# FOCUSING ON PRIORITIZING RESEARCH AND APPLICATION TO CONTRIBUTE TO SCIENCE AND TECHNOLOGY TRANSFER IN ETHNIC MINORITY AND MOUNTAINOUS IN THE CURRENT PERIOD

**Hoang Duc Thanh**[a]
**Nguyen Duy Dung**[b]; **Pham Đinh Chien**[c]

[a] Academy of Air Force - Air Defense; Email: *thanhanh481@gmail.com*
[b] Vietnam Academy of Ethnic Minorities; Email: *dungnd@hvdt.edu.vn*
[c] Border Academy; Email: *phamchien800512@gmail.com*
Received: 11/3/2023; Reviewed: 11/3/2023; Revised: 13/3/2023; Accepted: 13/3/2023;Released: 20/3/2023
DOI: https://doi.org/10.54163/ncdt/56

In the context of the fourth scientific and technological revolution and the trend of deep international integration, research, transfer, and application of science and technology has become a mandatory requirement for each country as well as each field, including science and technology transfer in ethnic minority and mountainous areas. Therefore, in the past years, the Party, State, National Assembly and Government have determined that science and technology transfer plays a very important role in the process of socio-economic development, hunger eradication and poverty reduction and improve the lives of ethnic minorities in extremely difficult areas, remote, border and island areas. Up to now, our Party and State have promulgated many undertakings and policies on science and technology transfer for ethnic minorities and mountainous areas in general and in extremely difficult, remote and isolated areas, borders and islands in particular, of which the important premise is Resolution No. 22/NQ-TW dated November 27th, 1989 of the Politburo on a number of major undertakings and policies "to accelerate scientific and technological progress in mountainous areas" and Decision No. 72/HDBT dated March 13th, 1990 of the Council of Ministers on a number of specific guidelines and policies on socio-economic development in mountainous areas

***Keywords:*** *Research and application; Science and technology transfer; Ethnic minority and mountainous areas.*

## 1. Introduction

After more than 35 years of implementing the national renewal policy (from 1986 to the present), the Party, State, National Assembly and Government have issued many important undertakings and policies, including the transfer policy of science and technology for sustainable economic development, hunger eradication and poverty reduction for ethnic minorities, especially ethnic minorities living in extremely difficult, remote areas, borders and islands. In Resolution No. 22/NQ-TW of the Politburo on a number of major undertakings and policies "to quickly bring scientific and technical progress to mountainous areas", the Resolution emphasized "it is necessary to focus on applied research progress in the fields of cultivation, animal husbandry and processing of agricultural and forestry products, especially for crops and livestock, which are the strengths of the region... It is necessary to pay great attention to training technical staff for mountainous areas, associate the training of cadre with the research and application of new technologies".

In Decision No. 72/HDBT of the Council of Ministers on a number of specific guidelines and policies on socio-economic development in mountainous areas, it was affirmed that "The State Science and Technology Committee and branches carry out review the entire system of agencies, stations, camps, research centers, scientific and technical experiments in mountainous areas, in order to have a plan to consolidate and strengthen these facilities and build new ones for the following years. In which, scientific research agencies, organizations, scientists and artisans are encouraged to go to mountainous areas to research and apply new scientific and technological advances,... to develop and implement progressive programs of synchronous techniques to promote socio-economic in mountainous areas…".

Decision No. 1747/QD-TTg dated October 13th, 2015 of the Prime Minister approving the "Program to support the application and transfer of scientific and technological advances to promote rural socio-economic development, mountainous areas, ethnic minority areas in the period of 2016-

2025" more clearly clarifies the role of science and technology in socio-economic development in rural, mountainous and ethnic minority areas: "The support of application and transfer of scientific and technological advances suitable to the people's absorptive capacity, bring into play the comparative advantages of each region and bring into play the social resources involved in the implementation of the Program to contribute to promoting socio-economic development in rural, mountainous and ethnic minority areas".

These are important guidelines and policies to start the period when ministries and branches carry out activities to transfer scientific and technological advances to ethnic minorities and mountainous areas. That is the basis for the Ministry of Science and Technology to develop many policies, programs and projects on science and technology transfer, building models for socio-economic development in the mountainous region in general and for particularly difficult and island areas in particular.

**2. Research overview**

Related to the issue of research and application contributing to the transfer of science and technology in ethnic minority and mountainous areas has been interested and researched by many authors, scientists, of which are typical research works such as: Phan Van Dung (2004), "Technology transfer in Vietnam - current situation and solutions"; Phan Van Hung (2010), "Science and technology transfer for socio-economic development in ethnic minority areas"; Nguyen Van Anh, Le Vu Toan, Dam Quang (2012), Discussing the terms "Scientific market", "technology market" and "science and technology market"; Nguyen Thi Van Anh, "Discussion about amending the Law on Technology Transfer from a comparative perspective with the Law on Science and Technology"; Tran Anh Tuan, Truong Thu Hang, "Research on policies to promote the transfer of scientific and technological advances in agricultural production in the Northern mountainous region"; Pham Thi Sen (2018) - representative author, "Main barriers preventing small-scale farmers from receiving and applying technological advances in temperate fruit production; Duy Anh, "Science and technology contribute to socio-economic development in ethnic minority areas"… The above research works have discussed a lot about the research and application contributing to the transfer of science and technology in general and the transfer of science and technology in ethnic minorities and mountainous areas in particular... This is a valuable document for the author to inherit, supplement and complete this research.

**3. Research Methods**

The article uses some main methods such as: The method of secondary document collection; The method of synthesizing and analyzing documents related to this research matter, in order to clarify and provide basic solutions for effective research and application, contributing to the transfer of science and technology in ethnic minorities and mountainous areas in the coming time.

**4. Research Result**

Research, transfer and application of science and technology have brought into play the social resources involved and achieved certain results, showing more and more clearly its role in socio-economic development in ethnic minority and mountainous areas.

Stemming from the achievements achieved since the renovation (since 1986), in the period of 2016-2025, the Prime Minister issued Decision No. 1747/QD-TTg dated October 13th, 2015 on the Program supports the application and transfer of scientific and technological advances to promote socio-economic development in rural, mountainous and ethnic minority areas in the period of 2016-2025. In this program, the Party and State's viewpoints have been determined in support of the application and transfer of scientific and technological advances to promote socio-economic development in rural, mountainous and ethnic minority areas in the period 2016-2025 as follows: *Firstly*, to give priority to technology application and transfer activities in extremely difficult and ethnic minority areas; projects with the participation of enterprises as the nucleus in the value chain of commodity production, creating livelihoods for people in extremely difficult and ethnic minority areas. *Secondly*, supporting the application and transfer of scientific and technological advances in accordance with the people's absorptive capacity, bringing into play the comparative advantages of each region, bringing into play the participating social resources. participating in the implementation of the Program to contribute to the promotion of socio-economic development in rural, mountainous and ethnic minority areas. *Thirdly,* the transfer of scientific and technological advances must go hand in hand with the training and development of staff for the grassroots, and the enhancement of the people's ability to apply science and technology.

***In which the goal for the period of 2016-2020:***

*Firstly*, to build at least 1,200 models of effective application and transfer of scientific and technological advances, with a scale suitable to the ecological zones of each rural, mountainous and ethnic minority area, of which at least 30% of the models are implemented in mountainous areas and ethnic minority areas; *Secondly*, to build at least 20% of models of linking science and technology application along commodity value chains, creating livelihoods for people; *Thirdly*, transfer at least 1,500 turns of new and advanced technologies suitable to each region, promoting

socio-economic development in rural, mountainous and ethnic minority areas; *Fourthly,* training and retraininging to improve project management and organization capacity, application capacity and technology transfer for at least 1,500 managers and about 2,500 local technicians, about 80,000 farmers to have a team of technicians and managers to regularly follow the area to help farmers continue to expand the application of transferred scientific and technological advances.

***The goal for the period of 2021-2025:***

*Firstly*, building at least 1,000 models of effective application and transfer of scientific and technological advances, of which at least 30% of models are implemented in mountainous areas and ethnic minority areas; increasing the proportion of models linking science and technology application along the commodity value chain, models with large production scale, industrial scale, linking agricultural production with processing industry; Secondly, transferring at least 1,500 turns of new and advanced technologies in the fields of science and technology, of which at least 20% are high technologies; *Thirdly*, training at least 1,500 junior technicians, technical training for at least 60,000 farmers, there are at least 10 science and technology enterprises engaged in the transfer of science and technology for the development of rural, mountainous and ethnic minority areas formed from the Program.

Through guidelines and policies to support bringing scientific and technological progress into ethnic minority and mountainous areas, it can be seen that the main contents are as follows:

- Increasing investment in research activities and supporting the transfer of science and technology in ethnic minority and mountainous areas.

- Supporting the formation of science and technology transfer systems in mountainous ethnic minorities and mountainous areas.

- Implementing the policy of subsidizing freight and subsidizing prices in ethnic minority and mountainous areas so that farmers, especially the poor can apply science and technology to production.

- Supporting science and technology transfer programs in ethnic minorities and mountainous areas. In this context, the Ministry of Agriculture and Rural Development has focused on 9 key programs.

- Focusing on supporting the effective implementation of international cooperation projects, providing technical support for science and technology transfer in ethnic minority and mountainous areas.

- Supporting the development of human resources for science and technology transfer for socio-economic development in ethnic minority and mountainous areas.

- Increasing budget investment capital for activities to support science and technology transfer in ethnic minority and mountainous areas, especially focusing on regions with difficult conditions in terms of geographical location and human resources…

In the past time, activities to support science and technology transfer in ethnic minorities and mountainous areas in general and in extremely difficult areas, remote areas and islands in particular have achieved important results, it can be summarized as follows:

In theory, in recent years, many themes and projects supporting science and technology transfer have been implemented. Projects of the National Program to improve productivity and quality of products and goods of Vietnamese enterprises by 2020 continue to be implemented effectively.

The Ministry of Science and Technology has closely coordinated with the ministries and branches in inspecting and urging the implementation of the National Science and Technology Strategy, strategies and plans for science and technology development of ministries and branches; renewing scientific and technological activities in the spirit of Resolution No.20-NQ/TW, Law on Science and Technology and restructuring projects of ministries and branches. Especially, the Ministry of Science and Technology has closely coordinated with the Ministry of Health, the Ministry of Agriculture and Rural Development, the Ministry of Industry and Trade, the Ministry of Natural Resources and Environment to actively implement science and technology projects under the National Product Program, the High-Tech Development Program and key programs and projects on science and technology under the management of the ministries and branches assigned.

The rural and mountainous program was implemented in three phases 1998-2002, 2004-2010 and 2011-2015, with a total investment of 2,746 billion VND to implement 845 projects in 62 provinces and cities. In which, the support budget from the budget for the cause of science and technology in the spirit of Resolution No. 20-NQ/TW, the Law on Science and Technology and the proposal of the Central Government is more than 1,081 billion VND, accounting for 39.4%; the rest mobilized from people, businesses and the local budget is 1,665 billion VND.

Particularly for the third phase from 2011 to 2015, the Ministry of Science and Technology has coordinated with ministries, branches and provinces and cities to implement 317 projects, with a total budget of nearly 1,740 billion VND, which the central budget supports 663 billion VND and mobilizes from the local budget, businesses and people to be 1,076 billion VND. The projects are

distributed relatively evenly, in most localities in the country: the delta and coastal areas have 159 projects, and the mountainous and midland areas have 158 projects. In which, there are 98 projects implemented in the area where ethnic minorities live, three projects in the island area and 216 projects in other areas. The number of projects and the funding for the program has increased rapidly through the stages, specifically: in the first phase, only 272 billion VND, in the period of 2004-2010, the project implementation budget increased by nearly 170%, equivalent to an increase more than 462 billion VND, and in the period of 2011-2015 continued to increase more than 1,004 billion VND. Notably, although the number of third-phase projects accounted for only 40% of the total number of the Program's projects (317/845 projects), but the amount of science and technology support nearly doubled.

The scientific and technological potentials of areas with special difficulties, remote areas and islands have been enhanced. Investment from the state budget in science and technology increased by an average of 16.5 %/year, reaching about 2% of the total state budget expenditure. Social investment in science and technology increased rapidly, estimated at 1.3% of GDP in 2015. Basic science has made progress. The application of science and technological innovation in especially difficult, remote areas and islands has made progress, especially in the fields of agriculture, construction, health care, information and communication... Science and technology funds were established, initially put into operation and brought into full play. Developing the science and technology market, strengthening the connection between supply and demand, the value of technology transactions to increase by an average of 13.5% per year.

In 2016 alone, The Vietnam Farmers Association cooperated with the Ministry of Science and Technology, built 7,500 transfer models and supported the transfer of science and technology in ethnic minority areas with an amount of 10,498 trillion VND. The projects focus on the production and consumption of high-quality rice varieties for consumption and export. In addition, there are mushroom farming projects, aquaculture projects, poultry raising projects, bioga cellar projects, gardens, ponds, cages... with a total budget of over 6,950 billion VND.

Over the past few years, although not many, the Committee for Ethnic Minority Affairs has actively coordinated with ministries and sectors to contribute to promoting the network of science and technology transfer activities into ethnic minority and mountainous areas, specifically: 02 state-level projects and dozens of ministerial-level projects focusing mainly on livestock and crop production such as: Growing grapefruit; Applying scientific and technological advances to develop sustainable poultry production in Hoa Binh province; Applying scientific and technological advances to build beef cattle raising models in ethnic minority areas of Phu Tho, Tuyen Quang and Vinh Phuc provinces...; Producing organic fertilizer from organic waste on-site to protect the environment…

The localities have supported the formation of a number of models of effective linkage between institutes, universities and enterprises in scientific and technological activities in particularly disadvantaged, remote areas and islands. As a result, many models of science and technology transfer have been implemented in localities, such as: Quang Ninh province has implemented 205 research projects and topics on science and technology transfer in the period of 2011-2020. In which, research activities have a total of 184 topics (21 topics at ministerial level, 80 topics at provincial level, 83 topics at grassroots level). Along with that, the province also implemented 21 projects on the application and transfer of science and technology in mountainous and ethnic minority areas.

In particular, the province has applied science and technology with the model of growing red flesh dragon fruit TL5 by the method of making trusses in Nam Son commune and Ba Che town, and my model of raising Tien Yen with chicken breeds from artificial insemination technology, with the number of over 16,000 animals; in Ha Lau commune is a project to apply science and technology to produce commercial chili, lemon peach, ginger, raising Sind crossbred cows, plant medicinal plants... Quang Ninh province. In Yen Bai province, with the New Zealand rabbit farming model, the profit is 700-800 million VND/year, in Son La, the Israeli technology negative irrigation system is used to grow grass for beef cattle for an income of 1 billion VND/year… transferred into production nearly 700 samples of grain dryers (rice, corn, beans, coffee,...) with only 50-60% of the cost compared to imported ones, the drying cost was 80-100 VND/kg thanks to using readily available and cheap energy (coal, rice husk, sawdust, coffee husks, corn cobs...). In particular, Bac Kan province has had many programs, topics and projects to develop tea trees to form a commodity production area with high economic value. At the same time, building application models and transferring breeding technology; planting new, intensive farming, renovating old tea fields and processing tea in lowland communes of Cho Moi district; application of science and technology to organize production, processing and consumption of Shan Tuyet tea, application of technological advances to renovate and develop commodity tea production areas in Bac Kan province... Up to now, the province's total tea area is 2,168 hectares, of which the harvested area is 1,938 hectares, the output is over 9,400 tons of fresh buds (as of the

end of 2019). For Shan Tuyet tea, the locality has expanded the area in Bang Phuc commune to 139.8 hectares and continues to direct the maintenance and expansion of Shan Tuyet tea production area in the direction of VietGAP and organic. Bac Kan Shan Tuyet tea products have stable output and high economic efficiency, typically Hook tea, Red tea and White tea products. Bang Phuc Shan Tuyet Tea has become a trademark granted a Certificate of Collective Trademark Registration by the National Office of Intellectual Property - Ministry of Science and Technology, with an identifiable packaging label... Through the application topics of scientific and technical advances to production, the area of seedless persimmon has gradually increased over the years. Up to now, many applied research results have created a driving force for the province's socio-economic development, as well as a basis for socio-economic development orientation and economic restructuring, contributing to serving the cause of industrialization and modernization of agriculture and rural areas. For the ethnic minority areas in the province, the results of the projects and topics have positively impacted the perception and production methods, creating a production area for goods of high economic value, contributing to increasing income and improving people's lives.

Binh Phuoc province has determined that one of the effective solutions to contribute to socio-economic development in remote and ethnic minority areas is to implement science and technology projects to support the practical improvement of people's lives, bringing economic efficiency, creating jobs and raising people's incomes. Therefore, in addition to research topics, transfer and application of science and technology, Binh Phuoc province Department of Science and Technology pays special attention to coordinating with relevant units and localities to deploy many meaningful projects. The project "Application of scientific and technological advances to build a model for developing tea material areas and O Long tea processing factories in Bu Gia Map district" has attracted human resources and created jobs for people in the communes of the project region. The project also makes use of idle agricultural labor, contributing to increasing income for local people; produced O Long tea products with its own brand, initially received by customers in the market in the province and some surrounding areas.

Many new high-yielding varieties with characteristics suitable to the conditions in ethnic minority and mountainous areas have been put into production. Companies, seed centers and agricultural materials in ethnic minority and mountainous areas have organized the production of new rice varieties on-site to be confirmed (such as: IR-64; IR17494 (February 13); MTL 250 ; Fragrance No. 1, OMCS-94; Bac Thom No. 7; TNDB 100, KDML 39; DT 10, Khang Dan...), produce and introduce F1 hybrid rice varieties (such as Nhi uu 838, Bac uu 64, Bac uu 903, Nong uu 28, Boi tap Son Thanh) and put into structure hybrid rice varieties to serve farmers, especially in region III (especially difficult areas) in order to ensure food security and fast hunger eradication and poverty alleviation in the locality. In the field of farming techniques, many technological advances have been transferred and applied in wet rice cultivation and extended to upland crops, integrated pest management program (IPM), crop management (ICM) has minimized the harmful effects of field pests and diseases and the adverse effects of chemical drugs on farmers' health and the environment. Application of farming methods on sloping land, anti-erosion, soil protection; restoring the system of forest belt trees to block wind, shade trees for coffee-growing areas; guiding farmers to apply the coffee intensive care and investment regime to shorten the basic construction time of coffee trees from 4 years to 3 years. On long-term industrial plants, the technology of grafting coffee buds and cashews has helped to quickly and effectively renovate, replace orchards, rejuvenate orchards quickly and effectively.

In general, activities to support the transfer of science and technology in extremely difficult, remote areas and islands in the past time have been achieved, but important effects have contributed significantly to economic growth and poverty reduction in extremely difficult, remote areas and islands. Many localities with science and technology transfer activities have households with incomes from 100 to 200 million VND/per year. Transfer projects in the field of processing with new technology have created many products with high economic value.

**** Some shortcomings and limitations***

*Firstly*, mechanisms and policies to support science and technology transfer still have certain shortcomings and limitations to the effectiveness of science and technology transfer in ethnic minorities and mountainous areas.

*Secondly*, activities to support science and technology transfer in ethnic minority areas, extremely difficult areas and islands have achieved many important results, but there are still many shortcomings, limitations, inconsistencies and still overlaps.

*Thirdly*, some activities to support science and technology transfer have low economic efficiency and cannot be replicated in the whole region.

*Fourthly*, activities to support science and technology transfer have not yet made a change in the old production habits of the people.

*Fifthly*, the activities to support the people to apply the results from the project into practical

production life are still limited.

**** Causes of existence, limitations***

*- Objective reasons:*

The residence of ethnic minorities in extremely difficult, remote, difficult island areas, far from centers and markets, making it very difficult to access science and technology activities. On the other hand, because ethnic minorities in extremely difficult, remote and island areas still maintain old production practices, which have existed for a long time, it is difficult to change. People in extremely difficult, remote and island areas are mainly poor people, lacking physical facilities for investment and production.

*- Subjective reasons:*

Authorities at all levels have not really paid attention to activities of transferring science and technology to ethnic minorities. Some leaders and many officials are not fully aware of the importance of activities to support the transfer of science, technology, production and business. In extremely difficult, remote and island areas, there has not been a link between science and technology activities with socio-economic development programs, projects and there has been no coordination between agencies of transfer of science and technology in the locality. Some projects and models of science and technology transfer are not suitable for natural conditions, socio-economic conditions, ethnic characteristics, so they do not bring high efficiency. The organization and implementation of transfer activities are still confused and many problems.

The main cause of these limitations is that the policy to encourage the application of scientific advances and the transfer of science and technology in production is still inadequate; it is difficult for people and businesses to access loans, so even if there is a need to innovate technology and synchronize equipment for production, it is still difficult to implement. The link between scientific research and production practice is still not close. The participation of enterprises and production facilities in the research and application of technical advances is still limited. Although there are many policies to encourage enterprises to invest in scientific research and transfer, apply science and technology, the effectiveness of these policies is not high.

**5. Discussion**

In order to contribute to socio-economic development, improve the living standards for people in extremely difficult, remote, border and island areas, in the coming time, support the transfer of science and technology, it is necessary to continue to perform well the following solutions:

*Firstly, the cognitive solution*

It is necessary to focus on raising awareness for managers and people about the importance of science and technology transfer.

*Secondly, solutions in science and technology*

Selecting domestic or foreign models suitable to development needs and actual local conditions to deploy the transfer, focusing on models of preservation and processing of agricultural products. With special difficulties, remote, border and island areas are inhabited by many ethnic minorities.

Continue to select linkage models to propose to the Government an appropriate and effective support mechanism for enterprises in investing in agriculture and rural areas, promoting application activities and technology transfer. Local authorities develop a roadmap and support training and retraining for a team of farmers, businesses, managers and professional scientific researchers, ensuring that they have the qualifications to absorb and respond to the level and development of technology.

In particular, it is necessary to support the consolidation of scientific research, technological development and production and business units in extremely difficult, remote and island areas. Localities need to re-evaluate the activities of their units' science and technology centers, reorganizing their organizations and creating favorable conditions for scientific activity centers to transfer production and labor technology. It is necessary to improve the operational efficiency of the above units, dissolving the centers that do not operate in accordance with their functions and tasks, suffering losses in production; merging a number of centers with functions and tasks close to each other into centers or research institutes that are qualified to perform technology transfer services - production and business in the locality.

Innovate the method of transferring scientific and technological achievements in accordance with the socio-economic characteristics of ethnic minorities by linking research and technology transfer activities with the task of directly training local human resources. Only local human resources will stick around for a long time and have the best conditions to deploy and apply research results into practice. When allocating funds for topics and projects, there must be additional expenditures for human resource training. Proposing central agencies to provide funding to help localities and universities perform specific scientific tasks according to their addresses and needs for direct application. At the same time, universities and research agencies when choosing models, projects and deployment models must derive from the actual needs of the provinces to build in accordance with the planning, plans and strategies of local socio-economic development.

*Thirdly, the solution of investment sources*

In order to improve the quality and effectiveness of support for science and technology transfer,

it is necessary to focus on creating investment sources and using investment capital appropriately. Increase financial resources for science and technology transfer in extremely difficult, remote, border and island areas. Therefore, in order to carry out the transfer of science and technology, our Party and State need to increase investment in financial resources.

Scientific research activities, especially the transfer and application of science and technology to production, require large capital resources. Therefore, functional sectors need to have an open mechanism for producers to easily access preferential loans. At the same time, there are support policies to attract businesses to invest, transfer technology, produce, process and sell products…

Mobilizing capital and attracting investment in projects on application of science and technology transfer in agriculture and forestry in ethnic minority areas. Localities in the region need to create conditions for research and technology transfer units to list projects and call for investment. Annually or periodically, research and training organizations, based on research results and practical needs, build a list of transferred projects to call for investment or mobilize capital. Investment sources can be from the State, organizations or individuals at home and abroad. The problem is that the project must ensure feasibility, economic, social and environmental efficiency.

*Fourthly, human resource solutions*

Focus on retraining to improve research capacity and transfer scientific advances in agricultural production, management capacity, scientific and technological knowledge for grassroots staff, provide technical training for people. Continue to renew policies on human resource development… Policies to encourage and motivate cadres (income, reward and punishment, training, welfare, etc.) also need to be reviewed and adjusted to suit reality and assigned tasks to create incentive motivation for cadres to research and transfer scientific progress.

Associate research and technology transfer activities with the task of directly training local human resources.

*Fifthly, the solution for organization and management*

Develop a mechanism to encourage enterprises to associate with people in implementing new and advanced science and technology transfer projects in extremely difficult, remote, border and island areas.

*Sixthly, solutions on mechanisms and policies*

Develop and improve mechanisms and policies to encourage the application and transfer of scientific and technological achievements. Promote technology transfer activities in the field of agriculture and rural development. Develop a mechanism to link research activities with technology deployment and transfer to quickly apply research results to production and life. Creating a market for scientific activities, linking the interests of research, development and experimental production activities with socio-economic development tasks. Ensure absolute intellectual property rights and create conditions for intellectual products to be exchanged, transferred, bought and sold to owners of ownership rights.

For farmers, the State needs to have a synchronous policy framework to support and create conditions for them to voluntarily participate in the ownership of cooperatives in order to promote their collective economic strength. Having a mechanism to encourage and attract highly qualified laborers to work in cooperatives; providing professional support and training in business for agricultural cooperatives, farms and farmers so that they can acquire the right production skills according to market requirements; supporting loan interest rates for cooperatives; creating conditions for farmers' agricultural products to be consumed stably through association with processing facilities, cooperatives and enterprises...

**6. Conclusion**

Activities of research, application and transfer of science and technology in ethnic minority and mountainous areas have achieved positive results in recent years, contributing to the socio-economic development of the country in general and ethnic minority areas in particular. In addition, there are shortcomings stemming from limited internal resources such as the limited qualifications of the communication team, the qualifications of the people, the small number of enterprises, mainly small and medium enterprises, the number of cooperatives is not much.

A number of programs and projects in ethnic minority and mountainous areas have not been fully effective because they have not paid due attention to promoting the role of communities and people in the process of participating in the construction and implementation of the programs and projects. To overcome these shortcomings, it is necessary to have a system of synchronous solutions for the innovation of application methods and the transfer of science and technology to ethnic minority areas, we need to pay attention to and attach importance to the participation of the community and people, including the role of businesses and cooperatives, to exploit the potential and advantages of the region and locality in order to effectively promote the social resources include internal resources and other social resources involved. This is an important condition for the effective application and transfer of science and technology in ethnic minority areas, contributing to sustainable economic development in this region in the context of integration.

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# TẬP TRUNG ƯU TIÊN NGHIÊN CỨU VÀ ỨNG DỤNG GÓP PHẦN CHUYỂN GIAO KHOA HỌC CÔNG NGHỆ Ở VÙNG DÂN TỘC THIỂU SỐ VÀ MIỀN NÚI TRONG GIAI ĐOẠN HIỆN NAY

**Hoàng Đức Thành**[a]
**Nguyễn Duy Dũng**[b]; **Phạm Đình Chiến**[c]

[a] Học viện Phòng không - Không quân; Email: *thanhanh481@gmail.com*

[b] Học viện Dân tộc; Email: *dungnd@hvdt.edu.vn*

[c] Học viện Biên phòng; Email: *phamchien800512@gmail.com*

Nhận bài: 11/3/2023; Phản biện: 11/3/2023 ; Tác giả sửa: 13/3/2023; Duyệt đăng: 13/3/2023; Phát hành: 20/3/2023
DOI: https://doi.org/10.54163/ncdt/56

Trong bối cảnh cuộc cách mạng khoa học, công nghệ lần thứ tư và xu thế hội nhập quốc tế sâu rộng, nghiên cứu, chuyển giao, ứng dụng khoa học và công nghệ trở thành yêu cầu bắt buộc đối với mỗi quốc gia cũng như từng lĩnh vực, trong đó có chuyển giao khoa học và công nghệ ở vùng dân tộc thiểu số và miền núi. Chính vì vậy, trong những năm qua, Đảng, Nhà nước, Quốc hội và Chính phủ ta xác định, chuyển giao khoa học công nghệ có vai trò rất quan trọng đối với quá trình phát triển kinh tế - xã hội, xóa đói, giảm nghèo, cải thiện đời sống của đồng bào các dân tộc thiểu số ở các vùng đặc biệt khó khăn, vùng sâu, vùng xa, biên giới và hải đảo. Đến nay, Đảng và Nhà nước ta đã ban hành nhiều chủ trương, chính sách chuyển giao khoa học và công nghệ cho vùng đồng bào dân tộc thiểu số và miền núi nói chung và vùng đặc biệt khó khăn, vùng sâu, vùng xa, biên giới và hải đảo nói riêng, trong đó tiền đề quan trọng là Nghị quyết số 22/NQ-TW ngày 27/11/1989 của Bộ Chính trị về một số chủ trương, chính sách lớn "đưa nhanh tiến bộ khoa học kỹ thuật vào miền núi" và Quyết định số 72/HĐBT ngày 13/3/1990 của Hội đồng Bộ trưởng về một số chủ trương, chính sách cụ thể về phát triển kinh tế - xã hội miền núi.

***Từ khóa:*** *Nghiên cứu và ứng dụng; Chuyển giao khoa học và công nghệ; Vùng đồng bào dân tộc thiểu số và miền núi.*