

EXCHANGE FOR POLICIES

INTERNATIONAL SCIENCE AND TECHNOLOGY COOPERATION ORIENTED TO RESEARCH UNIVERSITIES

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Abstract:

Research university is a novel concept in education and training activities in Vietnam. Many universities are searching to build the contents and road maps which would lead them to research universities. In the world actually, research universities become largely extended categories to attract students to enroll. One of the success factors of research universities is international science and technology cooperation which would be figured in the contents for building research universities

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As indicated in Guidelines No. 1206/HD-DBCLGD on *the categories of research universities* issued by Hanoi National University on 23rd April 2013, the main objective of activities is “*To define indicators of the contents for building research universities in visions of approach to and integration into the system of international standards*”.

Category 3 which deals with *Internationalization level* includes three contents:

- Percentage of international lecturers;
- Percentage of foreign students;
- Number of projects and programs of jointly announced international cooperation

Implementing this category, member-universities of Hanoi National University should mobilize full efforts to push up international cooperation in general and international science and technology (S&T) cooperation in particular. The universities need to take international integration as important guiding factor to build and to implement the plan for

establishment of research universities. They need to mobilize full and decisive efforts to develop management staffs reaching international standards, and a strong and leading team of lecturers, scientists in the fields of natural sciences, technical and technological sciences, medico-pharmaceutical sciences, agricultural sciences, social sciences and humanities to meet requirements of activities of training, scientific research and technology transfer. This would be the background for fast becoming a research university.

Now Vietnam has entered the international integration stage and puts the objectives to come gradually to high S&T positions. This objective requires to develop numerous S&T staffs which are internationally qualified and capable of working in environment of advanced technologies and tough competition. In comparison to other countries in the region and in the world, we are still experiencing large gaps between potentials and results of S&T activities. The rate of researchers to the total population and the investment rate per person for scientific research remain low in absolute values and low developed, if being compared to international standards. In global, the S&T capacity of our country are low and late to respond to requirements of practical innovations. They do not have close links to and, then, cannot meet requirements of socio-economic development. The technological level of many production sectors remains outdated.

1. Global overview on international cooperation in the science and technology field

Within the period from 1981 to 1985, implementing Resolution No. 37-NQ/TW by the Party Politbureau promulgated on 20th April 1981 on S&T policies, Vietnam took part in the Global Science-Technique Progress Program of member-countries of the Council of Mutual Economic Assistance (COMECON). In these activities, USSR experts helped Vietnam to build and to implement 72 key object-oriented programs. In 1981, the Joint Agreement of COMECON member-countries was signed to support the fast science-technique development of Vietnam. It was the important international document to develop and to push up strongly cooperation between Vietnam and socialist countries. In that time period, Vietnam established cooperation relations in science-technique fields with more than 20 countries and international organizations. The main forms of cooperation activities were focused on training of staffs, assistance of expert and, particularly the establishment of bilateral joint scientific teams such as: Malaria and Tropical Diseases Research Group, Vietnam-USSR Tropical Typhoon Research Laboratory, Vietnam-USSR Plant Seedlings Test Station, Vietnam-USSR Silk Worm Research Station, Vietnam-USSR

Lightning Research Station and others. The international cooperation during this period gave parts to settle many actual problems and provided certain results.

Within the period from 1986 to 1990, science-technique international cooperation were focused mainly to support the realization of the three large economic programs defined by the VI-th Party Congress and the implementation of projects Vietnam took parts for in the Global Science-Technique Progress Program of COMECON with the 16 priority sectors of agriculture, food industry (rice, maize, vegetable, conserved foods, tea, silk worm), energy (lightning prevention research), health care (traditional medicaments), metallurgy (bauxite, coke coal), tropical techniques, electronics, natural resource surveys. In global, activities of international science-technique cooperation were pushed up, got effective and gave important contributions to science-technique development of Vietnam. We had chances to get supports from friendly countries in terms of finances, equipment, staff training, experts, infrastructure development for R&D activities which would be the background for future science-technique development.

For early 1990s, there were many important events which made great challenges to activities of international science-technique cooperation. The disintegration of the USSR and East European socialist countries made us lose important sources of grants and supports and disturbed traditional cooperation links. In this context, the Party and the State of Vietnam had issued right decisions and policies to recover this situation. With the large open, diversified and multi-lateral foreign policies we have gradually removed the hemmed and isolated position from external sides and extended cooperation links with many countries in the world. Vietnam has become ASEAN member (July 1995), normalized relations with the US (1995) and signed the Vietnam-US Bilateral S&T Cooperation Agreement (2000). The Vietnam-EU S&T Cooperation Agreement was signed in 1995. Vietnam was also the founding member of Asia-Europe Summit (ASEM), official member of APEC and official member of WTO since January 2007. In the S&T fields, Vietnam participated in hundreds international organizations in specific sectors and different regions.

Recently, particularly during the 5 latest years, in conformity to global trends of international economic integration, activities of international S&T cooperation get extended and developed in terms of scale, forms and effectiveness. Up to now, Vietnam has developed international S&T cooperation with partners from more than 70 countries, territories and international organizations. From one side, we keep on traditional ties of

cooperation (Russia and East European countries and others), and from another side, we have established and developed new ties of cooperation (USA, South American countries, African countries and etc.). International cooperation have moved from passive and grant-based positions to more active, pro-active, equal and mutual benefit based. Topics of cooperation projects and programs now are established on basis of practical needs of Vietnam and give contributions to solve many urgent problems and to serve actively the implementation of industrialization and modernization of Vietnam. Actually, we are implementing more than 200 joint research projects with foreign partners where more than 20 ministries/sectors/provincial governments has. At the same time, Ministry of Science and Technology (MOST) allocated tens billion VND which are used as counter-balance contributions for participation of domestic S&T organizations in these projects.

International cooperation in field of standards – measurement - quality and intellectual properties (IP) also make contributions meet demands of international institutions, associations or organizations to which Vietnam is member, namely AFTA, Vietnam-USA Trade Agreement, WTO and many others.

The main objective of promoting strongly the process international S&T integration is to accelerate the national S&T development, to shorten S&T gaps between Vietnam and other countries in the region and in the world, to serve effectively the process of industrialization and modernization of the country, and to promote the international economic integration.

In order to achieve these objectives we need:

1. Enhancing the awareness of international S&T integration with the focus on putting enhancing dissemination of strategies, policies and commitments of Vietnam in S&T fields, encouraging scientists and S&T managers to get involved directly in activities of dissemination, propagation of knowledge and experiences of international integration in S&T fields.
2. Enhancing capacities and potentials for international S&T integration on basis on higher quality of domestic S&T human resources, international standard based infrastructure, stronger financial resources for international S&T integration; developed S&T information sources and stronger competing capacities of enterprises in certain key economic sectors.
3. Accelerating international integration in fields of standards-measurement- quality, IP rights and quality management to improve the

international economic integration, namely establishment of a modern, effective and international standard based IP system, improvement of the system of standards-measurement-quality to facilitate the trade participation of Vietnam in international markets;

4. Innovating management of S&T activities including priorities to encourage the lease of foreign experts and consultants during the implementation of researches for S&T policy making, S&T development planning, S&T task evaluating, using of international standard based S&T indicators for statistic activities and building S&T databases.

2. Activities of international cooperation in universities

International S&T integration gains new progresses on basis of development of established ties of international S&T cooperation. Up to now, Vietnam has developed international S&T cooperation with about 70 countries, international organizations and territories; signed and implemented more than 80 S&T cooperation agreements of Government and ministerial levels. Vietnam is holding the status of official and non-official member to about 100 international and regional S&T organizations.

Contents of activities of international S&T integration start being attached to practical needs of sectors and localities and offering initial effective service to socio-economic development of the country. Ties of international S&T cooperation are getting more diversified in forms and more rich in contents (including joint research cooperation, technology transfer, expert exchanges, workshops, conferences, technology demonstrations, technology fairs and exhibitions and etc.). The scope of integration activities also gets extended, from basic science researches to applied researches, technology transfers, social sciences and humanities, natural science and inter-discipline researches. In the recent time, the international S&T integration makes contributions enhance the technical infrastructure of scientific research and technological development organizations, to enhance the qualification of human resources and to accelerate innovations in the country. Some ministries, sectors, local governments and enterprises have pro-active moves of approaches, transactions and applications of new technologies, and to give contributions to enhance the competitiveness of locally produced commodities. The systems of IP rights and standards-measurement-quality of products were gradually improved to meet demands of international economic integration activities. Management mechanisms of S&T activities get closer to international practice and are oriented to socialization of S&T activities through measures of free and public selection of participants (organizations or individuals) for Government-funded projects. For better implementation of these

mechanisms, the sets of indicators were established for practice of selection, evaluation and acceptance of projects and programs. On basis of these general regulations, universities build their plans and options of international cooperation activities which meet the targets of sustainable development of universities and the requirements of shift to research universities.

The following part presents activities of international cooperation of some universities to illustrate the effective contributions to main duties of teaching and scientific researches in their process to become research universities.

2.1. Ho Chi Minh City National University

Actually, Ho Chi Minh City National University has in total 5,343 staff with increase of 798 staff members (17% increased) compared to 2010. In this figure, the number of lecturers increased 7.6% (from 2,595 lecturers to 2,793 lecturers), the number of researchers increased 17.8% (from 450 researchers to 530 researchers). In addition to that, in the total effective of lecturers and researchers the numbers of those who hold post-graduate grades increased 14.2%. In that, the number of doctors increased 12.6% and 213 is the number of professors and associate professors.

In 2011, Ho Chi Minh City National University sent 931 staffs to overseas mission or education trips including 166 staffs for post-graduate study. As measures to attract highly qualified, domestic and foreign experts, Ho Chi Minh City National University issues special policies and schemes of works for global development of the University. Ho Chi Minh City National University invited Prof. Omar M. Yaghi, Director, UCLA Global Mentoring, to work as Co-Manager of MANAR Center of Ho Chi Minh City National University, Prof. Ho Tu Bao (JAIST), Prof. Duong Nguyen Vu, Prof.-Dr. Pham Xuan Huyen, Prof.-Dr. Nicole El Karoui (Paris Ecole Polytechnique) to give lectures of advanced programs in Ho Chi Minh City National University.

In April 2011, being supported by the Netherland Government NICHE Program, Ho Chi Minh City National University established Center for Water and Climate Change Management which puts the objective to become a leading center in Vietnam and South-East Asia in this sector.

International cooperation is providing good service for research activities. In addition to the projects under implementation, Ho Chi Minh City National University is preparing new projects, such as: “Building capacities for the Center for Water and Climate Change Management” of an Euro 2.5 million supported by the Netherland Government; “Vietnam vocational

skills” of a CAD 20 million valued support by Canada International Development Agency (CIDA); “Forecast models of climate change” of an Euro 320,000 supported by the Netherland Delta Res organization; Education Cooperation Program of Engineering Universities (HEEAP) (implemented by Ho Chi Minh City University of Science-Technology which is the joint project of leading universities of Vietnam, Intel Corporation and Arizona State University within 2010-2013 years); “Training of living skills for Ho Chi Minh City women immigrants” (implemented by Ho Chi Minh City University of Social Sciences and Humanities and supported by Germany Rosa Luxemburg Stiftung Fund; “Research and training of public policy management in field of environment protection” (jointly implemented with Duke University and supported by the US General Electrics; “Research Center of Sustainable Development (RCE)” (the first center in Vietnam among the world network of RCE, the Center was established in Ho Chi Minh City International University and granted of the certificate by the United Nations University). Eurocom Project is under survey stage for concerned sectors for enrolment sources and enrolment formality to enter Eurocom. One More Step Project, within framework of Erasmus Mundus Program (an EU program to enhance educational capacities through granting of scholarships for studies in European countries and to form education cooperation between Europe and remaining countries), would assist university lecturers from developing countries to access the European education system.

Orienting to research universities, Ho Chi Minh City National University pays attention to building the training qualities on basis of international standards. The focus would be to promote training programs of high quality international standards. This is seen clearly through increasing trends of training programs of PhD degree which is jointly held with UCLA MANAR Project. Ho Chi Minh City National University coordinates with General Electrics Corporation and Duke University to offer training programs of Master of Science in field of public policies for environment protection. It also coordinates with Arizona State University and Intel Corporation to conduct training programs of IT engineers. At the same time, Ho Chi Minh City National University is implementing the development of international quality training programs of excellent students through establishment of output standards on basis of verifiable indicators of educational qualities.

At the same time, Ho Chi Minh City National University pays attention also to innovating teaching methods, considering the latter as one of the crucial demands to improve the credit based training modes.

In process to develop the model of research universities, Ho Chi Minh City National University gradually demonstrates scientific potentials not only in human resources but also in outputs of training and research activities. Publishing research results (papers, books, patents, transferred technological procedures, post-graduate training) are listed among important indicators for selection and acceptance of S&T research projects. The allocation of investments for research teams and laboratories are based also on produced research results. Statistic figures by October 2011 show that Ho Chi Minh City National University has 773 papers published in journals and proceedings including 173 papers in international journals (among them, 142 papers in ISI rated journals (82%) and 31 papers (18%) papers in not-ISI rated journals).

Actually, the development of strong research teams and research centers is the right direction to shape more clearly the model of research universities. Ho Chi Minh City National University established more than 20 research groups/teams with capacities to approach the regional and international levels, namely: semantic web, grid computings, JVN, computing physics, optimal computings, micro-circuit designing, industrial robots, polymer-composite materials, bio nano sensors, solar cells, MANAR, applied chemistry-physics, bio fuels, stem cells, bio-molecular technologies, environment ecologies, urban flood prevention, South Vietnam literature, archeology, culture studies (*Source: Nhan Dan Newspaper, 31st December 2011*).

2.2. Hanoi National University

Implementing the development direction towards research universities, in lines with linking the training activities and research activities, Hanoi National University pays particular attention to transferring of knowledge, products and S&T solutions to various communities. S&T activities target the following objectives: research, technology development, international publication and commercialization of research products.

Being a scientific research facility with strong potentials of 1,500 scientists (349 professors and associate professors, 839 doctors) and solid and modern research infrastructure (about 30 key laboratories), Hanoi National University offers best conditions for teaching staffs to conduct research and creative activities as well as to develop research cooperation with other research organizations and enterprises. In this optics, Hanoi National University is worth to keep the leading position in the Vietnam education system.

On the way of development towards a research university (diversified disciplines, inter-discipline scopes, international standards), Hanoi National University defines S&T activities as backgrounds to enhance the quality of scientific staffs, to enhance the training quality, to enhance competitiveness of knowledge based economy of the country. Prof. Dr. Nguyen Huu Duc, Deputy Director, Hanoi National University, said: “Similarly to other research universities in the world, the basic research of different sciences including social sciences and humanities, natural sciences, and services for technological and socio-economic sectors and etc. are advantages of Hanoi National University. Here, international publications have become the indicator of quality culture”.

During the recent 20 years, the number of ISI international papers of Hanoi National University increased by 20 times (10 papers per year by 1993 and 200 papers per year by 2013), accounting to 12% of the total ISI rated papers of the whole country. Many papers were multiply cited (from 50 to 500 references). They are important indicators to evaluate research level and integration level of Hanoi National University. On this basis, since 2012, the QS international rating table has recorded and classified Hanoi National University in the list of 250 (making 5%) leading Asian research universities.

In practice, Hanoi National University implements integrated development and close links between disciplines of natural science, social sciences and humanities, and S&T research in inter-sector researches. Works of basic research in field of social sciences and humanities provide the Party and the State with scientific arguments to build up strategic orientations, policies, master plans, implementation plans, as well as development planning for sectors, regions and provinces. Many S&T studies, projects and programs give useful contributions to construction and defense of the country, such as “Scientific historical, geographical and legal arguments of sovereignty of the Socialist Republic of Vietnam over Hoang Sa and Truong Sa Islands (Paracel and Spratly)”, “Process of formation and development of South Region and South-West border” and many others. Studies on the process of shifting of socio-economic structure in process of industrialization and modernization, gender equality, social equality and etc. also give contributions to provide scientific backgrounds for macro-scale planning of socio-economic policies. Among them, Vietnam Annual Economic Report provides directly scientific and practical backgrounds for the Party to set up the planning of socio-economic development policies. Actually, Hanoi National University is assigned to host the S&T project for sustainable development of the North-West Region of Vietnam.

In its orientation towards a research university, Hanoi National University implements the policy to stabilize the scale and size of standardized higher education activities, to reduce the scale and size of non-standardized higher education activities and to develop strongly increase the scale and size of post-graduate training activities of basis of proper quality. During recent years, Hanoi National University trains, 200 doctor students and 2,000 post-graduate students annually. This number increases the rate of post-graduate training activities up to the 25% of total scale. This would lead gradually Hanoi National University to standards of advanced universities in the region and in the world. (*Source: Ha Noi Moi Newspaper, 9th December 2013*).

2.3. Academy of Policy and Development, Ministry of Planning and Investment

Academy of Policy and Development (called afterwards as Academy), Ministry of Planning and Investment (MPI) considers international cooperation in training and scientific research as pre-conditions to enhance teaching and scientific research activities of the Academy to achieve the international class. For that, the Academy implements the following solutions for international cooperation in teaching and scientific research activities.

Attracting professors and doctors from foreign universities, academies, training-research organizations to participate in teaching activities of the Academy:

- Proposing international organizations to send leading experts to give lectures and to supervise research works of the Academy's students;
- Inviting foreign experts to give lectures and to supervise research works of the Academy's students;
- Developing joint cooperation with well reputed universities in the region and in the world to implement study programs and projects;
- Inviting foreign experts to participate in implementation of MPI assigned projects. These activities would facilitate the exchange activities by the Academy's lecturers.

Providing information, learning experiences:

- Developing close links and cooperation with large international information centers such as World Bank Information Center, Asian Bank Information Center and etc.

- Developing joint links and cooperation with abroad universities in preparation of teaching materials and provision of books, journals, magazines and etc.;
- Organizing experience learning tours to well reputed universities in the region and in the world;
- Sending graduate students abroad to continue and to complete the training program;
- Receiving foreign graduate and post-graduate students;
- Coordinating to hold scientific workshops and conferences;
- Exchanging information, publications, research documentation, experiences, teaching methods and tools;
- Developing cooperation to co-host scientific research projects, to offer consulting services related to training and scientific research activities.

Developing foreign joint activities to implement projects related to training and scientific research activities:

- Definition of objectives:
 - + Enhancing teaching capacities of the Academy's lecturers;
 - + Developing foreign cooperation in Vietnam in teaching and scientific research activities for certain research sectors such as developed economy, public economy, territorial organization.
- Development of cooperation links with human resource research organizations to enhance the personnel management works of the Academy.

Defining priority partners for cooperation:

Some priority partners for cooperation are listed here including: World Bank, Asian Bank, Japan International Cooperation Agency, Canada International Cooperation Agency, Australia International Cooperation Agency, French Agency of Territorial Management and some universities (South Korea University of International Development, Tokyo University, Singapore National University, China Tsinghua University, Australian National University. (Source: [www. http://apd.edu.vn](http://apd.edu.vn)).

2.4. Academy of Education Management, Ministry of Education and Training

In industrial time, enterprises locate in central positions of development. The science of economic management and enterprise management

experiences a strong development and plays the steering roles in strategic planning, solutions searching, operational capacity setting for socio-economic development from macro scale to micro scale. When the humanity enters knowledge based economy, education science and education management gets strong attentions in almost all the countries with the new conceptual philosophy of the new century, namely “long-life learning” and “towards a learning society”. Nowadays, sciences of education management today are mainly oriented to young people of school age but already relatively developed and grown up. When the objects, time and space get extended, the diversity and the depth of scientific thinking will get multiplied, makes education sciences get more attention for development.

The Resolutions of the Party IX-th Congress had clearly indicated: *“During process of building and developing of the knowledge based economy, human development and human resource development, the central objectives will be the education and the management of education activities which are simultaneously coupled with information technologies as tools to govern the socio-economic movements.”*

In order to realize these objectives, international cooperation activities in field of education and training would play important roles in establishing and planning of objectives, contents, programs and methods of training which are coupled with concrete measures for organization and management of human resource training process. This concept would be integrated into practical activities of universities and other education and training facilities.

Academy of Education Management developed cooperation links with Thailand Academy of Education Management Development, China Yunnan Pedagogical University, UK Westminster University and other international organizations (France, Australia, China, Japan, Canada and many ASEAN countries). These links would be to facilitate the exchange of experiences, provision of documentations, exchange of coach lecturers and etc.

Particularly, Academy of Education Management provided regularly training courses for managing staffs and technical staff for the People’s Democratic Republic of Laos according to agreements signed between the two countries. (Source: <http://niem.edu.vn>).

3. Conclusions

International S&T cooperation is one of the important factors in external economy and socio-economic development of our country in the actual stage. International S&T cooperation provide huge resources of forces,

linking bridges and guiding channels for domestic S&T activities. During recent years, the S&T of our country has gained considerable achievements thanks to, in major parts, the open policies of the Party and the State. We managed to maximize the use of supports and helps accorded by friends and partners over the world. Up to now, our country has established S&T cooperation links with more than 70 countries, territories and international organizations. The scale of cooperation activities has been extended as well as the form and contents of cooperation activities get more diversified and effective to meet the demands of S&T development and socio-economic development of the country.

Pro-active international integration in economy, in general, and in S&T, in particular, will offer favorable conditions not only to extend the external exchanges but also to provide the pre-conditions for universities to become research universities and to play great impact roles in the country and in the region.

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