METHODOLOGY OF ASSESSING THE PERFORMING RESULTS OF SCIENCE AND TECHNOLOGY DEVELOPMENT STRATEGY

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Abstract:

Evaluation of science and technology (S&T) development strategy implementation (hereinafter referred to as strategy evaluation) is a requirement and necessity for the agency in charge of strategic S&T development planning and state S&T management. This paper provides various applicable proposals to address issues of public sector. The evaluation was based on the results of strategy implementation with a view to periodical review of the relevance, efficiency, effectiveness and impact of the strategy in a systematic manner taking into account the strengths, weaknesses, shortcomings and other observations of the strategy implementation for further appropriate change, adjustment or improvement. The paper presents the following contents: (i) the concept used in strategy evaluation; (ii) logical framework developed for strategy evaluation; (iii) Procedures, criteria and methods for strategy evaluation.

Keywords: Evaluation; Results; Science and Technology Strategy.

Code: 15113001

1. Concept used in evaluation and strategy evaluation

1.1. Concept of evaluation

Evaluation is an appraisal exercise:

Evaluation is the appraisal in a most systematic and objective way of the results of an already designed, implemented and completed project/program or policy. The objective of evaluation is to determine the appropriateness/relevance, effectiveness, impact and sustain ability of the implementation. An evaluation should provide credible and useful information, including the lessons learned in the implementation for the decision making process of both recipients and donors *(OECD 2008)*.

Evaluation is an action reviewing the performance:

Evaluation can be defined as the action of review or observation and record of performance, assessment of those behaviors/activities in contrary to the objectives, and recognition of the strengths, weaknesses, shortcomings, or other observations of the performance. Evaluation is not a single event in the process of implementation; instead, it shall be integrated into a carefully

designed overall implementation plan. Outputs of the evaluation shall be used for further improvements in future. For this reason, evaluation is considered as a part of an ongoing preparatory process before moving to the next implementation step with better enhanced/improved activities *(FEMA, 2012)*. According to FEMA, benefits of evaluation include better implementation controlled, result-based implementation better monitored and assessed as per recommendations. An evaluation is only valid when it leads to an improvement of the situation.

Evaluation is a tool to measure the level of effectiveness and success

Evaluation is an activity undertaken in a specific time in order to review, in a systematic and objective way, the level of effectiveness and success or shortcoming of on-going or already completed programs. The evaluation is selectively done to: (i) address specific questions to guide policy makers and/or the program managers; (ii) provide information to verify whether the theories and assumptions used during the program implementation were correct or not, what was right and did right, and what was wrong and did not right, and why. The evaluation usually aims at determining the relevance and value of the program design, the efficiency, effectiveness, impact and sustainability of a program *(Depocen, 2012)*.

1.2. Concept of strategy evaluation

Before assessing a strategy, it needs to understand what it stands for. According to Prof. Leslie A. Pal, strategy is part of the policy, the evaluation of strategy results needs to look at the policymaking process. Because policies are often designed to solve problems, so it is important that they should be monitored and evaluated in order to understand how the policies' results have been obtained, where there were their successes and failures.

So far, S&T policy is often reviewed under two angles: (i) S&T policy is considered as part of the strategy; (ii) S&T policy, including strategy, plans and specific policies, legal documents relating to S&T issued by authorities at different level, such as Parliament, Government, Prime Minister, Ministry of Science and Technology (MOST), relevant agencies. S&T policy is a set of normative documents, laws, under-law documents providing guidelines, principles, rules and regulations of the State for the operation and management of S&T" *(Current Science, 2003)*. This concept shows that S&T policy can take many forms, in different categories. It can be a strategy, a master plan, a decision, or specific guidelines (Circular) and above all, it provides the basis for S&T management. Depending on the context, the position and role of the strategy varies in different countries in

terms of promulgation time and scope of strategy application. Prof. Leslie A. Pal said that there was need to analyze risks in the implementation stage, make evaluation and foresee the problem right from the program design, the implementation should be take both strengths (efficiency) and weaknesses (inefficient) into consideration, evaluation of the results should include immediate, medium- and long-term outputs/outcomes.

There are many challenges faced by the evaluation of the implementation results of the strategy. What are purposes and objectives of the evaluation? In 2012, the OECD launched the rationales and objectives of S&T policy reform review: The role of evaluation was to provide general information on the effectiveness of public policy interventions. This information can be used to "illuminate" the practices of learning process and policy implementation, which allows policy-makers to select financial balances for public spending. Results of assessment could quickly help the policies and programs repositioned, shaping the allocation and reallocation of public finances and showing the status of the reform of the S&T development strategy.

In the framework of this paper, strategy evaluation is understood as the periodical review of the relevance/appropriateness, efficiency, effectiveness and impact of the strategy in a systematic way, recognition of the strengths, weaknesses, shortcomings or other reflections of the strategy implementation for possible more appropriate changes, adjustments or improvements in the future. Strategy evaluation should be based on concrete evidences such as prepared inputs, carried out activities, achieved outputs, outcomes and results. For evaluation, it is necessary to prepare a logical framework, set of criteria and method/approach of evaluation of the strategy performance.

2. Logical framework for strategy evaluation

Review of S&T policies, in general and evaluation of strategy, in particular, should be based on concrete evidences. There is a plenty of evidences relating to the implementation of strategy, however, there needs to systematically develop a logical framework for assessing the results of strategy.

Since 2008, OECD developed evaluation principles based primarily on logical framework to assess S&T policy in general and the strategy evaluation, in particular, including: inputs, activities and outputs. However, the logical framework has so far extended and supplemented several factors to meet practical requirements, namely in a logical framework, there needs assessment of: inputs, activities, outputs, outcomes, impact. The logical

frame does not only evaluate the performance results but also it is used as feedback for the evaluation process of S&T policy making. The following basic elements have been introduced into the framework of planning - implementation - policy review of S&T strategy:

- *Inputs:* The preparation of basic resources such as finance, human, information resources, facilities and resources used to intervene in development. Assessment of inputs is the review of efforts in mobilization, balance and allocation of resources;

- *Activities:* Organized implementation of use of finance, technical assistance and encouragement to create specific, special outputs;

- *Outputs:* New products, goods and services generated from the interference in activities.

- *Outcomes:* The direct and indirect results obtained in short and medium terms from the output intervention contributing to the development by making changes in socio-economic development or other expected objectives;

- *Impact:* Positive and negative, short - medium - long term, direct or indirect, intended or unintended impacts by an intervention in the development;

- *Results:* It includes Outputs + Achievements + Impacts of the intervention in the development. The inputs estimation (financial, human, technical and material...) is used in an optimal and economic way to produced expected outputs against the achievement of the identified objectives.

According to Prof. Leslie A.Pal, there should be the following criteria available for evaluating the results of public policy implementation:

- Effectiveness (comparison of results with intended objectives). The direct or indirect change of already or not yet oriented issues. Effectiveness includes results and impacts. Is there any difference created? To what extent it's worth to implement policies, strategies?

- Efficiency: Is cost-benefit analysis acceptable? Can it make more from less? How best the results obtained in comparison with the efforts made/resources spent?

- Strategic planning process includes identification of problems and proposing solutions, selection of alternatives, and implementation;

- Usefulness: effectiveness of performance, perception after implementation.

The above criteria have been used by many international organizations in evaluating financed programs and projects. Currently, these criteria have been revised with some new content added, creating many similarities and difficulties in differentiation of definition, especially the concept of efficiency and effectiveness**.** These both terms are defined based on the results of the implementation process, but they have certain differences and should be distinguished.

Table 1. Differences between efficiency and effectiveness

Efficiency	**Effectiveness**
- Results achieved against intended objectives	- The results obtained compared to the cost involved
- The level of achievement of objectives	- Manner of achievement of objectives
- Doing right thing	- Doing thing right
- Objectives are correctly identified, relevant and reasonable plan	- Appropriate means, methods and reasonable management

Within the scope of this article, the research team would propose a logical framework with the above criteria be applied for the strategy evaluation as outlined in the scope of public policies, in general and S&T policies, in particular.

3. Evaluation cycle of the strategy implementation

In 2012, OECD proposed an evaluation cycle for general policy at different stages, i.e, baseline, mid-term (active) and terminal, and it was used by many countries, organizations of OECD. The method and evaluation criteria is very varied depending on the type of information required and the evaluation purposes.

- Baseline evaluation (start of implementation plan) - it focuses on the assessment of inputs: human, finance, information resources, technical facilities, to see whether they are sufficient and available for the implementation;

- Mid-term evaluation - it focuses on the evaluation of activities, outputs, early results (short-term and medium-term), based on the criteria of relevance, effectiveness and efficiency, impact and evaluation on the planning process;

- Terminal evaluation or final evaluation - It takes place immediately after the period ends. The focus is the evaluation of final results (including results of the previous periods, and long-term results) and impact based

on criteria of efficiency, sustainability, utility, assessment on the strategic planning process and lessons learned obtained.

The review through 03 implementation periods should pay attention to the results obtained in each period including immediate, medium-term and long-term results.

Some issues drawn from this study

Evaluation of strategy is basically conducted as policy evaluation, in general and evaluation of S&T policy, in particular. It is the need, the objective requirement of the process of strategic planning - implementation - strategy evaluation. The purpose of the evaluation is to examine and evaluate the implementation capability and capacity, effectiveness, efficiency and sustainability of the intervention of the government through the promulgation of strategy. Evaluation of strategy is an evidence-based type of assessment.

4. Process, methods and criteria for strategy evaluation

This part of study focuses on evaluation process which consists of 03 major important steps: (i) Establishment of organization in charge of evaluation and planning; (ii) Conducting evaluation; and (iii) Final conclusions and recommendations. Each major step gathers many small steps. Evaluation criteria and methods are classified into groups of overall and specific criteria, each group shall have specific appropriate evaluation methods.

4.1. Strategy evaluation steps

Step 1. Establishment of an organization in charge of evaluation development of strategy evaluation plan

*a) Establishment of an evaluation group/organization*

- *The composition of the evaluation group/organization includes:* Senior leaders of Government, ministries, branches and localities; Leaders in state management agencies; Representatives of law enforcement agencies in different sectors; Managers of programs at national, ministerial and provincial level; Trained officers concerned. One member shall be appointed as the head of the evaluation group/organization, she or he will be in charge of supervision of the evaluation plan implementation, assignment of tasks for participating members. An evaluation group/organization should be established at different levels of authority.

Evaluation of strategy is basically carried out at 3 levels: national, ministerial and local, each level will set up an evaluation body based on their organizational structure.
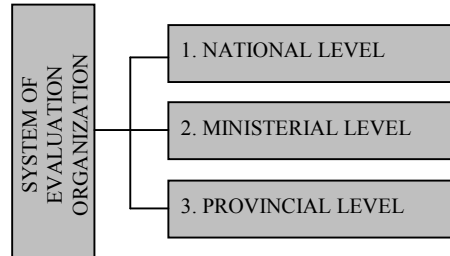
For example:

National level: The highest authority is Prime Minister, pursuant to Decision 418/QD-TTg, The Prime Minister assigned MOST in coordination with other ministries, ministerial-level agencies, Government agencies, People's Committees of Provinces or Cities under Central authority to organize the implementation of Strategy; give guidance, monitor and review the implementation of the Strategy and prepare and submit annual report to Prime Minister; organize preliminary review of the implementation of the national strategy in early 2016 and final review in early 2021.
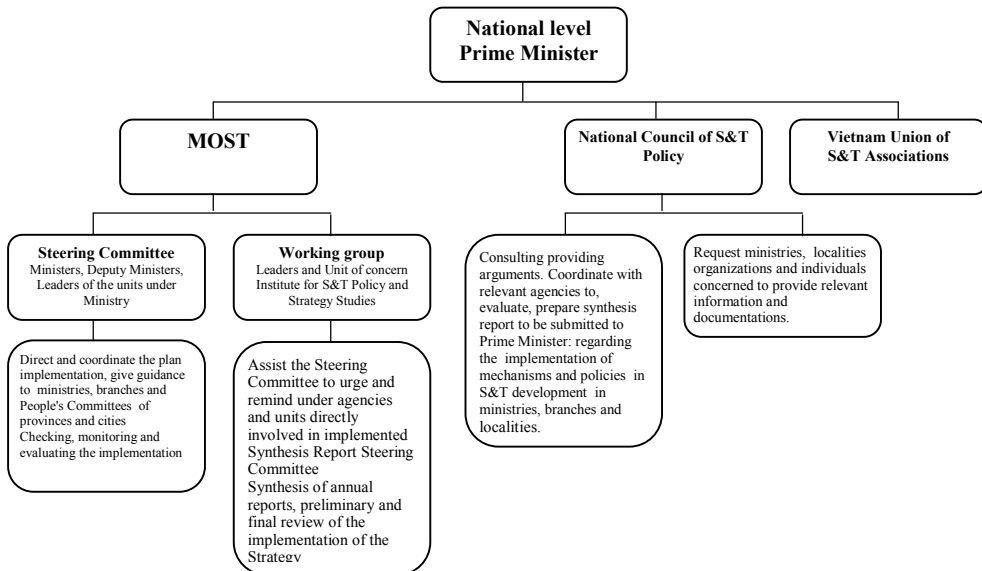
Legally, the MOST is a government agency responsible for the state management over S&T. MOST proactively established evaluation

organizations. In addition to the subordinate units, the MOST may invite other organizations such as the National Council of S&T Policy, the National Union of S&T Associations, line Ministries and localities to join independent review or evaluation of strategy. The expansion of the participants in strategy evaluation depends on the request of Prime Minister, timing of preparation, and the availability of resources for the implementation.

- *Selecting the head of evaluation organization:* The leader of evaluation team should have ability to forecast, predict, solve problems relating to achieving the goals of evaluation; She or he should be provided with enough authority to carry out the evaluation plan, enough competency to make order and decision (e.g to establish an evaluation organizations, revise goals, tasks and solutions in the plan, suspend organizations and individuals that have violated rules and regulations while discharging duties); Be able to assume the coordination role of stakeholders involved;

- *Responsibilities of the head of evaluation organization*

  + *Before the evaluation:* Develop evaluation requirements and corresponding documents, Evaluation Guide; Select evaluators, assign tasks to and conduct training for each evaluators; Prepare an evaluation plan; Collect records of previous evaluations, including maps, documents and list of participants;

  + *During the evaluation process:* Coordinate activities of the evaluators; Ensure sufficient means for evaluation; Distribute of work for each member; Provide appropriate information, materials, supplies; Monitor and make record of the achievement progress; Supervise the performance of all evaluators; Collating the data collected.

  + *After evaluation:* Oversee the analysis of data obtained from the evaluation; Coordinate the participation of evaluators in the meetings; Identify and assess the preparation of written reports; Monitoring the progress - Write a report based on the analysis of data collected, make comment on the draft text, conduct meetings and discussions; Give guidelines on prepared adjustment of plan, improvements.

b) Preparation of evaluation requirements

b.1) Proposing evaluation requirements

Proposing evaluation criteria

- Simple: Objectives should be simple and easy to understand;

- Measurable: Objectives should be specific and can be observed;

- Achievable: Objectives must be reasonable for participants to fulfill all the objectives in their capacity;

- Realistic: It should reflect the actual situation of on-going implementation.

- Orientated task: Objectives should focus on specific activities and avoid extension and multi-purpose task.

b.2) Making draft evaluation document

- Identify plans, documents and experts needed for the evaluation;

- The document helps evaluators understand their roles and responsibilities;

- For the evaluations based on status reports with full information they can replace the formal evaluation plan;

- In activities based on evaluation plans, there must often be a monitoring and evaluation manual.

b.3) Recruitment, assignment and training of evaluators

Recruitment of people for conducting evaluation. This kind of personnel should

- Have expertise in the field of evaluation;

- Be able to perform their assigned responsibilities;

- Have ability to observe and take notes of discussions or actions of participants;

- Be familiar with evaluation systems;

- Not assume other liability burden heavier than the evaluations assigned;

- Be committed with sufficient time to perform the evaluation.

Assignment of evaluation: The evaluation should be decided, recorded and informed to the participating evaluators before implementation. Assignment of evaluation task should be based on expertise and professional job of the to be assigned evaluator..

Training of evaluators: Training time should be at least 1 day prior to the period under review. Training of evaluators including instructions on how to observe a collective discussion or activity, what to find and what to record, and how to use the evaluation guidelines.

b.4) Avoidance of common mistakes of evaluators

- *Tolerance mistake:* Omission, underestimate of the infringement of no serious implementation of strategy;

- *Halo effect:* when the evaluation forms a positive impression to a person or a group in the implementation and leaves this impression which influences on the evaluator's observations;

- *Hypercritical effect:* It occurs when evaluators believe that their work has found something wrong, regardless of how was done by the implementer;

- *Prejudicial evaluation:* not positive assessment tendency may bring about negatively effect on objective judgment.

b.5) Completion of evaluation plan

- *Special information:* The evaluation plan includes implementation specific information, like framework and schedule for evaluation;

- *Organization, implementation of evaluation, assignment of evaluation task, location*: The evaluation plan includes a list of locations, a map of evaluation location and an evaluation organization chart;

- *Evaluation Guide:* It includes what should be done by the evaluators before they come to the location, how to conduct assessment on arrival, during and by end of the process;

- *Evaluation Tool:* practical evaluation exercise, preparation of paper, pen, notes, timetable for implementation of evaluation.

Step 2. Conducting the strategy evaluation

a) Identification, classification of evaluation

Baseline evaluation of the implementation of S&T development strategy

- Balance, mobilization and allocation of resources, such as human, financial and information resources to implement the strategy;

- S&T indicators outlined in the objectives of the strategy being concretized, integrated into five-year and annual plan;

- Development of a plan to perform S&T tasks (research programs and projects);

- Results of the implementation of S&T tasks.

Mid-term review of the implementation of the S&T development strategy: Results obtained compared to the proposed objectives of the strategy; Effectiveness; Efficiency; Initial achievements; Process of plan and strategy making;

Evaluation of results of the S&T development strategy: Effectiveness; Impact; Sustainability; Process of strategy making.

b) Observation on activities and collection of information, documentation, data

Observation on activities: Observation in a systematical way to ensure the data are consistent and well organized. These data are essential for the report, where corrective actions are identified to be addressed and monitored thereafter.

Three kinds of observation reports: descriptive report; commentary report; evaluation report

Data collection for evaluation: Event logs, video or audio recordings, questionnaires for participants; Record of telephone conversations; copy of internal, and in and out message.

c) Request for providing the dossier of evaluation results of S&T tasks

- Level of proposal: management units at central and local level;

- Dossier of evaluation results of S&T tasks of various programs, projects;

- Development of evaluation forms, compilation of findings from the strategy implementation.

d) Data processing and analysis of information, documentation and data

- The main purpose of data analysis is to assess the possibility of achieving the objectives. Four steps of data analysis: (i) identify the problem; (ii) identify the root cause; (iii) provide suggestions for improving the practice (in the case the desired objectives are affected); (iv) provide lessons learned;

- During the data analysis, evaluators can determine the problem difficult to solve by: comparing the evaluation objective with the actual facts and findings; completing analysis tables; Resetting a timeline of the evaluation events;

- Analyzing the root causes to understand the origin of differences between the events happened and likely to happen to the desired objective. Evaluators need to develop the proposals for further improvement (in the case the desired objectives are affected), identify the issues that need to be addressed. These recommendations are the bases for adjustment action.

e) Investigation, Survey, Quick Review

- Places where there are potential recipients of finance to carry out S&T tasks;

- Places where there are potential beneficiaries (transferee) of results from S&T tasks;

- Developing investigation, survey forms;

- Writing reports.

Step 3. Final Review and Development of plan after the strategy evaluation

a) Conducting analysis, evaluation and making draft report

- Analysis and evaluation: the data collected for to this purpose include: data from the workshops, interviews, periodic review and the data from step 2;

- Draft report: Summary of the implementation; Overview of the implementation; The objective and purpose of the evaluation. The appendixes may include the lessons learned, a summary of the participants' feedback, a summary of the evaluated events, ranking of the efficiency, and a list of acronyms and abbreviations.

b) Conducting seminars, conferences

- The purpose is to review and finalize the draft report after the evaluation. Participants give their advice to the plan of improvement after evaluation, clarifying specific corrective actions to address the identified problems in the post evaluation report. Then, this evaluation report and the improvement plan is completed as a final evaluation report;

- The specific schedule, organization of the evaluation should be realized in convenient locations or project sites. The conference should be carried out in an interactive manner. The conference discusses the way whereby participating organizations could contribute based on the strengths identified within the scope of their management;

- The result of this discussion is a list identified corrective actions, organizations responsible for implementation and the timeframe to fulfill. When agreed upon, the corrective actions and the implementation roadmap will create plans of improvement. This improvement plan will be specified into recommendations of the evaluation report, measurable steps have the ability to measure thereby it could provide readiness for improvement.

c) Complete the improvement plan

- An important aim of the post-evaluation conference is to discuss the way how to implement the recommendations for improvement;

- The complete improvement plan includes a formal report after improvement action/plan as a summary of the next steps. Organizations/agencies involved will use to implement their improvement plans;

- The recommendations and corrective actions should correspond to the contents listed in the post-evaluation report.

d) Identify the issues that need to be improved

- The identification of rooms for improvement is a step in the process of evaluation and improvement plan making;

- List the corrective actions corresponding to each proposal in the report after the action/ improvement plan. Each corrective action must be determined what to be done to follow the recommendations, who (individuals or organizations) shall be responsible for and an implementation timeframe, for effective implementation it should select those organizations with best conditions, authority to perform;

- Improvement plans can be monitored, managed by planners, evaluators, organizations involved in the evaluation process. These organizations should be supported with full evaluation plans, especially the components of the plan related to the organization's responsibilities and the timelines for completion. In short, the construction of improvement plans should be a stakeholder driven process.

e) Propose corrective actions

- Some corrective actions require resources for training, equipment or personnel. When the resources are not available, planners and evaluators should immediately develop short-term and long-term solutions to improve the implementation;

- Experiences from evaluation help funding receiving individuals and organizations and donors, managers learn, review and provide lessons learned for future.

g) Monitoring of implementation

- Monitoring of adjustments in operation, which have been identified in the evaluation report and improvement plan is carried out by competent authorities. The corrective actions indicated in the report need to be monitored and continuously reported;

- Monitoring of corrective actions is an important step in the process of evaluation implementation of improvement plan;

- To monitor the implementation of corrective actions, each participating authority concerned should have a focal point unit responsible for this task and making the progress report accordingly;

- Competent authorities (manager) need in coordination with law enforcement agencies such as inspectorate, local authorities (where located the organizations and individuals receiving funding for implementation) to monitor those remedial actions assigned by competent authorities. The implementing agency shall be responsible for collecting information, compiling, updating the periodic reports.

h) Printing and publishing the results of the strategy implementation

4.2. Criteria and methods of strategy evaluation

General evaluation criteria and methods

In 2010, the National Research Council of America, when conducting the evaluation of S&T strategy of 06 countries: Japan, Russia, Brazil, India, China, and Singapore, proposed general criteria and holistic approach, as follows:

- Access to S&T plan to see the spending on S&T in general and R&D expenditures compared to the GDP growth changes;

- Access to the innovative capacity (invention, level of awareness, number of scientific publications, percentage of High-tech/manufacture export, etc.).

Currently, many countries focused on input evaluation criteria, e.g. spending on S&T and output evaluation through innovation capacity.

Specific criteria and methods

From 1991 to present, when evaluating the results of implementation of policies, strategies and plans, OECD has based on five key criteria: Relevance, Effectiveness, Efficiency, Impact, Sustainability.

During the evaluation process, evaluators based on the criteria and specific terms, information, data and used the methods appropriate to reality. Performance evaluation criteria are synthesis criteria

Evaluation framework	Summary Table usable for qualitative / quantitative criteria Selection of Level to fill out				
	Qualitative. Very High: VH; High: H; Normal: N; Low: L; Very low: VL Quantification: could follow a scale from 10-100				
	Relevance	Efficiency	Effectiveness	Impact	Sustainability
Input					
Activity					
Output					
Result					

For each criterion, it should concretize and detail in the evaluation process. For example, in case of the result impact of the implementation of socio-economic development strategy, the illustration is below:

Combined baseline and mid-term evaluation of the strategy implementation

Socio-economic objectives	Planning	S&T Indicators	Activity	Output	Result	Impact
Economic indicators **Social indicators**	Inputs for implementation of S&T tasks Specific activities	Technology indicators Science Indicators	Mobilization Organization for implementation Guidance Monitoring	Products Goods Services	Direct increase / decrease of Economic indicators Indirect change of social indicators	Impact on development of: *sector, branch, local, nation.* Impact on socio-economic development Competitiveness of the sector, branch, local and nation.
2011-2015		**2011-2015**	**2011-2014**		**2015-2016**	

Annual evaluation and comparison between years

Final evaluation of the strategy implementation

Socio-Economic indicators	Planning	S&T indicators	Activity	Output	Result	Impact
Economic indicators **Socio-indicators**	Inputs for implementation of S&T tasks Specific activities	Technology indicators Science indicators	Mobilization Organization for implementation Guidance Monitoring	Products Goods Service	Direct increase / decrease of Economic indicators Indirect change of social indicators	Impact on the socio-economic development ..... Competitiveness of the sector, area, local and nation
2011-2020		**2011-2020**	**2016-2020**		**2011-2020**	

5 year period evaluation (2011-2015; 2016-2020) and compared between 2 periods

Now there are many methods (multi-method) to conduct evaluation of the implementation results, within the context of this article, research team would like to suggest using the following evaluation method:

No	Criteria	Methods	Evaluation Content	
			Proposed strategy	**Results of implementation**
1	Relevance	Systematizatio: indicators, indexes Measurement: Quantitative biography-counting of number Quantitative biography-counting and analyzing citations	Opinions, objectives, tasks and solutions, implementation arrangement	Organization of implementation Inputs be guaranteed. Activities: monitoring, review, investment, as well as funding, technical support and the kind of encouragement and support to create special outputs. Outputs: New products, goods and services resulting from development interventions in related to outputs obtained, etc.
2	Effectiveness	Tracking progress, aggregating data and use of indicators (monitoring) Qualitative Quantitative Estimate	Objective, Task orientations	Measurement of the relevance of selected objectives and the level of achievement (programs and projects funded), effectiveness is actually a comparison between the results obtained and the objectives set. The change of the already or not yet oriented issues, directly or

No	Criteria	Methods	Evaluation Content	
			Proposed strategy	**Results of implementation**
				indirectly influence to the change. For example, the change in GDP. Effectiveness includes results and impacts.
3	Efficiency	Comparisons and benchmarks S&T statistics	Objectives and proposed solutions	Efficiency measures the level of resources used to reach a goal. It is the comparison between the results achieved and the cost involved in the process of implementation. Efficiency can only be obtained when the objectives have been rightly identified and the approach been correctly applied. Reduction of costs of inputs while still keeping production of the expected outputs. Or: Remain the inputs, increasing production output. Or less inputs used but more output produced.
4	Impact	Comparisons and benchmarks Investigation, survey Analyzes Simulation Induction Aggregation Peer-view Assessment of strengths, weaknesses, opportunities, challenges	Viewpoints` and objectives, orientations and tasks set out	Positively and negative results of the performance, short-term and medium-term, intended or unintended, direct or indirect interventions in the socio-economic development.
5	Sustainability	Network analysis Survey/Investigation Aggregation	Viewpoints and set out objectives	S&T, on-going and future further socio-economic development

Conclusions:

Methodology for evaluation of the result of S&T development strategy on the basis of theory, practical reality of policy evaluation, in general and for S&T policy evaluation, in particular, takes integration of the same viewpoints, inherence of previous evaluation methods and criteria.

Evaluation of strategy should not only rely on common logical on framework, evaluation processes, criteria and methods, but it is important

also to rely actual evidences of the implementation of strategy in order to have necessary information, documentations and data for analysis, synthesis, processing and assessment.

Evaluation is basically conducted in three phases: baseline, mid-term, and terminal period. Baseline evaluation and mid-term evaluation play an important role in the adjustment and preparation of improvement plans, improved focus of behavior, implementation arrangement, realization of S&T tasks, right objective oriented solutions and direction for monitoring and evaluation capacity/ability towards achievement of objectives. In case of any deviation of the direction of objectives detected, an early adjustment plan shall be required. Terminal evaluation is for clarifying the role of the strategy on the basis of assessment on its impact, effectiveness and sustainability./.

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