

## **TWO YEAR IMPLEMENTATION OF THE SCIENCE AND TECHNOLOGY DEVELOPMENT STRATEGY, PERIOD 2011 - 2020**

### **Strategy Working Group<sup>1</sup>**

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**Abstract:**

*Over the past 2 years, the implementation of the Science and Technology (S&T) Development Strategy, period 2011 - 2020, issued under the Prime Minister's Decision 418/QĐ-TTg on 11<sup>th</sup> April 2012, by the Ministry of Science and Technology (MOST), ministries, sectors and local authorities in the country have brought about initial results. Many policies and legal documents relating to policy, mechanism reform have been developed and promulgated, a number of national S&T programs have been launched to carry out key and priority technology-oriented tasks; S&T activities in ministries and localities have been focused on the implementation of the Strategy objectives. However, difficulties and challenges are still there ahead.*

**Keywords:** *Science and Technology; Development Strategy.*

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## **1. Implementation process of the S&T development strategy, period 2011- 2020**

### **1.1. Context of the Strategy implementation**

The national socio-economic strategy up to 2020 adopted by the XI Party Congress confirmed S&T development together with education and training was a key driver for rapid and sustainable development of the country. S&T must play a leading role to create breakthrough steps in development of productive forces, renew growth models, enhance the competitiveness of the economy, accelerate the process of industrialization and modernization of the country. In order to orient S&T development aligned with the need of socio-economic development in the industrialization and modernization stage, the Prime Minister issued Decision No. 418/QĐ-TTg on 11<sup>th</sup> April 2012 approving the Strategy of S&T development, period 2011-2020 (hereinafter referred to as Strategy). The strategy has clearly defined goals, implementation roadmap, priority directions for S&T development in

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Vietnam for a long-term period of 10 years. These were of important basis for MOST and other line ministries and localities to prepare their medium-term and annual plans for S&T development.

The Strategy was implemented in a favorable context where the strategy's content was integrated into newly issued S&T development policies and new provisions of the S&T Law, just recently adopted by the Party and the Government, namely:

- Resolution No. 20-NQ/TW dated 1<sup>st</sup> November 2012 on S&T development for industrialization and modernization in the context of socialist oriented market economy and international integration adopted by the Sixth Conference of the Party's Central Committee at its XI session; and Resolution No. 46/NQ-CP dated 29<sup>th</sup> March 2013 of the Government approving the Programme of Action to implement the Resolution 20-NQ/TW, where it assigned specific responsibilities to ministries, branches and localities in the implementation of the content of Resolution 20-NQ/TW.
- Amended Law on S&T (Law No. 29/2013/QH13) adopted by the National Assembly on 18<sup>th</sup> June 2013, which institutionalizes reform policies and directives of the Party and creates a legal framework for the innovation of mechanisms and policies for S&T development.

### ***1.2. Process of the Strategy implementation***

*With respect to the MOST*, as an agency responsible for the organization of implementing the Strategy, the MOST organized in March 2013 “*The national conference on implementation arrangement of the S&T Development Strategy period 2011 - 2020*” where it announced strategy implementation plans on the basis of the Resolution 20-NQ/TW; promoted information and advocacy activities in many different forms such as conferences, workshops, internet and other means of mass media,...

Next, MOST established a Steering Committee for the S&T Development Strategy implementation headed by MOST, and the National Institute for S&T Policy and Strategy Studies was appointed as standing body of the Committee to regularly provide guidance and monitor the implementation of the strategy in respective ministries, sectors and localities.

In order to integrate the strategy implementation into the tasks specified in the government action programme issued by the government Resolution No. 46/NQ-CP and the Law on S&T in 2013 adopted in 2013, MOST developed a general action plan (in pursuant to Decision No. 2404/QD-

BKHCN, dated 05th August 2013) consisting of 32 specific tasks to be realized by different subordinate units of MOST. At the same time, with a view to regularly measuring the quantitative indicators outlined in the Strategy, MOST assigned 15 tasks to their units concerned to quickly develop evaluation methods of these quantitative indicators.

*In respect of line ministries and localities*, after 2 year implementation, as of 31<sup>st</sup> December 2013, there were 63/63 localities and 21 ministries, agencies submitted reports on the 2 year implementation of the strategy and the government Resolution No. 46/NQ-CP. Out of which, 41 localities had developed action plans to implement the Party's Resolution No. 20-NQ/TW and the government Resolution No. 46/NQ-CP, 49 localities and 4 line ministries issued specific writing instructions for the Strategy implementation. The guidance of line ministries and localities focused on concretizing the content of the strategy into their annual work plans/programs, assigning S&T tasks as well as giving direction for the application of S&T results in ministries and localities. Particularly, some line ministries had developed specific S&T strategies for their own ministries/sectors.

## **2. Results of the Strategy implementation**

### ***2.1. Regarding the continued radical, comprehensive and synchronized reform of S&T organization, management and operation mechanism***

S&T organization, management and operation mechanism reform has been identified as a breakthrough step to promote S&T development and improve the efficiency S&T. Accordingly, the central contents of reform, such as S&T organization and operation, socialization of investment sources for S&T, increased efficiency of the use of State budget for S&T, incentive measures for S&T personnel, were consistently designed and integrated in draft legal documents, for instance Law on S&T in 2013, Government Decree to guide the implementation of the Law on S&T, Decree on investment and financing for S&T, Decree on S&T Development Fund, Decree on the use of and incentives for S&T personnel, etc. These drafts were developed and submitted to Government by MOST in 2013. Accordingly, the Programme on S&T market development was approved in November 2013 by Prime Minister, this is an important task which was basically completed by MOST. As of March 2014, there were 7 government decree resolutions, 9 decisions of Prime Minister, 27 circulars submitted and formally approved, other 14 pipeline projects were awaiting for promulgation, 8 legal documents were under elaboration.

## ***2.2. Regarding promotion of applied research, link of S&T development tasks to socio-economic development tasks in sectors at different level***

Along with the reform of mechanisms and policies, MOST has focused resources for the implementation of various national S&T programs and projects such as National Key Products Programme, Technology Innovation Programme, High technology Development Programme, Intellectual property Development Programme, S&T Programme for Rural, Mountainous Areas Development, Productivity and Quality Programme and the most recent one was the S&T Market Development Programme...

The preparation of research projects of line ministries and localities was carried out in a more proactive manner, more connected with the team leader's responsibility. As a result, research tasks were more focused, less in number, higher in quality, higher priority given to the tasks of breakthrough nature. The project implementation was mainly conducted through competitive selection modality. Assignment of research tasks by ministries, localities was based on immediate urgent needs with due attention to medium and long-term requirements.

As a result, there was a qualitative change in S&T activities. Number of publications published in international journals (from 2006 to 2012) increased about 20%<sup>2</sup>, annually. Many outstanding research results in 2011-2013 were highly appreciated by society, out of which, it is worth to mention the following: 90m water self-lift drilling (2011)<sup>3</sup>; Method of laparoscopic surgery and adult liver transplantation (2012)<sup>4</sup>; Decoding the genome of 36 Vietnamese local rice varieties<sup>5</sup> and Fabrication of super-mini satellite (2013)<sup>6</sup>;...

In addition to specifically recognized S&T results, the TFP - a general indicator used internationally to assess qualitative changes of resource elements and demonstrate the contribution of S&T progress in economic

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<sup>2</sup> Statistics and ranking of SCOPUS organization, Europe (source [www.scimagojr.com](http://www.scimagojr.com)). In 2011 and 2012, there were 2,215 and 2,836 publications, ranked 52/226 and 59/225 countries, respectively. And according to Thomson Reuters (Web of Knowledge, accessed on 20 December 2013), the number of research papers published in international journals of Vietnam in 2012 was 1,924, ranked 4th in Southeast Asia (after Singapore, Malaysia, Thailand) and 60th in the world; In 2013 (as at 20 Dec. 2013) there were 2,005 papers, ranked 4<sup>th</sup> in Southeast Asia (after Singapore, Malaysia, Thailand), and 56th in the world.

<sup>3</sup> This is the first oil rig of Vietnam which can reach 90 meters water depth, owned by the National Petroleum Corporation of Vietnam. Vietnam is now of the top 3 countries in Asia and the world's top 10 owning quality oil rig.

<sup>4</sup> Implemented respectively by Hospital 103 in Hanoi and Cho Ray in Ho Chi Minh.

<sup>5</sup> Jointly implemented by the Institute of Agricultural Genetics (Vietnam) and the Center for Research and genome analysis (United Kingdom).

<sup>6</sup> Implemented by the National Satellite Centre of Viet Nam Academy of Science and Technology.

growth - was 17.91% in 2011-2013 and particularly 30.87%<sup>7</sup> in 2013. With TFP of approximately 20%. Year 2013 could be the year opening up for a new stage of economic development, a transition from natural resources based development to productivity and result based development, where the income per capita was about \$ 2,000 and gradually approaching the milestone of \$ 3,000.

### ***2.3. With respect to research capacity building***

*Number of research personnel:* According to the survey results of the National Agency of S&T Information, the research manpower of our country was significantly increased. As at the end of 2012, there was about 105,200 research staff, out of which 79,100<sup>8</sup> working in research institutes, universities and other state funded organization. As it can be seen, in terms of quantity, we achieved the target of number of researchers per 10,000 people set for 2015. This is a necessary condition for Vietnam to mobilize the strength of research forces to carry out S&T tasks that in depth, productivity and quality based economic development requires.

*Capacity of S&T organizations:* also according to statistics and ranking of SCOPUS<sup>9</sup>, Vietnam now has 04 organizations ranked by SCOPUS, i.e, Vietnam Academy of S&T, National University of Ho Chi Minh City, Hanoi National University and Hanoi University of S&T. Out of which, the Vietnam Academy of S&T was considered the strongest S&T organization of Vietnam, ranked 558 in the list of S&T organizations in Asia, and 1,748 in the list of 2,744 S&T organizations worldwide.

Thus, after two years of implementation of the strategy, there were initially only 4 S&T organizations reached the Southeast Asia's level. If compared with highly ranked S&T organizations in ASEAN region, the Vietnam Academy of S&T ranks fourth after Singapore, Malaysia, Thailand and the same as Indonesia, the Philippines and other countries. This was a good premise to help us achieve the goal that by 2000, Vietnamese S&T had various areas achieved modern, advanced level of ASEAN region and the world, forming basic and applied research organizations capable of solving key national development challenges.

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<sup>7</sup> According to calculations by the Directorate for Standards, Metrology and Quality Control, Ministry of Science and Technology.

<sup>8</sup> On average, 11.7 research staff per every 10 thousand population, out of which 8.8 staff really work in research institutions, others do teaching and other careers.

<sup>9</sup> Source: [www.scimagoir.com](http://www.scimagoir.com)

### **3. Difficulties, challenges in the strategy implementation**

#### ***3.1. Regarding the implementation of some strategy indicators***

Some of the indicators set out in the Strategy have low possibility to attain, it may affect the key motivative role of S&T in enhancing the competitiveness and growth rate of the economy. Specifically:

- a, The indicator on speed of technology, equipment innovation: it tended to decrease from 10.33% in 2011 to 6.8% in 2012 due to difficult economic situation leading to reduction of public investment and social investment in S&T<sup>10</sup>;
- b, The value of high-tech and high technology applied products slowly increased: it was 19.81% and 20.47% in 2010 and 2011, respectively. If there are no new policy-decisions and high determination, it is difficult to reach the figure of 45% of technology production value by 2020.

#### ***3.2. Regarding the coordination between state management agencies***

It can be said that over the past 2 years, though there was a lot of breakthrough policies, guidelines suggested in the strategy and specified in the Law on S&T 2013 to be applied in all stages from planning, state budget estimation, fiscal mechanism, and the use of S&T personnel for S&T development, it requires all ministries, agencies, organizations and individuals involved in S&T to change their thinking, perception and action in order to understand and comply with the Resolution No. 20-NQ/TW, the Law on S&T and the Strategy of S&T Development.

Lack of harmonization, slow revision of current legal documents in other sectors (finance, internal affairs) in line with the requirement of new provisions in the Law on S&T 2013 and without relevant guidelines it made the coordination between state management agencies concerned in the field of S&T not smooth, sometimes delayed, giving negative effects on the implementation of strategy and the degree of contribution of S&T to socio-economic development. Some evidences can be outlined, as follows:

- a, The mobilization of resources from business to invest in S&T was still very difficult due to tied mechanisms.

In reality, some large companies of Vietnam such as Viettel, Oil and Gas Corporations, etc. were totally able to spend trillion dong per year for S&T. The problem was that there should be a proper mechanism to

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<sup>10</sup> The targets set out in the Strategy is 10-15% for 2011-2015 and 20% for 2016-2020.

create most favorable conditions for them to use such investments in S&T for achieving of their production, business development goals. After all, considering that about 3/4 of the investment in S&T comes from prior tax revenue of the company, it is an appropriate solution for S&T funding while investment from the State budget is still limited, without contribution from social sources, investment for S&T per head of researcher was very low (only equal to 1/10 of the level of Thailand investment, 1/20 of Malaysia and Singapore's). This exposed a large effect on labor productivity and outputs of research activities<sup>11</sup>.

- b, There was a great imbalance between actual investment from State budget and the need of focused investment for capability building, key national research programmes/projects and priority technology orientations.

The total annual investment from state budget for the whole system of S&T of Vietnam now is more or less US\$1 billion, only 2 times higher the amount that Republic of Korea invests for a research institute of electronics and telecommunication (in 2010, ETRI Institute's budget was over US\$500 million to cover research expenses of 1,900 researchers) or the case of Taiwan Research Institute for Industrial Technology (in 2011, ITRI Institute received over US\$600 million to spend for research activities of 5,780 researchers). This critical investment actually helps ETRI to produce around 260 international publications, over 3,720 patents and transfer of nearly 250 technologies a year<sup>12</sup>; In 2012, ITRI had 1,715 patents and transferred 590 technologies.

- c, Very low incentive policies given to scientists

Compared with other sectors, the level of preferences for key personnel in S&T sector is still low, leading to brain drain from S&T sector. The main cause is:

*First*, the mechanism of utilization of S&T workforce is now based primarily on the thinking of average remuneration level, very difficult to go beyond the current policy framework.

*Second*, the current financial mechanism has not created differences to encourage talented persons in S&T.

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<sup>11</sup> In reality, spending on researchers engaged in R&D in our country was still at modest level compared to other countries in the region: in 2010, USD 9,500/ researcher. Meanwhile, the figure of the Philippines was USD 52,370/researcher, Thailand: USD 81,764/researcher (2008), Malaysia: USD 208,857/researcher (2008), Singapore: USD 217, 431/researcher (2008).

<sup>12</sup> Source: ETRI.re.kr and ITRI.org.tw

### ***3.3. Different interpretation of sectors at different level on the role of S&T leading to low efficient coordination in action***

Although the role of S&T was clearly highlighted in relevant documents of the Party and State, the perception of sectors at different level on this was still different. Therefore, it made the strategy implementation not the same, sometimes in formal way. In reality, there was still low recognition of the society, not high sharing effort of sectors at different level in removing difficulties in organization, mechanism of S&T activities.

## **4. Suggestions and recommendations**

### ***4.1. Continued issuance of policies to remove barriers/difficulties for enterprises, providing strong state support for technology innovation in businesses***

In parallel with the creation of healthy competition market economy environment for enterprises to see practical benefits of their investment in technological innovation to enhance competitiveness of their products, the State, on the one hand, needs to create all favorable conditions for enterprises to import, receive and apply new technologies; on the other hand, the State is willing to share risks in research and support enterprises in protecting their intellectual property created in the process of technological innovation. The focus of future capital investment on National Key Products Programme, Technology Innovation Programme, High technology Development Programme, Intellectual property Development Programme, etc would create favorable conditions for many businesses to receive support, risk sharing in research, searching technology, technology transfer, S&T human resource training as well as preferential loans for technology renovation, enhancing their competitiveness.

### ***4.2. Overcoming delays in coordination between S&T state management agencies***

- a, Quickly remove unreasonable financial provisions on investments of businesses in S&T;
- b, Create proactiveness for the MOST in preparing budget estimates and proposing structural adjustment and budget allocation of S&T budget (between central and local budgets; between administrative and development spending). The authority decentralized to MOST in proposing S&T budget estimation and expenditure structural adjustment shall facilitate focused investment in capability building, key national



S&T programmes/projects and priority technology oriented tasks towards achieving the goals of the Strategy. National Key Products Programme, Technology Innovation Programme, High technology Development Programme, Intellectual property Development Programme, etc will create breakthroughs in the development of new industries, new products with national brands of high competitiveness.

#### ***4.3. Continued awareness raising, creation of social position for personnel working in S&T activities***

- a, To further promote advocacy, raise awareness of ministries, sectors, localities and entire society on the implementation of the strategy.
- b, To continue to promote advocacy, awareness for ministries, sectors and localities to understand, share and have correct perception about the role of S&T, thereby integrate the strategy's content into their respective working programs/plans of action.
- c, For managers of functional agencies, there should be close instruction for a smooth coordination in developing and promulgating legal documents related to the implementation of the Law on S&T and their attached Decrees to support the sharing and exchange of information and data for the calculation of quantitative indicators of the Strategy.
- d, In regard to utilization and respect use of S&T personnel:
- e, In addition to material incentive measures (salary, special remuneration mechanism,...), it should increase investment in infrastructure and delegate self-determination right associated with responsibility in implementing the task, to scientists, first to leading scientists, scientists performing national tasks and talented young scientists.
- f, Launching the movement of dedication for S&T:
- g, Attitude of appreciation for comments of scientists has great influence on their wholehearted dedication to serve the country as well as the attraction of youth to engage in science which is a very tough and thorny path. The Uncle Ho's lesson when founded the nation in respect to attracting talented Vietnamese living abroad to return for the country's development still remains its value. The right utilization of talents always requires the determination from the top level of both, political system and commitment of the state.

#### ***4.4. Strengthened proactive coordination of all state management agencies in the implementation of the Strategy***

Ministries, sectors and localities should continue to raise awareness and accelerate the implementation of S&T development oriented tasks specified in the strategy, enhance the contracting modality to assign S&T tasks so that they are linked with socio-economic development needs of sectors at all levels.

Officials of functional government agencies (*Ministry of Planning and Investment, Ministry of Finance, Ministry of Home Affairs*) should coordinate closely with MOST in the organization of activities to achieve the objectives of the strategy, conducting analysis, assessment of the goals achieved; making arrangements to implement the strategy's solutions, particularly regulations on investment, result based budget allocation, in direction of the key national programs, untied financing mechanism for businesses, leading scientists, young scientists carrying out national S&T tasks of particular importance./.

## REFERENCES

1. Documents of National Congress of the Communist Party of Vietnam.
2. Decision No 418/QĐ-TTg dated 04<sup>th</sup> November 2012 of Prime Minister approving the Strategy for S&T development, period 2011 - 2020.
3. Resolution No. 20-NQ/TW regarding S&T Development for the industrialization and modernization in the conditions of socialist oriented market economy and international integration, adopted at the sixth Conference of the Party's Central Committee, Session XI, 01<sup>st</sup> November 2012.
4. Resolution No 46/NQ-CP dated 29<sup>th</sup> March 2013 of the Government issuing the Action Plan to implement above Resolution No. 20-NQ/TW.
5. Law on S&T 2013 (Law No. 29/2013/QH13) adopted by the National Assembly on 18<sup>th</sup> June 2013.
6. Synthesis reports from 21 ministries and 63 localities.
7. Synthesis of reports by subordinate units concerned under MOST.
8. [www.scimagojr.com](http://www.scimagojr.com)
9. [www.re.kr](http://www.re.kr)
10. [www.itri.org.tw](http://www.itri.org.tw)