DEVELOPMENT POLICIES FOR AGRICULTURAL ELECTROMECHANICAL TECHNOLOGIES: CASE STUDY OF NGHE AN PROVINCE

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Abstract:

Agricultural electromechanical technologies keep an important role in agricultural production in Vietnam actually. In addition to ease hard works of farmers, it assists to increase productivities of agricultural production. Actual situation of application of agricultural electromechanical technologies is seen as weak and lacking as required by actual needs. One of the reasons of this situation is the shortages of the system policies related to agricultural electromechanical technologies. After having analyses of strong and weak points of this system, the author proposes some solutions to enhance the application of electromechanical technologies and equipments in production.

1. Introduction

Vietnam is one of the world's leading producers and exporters of some agricultural commodities such as rice, coffee and etc. But during recent years, the development growth rate of Vietnamese agriculture is only about 5.36% for 2001-2010 periods and the export value increased only from USD 4.3 billion of 2000 to USD 19.5 billion of 2010[1]. The volume of Vietnamese export is high but the selling price at international market is not high and then the total income is not high also.

As a WTO member, Vietnam and many other developing countries still face many challenges. The low scientific content of Vietnamese agricultural products cannot bring in high competitiveness, even in domestic market. This situation requires local governments to issue policy solutions for technological development to overcome difficulties and challenges raising during integration process.

[1] Report of Ministry of Agriculture and Rural Development of Consultative Conference for Project "Re-structuring agricultural production on direction of added value growth and sustainable development" hold in Hanoi on 6 April 2012.

Nghe An, a province in North of Central Vietnam, has high GDP share of agricultural production. The problem of industrialization of agricultural production and rural areas through development of suitable technologies (where agricultural electromechanical technologies keep an important position) appears as urgent problems for present time and close future. This orientation was reconfirmed by the decision of the Provincial Party Board: "Enhancing electrification, mechanization and development of rural transport. Enhancing and encouraging the use of new intensive cultivating methods, applying new technologies for production processes to reduce post-harvest losses, increase productivity and product quality, by this way to increase production efficiency, to ease hard works of farmers. Encouraging economic sectors to invest in mechanical services for agriculture-forest-aquaculture production, product processing and conserving, manufacture of agricultural machines and tools and etc."[2]. The practice shows that the actual difficult economic situation of farmers, their low knowledge level, undeveloped socio-economic context and infrastructure cause difficulties for development of agricultural electromechanical technologies. On this basis, local government administrations issued many policies to support farmers, to promote the application of technologies and electromechanical machines in production. However, the problem is that the numerous policies were issued but they could not bring back high impacts and effects. As result the local government administrations could not achieve their targets, the population does not get suitable technologies and technology suppliers could not find potential and responsible position. In order to meet the solution for this problem, it is required to produce policies to meet actual local situation and socio-economic development trends of the country.

2. Actual situation of agricultural electromechanical technologies in Nghe An Province

Through studies of existing documents and practical surveys conducted by Department of Agriculture and Rural Development, Department of Science-Technologies and Department of Finance in 20 communes of Districts Yen Thanh, Do Luong, Dien Chau and Quynh Luu, 150 questionnaires were sent to and collected back from technology users, managers and technological transfer services during October 2010. The results are shown in the following table.

[2] Resolution of Nghe An Party Board Congress, Session XVI, 2006-2010 periods

Table 1: Level of satisfaction of agricultural electromechanical technologies for agricultural production in Nghe An Province.

Unit: %

No.	Items	"For" votes
1	Fully satisfying of needs	0
2	Partially satisfying of needs	38
3	Unsatisfying (low level) of needs	62

Through it, we can see the important role of agricultural electromechanical technologies for agricultural production. Practical agricultural production in Nghe An Province shows that:

- Agricultural electromechanical technologies play a decisive role for results of agricultural production in Nghe An Province. They keep links of key components of agricultural production and contribute to the development of agricultural production;
- Agricultural electromechanical technologies are still behind requirements of production practice, namely:
  + Existing technologies and machines do not yet meet needs of agricultural production in terms of quantity and purpose of use;
  + Existing technologies and machines cannot help to solve technical problems.

The following remarks are produced through studies of documents and analysis of actual situation of agricultural electromechanical technologies applied for agricultural production in Nghe An Province:

a. Leaders of People's Committees of various levels and provincial departments realized the important role of agricultural mechanization in general and agricultural electromechanical technologies in particular for local agricultural production.

b. Development of agricultural electromechanical technologies becomes real needs of rural economic sectors. Even with low income rate and limited purchasing power but supported by provincial policies, the agricultural mechanization witnesses the development in some aspects then contributes to the renovation of producing forces, effective use of labor forces and successful exploitation of land resources of the province.

c. Agricultural machine manufacturing industries remain still limited and low developed the main cause of which is the competition from import products.

d. The support policies were issued to set up an integrated development of agricultural machinery which make Nghe An Province be a national leader in this field. The issued policies are highly feasible contributing to increase the investment rate and the use of machines, equipments and technologies in agricultural and rural development.

The actual weak situation of agricultural electromechanical technologies is causes by some reasons, namely:

- Machine manufacturing capacities for the whole range of agricultural production cannot meet market demands. Many machines imported largely through boarder lines without control cause difficulties for domestically produced machines;
- Development of agricultural electromechanical technologies for the whole range of agricultural production remains unbalanced among production processes;
- Average income per capita highly increases (in comparison to past records) but is not equal among regions. There exists a limited capacity of saving and investment for integrated production chains of economic sectors;
- Planning works for cultivating lands remain shorted which cause also obstacles for development of agricultural electromechanical technologies;
- Awareness of local leading bodies as well as local population for agricultural electromechanical development remains still limited which lead to difficulties in technological absorption in practice;
- Actual policies for development of agricultural electromechanical technologies cannot touch yet driving elements of technological transfer in Nghe An Province and this is considered as a key factor of the actual situation;
- Low quality of equipment and high prices of agricultural mechanical products make them difficultly accessible for farmers. There is no integrated solution from numerous aspects such as development orientation, research and development policies, planning works, State incentive supports for investment, use skills and technical and management training/re-training activities.

3. Analysis of policies and development solutions for agricultural electromechanical technologies in Nghe An Province

There are some policies issued for development of agricultural electromechanical technologies in Nghe An Province which include:

- Resolution No. 119/1999/ND-CP dated 18 September 1999 by the Government on policies and financial mechanisms for incentive investment for science-technological activities;
- Resolution No. 48/NQ-CP dated 23 September 2009 on mechanisms and supports to reduce post-harvest losses for agricultural and aqua cultural products;
- Decision No. 497/QD-TTg dated 17 April 2009 by the Prime Minister on interest rate supports for purchase on agricultural machines, equipment, materials and housing construction material for rural areas;
- Decision No. 2213/QD-TTg dated 31 December 2009 on amendments and revision of some articles of Decision No. 497/QD-TTg dated 17 April 2009 by the Prime Minister on interest rate supports for purchase on agricultural machines, equipment, materials and housing construction material for rural areas;
- Decision No.5005/QD-UBNN dated 12 December 1998 by the Provincial People's Committee on policies to support the supply of multi-purpose of small-size digging machines for agricultural production;
- Decision No. 07/2006/QD-UBND dated 18 January 2006 by the Provincial People's Committee on the issue of supporting policies for agricultural and rural development of Nghe An Province, 2006-2007 periods;
- Decision No. 3124/2007/QD-UBNN dated 13 September by the Provincial People's Committee on the support norm for 100 tea picking machines of VND 4 million/machine (equivalent to 30% value of machine).

The agricultural electromechanical experts at research institute (technology supplying side), technological broker organizations, local management agencies (Department of Agriculture and Rural Development, Department of S&T, Department of Finance) and District Agricultural Services (intermediate management agencies), Commune leaders and local population, give their answers to questionnaire interview, and 82% of the total interviewed people confirm that the issued policies do not promote the commercial production; 66% of them confirm that actual policies do not

support farmers in terms of capital for purchasing machines; 58% of them confirm that the issued policies do not produce impacts to raise the knowledge of farmers in application of agricultural electromechanical technologies; 78% of them confirm that the issued policies do not follow the production practice of local population. The interview results also show that the interviewed people remain aware of the important role of policies in daily life, the role of policies towards the actual situation of technologies and agricultural electromechanical machines. The policies are acknowledged as the key factor for technological transfer. This confirms also that policies are key cause of the actual situation of agricultural production as well as agricultural electromechanical technologies, namely:

- Actual system of policies does not produce strong impacts to production mindset and agricultural production picture;
- Demands of investment of farmers are diversified and large. Actual policies for development of agricultural electromechanical technologies, in initial stages, offer supports of capital to purchase machines of agricultural electromechanical technologies. However, these supports should be adjusted in terms of loan time, illegible type of machines, loan procedures and capital payback time and etc;
- Actual policies do not touch much the training/coaching problems which are crucial for technological transfer. Farmers almost realize the matters of investment for machines from their own experience, production and business activities;
- The system of policies for development of agricultural electromechanical technologies in Nghe An Province remain weak and non-integrated.

3.1. Strong points

The issued policies help to settle big production problems, namely:

- The issued policies show that local leading bodies realize correctly the role of agricultural electromechanical technologies for agricultural production. They offer favorable condition for application of agricultural electromechanical technologies in Nghe An Province;
- The policies produce positive impacts to investment capital for agricultural machines. Farmers actually have a very low income and limited investment for purchasing agricultural machines, equipments and materials;
- The issued policies help to settle big agricultural electromechanical problems. By loans and technological transfers, provided technologies

and machines gradually enhance production capacities and modernize agricultural production;

- Financial policies help settle partially needs of investment capital for agricultural technologies and machines;
- The market's pressure on quality of agricultural products increases and this trend is gradually clearly confirmed. Financial policies help also to settle this problem of agricultural production, in addition to a good agricultural market and awareness of population;
- Farmers have additional access to support loans for purchasing agricultural machines and materials. They help to ease hard works of farmers and they have chance to make the shift of production profiles;
- They contribute to enhance income of farmers and their life level. By this way, the local socio-economic conditions get improved which would be good pre-conditions for development of other fields...;
- Outputs of technologies and machines get settled through the impacts of issued policies which stimulate technological application for production practice;
- Finally, the development of agricultural electromechanical technologies, through the propagation of policy impacts, turns farmers to direct beneficiaries. Other beneficiaries are research organizations, agricultural machine business entities and local banks.

3.2. Weak points

- Tools of policies do not produce right impacts. They do not have clear differences between plane areas and mountainous ones, knowledge level of local population and socio-economic conditions.
- The practice shows also that offered lists of machines and materials do not satisfy correctly demands. They cannot cover the so-called "technological empty areas".
- The policies which require the supported commodities to be locally produced limit the chances of investment of farmers...
- Loan procedures and access to support policies remain hard and complex and they cause difficulties to purchase of agricultural electromechanical technologies and machines.
- Existing policies do not focus on impacts towards elements which limit the development of agricultural electromechanical technologies.

- Majority of issued policies are classified as middle termed and short termed. Long term policies are very rare. This problem is chronic weak point of the system.
- Inter-links between policies are also a problem. They do not support each other in common efforts to enhance synergy for application in production practice.
- Existing policies do not produce impacts to the awareness of local leading bodies on the role and the necessity of development agricultural electromechanical technologies in production practice.

4. Proposal of some measures for development of agricultural electromechanical technologies in Nghe An Province

4.1. Solutions of global policies

- The Party, the State, the Government and Ministries issued many policies to concretize Resolution No. 26 - NQ/TW by the 10th Party's Central Committee dated 5 August 2008 on agriculture, farmers and rural development;
- Issue of solutions to push up "National Program of new rural building";
- Issue of incentive policies for application of agricultural science and technology advances in general and in fields of seeds, cultivation and reservation/processing in particular;
- Issue of many mechanisms, policies and solutions to enhance capacities of domestic manufacturing, control and automation of manufacturing enterprises, research units and mechanical machine/equipment transfer services;
- Continued activities for "gathering/exchanging cultivation lands", building on-field transport systems which facilitate the application agricultural of technologies and machines;
- Issue of policies for stabilization of agricultural products price, sustainable development of agricultural products market which would be favorable for investment efforts by farmers for agricultural technologies and equipment.

4.2. Solutions of policies for development of agricultural electromechanical technologies

4.2.1. Financial policies

a. Taxation policies for enterprises

- Issue of more favorable income taxation rate for enterprises to conduct scientific activities, technological renovation on basis of achievements of Resolution No. 119/1999/ND-CP by the Government (possible tax exemption for enterprises conducting activities in field of agricultural electromechanical technologies in mountainous, island and difficult areas).
- Issue of the list of agricultural electromechanical machines to be imported. The import tax rate should be reduced to be less than 5% (actually these commodities bear the import tax rate of 5%).

b. Financial supports for farmers to purchase machines, equipments and technologies

- This support should be based on regular basis. It is a long term policy.
- The scope of beneficiaries should be extended larger than farmers and farms but also to agricultural manufacturing enterprises. Policies should also distinguish beneficiaries depending on their income, socio-economic conditions of regions; priorities being given to mountainous and remote regions;
- Loan procedures should simple and streamlined without causing complexities. Loans should be offered without demands of mortgages but only certification or guarantee by local administration.
- Loan terms should be long enough (at least 3 years) to give farmers the chance of payback due to the low benefit rate and seasonal features of agricultural production nature.

c. Financial supports for research and development (R&D) organizations

- Financial sources for R&D activities in agricultural science-technology (S&T) field should fit the contents of projects.
- Products from projects are financial background of projects. The settlement supporting documents are the accepted results of projects. Financial management regulations should be more eased and applied in conformity to reality of S&T activities.
- Reasonable tax rates should be applied for research machines and tools. Tax exemption should be applied for machines/equipments used for S&T activities which produce commercial products.
- Tax exemption should not be applied also for personal incomes raised from agricultural S&T activities.

- Favorable policies should be applied for pilot projects. Loans should not be compulsorily paid back for agricultural manufacturing pilot projects.
- Support policies are required for manufacturing fields in order to enhance domestic engineering capacities and to reduce product costs.

d. Financial support for State management organizations and intermediate agencies

It is necessary to encourage organizations and individuals to participate actively and effectively in technological transfer. As solutions, they should be supported financially in their activities for agricultural electromechanical technologies. The policies should:

- Provide sufficiently financial sources for State organizations to conduct surveys, to build development policies for agricultural electromechanical technologies and application of new technologies in production... They should be also financially provided to build up target programs, standard system for evaluation of activities in field of agricultural electromechanical technologies;
- Provide financial sources for intermediate agencies to conduct transfer projects in field of agricultural electromechanical technologies, to build up production models and successful application models for large diffusions;
- Facilitate implementations of S&T and technological development projects by removing the compulsory requirement of certain fixed recovery rate;
- Provide incentive policies for staff specifically in charge of technological development in field of agricultural electromechanical technologies and agricultural product processing;
- Encourage organizations and individuals to participate actively in technological transfer by higher income from technological transfer.

4.2.2. Policies to enhance State management works

a. Improvement of training functions of human resources of S&T stakeholders in field of agricultural electromechanical technologies

- Set-up and extension of legal regulations for S&T activities in field of agricultural electromechanical technologies.
- Target oriented financial investment for S&T activities.

- Extension of international S&T cooperation in field of agricultural electromechanical technologies.
- Promulgation of the "Law of Agricultural Mechanization" on basis of external experiences where the dominating role belongs to agricultural electromechanical aspects.

b. Enhancement of functions and tasks, and improvement of structure of organizations in technological transfer activities in field of agricultural electromechanical technologies

- Organizations working in agricultural electromechanical field are to have transfer functions of agricultural electromechanical technologies. Particularly, research organizations such as Institute of Agricultural electromechanical and Post-harvest technological researches should keep the technological transfer as main functions and tasks.
- Research organizations such as Institute of Agricultural electromechanical and Post-harvest technological researches should have integrated structure and reasonable shares of duties between divisions of research-manufacture-transfer. From another side, it is necessary to deploy research-transfer centers in various regions of Vietnam.

c. Human resource policies for organizations working in field of technological transfer of agricultural electromechanical technologies

- They have to be focused centers of S&T human resources in agricultural electromechanical field.
- The supply of scientific human resources should be a regular activity through training activities.
- Issue of policies for universities and colleges to train human resources in agricultural electromechanical and post-harvest field.
- Issue of dynamic policies for better recruitment and use of human resources working in field of technological transfer of agricultural electromechanical technologies.

4.2.3. Policies for scientific research activities

- Creation of favorable conditions for research organizations to conduct research projects of national and ministerial levels for implementation of research projects in Nghe An Province.
- Effective mechanism of coordination with Ministry of S&T for setting up and implementing S&T projects in various stages of agricultural production process.

- Effective mechanism of coordination with Ministry of Agriculture and Rural Development for setting up and approval of scientific tasks in agricultural electromechanical fields; focused efforts for settlement of urgent technical problems of farmers in Nghe An Province./.

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