# Policy Barriers to the Development of High-tech Agriculture in Contemporary Vietnam

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## Abstract

High technology application in production development is an irreversible trend of economic sectors in the era of modern science and technology. Development of high-tech agriculture helps improve the quality of agricultural commodity, product value and thereby increases productivity of labor and land. It also boosts farmers' incomes and increases competitiveness of agricultural commodities at domestic and global scales. From 2010 onwards, the Vietnamese government has issued many supporting policies and created conditions for promoting the development of hi-tech agriculture. However, the implementation of many policies has been showing limitations that hinder the development of high-tech agriculture that needs to be examined. This paper focuses on scrutinizing the limitations of the three major policies that have great impacts on the development of high-tech agriculture in Vietnam including: (1) land policy; (2) credit support policy and (3) policies to promote linkages between producers. As a result, this paper will offer some recommendations for removing these policy barriers.

**Keywords:** Barrier, Policy, High-tech Agriculture

## 1. Research Problem

Vietnam has been undergoing a rapid transition from an agriculture-led economy to industry and service-based economy that is characterized by much higher integration and dynamics. However, the updated data shows that Vietnam still has more than 19.2 million working people in agriculture, accounting for 35.4% of the total labor force of Vietnam (GSO, 2019). Also, the share of agriculture in GDP is 14.6% (GSO, 2019). That means that agriculture still plays an important role in GDP. Vietnam's agricultural sector is facing many difficulties due to the impact of industrialization and urbanization, which reduced the area of land for production gradually. Along with that is the effect of climate change. Agricultural productivity growth rate in Vietnam tends to slow down and be slower than that of many countries in the region. Along with the increase of average income and the deeper global integration, the requirements of product quality are also raised. Vietnam can no longer maintain a small and fragmented agricultural production but must gradually shift to large-scale agricultural production and especially promote high-tech applications in agricultural production. New investment in high-tech agricultural development is currently a trend of many countries in the world that have achieved great success such as the Netherlands, Japan, Israel, Korea, Taiwan... The development of high-tech agriculture is an indispensable choice for Vietnam in future. In fact, the application of high technology in agricultural production in Vietnam is, however, facing many difficulties, mainly resulting from policy paradigm. Removing policy barriers will help better develop high-tech agriculture in Vietnam.

## 2. Research Methodology

The objective of this paper is to focus on three policies including (1) land policy, (2) credit support policy and (3) policy to promote linkages among current producers in Vietnam to shed light on shortcomings that hinder the development of hi-tech agriculture. Therefore, the research design of the article is structured as follows:

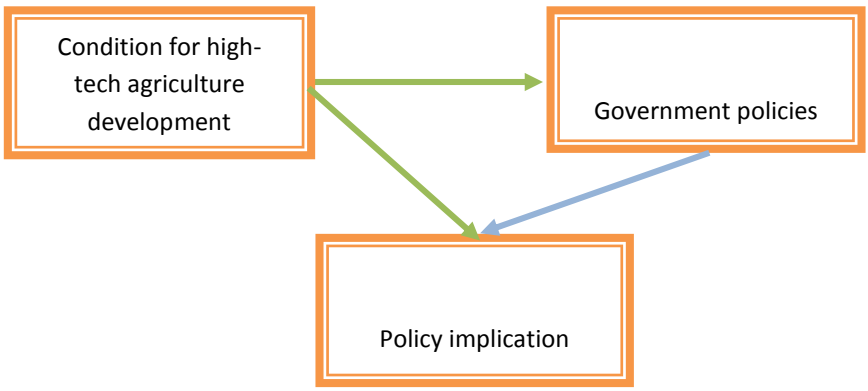


**Figure 1: Research Design**

*Source: suggested by the author*

Identifying necessary conditions for high-tech agriculture development will be addressed. Accordingly, consideration of the current policies of Vietnam to answer the question whether these policies meet the conditions for high-tech agricultural development. Consequently, this paper makes recommendations for amendment of the policies to ensure suitable conditions for high-tech agricultural development in Vietnam in future.

The paper uses secondary data collected from the Vietnam Statistical Yearbook 2018, Vietnam White Paper 2019 with the methods of synthesis, descriptive statistics and qualitative analysis to analyze both policies and regulations in order to clarify policy barriers to hi-tech agricultural development in Vietnam.

## 3. Research Results

### *3.1. High-tech Agriculture and Conditions for Developing High-tech Agriculture*

3.1.1. High-tech Agriculture

Currently, there are many different ways in understanding and approaching high-tech agriculture, even the name itself is not consistent: "high-tech agriculture", "intelligent agriculture", "precise agriculture" etc...

In Vietnam, according to the Ministry of Agriculture and Rural Development, "High-tech agriculture is the agriculture that applies new technologies to production, including: agricultural industrialization (mechanization of agricultural production), automation, information technology, new materials technology, biotechnology and plant species and animal breeds with high productivity and quality, achieving high economic efficiency per unit of area and sustainable development on the basis of organic farming ".

Therefore, high-tech agricultural production must ensure the following criteria:

- Applying technologies step by step to agricultural production, including: technological advances on plant and animal species, cultivation technology, post-harvest technology and preservation ...

- High-tech agricultural products must be products with unique characteristics of each region, highly productive and economically efficient, highly able to compete on domestic and foreign markets.

- High-tech agricultural products must be produced in a closed process, ensuring quality standards and avoiding risks due to natural conditions.

3.1.2. Conditions for Development of High-tech Agriculture

(1) *Land accumulation, promotion of large-scale concentrated commodity production*

In theory, economies of scale and large-scale production will require less initial investment and thus bring better economic efficiency. In agriculture, large-scale production will enhance the uniformity of quality for a large number of products, facilitating the domination of a given market. This is a critical condition because the current target of production of many countries is not only to meet domestic demand but also foreign markets. In particular, large-scale production is a necessary condition for investment of a production technical infrastructure that is synchronous and easy to apply advanced production technologies towards diversifying products, saving product cost and therefore increasing the productivity of labor and land.

Regarding revenue, science and technology are highly intellectual products. So, investing in science and technology in general and specifically, applying science and technology in agricultural production requires a high level of investment. Each farming household cannot have enough resources to invest individually in science and technology. The value of modern machinery and equipment that help increase the productivity of either crops or livestock is often costly and beyond the affordability of each farming household. For small-scale production, agricultural products will not be enough to offset the initial investment in machinery and equipment. In contrast, investment and production at a large scale will bring about promising revenue.

*(2) Mobilizing investment*

As discussed above, hi-tech agriculture is an agriculture that applies new and advanced technologies into the production process in order to create a breakthrough in productivity and quality of agricultural products. To implement the model, in addition to organizing agricultural production on a relatively large scale, adequate investment is also needed to ensure the conditions of infrastructure and production technology. Therefore, high-tech agricultural production requires a high level of investment.

It is estimated that in addition to the investment for infrastructure construction, the cost of trees, breeds, labor training costs, ... to develop a farming or husbandry farm at a medium scale following the high-tech agriculture model, it will cost 4 to 5 times more expensive than a traditional model farm. For example, greenhouse of 1 acre with full watering, spraying and fertilizing systems that is automated by Israeli technology needs at least US$ 500,000 – 600,000 (equal to VND 10 - 15 billion).

*(3) Linkages between entities in hi-tech agricultural production*

Production linkage is an inevitable development trend of modern agriculture, particularly in hi-tech agricultural production. High-tech agricultural production highly entails a closed process and ensure the quality standards from raw materials to harvesting, storage, processing and consumption. Each stage in that process needs a condition in which the linkage of producers including input suppliers, scientists, farmers, cooperatives, product-selling enterprises. These agents cannot carry out the entire production process alone. Scientists play the role in exploring new technologies and transferring them over manufacturers and product distributors and responsible for overseeing technology application. They are also a bridge in connecting producers

with businesses (distributors). Producers (farming households, cooperatives, farms ...) are responsible for production organization in consistent with the regulations of production processes and operating the transferred technology. Distributor (enterprise) is a provider of inputs for production and ensures the distribution and consumption of products. Therefore, it is essential to create and maintain a strong relationship between actors in hi-tech agricultural production.

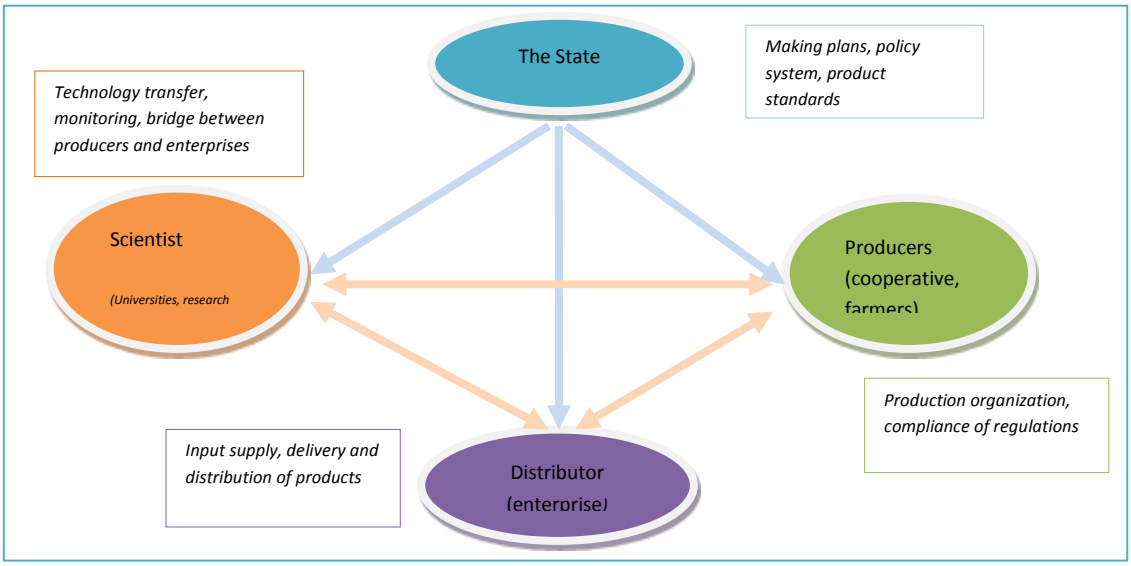


**Figure 2: The linkage among production actors**

*Source: synthesized by the author*

To ensure an effective and sustainable production linkage in high-tech agriculture, it is necessary to ensure that within the linkage among scientists, producers, distributors and the State is the coordinator of this relationship through the development of agricultural development plans, policies, and systems of product quality standards.

### *3.2. Policy barriers in Developing High-tech Agriculture in Vietnam*

#### *3.2.1. Land Policy Barriers*

Land policy is currently the Vietnam's biggest barrier to developing high-tech agriculture. In Vietnam, there are 11 million hectares of agricultural land, but fragmented into about 78 million fields and distributed to about 8.5 million farming households. Of which, 70% of farming households are assigned production land with an area of less than 0.5 ha and only 3.4% of households have land area of more than 3 ha (Vietnam News Agency, 2019). The land is fragmented making it difficult for concentrated production such as hindering the application of high technology in agricultural production. However, land accumulation is facing many difficulties due to from land policy barriers.

Since the 2013 Land Law of Vietnam took effect on 1st of July in 2014, after many amendments, there have been new regulations towards land accumulation. Specifically, the 2013 Land Law has increased the time for land valuation of provincial authorities from one time to five times per year, creating more stability in land prices; changing the term of land allocation for annual crops from 20 years (mentioned in Land Law 2003) to 50 years; allowing land accumulation on a larger scale that does not exceed more than 10 times of agricultural land allocation (Le and Le 2017). Thus, the 2013 Land Law of Vietnam has increased the limit of less than 20 ha for annual crop land in the North and the Central, no more than 30 ha in the Mekong Delta, no more than 100ha for perennial trees in the delta areas and less than 300 ha in the mountainous areas. Further, the Vietnamese government have also encouraged and accumulated land for large-scale production through a lot of different ways such as land renting exemption, water surface rent from the State, and land use change free of charge.

However, the current land limit has not met the requirements of forming a large-scale concentrated commodity production agriculture, hindering long-term investment and the application of technology into hi-tech agricultural production. Therefore, it has not created a good motivation for investors. Not to mention the procedures for hiring and transferring agricultural land are still so troublesome that businesses find it hard to acquire enough land in order to invest in agricultural production. On the one hand, seeking a suitable production land source is highly problematic, time-consuming for businesses when they want to invest in agriculture, not to mention a lot of disputes and lawsuits. On the other hand, the State's supporting policy of land renting exemption or reduction is also ineffective because the public land fund for agricultural production, in fact, is almost unavailable. Therefore, businesses and producers have to rent private land. This is also the reason why the number of enterprises investing in agricultural production in Vietnam is limited.

As of August 31st, 2018, there were 714,755 operating enterprises in Vietnam but only 10,766 enterprises (accounting for 1.51%) were participating in agricultural production. The number for 2017 was 654,663 and 9,951, respectively (accounting for 1.52%) (MPI, 2019). Among agricultural enterprises, small and medium-sized enterprises account for 55% of the total number of enterprises, the number of high-tech agricultural enterprises only accounts for a very small proportion of the whole economy's enterprises. In addition, foreign-owned enterprises have limited access to agricultural land compared to domestic enterprises. Currently, there are 25,339 projects with the focus on investment in Vietnam's agriculture with a total registered capital of nearly US$ 319 billion. Only 522 foreign direct investment (FDI) projects, are, however, in the agricultural sector with a total capital of nearly US$ 3,577 million, accounting for 1.22% of total investment capital (VNA, 2019).

*3.2.2. Barriers in Credit Supporting Policies*

The lack of capital in investment is also a key obstacle in developing high-tech agriculture, including many causes resulting from capital-mobilizing policies. Derived from the condition of applying technology in agricultural production that requires a large amount of capital, beyond the

support of the state budget, local governments' budgets and the enterprises' funding. That means that loans are an inevitable choice. The Government of Vietnam has also issued many policies to support loans for entities operating in this field to encourage and promote agricultural development and high-tech agriculture. The Decree 118/2015/ND-CP dated 12th November 2015 of the Government detailing and guiding the implementation of the Law on Investment including cultivation, livestock and poultry farming, preservation and processing of agricultural products... that are the top priorities; Decree 55/2015/ND-CP dated June 9th, 2015 replaces Decree 41/2010/ND-CP on credit for agricultural development with many preferential policies such as loans without assets backing at the level of 70 - 80% of the project value according to the affiliated model with flexible lending, reducing lending interest rate by 0.2%/year if buying insurance...; Decree 57/2018/ND-CP dated April 17th, 2018 of the Government on policies that encourage businesses to invest in agriculture and rural areas had many changes in terms of support mechanisms that changed from money-based direct support to land renting exemption, administrative procedures cut, interest rate support, training support; Decision No. 813/QD-NHNN dated April 24th, 2017 of the State Bank of Vietnam on preferential lending programs to encourage the development of high-tech applications and clean agriculture with which businesses are allowed to use real estate that results from the loan as an asset backing. Moreover, the structure of loan repayment schedule was changed...

However, it is not at ease for civilians, cooperatives and businesses to gain access to loans according to State policies because lending procedures are still not good enough. Firstly, among the preferential policies to attract investment in agriculture, the beneficiaries are enterprises while the agricultural producers are usually farming households and farms. Second, for many businesses, cooperatives and farmers, they are facing a difficulty to borrow a loan because of not having collateral. The land of cooperatives and enterprises is mainly rented land, so it is not eligible to borrow. Assets on the farm or business land are invested in tens of billion Dongs, but they are not currently considered as collateral or, if any, are often underestimated. On the other hand, investment projects on production lines and modern machinery are often costly, so the loan support of 70% is sometimes difficult for farmers and small businesses when they have to find sources for the rest of 30%. The policy that supports 100% of loans, but farmers and businesses pay part of the loan each month as prescribed. In 2016, according to a survey conducted by the Institute of Policy and Strategy for Agriculture and Rural Development (Ministry of Agriculture and Rural Development), up to 70.1% of enterprises said that they had difficulty in accessing credit while 49.4% of them find it difficult or inaccessible for credit loans (Ngoc Quynh, 2017).

*3.2.3. Barriers in the Bridging Policy between Production Actors*

In addition to land fund and investment capital required in the high-tech agricultural production, technology and the market for products are the next important factors for success. In order to ensure stability, these two factors need to be closely linked between producers and scientists and product distributors. In other words, a series of linkages in agricultural production is needed. Currently in Vietnam, many localities are actively promoting the development of linkages

in agricultural production. A number of hi-tech agricultural production linkages have been formed and developed strongly in recent years such as the high-tech agricultural model of Vineco – a member of Vingroup Corporation, a closed industrial supply chain of high technology in Nghe An of TH Group, 5-star technology led cow farm in Thanh Hoa of Vinamilk Corporation...

However, these are big corporations with a lot of financial potential to invest synchronously and methodically and not many other enterprises are like them. Farming households and small businesses account for the highest number in the agricultural production. For these actors, the linkage in production and consumption of agricultural products remains loose. The situation in which farmers break supply contracts with businesses or businesses do not cover all products as agreed is still not uncommon. Cooperatives have failed to play the role as a good bridge between farmers and businesses.

The linkage between scientific and technological activities among provinces and cities is also fragmented. Many localities have not developed a plan for close cooperation between organizations, scientific researchers with research management agencies, result-transferring agencies and results-using organizations and individuals. There is a serious lack of policies in Vietnam to create linkages between research institutes, universities and businesses, cooperatives and farmers. At present, Vietnam has only 11-14% of agricultural production produced and consumed through the linkages, not fully at the potential (Thu Phuong 2019).

## 4. Solutions for the Removal of Policy Barriers in Hi-tech Agricultural Development in Vietnam

### *4.1. Adjusting the Land Policy and Promote Land Accumulation*

In agricultural production, land is the primary and irreplaceable means of production. Vietnam's land-related policies are currently the biggest barrier to the development of high-tech agriculture as discussed above. To overcome this obstacle, Vietnam needs to recognize two levels of ownership of land:

+ The ultimate ownership of land belongs to the State prescribing that: (1) to govern the whole territory; (2) collect land taxes; (3) directly manage public land.

+ The limited ownership (owned by citizens). The seven rights to the land given to the citizens are actually the limited ownership.

Acknowledging that land has two levels of ownership will end the wrong land acquisition, corruption related to land and the lawsuits. This also means that there will be no more land limit, no land allocation term, and citizens will feel more secure in using their land. The State and investors who need land to build constructions and factories must buy land from citizens at market prices. Once purchased at market prices, the government will no longer have to concern about resettlement support or job support after land acquisition. If this is appropriately done, citizens,

businesses, and investors will be more secure in investing in land accumulation for centralized, large-scale production and then disputes and lawsuits related to land will be reduced…

### *4.2. Improving the Credit Supporting Policy*

Policies to support credit in developing agricultural production and namely high-tech agriculture in Vietnam are quite adequate, but they have been failing in reflecting the problems in reality that cause difficulties for citizens and businesses when accessing loans. Therefore, the Government needs to adjust some contents in these policies to create favorable conditions for citizens and businesses to have access to loans for the development of agricultural production:

+ The State needs to make specific guidance on criteria for identifying high-tech agricultural projects and clean agriculture, which helps commercial banks have a basis for appraisal, thereby speeding up the loan consideration process.

+ In addition to the red book of houses, residential land, land use right certificates, the State should establish property rights on agricultural land, including net houses, membrane houses, greenhouses, irrigation systems, etc. enabling businesses to able to borrow loans.

+ Expand and loosen loan standards, simplify loan procedures for both mortgage and loans so that farmers and businesses can access capital more conveniently.

+ Increasing the limit of unsecured loans for businesses to have more fund to invest in production development

+ In terms of the loan term, depending on the production conditions of each household, the State should give farmers a full production cycle. Some trees are harvested after 3 years while others have to take 5 years, even 7 to 10 years to harvest. Thus, people will be more active in borrowing and repaying bank loans.

In addition to adjusting credit supporting policies, it is also necessary to pay attention to the characteristics of agricultural production, which often faces risks due to weather, climate, natural disasters, epidemics. The State should study and establish risk prevention funds in agricultural production in order to support production actors when facing major risks. This also helps minimize risks for banks when lending to high-tech agricultural development projects.

### *4.3. Developing Policies to Promote Linkages between Production Actors*

As mentioned above, only 11-14% of Vietnam's agricultural output are currently produced through linkages, not reflecting the full potential of Vietnam. It also hinders the promotion of scientific and technological application and the development of hi-tech agricultural production. Therefore, ministerial agricultural agencies should continue to guide the provinces to revise policies, promptly issue policies to create favorable conditions for enterprises and cooperatives to invest in agriculture and promote production linkages. Specifically:

+ It is necessary to continue to adjust the Cooperative Law, to overcome the shortcomings revealed in the implementation of the Cooperative Law in the last 7 years; Reviewing, adjusting

and supplementing documents guiding the implementation of the Cooperative Law in a clear and specific manner, creating good conditions for cooperatives to operate and develop. In particular, a separate decree is needed to guide the implementation of the Cooperative Law for agricultural cooperatives.

+ In terms of the linkage among four actors in agricultural production, the three main actors participating in the production chain are producers, distributors and scientists while the State plays the role of supervisor (more influential actor). There is currently a lack of policies to create linkages in the agricultural production chain. The State should have policies to specify the roles, obligations and interests of these actors in the link chain. Accordingly, the State focuses on playing its management role well in supervising the signing of contracts between producers and service providers, input suppliers, product-marketing actors and production technology transfer. It is necessary to ensure the principle that all parties involved are equal and mutually beneficial, contributing to building sustainable and effective links.

## 5. Conclusion

Developing high-tech agriculture is an inevitable selection for the status quo of Vietnam's agriculture and is a premise for agricultural and rural modernization. For Vietnam, this is also the critical basis to accelerate the process of economic transformation, improve productivity and boost farmers' income. The three policies mentioned and analyzed above are only the most important ones that need to be reviewed and adjusted. The amending process also needs to be implemented early but carefully, ensuring the stable production and business activities of all parties. In this regard, the goal of building up a comprehensive agricultural development towards modernization, large commodities in order for Vietnamese agricultural products that can be exported at world market prices.

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