, implemented by a team of experts who closely monitor all stages of production, distribution, processing, price, consolidation and finding markets. new export. For food producers such as rice, paddy, etc., they will receive incentives to buy low-cost fertilizers, free transportation to the production site, experience new high-yield varieties, and get loans with interest. low export from agricultural banks. In particular, to avoid duplication and oversupply, the government has implemented the program "one tambo, one product - OTOP", whereby each village only focuses on producing a typical product based on the strengths of the region, developing "village fund" programs (Village Fund Proram. Accordingly, each village will receive 1 million baht from the government as a loan for the purpose of economic development - Society within the village. Statistics show that more than 75,000 villages in Thailand have received this loan (Nguyen Thi Tu, 2017).

4. Conclusion

Our Party and State have soon recognized the importance of sustainable development, incorporating the perspective of sustainable development into resolutions, strategies, and plans for socio-economic development, including the agricultural sector. industrial, rural. Besides the positive results, there are still difficulties in the process of industrialization, modernization, and restructuring of agriculture and rural areas such as the situation of "good season falling prices" still occurring. The quantity and price of exported agricultural products are unstable; The average income of farmers is significantly lower than that of workers in the industrial and service sectors. Agriculture accounts for about 47% of the workforce, but only contributes 19% of the value to gross domestic product, meaning labor productivity or average income of farmers is less than 1/3 of the average income of farmers. workers in the industrial and service sectors. In addition, farmers still have difficulty accessing investment capital despite the State's supportive policies.

The inadequacies in our country's agriculture, from the perspective of political economy, are the most basic cause due to the incompatibility of production relations and production organization in agriculture with market economic conditions. current market and international integration. Awareness about building new rural areas and restructuring agriculture is not at the right level. The majority of



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people are not really proactive, mastery, and lack determination to participate in restructuring and developing agriculture. The majority of farming households - the basic production units in agriculture - have very small economic potential, produce alone and lack compatibility with the market economy and international integration (Nguyen Thi Anh, 2020). From the above issue, agricultural structural innovation is an issue that needs to be raised. Referencing the experiences of agricultural economic development in countries that have successful agricultural models in the world will be the premise. Help Vietnam change mechanisms and policies to promote sustainable agricultural economic development in the future./

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