

THE INTER-RELATIONSHIP BETWEEN STRATEGY, PLANNING, PLAN IN THE FIELD OF SCIENCE AND TECHNOLOGY

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Abstract

Science and technology (S&T) strategy, planning, plan are always inter-related in respect of legislation, interaction, dependency and complementary to each other. They are intentionally formulated based on planned ideas. During the development of S&T policy, policy-makers always try to create a sustainable relationship among them, but to do that, there exist many difficulties encountered in reality. In this article, the author focused on research concerning theoretical bases, characteristics and rules of the relationship between S&T strategy, planning, plan to draw out from there a meaningful methodology.

Keywords: *Science and Technology Strategy; Science and Technology Planning; Science and Technology Plan.*

Code: 13090303

1. Theoretical bases of the relationship between science and technology strategy, planning, plan

1.1. Theoretical bases

The term "strategy" has so far been confirmed by many studies that it derived from military field and it means the way how to win in a war. The term was created in the ancient Greece and then be applied in many fields and now is still used and continuously further developed. The terms "planning" and "plan" were launched later than "strategy" term but they have been utilized in many areas/sectors. To date, the question of when all of these three terms were first applied in the field of S&T is still controversial, many opinions believed that they appeared in the modern scientific and technological revolution started in mid-forties of the XX century. Presently, with the contemporary scientific and technological revolution in XXI century, the concept of strategy, planning, plan in the field of S&T has experienced a lot of changes.

Theoretically, based mainly on the innovation theory in strategy development, many foreign scholars recognized the following persons as

first scientists who laid the foundation for change of thinking on S&T strategy, namely Freeman (1987), Lundvall (1992), Nelson (1993), Edquist (1997), when they began introducing the concept of innovation system (IS) in the 80th - 90th. This concept pointed out the role of each elements having strong influence in the system as well as the role of institutional tools in providing a guiding framework for respective interactive relations. Following the innovation system concept, many scientists continue to conduct deeper studies and put forward the concept of science, technology and innovation (STI). This new concept is now commonly known as STI system and used in the development of S&T strategy.

S&T planning is now undertaken in many countries, but there are not much studies on the concept and method of planning. In 2008, Robert J. Lempert and James L. Bonomo proposed two new methods for S&T planning, i.e., *HyperForum*, an enabling environment for collaborative groups working on global networks, is carefully conducted with rich information, on-line environment; *Exploratory Modeling*, a new approach based on the deployment and use of information technology, for creating systems, quantitative comparisons of alternative policy decisions without relying on imperfect future predictions.

It was observed that research works of experts in the field of innovation had not clearly defined the concept of S&T strategy, planning, plan. They mainly offered new approaches to guide general renovation of S&T policy. Furthermore, conducted studies also had many limitations as there not considered the relationship between S&T strategy, planning, plan.

In the diversified development of the innovation theory, some international organizations (*OECD, APEC, World Bank*) launched in the 80-90 decade of last century, various criteria to assess the development of knowledge economy, known as *Knowledge Economy Index (KEI)*, to serve as a basis to adjust development strategy, policy. The KEI criteria provided an active/useful tool for the formulation, adjustment of socio-economic and S&T strategy, planning and plans. In 2010, OECD introduced the concept of Innovation Strategy, in which it clearly indicated specific contents and action programs to help government of member and non-member countries to use it as an action oriented framework in the context of global economic crisis.

In 2010, UNIDO provided Policy Advisory Assistance to Vietnam for the development of Science, Technology and Innovation (STI) Strategy, period 2011-2020, and the implementation of High Tech Law. In the advisory framework, UNIDO used the term STI and provided various research methods, e.g, SWOT - Analysis of strengths, weaknesses, opportunities and

threats; Context scenarios; Success scenarios; Delphi survey; Key technologies and Key technology innovation systems; Future Vision; Roadmap - a sequence of steps or events needed to perform a scenario. Based on STI Strategy, S&T strategy is determined for respective elements of the innovation system. Although the scenario given by UNIDO was a fairly broad framework, it did not make a clear concept nor point out the relationship between S&T strategy, planning, plan specifically for Vietnam, therefore the technical assistance and policy advice given by UNIDO for the development of Vietnam S&T strategy 2011 - 2020 was not so efficient as expected.

1.2. Concept of relationship between S&T strategy, planning, plan

1.2.1. The concept of relationship

To date, many scientists have still relied on the two principles of materialist dialectics of the Marxist - Leninist philosophy when considering a subject. F. Engels defined: Dialectics is nothing more than a science studying on common rules of the motion and development of nature, human society and thinking” [1] and "dialectical method is a method of looking at objects and their reflections in human thinking, mainly through their interrelation in the chain of their connection, movement, emergence and disappearance” [2].

Theory of common relationship is a theoretical principle used to take into consideration of objects or different sides of an object or objective phenomena in the universe, which are mutually binding, influencing, interacting and existing in their relationship.

Theory of development is a theoretical principle used to consider objects, objective phenomena in a dynamic context by putting them in a continuous evolution, development process (moving from low to high level, from simplicity to complexity, from less to more perfect things).

1.2.2. Concept of S&T strategy, planning, plan

Concept of S&T strategy

So far, there exist many concepts of S&T strategy. In brief, some key concepts focus on characteristics, position and role of the strategy, as follows:

- S&T strategy possesses systematic, principle, standard character, it has a defined role of serving socio-economic development: “S&T Development Strategy provides norms, rules and regulations to regulate behavior in S&T activities. It is in nature a comprehensive, long-term

document formulated for a nation or a region in service of performing socio-economic development tasks and meeting the need of S&T development itself. The strategy includes some basic items such as key directives, goals/objectives, priorities and major measures for the strategy implementation” [3].

- S&T development strategy has a breakthrough character, it steers the socio-economic development: S&T development strategy is a system of viewpoints, guidelines and major measures, in nature it is basic and breakthrough document viable for a period of 15-30 years to ensure the achievement of the desired goals of S&T development [17].
- S&T strategy is not merely for service of or leading the socio-economic development, it still has bigger and more special tasks, i.e, changing the position of the nation: S&T development strategy is, in fact, the strategic, tactic in scientific and technological development; it is the crucial principle for actions, it sets out timeline and itinerary for development as well as provides a common platform for policy decision making, elaboration of plans and tasks of S&T development [11]. In some special cases where S&T strategy is not adopted as strategical, tactical tool, some countries still utilize it for technology copy, decoding, planning of action in a systematic way for the benefit of their nation.

Academically it can say the concept of S&T strategy already exists, however, in reality not much attention has been given to the practical identification of the strategy. In this study: *S&T Strategy is identified as a legal document (called in short, S&T Document) which has been formulated based on a system of viewpoints, a set of specific goals, directions, tasks, solutions, implementation arrangements with detailed objects and scope of application, methods, principles, long-term implementation and it is decisive for the development of S&T.* The promulgating authority of the strategy is Prime Minister under his Decision, the timespan of effectiveness may be 10 years, 20 years, 30 years or longer, and the legal basis for issuing the strategy is the prevailing Law on Promulgation of Legal Documents.

Concept of S&T Planning

S&T Planning receives much attention by developed and developing countries, particularly newly developed countries in Asia like Republic of Korea, China, Japan, when developing S&T policies. There exist many different concepts on S&T planning, such as:

- *Macro concept:* S&T development planning is the master plan of directive character for a relatively long-term plan of S&T development, it reflects the need of a long-term plan drawn out by the State for a given

period of time based on the need of socio-economic development of the nation, it is the overall layout/arrangement for the future development of S&T [3].

- *Specific concept*: Planning of S&T development may be summarized as follows [13]:
 - + Planning of S&T development must be a basis and in practical service for the objectives of S&T development.
 - + Planning of S&T development must balance the needs for building and developing indigenous S&T capacity of the country, work out the implementation roadmap with concrete steps to achieve the set out objectives of S&T and socio-economic development.
 - + Planning of S&T development is, after all, the final feasibility study to achieve the socio-economic and S&T development goals in a most cost-effective manner.
- Concept based on the relationship between S&T planning and S&T strategy: Planning and implementation of S&T development plan is in fact, the implementation of strategy, directives, policies and objectives of S&T development of each country. It serves as a basis for making annual S&T plans. As the plan period is relatively long, the change of scientific and technological development is very rapid, and there are so many unforeseen factors, it can, therefore, only suggest tentative preliminary contents for later development, in the principle of making common assumptions to achieve strategic goals" [11].

Although the concept of S&T planning is somewhat different, it is basically the same as per definition in administrative planning hierarchy [3]:

- *State-level planning*: it includes the master plan of different specialized sectors, public planning, the need of inclusion into key S&T categories of national planning, namely: (a) S&T general, crucial issues which can be the locomotive to pull the whole setting, interdisciplinary, inter-regional tasks; (b) Some specialized fields that have the ability to bring about major scientific and technological breakthroughs.
- *Sector and regional planning*: includes the overall objectives and S&T development directions of a sector or region for a relatively long period, the overall estimation, arrangement and orientation for S&T development of the country as a whole in combination with the characteristics and requirements of each sector/region. The national scientific and technological planning is the basis for sector and regional planning.

- *Grassroots-level planning*: is the planning to develop S&T at grassroots level such as research institutions, universities, colleges and enterprises, etc. based on the goals and needs of state, sector or regional planning, and must be market demand oriented in consideration with the development direction and specific conditions of their institutions. It can say that grassroots institutions is the place where the national, sector, regional is materialized.

In the present context where there exists cross-cutting and interdisciplinary effect, the S&T planning process often relies on socio-economic development plans. It is therefore S&T planning is associated with the economic spatial distribution (economic zones) to arrange a network of S&T institutions, S&T parks/clusters, S&T enterprises, S&T models. In addition, the present issue of climate change, global economic crisis places significant impacts on socio-economic and S&T development plans. So when realizing S&T planning it needs to take into account the issues of environment, climate and investment resources for S&T.

Concept of S&T Plan

Compared with the concept of S&T strategy, planning, the concept of S&T plan is more specifically explained:

- Plan is a part of S&T Planning: The plan is a specific part of the planning, it is the action arrangement to achieve setforth objectives. It usually consists of objectives, measures to ensure necessary conditions/resources such as: human, financial and material, information resources... are available to achieve the objectives. The main objective of the S&T plan is to implement the S&T development planning [3]. S&T plans shall work out every specific steps of the S&T development planning of a nation in a five-year period or longer. S&T plan is a set of directions, objectives and implementable measures to achieve the intentions, policies and strategies for scientific and technological development of a country. This is a group of objectives and major solutions at the country or regional level to obtain those objectives [17].

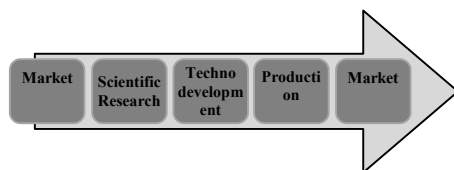
Plan classification by time frame of activity [3].

- + *Long-term plan*, it is called perspective planning of S&T development (for 10 years or more), and is the strategic plan having decisive role in setting the key strategic directions and basic contents for medium term plans, and it is the foundation for developing medium-term plans.

- + *Medium-term plan* (5 years), is the basic form of plan management, the concretization of planning and the basis for making short-term plans.
- + *Short-term plan*, is the annual action plan of scientific and technological development to materialize specific tasks of the medium-and long-term plans.
- S&T plan is an integrated part of socio-economic development plan, but at the same time it should pay attention to the particularity of S&T (in the identification of S&T development trends). It is the main tool for the State to implement and manage S&T activities [17].

Requirements for the formulation of S&T plans:

- + Ensured consistency with socio-economic development plans and objectives of S&T development (technology of novelty, breakthrough character).
- + The objectives of annual plan are integrated with the 5-year plan.
- + The formulation of S&T plans is linked with the actual demand of production and life, appropriate with economic development potential, has positive impacts on the socio-economic development indicators which are determined by a throughout cycle.



Source: Study of authors

Figure 1. Requirements for the formulation of S&T plans

1.3. Practical and legal basis

Experience of the countries in the region such as Republic of Korea, Japan, China shows that the basis for formulating S&T strategies, planning and plans relies a lot on environmental and institutional context.

1.3.1. Experience of South Korea

The S&T plan came into life earlier than S&T strategy, planning, it was included in an Article of Law on Key Plan for S&T development, and then it was specified in Article 2 of Art 1992 regarding implementation of the Law on Korean S&T development. The comprehensive plan for S&T development consists of two main parts: Plan for the promotion of S&T

Application and plan for business, development of research stages S&T Training [2].

In 1999, the Korean government issued the 1999 Action Programme and Vision to 2025 for S&T development based on the Frame Law on S&T. Vision 2025 included 40 tasks and 20 proposals which had been designed to guide the transition of the economy to higher level of development and successful through the development of S&T.

The relationship based on the provisions of the Strategy of Action and Vision 2025 to formulate the Vision 2025 action plan [5]: In the short term, the government shall be preparing conditions for a future knowledge society, in the long term, the country's S&T must play an important role in the global community. Republic of Korea strives to become, by 2015, the scientific research center of the Asia - Pacific region. By 2025, the country shall join the rank of industrialized countries. The goal up to 2025, Korea shall be placed in the top 7 on technological competitiveness capacity. The promising technologies in the future were: Information Technology; Biotechnology, Environment technology, Energy technology, Mechatronics and Systems technology, and Materials and Processing technology.

Basic plans of S&T: Based on the Frame Law on S&T in 1999, the government has developed the following plans: First S&T five year Plan (2001-2006); Basic Plan of S&T (2003-2007); Basic Plan of S&T (2008-2012) - Initiative 577, which is the center of the current S&T strategy and policy of Republic of Korea.

1.3.2. Experience of China

In 1993, the VIII Legislative of the National Assembly of the People's Republic of China adopted the Law on Scientific and Technical Progress of the People's Republic of China. Chapter I, Article 7 indicates: Government shall make decision on planning for scientific and technical development, identify major categories of S&T, those are closely related to S&T, ensure smooth coordination between scientific and technical progress and economic and social development. The government shall decide upon major S&T planning and policies, major categories of S&T, those large categories closely related to S&T, receive opinions of scientific and technical workers, practice the principles of making decisions scientifically [2].

Entering the new century with increasingly vigorous integration and international competition, it was required that the planning of S&T development be clearly placed in the global and domestic context: Urgent need for scientific and technological development in the building a

comprehensive middle-class society following new-type industrialization was the basic starting point for the formulation of the S&T development plan in new era; Changes in the world economic, politic situation make higher requirements for scientific and technological development; New development trends makes China to stem from top strategy to provide arrangements of predictive nature; Institutions of socialist market economy requires new design and layout for the entire national innovation system.

The policy support tools to implement the 15 year S&T development plan [7] including: tax policies; funding and financial policies, government procurement policies.

1.3.3. Experience of Japan

Japan always desires to be the world leader in S&T, share with the world their experiences and achievements in S&T. The Basic Law of S&T came into effect in 1995, this is the legal document for the State to pursue the goal of making the country become a “Science, Technology and Innovation based Nation”, whereby the State shall be responsible for longer-term investment and at higher level in S&T.

From 1996 to present, Japan has experienced 4 times of formulating Japan's S&T Basic Plans, namely: The First Plan (1996-2000), the Second Plan (2001-2005), the Third Plan (2006-2010), and the Fourth Plan (2011-2015). In the initial stage of S&T development, the S&T Plan had been formulated before the Strategy of S&T came into life, later on Japan's S&T development experienced many changes, many conditions that made Japan build different process of S&T development. To date, the country's S&T vision - strategic orientations - plans are interactive, inter-connected and mutually complementary.

- *Vision 2050*: In 2005, the National Scientific Council of Japan issued the “Japan Vision 2050” and pointed out that by 2050, Japan will become a high dignity nation (all values almost reach the highest) and the trust of Asia be created [6]. The structure of the Vision includes major components as follows: Overview on characteristics of Japan and the world's in 20th Century; Challenges that the world, Japan and Asia must confront in 21st century; Mission, goals to be obtained, S&T as well as education and training strategy and policy of Japan. Time frame for implementation consists of 3 phases with 5 year plan each for implementation. Principles of S&T policies in the plan are to ensure the certainty and stability of the economy and environment.
- *Strategic Orientation for Innovation of Japan up to 2025*: The roadmap of technological innovation strategies consists of 3 layers: (1) Project to

accelerate the transfer of technological results to society by reviewing the whole process, from basic research, research and development, technology transfer to society; (2) To promote oriented strategic and specialized research and development on a selective and concentrative basis; (3) Highly Innovative Basic research and activities creating seeds for innovation. The roadmap for research and development is aimed at materializing the 5 social images of Japan by 2025, i.e.: (1) A society that all people live healthy throughout their life; (2) A society that is safe and insured; (3) A society which can grasp the diversity of life; (4) A society that participates in solving global problems; (5) A society that is open to the world.

- *Basic S&T Plan*: In the 4th S&T Basic Plan for 5 years starting from 2011, Japan considered that S&T policy played the role of reviving the society, solving the problems that mankind society is facing. On the other hand, Japan affirmed that S&T policy had a basic position in the National Strategy. It had a close relationship with other important policies,... The 4th Basic Plan had to assess the achievements and drawbacks during the implementation of the 3rd Basic Plan, through a further improvement of policies and strengthened S&T, technological innovation, new structures of strategy development to create more new value for the country [12].

2. Nature of S&T strategy, planning and plan

2.1. Objectivity

S&T strategy, planning, plan are studied and formulated based on the objective requirements of practice, so they must be associated with the context/situation, current status of socio-economic and S&T development. According to Prof. Leslie Pal, policies are developed in a specific institutional context. In order to be able to track and monitor policies as well as manage their progress, it is important to understand the context where the policy has been developed, as well as the process of the policy development to see how it took place and why it is repeated. This view is supported many experts because this is of high efficiency for S&T policy makers.

In 2007, Andrew Green and Sara Bennett¹ indicated that understanding of the policy context is extremely important because "Policy development cannot be apart from political - economic - social elements. All of these elements have influencing effect on the policy at all levels: global, national

¹Andrew Green and Sara Bennett. (2007) *Sound choices: enhancing capacity for evidence-informed health policy*. http://www.who.int/alliance-hpstr/resources/Alliance_BR.pdf

and regional. Clear understanding on global trends helps increased recognition of the extent to which the nations are interdependent”.

Thus, experts suggest that policy makers need to pay attention to the context of policy development with a view to issuing not only appropriate policies to the reality, actual policy tracking, monitoring works but also avoiding the separation of policy with practical life of the country and the world.

2.2. Popularity

S&T strategy, planning, plan basically are not isolated. This is a set of interconnected documents that create a unified platform to build a system/structure. The system, structure of S&T strategy, planning, plan is a kind of open, interactive, interdependent, mutual binding and complementary system for the following reasons:

- S&T strategy is the back born for making S&T policy, it has a major impact on the development of science.
- S&T planning, plan is an important step in S&T management.
- S&T planning, plan is an important integral part of the national economic development planning.
- S&T planning, plan is an important assurance to promote the inspiration and proactiveness of S&T personnel and raise their scientific and technological level.
- S&T planning, plan is a means to link the national economic development with scientific and technological development in line with market oriented planning.

2.3. Diversity of S&T strategy, planning, plan

- *Scientific aspect:* S&T strategy, planning, plan must be consistent with common law of S&T, socio-economic development and it should be formulated from an overall, long-term vision, based on the results of S&T surveys and forecasts.
- *Systematic aspect:* S&T planning has the task of making unified arrangements, determining right directions, priorities, key development objectives, specific conditions and solutions for implementation.
- *Coordinating aspect:* it primarily reflects the major important categories in the planning process. To do that, it is necessary to have the cooperation and involvement of many institutions, many new scientific disciplines.

- *Adaptation aspect:* S&T planning, plan must be adaptive to major preconditions of the state-owned economic base, S&T development environment and international context.
- *Legal aspect:* S&T planning, plan at national, regional or sector level are all for S&T development objectives, increased level of scientific and technological progress and timely and right application of S&T results, and at the same time it must clearly reflect the development level and economic efficiency of the productive forces based on of scientific and technological progress.

S&T strategy, planning, plan can be developed at different time, content, requirement, but always are associated with certain historical conditions.

2.4. The difference between S&T strategy, planning, plan

S&T Development Strategy is not the same as the normal S&T development planning. S&T development planning needs to reflect the content of the S&T development strategy but cannot be identical to the strategy itself. Planning requires a specific timeline, there is a lot of contents need to be quantified towards achieving specific outputs. In the meantime, S&T Development Strategy primarily addresses to broad policy issues of orientation, comprehensive and long-term, decisive nature.

Planning and plan are two separate concepts on the one hand, but have close interrelation, on the other. S&T planning is a document of guiding, forecasting nature of the objective, basically it is an indicative planning document. Planning and plan are together making plans and planning flexible, consistent with practical requirements. Planning decides upon tasks and content of plan and is as a basis for making plans.

The plan must be based on S&T planning, it identifies specific task items, completion date, workload, quantity of resources to be used, applicable policies for implementation... In brief, planning is the definition of strategic objectives of S&T while plan is the specific arrangement of tactical actions.

Compared to S&T planning, the characteristics of S&T plan are of relatively short-term, clearer goals. In respect of implementation modality, it is more specific with the annual plan and tasks assigned to direct dependent relationship.

For strategy, it is required to ensure the "feasibility" and the "reasonability" while the plan must be "effective" [15].

3. Rules of the relationship between S&T strategy, planning, plan

3.1. Repetitive, stable relationship, and creation of interactive model

The inside relation between S&T strategy, planning, plan is a dialectical relation, S&T strategy is a premise for S&T planning to be closely connected with S&T plan. The relationship between S&T strategy, planning, plan is inseparable and interdependent. Because "a strategy should be understood as an "overall package" which includes long-term goals, the means and resources to be used in accordance with the arrangement of planning, medium-term and short-term plans under different programs and projects in order to achieve already identified long-term goals" [10, p.13].

S&T development strategy provides a basis for determining issues in S&T development planning. The basic role of S&T development strategy in planning of S&T development is first to provide important bases, namely: strategic views, objectives and orientations, solutions; objects and scope of application; periods in S&T development strategy, and the level of funding. The contents of the S&T development Strategy should be further specified in the framework of planning [16, p.5].

S&T planning shall base on points of view, goals, directives, solutions indicated in S&T development strategy to set up their objectives, orientations and tasks. Plan shall, accordingly, base on the S&T planning to design and allocate time and funds for S&T activities.

S&T plan is an ordinance for competent authorities to carry out their management over plans. Plan management must ensure the continuity of the planning system, as well as the mutual relationship between plans and planning with a view to ensure the consistency of verifiable indicators of plans with strategic objectives of the planning.

3.2. Interdependent and transformative relationship

Considering the interdependent and transformative relationship, there are 2 issues within and without S&T area because the immanent relationship of S&T is always influenced of objective impact and the demand of socio-economic development recently. The reciprocal transformation between S&T strategy, planning and plan is not only the S&T immanent interdependent but also the impact of socio-economic development. "Planning and implementation of planning and S&T development plan is to express specifically the implementation strategy, guideline, policy and the target of developing S&T, it is the important stage of the practice of managing S&T. Guiding ideology, target and focus of establishing S&T development planning and plan are identified by the demand of socio-economic development and the demand of S&T itself" [3, p.161].

3.2.1. The interdependent and transformative relationship in S&T scale

Basically, after issuing the S&T development strategy, contents of the strategy continue to be concretized in repetitive S&T Planning and Plan in process of planning and implementation S&T Planning and Plan. In some special case, some countries have only long-term plan (over 10 years), there is a rule as Plan reflects important strategy, direction of S&T strategy, there is a clearly division of period of long-term, medium-term and short-term Plan to form a plan. In some case, there is only Planning with no strategy; contents of Planning still reflect strategy.

The relationship between S&T strategy, Planning, Plan is the dialectical relationship, S&T strategy is a prerequisite for planning S&T, planning S&T associates closely with S&T Plan. The relationship between strategy, S&T Planning, S&T Plan is inseparable or interdependent. S&T Planning depends on opinion, target, direction and solutions of S&T development strategy to establish target, direction, mission and plan based on S&T Planning to design and allocate time, expenditure for S&T.

3.2.2. The interdependent and transformative relationship in relation to socio-economic development

In the relation to socio-economic development, there are 2 basic rules: (i) S&T serves socio-economic development; in this relationship, S&T depends on strategy, planning and plan of socio-economic development to establish, socio-economic development is the premise of S&T, (ii) S&T leading socio-economic development, S&T strategy, planning, plan will be developed before socio-economic development, S&T is the premise of socio - economic development. In many cases, S&T strategy is not always for economic purposes (go after) but has changing role (go before) for the purpose of changing the position and role of the country in the world. To play the role of leading the socio-economic development, S&T must become a direct productive force of the new economy whereby it can change the socio-economic relation with S&T in the new context. This requires S&T strategy to outline/identify tasks to develop S&T potential resources (human, material, information and financial resources) so that the sector can become a direct productive force of the economy. The role of S&T planning, plan is the design a master framework, set out directions, goals and measures to implement effectively the national S&T development strategy.

3.3. Dependent and institutional relationship

S&T strategy, planning, plan are always influenced and dominated by political systems, national and international context, status of socio-

economic and S&T development. To date, many countries rely on their national development mission, macro policies in the process of formulating S&T strategy, planning and plans, such as Canada, China, Republic of Korea, Japan, and Vietnam.

In addition to the above mentioned relationship, there are also relationship bound by the number of years defined for the plan (five year plan, annual plan), split relationship to make plans take full responsibility for its design and arrangement to implement the S&T planning. It is required that planning identify clearly phases, planning tasks, category objectives, sub-objectives for each phase, financial estimation S&T development work.

With respect to institutional relation, S&T strategy, planning, plan are all legal documents issued by different levels depending on its importance and authority of the decision makers, namely Government, Prime Minister, Minister, inter-ministerial authority, or high level cooperation programs with ASEAN, EU, bilateral, multilateral agreements, etc. All of such documents must be formulated and issued in pursuant to the Law on legal documents promulgation.

4. Conclusions and recommendations

From theoretical, legal and practical basis and nature of S&T, the development of S&T strategy, planning, plan requires decision makers have comprehensive views when issuing S&T strategy, planning, plan. According to V.I.Lenin "To really understand a thing it needs to have a comprehensive view and conduct research on all aspects, all direct and indirect relationships of the thing. We cannot do that in an exacted manner, but it is necessary to consider all the aspects so as to help us to avoid mistakes and being rigid".

From the experience of Republic of Korea, Japan, China and suggestion for Vietnam. First, the legal basis for the development of S&T strategy, planning, plan is Laws. The role of Laws is not just a legal outside corridor for S&T strategy, planning, plan to follow, but is also the best legal environment for the interrelationship between S&T strategy, planning, plan to be most stable and secured.

Korea, China and Japan all have great ambition and are very determined to make their high ambition happen on the basis of major goals, objective identified to be achieved. From these, specific planning, plans, implementation schedule is designed. To ensure successful achievement of goals and objectives, the countries have set principles, rules, standards, provisions to apply. In addition, they always bear in mind the role of S&T in raising the political position, role, image of the country in the international arena.

For Vietnam, despite there were some changes/amendments in 2013 to the S&T Law, the S&T strategy, planning plan has not been included into the Law, which is the best regulatory environment for the relationship between S&T strategy, planning, plan to be established in a sustainable, stable, interactive, transformative manner. It is therefore recommended that Vietnamese S&T policy makers should learn experiences of countries, i.e, integration of S&T strategy, planning, plan into the Law on S&T, which is the highest legal environment for S&T development./.

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