

LIMITATIONS OF THE LUMP-SUM PACKAGE CONTRACT POLICY IN IMPLEMENTATION OF SCIENTIFIC AND TECHNOLOGICAL TASKS FUNDED BY STATE BUDGET

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Abstract:

The funding modality of package contract to perform scientific and technological (S&T) tasks has currently not supported for effective management of financial resources for implementation of research projects, not created an enabling environment for scientists, thus it does not really promote scientific research. This article focuses on limitations of the package contract policy and its impact on the implementation of S&T tasks funded by State budget, and suggests direction for improving the policy.

Keywords: Lump-sum package funding policy; S&T tasks.

Code: 13082601

1. Theoretical and practical basis of lump-sum package contract in performing state scientific and technological tasks

1.1. Some concepts

- *Scientific and technological task* is a set of scientific and technological issues need to be addressed, implemented in the form of S&T theme, project, program. Each form has its different purposes.
- *Product of research and development activity:* In all cases, the product of research and development activities is information, regardless it is of natural sciences, social sciences or science and technology.
- *S&T Policy* is a set of measures that management can utilize it to impact on managed objects (e.g, S&T organizations) to achieve the objectives setforth for a certain period.
- *Lump-sum package funding policy* in implementation of research theme/project is one of the S&T policies. It is a measure issued by the S&T management and used as a tool to manage research themes/projects.
- *Lump-sum package funding:* In this article this concept only applies for the implementation of research themes/projects. In this context, it

means funding for the implementation of research theme/project is provided by the management body to the project owner as a lump-sum package based on the research content and total cost estimates which have been approved by approving authorities (following the recommendations of a Technical Review Council after assessing the content and expected results stated in the application); the product of research here is the results evaluated by a Acceptance Council of Scientists).

1.2. Why is lump-sum package funding?

When considering this modality, we should look at two sides with different controversial thoughts: One side of financial managers and the other side of scientists (specifically, project managers who represent research team consisting of scientists involved in research theme/project). From financial managers' perspective, there should always take all kinds of measures to make sure the State financial sources are well managed, spendings are closely controlled. After being disbursed the recipient must have sufficient invoices and vouchers for financial clearance. On the scientists' opinions, because of specific features of scientific activity it is difficult to know beforehand exact cost of research materials due to price fluctuation, therefore scientists find it difficult, restrictive in implementation of research tasks when applying the current financial mechanism. Therefore, it is necessary to have a proper management mechanism that can satisfy both sides.

Thus, the lump-sum package funding policy should aim at achieving two goals:

- Effectively manage the State budget allocated for science;
- Create a favorable mechanism for scientists when they use this kind of fund. Intellectual products must be paid at satisfactory level.

1.3. Basis for calculation of the lump-sum funding for science and technology activities

The basis for estimation of budget of research theme/project under the package funding modality includes the following factors:

1.3.1. Identify issues to be studied and research activities to be carried out in the research theme/ project

This is very important task, it is often handled by leading experts in the area of concern or reputable scientists. In the proposal, research managers are requested to describe/explain the content of research need to be carried out and the expected outputs to be produced by the research project. The

decision to approve or reject funding for the proposal will be based on the recommendations of the Evaluation Council after a care full assessment on the need and specific content of the project.

1.3.2. Determine the total funding required to ensure smooth implementation of research activities including: remuneration for scientific labor, materials, energy for research.

In order to calculate the total cost of the research theme/project in a most practical manner, it requires joint effort, cooperation from both sides: project owner and funding agency.

Normally, the estimation for the production budget is based on the economic and technical cost norms issued by Government and the price is determined in according to present market price, including: cost norms for labor, materials, energy, etc. However, the bugeting for scientific and technological tasks, or more specifically, research themes/projects has its own characteristics, unlike other types of physical production activity, so it is not easy to estimate costs close to the actual implementation. Currently, there is no document of the State stipulated provisions of detailed remuneration for research activities. Scientists find themselves sometimes difficult to estimate in advance their level of effort and time to achieve the desired results.

Therefore, it is not an easy task to estimate the total budget of a research project in a most realistic way, only 80% of the real requirement. In the research process, scientists have to adjust the budget to scope with changes of work items to obtain expected results as quickly as possible. Results of the study below showed that the most difficult stage in estimation of budget for scientific research is labor cost as scientific labor has its own characteristics [15], thus requiring a proper level of flexibility in budgeting and approving the budget for research so as that financial matters are not the biggest barrier affecting the research quality.

During 2001 - 2007, the basis for the cost estimates of research project was mainly based on the provisions in Circular 45/2001/TTLT/BTC-BKHCMNT, dated 18/6/2001 (Circular 45). The issuance of a frame of payments for research as stipulated in Circular 45 had the purpose of creating more autonomy for project managers in implementing research activities. However, the ceiling limit of rates is too low, it makes researchers go around to apply the rules. For example, in the field of social sciences and humanities [15, page 54], there are projects with large research content, require interdisciplinary efforts. To get the budget approved, the large project has to split into smaller separate thematic subjects with smaller budget each for ease of clearance. Other case when a study requires highly

qualified and experienced personnel in the field of research, but the budget does not allow project owner to engage such kind of experts/specialists. On the other hand, rigid rules of the cost norms frame made it difficult to use and affected the progress and quality of research.

Since 2007, Circular 45 has been replaced by interministerial Circular No. 44/2007/TTLT/BTC-BKHCN dated 07/5/2007 (Circular 44) issued by Ministry of Finance and Ministry of Science and Technology guiding norms, methodology of budget allocation and estimation for S&T projects funded by state budget.

According to the content of Circular 44, funding for the implementation research project activities is itemized as follows: Development of detailed proposal; Thematic studies (including thematic type 1 and type 2); Report on desk study; Development of survey questionnaires ; Information supply ; Survey report, including data analysis ; Scientific report; Consultants for evaluation, acceptance panels at the grassroots level; Scientific workshop; Remuneration for project management; S&T management fee.

Remuneration for research is mainly undertaken in the form of payment by topic to the head of the research theme, this means project owner has to split the project into research thematic themes to effect the remuneration for research activities.

In addition, project owner needs to use a number of reference documents with special features that are not defined in the Circular as basis for making estimate costs.

Though there was improvement in the cost norms framework for research activities specified in Circular 44, namely higher ceiling rates, it has not fundamentally solved the problem of reasonable labor cost in scientific research. The reason is because of currency devaluation (in 2001, the inflation rate was 0.8%, but in 2007, it was 11.2%), if compared to the minimum wage (in 2001, it was VND 210,000 and in 2007 it increased to VND 450,000). We can see the increase of norms is still not satisfactory.

Thus, we can make a general statement that scientists are not satisfied with the current remuneration system provided by research projects. According to the results of a research project [15], the setting remuneration level for scientific workers is lack of justifications. Payment for remuneration varies, depending on types of implementing agency whether it is government funded or not, if so, researchers can be paid out from projects besides getting regular salary as government staff. Remunerations are also different in different types of research project whether it is in the field of social sciences and humanities or in the area of science and technology.

1.3.3. Correct evaluation of the research results compared to established indicators

This work is no less important. Currently this is done by the method of council meetings. The Evaluation Council consists of invited scientists with intensive knowledge in the field of concern to participate in the assessment (or acceptance) of the research results. However, it comes back to the issue of remuneration for evaluators: In the previous Circular 45, the maximum rate for analysis and evaluation was VND150,000-300,000/application; The present Circular 44 provides higher level (VND 800,000/application). To do analysis and evaluation, experts have to look at the whole implementation process of the project, the review criteria again the content in research proposals, consider the research results, it is just talking about desk assessment. In case the research project of application nature evaluators must go further to field assessment. Therefore, the remuneration stipulated in such regulations is considered not satisfactory. Furthermore, no provisions to prevent evaluators from low quality/wrong assessment, even infringement they made in the evaluation of the projects

Thus, it is necessary to set up more specific procedures for the screening, selection of projects and the evaluation of the project results, i.e.:

- There should be a clear mechanism: satisfactory remuneration, good selection and evaluation criteria;
- There should also be strong sanction measures to prevent low quality/wrong/underestimated assessment in the appraisal, selection and evaluation of research projects. This is the key reason causing large losses and wastes in S&T activities, in general and in research and development, in particular.

One of the mandatory requirements of the package funding modality is result based management, focus should be placed on job effectiveness, clear set of evaluation criteria, otherwise, we can not say we have the modality in place. Moreover, one of the basic principles of "lump-sum contract" is to know the average consumption level of society for a particular job or to value/price the average labor effort paid for it, only then we can determine the lump-sum level for each job [13].

Financial mechanism is a system of modalities, methods, measures and organizations to manage the process from creation - distribution - use of financial resources in the national economy. Depending on specific context and socio-economic development policy in each period, the financial management mechanism is accordingly developed to be appropriate and adaptive to economic mechanism of that period. In the market economy, it

requires reform of financial management mechanism in the direction of "self-reliance, self-responsibility" and the State is only an actor to support and manage the development by law.

When implementing the lump-sum funding modality we should make sure that the both sides in the contract understand clearly all requirements and obligations, otherwise we can face an uncertainty in the achievement of the results.

S&T task has its own characteristics, so in the implementation process, it requires persons involved to meet the set requirements. Research work does not have a standard format, it requires a highly creative and independent effort challenging with large risks, no repetition in products and diversified research methods.

Therefore, to provide a scientific justification for lumpsum funding for research and development activities, the contracting agency who signs the lumpsum contract must be clear in mind what specific products they want to get from the research project. In return, this requires scientists when design the project they should describe concrete products, conditions, standards and methods to produce them, identify the methods to evaluate their products. On that basis, it can ensure the fairness, appropriateness and correctness of the decision. This stage is of high attention of the funding agency, as well as the critical stage of for scientists because if it is underestimated, it may make difficult to complete the project with quality products as specified in the contract. More specifically, for S&T projects, it is very important to have clear procedures from the project selection, appraisal, approval to project evaluation, acceptance of the results. These are the necessary and sufficient conditions to make the package funding policy effective. In other words, financial mechanism, approval mechanism and acceptance mechanism should be compatible with each other, otherwise the system will not be effective.

1.4. Experience of package contract in material production activities

1.4.1. Package contract in agricultural production

The policy on package contract in agricultural production issued in pursuant to Resolution 100 (called "Khoan 100") initially met the requirement of restoring the household economy. The objective of "Khoan 100" was to develop production, improve economic efficiency, labor productivity, raise income of workers. This policy comply with following principles: management and effective use of productive means, firstly land, management and production must base on final results of production,

implementation of contract in 5 stages and 3 stages; in distribution to harmonize the interest of workers. Scope of policy applies to all kinds of crop and livestock.

In terms of economic management mechanism, “Khoan 100” broke the centralized bureaucratic mechanism in agriculture production. In the first period, “Khoan 100” had reactivation effect on the rural economy and generated a larger volume of agricultural products compared to the previous time.

However, the “Khoan 100” is only effective for a short period of time, as the centralized bureaucratic mechanism still remained in cooperatives as well as in the whole system of agricultural reproduction. This system together with the administrative orders imposed on farmers, particularly those had received package contract. Farmer households could not afford to ensure reproduction and basic needs, then they returned part of the contracted land. The significance of “Khoan 100” was to create a comprehensive reform in agriculture and economic activity in rural areas, renewed the role of household economy.

1.4.2. Package funding for administrative expenditures

In order to create conditions for all state agencies to be proactive in the use of administrative budget in a most reasonable way to fulfill assigned functions, responsibilities and tasks, the Government issued Decree 130/2005/ND-CP dated 17/10/2005 (Decree 130) prescribing autonomy, self-responsibility in the use of administrative personnel and expenditures of state agencies. The main objective of the Decree was to give autonomy in staffing and administrative expenditure management to state agencies towards improved workforce performance, effective use of budget, increased income for public servants.

Principles of this modality of package funding were: Ensure the fulfilment of the tasks assigned; No increase of staff and budget assigned (except special cases); Ensure democracy openness and legal rights of public servants. After nearly 10 years of implementation, the package funding for administrative expenditures scheme clearly showed its superiority, had created favorable conditions for state agencies to be more active in securing funds, focusing on the implementation of the tasks assigned, step by step reducing cumbersome administrative procedures, raising the accountability of heads of agency for financial management, budget provided by the State.

1.4.3. Experience of financial management mechanism of some international organizations

Financial management in projects funded by international organizations is implemented based on the project proposal, in which there is clear explanation on cost estimates. Basically, all project activities are accompanied with cost estimates. However, actual payment can be made in a flexible manner, not rigid. To assess the proposal, funding agencies often invite highly qualified experts in relevant fields in order to appraise the task and the budget required to implement it. Projects funded by international donors are considered very effective, but financial management is very flexible.

Taking the case of financial management of PLAN organization (a non-governmental organization founded in 1937 in Europe with the aim of helping women and children) for analysis, we saw that their view on financial management was focusing on close monitoring activities, trying to minimize any financial losses, so the efficiency of investment reached higher. During the implementation, budget revisions can be made to meet the actual requirement. They do not use "package funding" modality but final financial clearance compared to approved cost estimates. The budget revision must be accepted by representative of the project management.

Another example is the case of financial management mechanism for projects assisted by the French Development Agency (AFD). It is somewhat different, they pay attention to the explanation of the tasks in accordance with project cost estimates to see whether they are compatible or not, what are the final results, with such a total funding whether it can achieve the desired results or not. Evaluation of the results throughout stages was of particular interest, from this assessment budget will be flexibly adjusted to suit the actual situation but still ensure achieving the final results. To some extent, the financial management mechanism for projects funded by this organization is partly package funding applied to some items, and the majority apply final clearance compared to approved cost estimates.

Through the above study on theoretical and practical basis for the package funding modality the following points can be highlighted:

- When performing package contract in agriculture, the basis of the contractual arrangement should be based on productivity, yield estimates before harvest to make the ratio of contractual package. Here, no need to pay attention to monitor the implementation. All are in accordance with the final products. Package contracts made fundamental changes, created important breakthroughs in agricultural production.

- When performing package funding in spending state administrative budget, the basis of this modality is a given number of staff and pay interest in the work performance by the end of the year. This modality showed effective in practice.

Table 1: Comparison of different modalities of package funding or lump-sumcontract and financial management measures

No	Types of modality and measure Management stage in package funding and financial mechanism	Lum-sum Contract in Research & Development (According to Circular 93)	Package funding in administrative expenditures (Decree 130)	Package Contract in Agriculture (Resolution 10)	Financial management Measures of PLAN	Financial management Measures of AFD
1	Initial period	- Set up spending norms - Give authority to pay for some expenditures	- Fixed staff number of the agency - Development of internal spending regulations	- Contract granted based on the assessment of soil quality	- Based on cost norms for specific project inputs/items	- Based on cost norms for specific project inputs/items
2	Mid-term period	- Monitoring the progress of implementation	- Only submit quarterly reports	- Assessing Output to determine rate of return in the contract	- Closely monitor the implementation is regarded as the most important task	Mid-term review is concerned
3	Final period	- Control of supporting documents - Results must be accepted by a council	- Control of supporting documents; Interested in the results obtained in annual plans	- Attention paid to final products	- Control of supporting documents - Evaluation of final results	Evaluation of final results is regarded as the most important task
4	Financial Mechanism	Unchanged total budget	Unchanged total budget		Total budget can be changed compared with initial proposed budget	Total budget can be changed compared with initial proposed budget

- Experience of some countries and some international funding organizations showed that project proposals by applicants must come from actual needs/requirements, the explanation must be specifically presented, accompanied by detailed cost estimates. Proposals are evaluated in terms of content and cost estimates, by professional panels established by the funding agency. Cost estimates are made in two methods:
 - + Method 1: Set out maximum funding level for projects; in case it is not sufficient for implementation the project owner will be responsible for securing missing funds from other sources.
 - + Method 2: Payment by actual expenditures incurred in the implementation, and the project will reimburse based on supporting documents attached to the production of the project outputs.
- In the research project implementation, due to scientific products are intangible when proposed, especially in basic research project. As a result, they are quantitative rather than qualitative for example, papers to be published in specialized journals, innovations to be patented, scientific reports to be presented in international conferences. This means it is difficult to make cost estimates for such kinds of study. Therefore, the cost of research and development activities sometimes changes in the implementation process.
- According to the definition of package contract mentioned above, the cost norms should rely on result based management approach.

2. Present status of the package funding in implementation state S&T tasks

2.1. Present status of implementation of the package funding modality in research projects

2.1.1. Relationship between budget estimation, allocation and final clearance in current science and technology activities

Financial management from budgeting, evaluation of cost estimates, final clearance still in a mechanical manner, not based on characteristics of innovative activity, namely risky and non-economic. Provisions on the use of funds for research projects say: *The budget approved and allocated to each project is the maximum ceiling to implement the project [5]*, because of this, many scientists are not so interested in package funding policy. Accidentally, the policy created obstacles to research activities.

In order to see the current status of financial management mechanism in science, the author conducted a survey by sending questionnaires to a number of research institutes and universities and some provincial Department of Science and Technology. Objects for the survey were selected scientists, science and finance managers and enterprises.

Table 2: Results of the survey on the implementation of package funding policy by fields of science

Field of science Survey subject	Natural Sciences	Social Sciences	Science-technology engineering	Medicine	Agriculture, Forestry and Fisheries	Others
Total number of questionnaire	30	5	32	16	44	12
Number of projects applied package funding	4	0	7	5	10	2
<i>Percentage of responses applying the modality</i>	<i>12</i>	<i>0</i>	<i>21,8</i>	<i>31,3</i>	<i>22,7</i>	<i>16,7</i>
Number of projects not yet applied package funding	26	5	25	11	34	10
<i>Percentage of responses not applying the modality</i>	<i>88</i>	<i>100</i>	<i>78,2</i>	<i>68,7</i>	<i>77,3</i>	<i>83,3</i>

Below are the survey results:

- 64% of respondents shared the opinion that financial management mechanism in the implementation of State S&T tasks still remained inadequate.
- 36% of respondents were of the opinion that the financial management mechanism in the implementation of State S&T tasks exposed too many shortcomings.
- 42.5% of responses shared the view of final financial clearance mode did not match the characteristics of scientific research.
- 19.4% of responses were in the opinion of too limited budget approved for research projects.

Financial management for S&T has many points no longer appropriate for operations having special characteristics like S&T activities. State cannot manage financial matters of S&T in a tightly way and on the other side,

scientific and technological communities also face difficulties in carrying out activities relating to current financial institutions. However, ethic issue of scientists had also been considered more and more recently, many scientists commercialized their research results, it made big waste of the State budget for scientific activities in general.

According to the provisions of Joint Circular No. 93/2006/TTLT/BTC-BKHCN of 04/10/2006, there are two groups of expenditure items to be estimated, one is for those items which can be put in a package for lum-sum funding, the other is for those not included in the package and will be itemized under the budget lines defined by State budget. For the first group, it would not find any difficulty but the second one found a lot of trouble. Furthermore, it is difficult to differentiate these two kinds of expenditure when making cost estimates for S&T projects in pursuance with Circular 93.

2.1.2. Comments of Financial manager on the package funding policy in realization of S&T tasks

The author conducted a consultation with financial managers in a number of S&T institutions and provincial department of science and technology and found that financial managers supported the idea in package funding in the implementation of State S&T tasks, but the problem was how the package contract be appropriate. The current policy had not really promoted scientific research. Another issue was the package funding mechanism was not compatible with scientific management mechanism and financial management mechanism in scientific activities in terms of loose approval and acceptance procedure, it largely depends on members of review council. The purpose of the package funding policy is, on the one hand, to create an enabling environment for S&T activity, but on the other hand it shall ensure better management of the state budget for this activity.

The current package funding policy if it is not well implemented it would be possible to create leakage-making losses of the State budget, and undesired effects. For example, a research project in the field of basic research when came to the stage of implementation, the project leader split the research content in the form of thematic theme in order to meet the requirement of payment, but the themes had in fact not any content invisible (because all were in the package contract), the administrative procedures for financial clearance were too easy, just signed a subcontract and had it liquidated instead of showing supporting documents of payment for investigation, surveys, experiments,... as it was before. Here we see the role of the review Council in appraising the proposal. It should make clear what contents of the research must be done, how many subprojects is enough, should it be necessary to conduct surveys, experimental tests, how many samples are

needed for the research, etc. In reality, the application of Circular 44 was not easy to determine the number of subprojects and their classification. This is not a simple matter for the appraisal Council.

2.1.3. Reflections of science and technology organizations, provincial department of science and technology and scientists on the package funding policy

To get comments of scientific managers and scientists, the author directly interviewed leaders of provincial departments of science and technology, officers in charge of scientific management and scientists of a number of universities, colleges, research institutes. Most of provincial departments interviewed gave the answer that they had not yet applied the Circular 93. It can come to conclusion that all S&T tasks at provincial level had not yet implemented the package funding policy.

The result of survey carried out at 13 departments of science and technology; 07 research institutes, 05 universities and colleges showed that:

- 20 organizations had not yet implemented package funding policy in realization of S&T tasks (accounted for 80% of the total surveyed organizations);
- 05 organizations had implemented package funding policy in realization of S&T tasks.

There are many reasons to justify why many provincial departments of science and technology had not implemented the policy:

- Due to disagreement of provincial department of Finance and Treasury to the policy;
- No specific guidelines available making it difficult to implement.

From the scientists' perspective, the common reason was that they feared facing troubles when making final financial clearance with the Treasury or Banks.

Through the data shown in the table 3, we can see that many scientists are not in agreement with the current package funding policy.

So what scientists expected from the package funding policy?

- 90% of the responses wanted to apply a result based mechanism;
- 86.3% of the responses wanted to apply full package funding for the whole project;

- 3% of the responses wanted to have package funding applied only in some limited research content;
- 7% of the responses wanted to have more tightly policy with higher ceiling of the cost norm.

In summary, most scientists wanted to apply a result based mechanism in lumpsum funding for S&T projects.

Table 3: Contract is not satisfactory as expected from scientists

Field of survey Content	Natural Science s	Social Science s	Science- Technol ogy Enginee ring	Medi cine	Agricul ture, Forestr y and Fisheri es	Other	The total number of votes (% of total)
Total number of survey questionnaires	30	5	32	16	44	12	139 (100%)
The policy is not compatible with science management mechanism and current practice of management and use of State budget	20	3	28	8	30	8	97 (70%)
Funding mechanism have not yet really promoted scientific research	22	1	29	10	36	6	104 (75%)
Package fun.ding should only apply in some expenditure items	1	0	0	1	1	1	4 (3%)
Full package funding applied after project has been approved	29	2	31	13	35	10	120 (86,3%)
Lump-sum funding should base on final products	29	2	31	13	40	10	125 (90%)
More close financial management but higher ceiling of cost norms	0	3	1	2	3	1	10 (7%)

Source: Survey results

2.2. Impact of the package funding policy to the management and implementation of scientific and technological tasks

Positive impacts: For first step, it was empowered project managers and research institutions to assume the prime responsibility in revising the

project budget between the cost items in response to the actual requirement during project implementation, without changes of the approved budget.

Negative impacts: Allowing project managers to spend the budget with the small split thematic research subprojects may bring about undesirable results (as mentioned above).

The objective of package funding policy was to promote scientific research, make it more effective in accordance with standards, scientific works achieve high value, investment for science and technology be viable.

On contrary, as the survey results showed, 43% of the responses said that the policy had not actually promoted scientific research and many institutions/agencies did not apply it in the implementation of their research projects.

Main drawbacks of the current policy:

1. Impossible to calculate the average labor effort level for research and development, so the basis of project implementation cannot be guaranteed.
2. Provisions of maximum total cost estimate for both contracted and non-contracted parts are not satisfactory.
3. Package funding is not completely realized.
4. The policy did not involve relevant financial agencies for uniformly implementation of the policy.
5. Benefits of project managers from the saving funds had not encouraged them as expected.

3. Solutions to improve the package funding policy

3.1. Viewpoints on an improved package funding policy in the implementation scientific and technological tasks

First, it should not apply management measures by implementation of package funding, but by actual spending, actual payment. Cost estimate shall be tightly controlled and approved by competent authority. In the process of implementation, flexibility should be given to project managers to make revisions to some extent of the content and the correspondent budget due to price fluctuation at the time of procurement of goods and services for research. Cleared previous financial report is the basic condition for the next disbursement.

Second, It should classify research projects in different types, for instance, basic research, applied research, experimental development so that different

financial management measures can apply. Some types can use package contract, some cannot. It should also apply full package contract with focus on final products. However, due to particular characteristics of research and development, it should not fix the total cost estimate, but allowing adjustment in the course of project implementation. The question here is that the state budget should help scientists to obtain research products which have been approved by the review Council.

In order to choose which point of view to follow we need to take the following points into consideration:

- 1) *It is necessary to issue specific provisions on cost norms, especially remuneration level for scientific labor in accordance with its characteristics.*
- 2) *No maximum ceiling of cost estimate specified for approval and allocation to research project.*
- 3) *The management of S&T tasks must be improved in accordance with the lump- sum mechanism.*

One of the conditions necessary to implement package funding policy is to clearly identify the final products of S&T tasks. The right assessment depends entirely on the assessment capacity of the Science and Technology Review Council.

Review and acceptance mechanism in respect of S&T tasks: The members of the Review Council of Science and Technology need to be well remunerated for them to pay full attention to the evaluation of inputs and outputs of research projects, It needs to satisfy the following conditions: Remuneration should be paid accordingly to the intellectual effort made by members of the Council. It should set up a set of specific criteria for the selection of members of the Council (experience, area of expertise, etc.), Scientists who are invited to join the Council should have extensive knowledge and experience in the area of concern. Their qualifications should be higher than the project owner. In reality, there were many members of the Council had not met the required standards while there was a number of highly qualified candidates available for selection [18].

3.2. Some suggestions to improve the package funding mechanism

With the two viewpoints mentioned above and within the scope of this article, the author only refers to a group of solutions for the second point.

3.2.1. There should be financial policies corresponding to each phase of the research and development process

- S&T tasks are of basic research should not apply final result based contract, it needs a policy to give more authority to project director so that they shall be of self-reliance and self-responsibility.
- S&T tasks are of applied research should not apply final result based contract, it needs a policy to give more authority to project director so that they shall be of self-reliance and self-responsibility. The financial clearance shall take place on actual payment, actual cost basis against the approved proposal.
- For technology development tasks it should apply the package funding modality, final result based assessment, cost estimate based on market price, especially for labor cost.

For this group of solution, it is necessary to establish a set of clearly defined criteria to distinguish stages of project. Specific provisions on responsibilities of the S&T Review Council members in appraisal and approval of projects need also to be promulgated.

3.2.2. There should be respective funding policies applied separately for each type of research

Table 4: Summary of S&T tasks classified by research area and research stage

Classified by research area	Classified by research stage		
	Basic research	Applied research	Experimental development
Natural Sciences	X		
Technological and Engineering Sciences		X	X
Agricultural Sciences		X	X
Medicine Science		X	X
Social Sciences and Humanities	X	X	X

- For pure theoretical scientific research in natural sciences and engineering sciences which are not directly linked to the creation of new technology it should not apply lump-sum funding modality just allow the project owner to adjust some cost items and not define the maximum ceiling of the project budget estimates.

- For social scientific research and researches for public interest not associated with production and business, it should apply a flexible fiscal policy, project manager has the right to adjust some cost items and it should not define the maximum ceiling of the project budget estimates.
- For research in technology and engineering sciences: it should apply full lump-sum funding policy based on final products to be produced.
- For research in agricultural sciences: it should apply full lump sum funding policy and give authority to project manager to use the approved budget for research project.
- For Medicine Sciences: it should allow the project manager to be of full autonomy in the use of the approved budget, have the right to make budget revisions within the approved budget and it should apply the modality of lump-sum funding for the project whole budget.

4. Recommendations

Through the study on the limitation of package funding policy/lump-sum contract in the implementation of S&T tasks funded by state budget, it is recommended that the following improvements should be made in order to have the policy successfully implemented:

- a) To apply full package funding or final product oriented contract in the implementation of projects.
- b) The content of research should not be split into various thematic themes, research project should be costing based on effort of people estimated in monthly salary (for those directly involved in the implementation of the project).
- c) Science and Technology Council when approving projects must look at scale of research content needed to achieve the stated objectives.
- d) Science and Technology Council must foresee the quality and quantity of the project results.
- e) Outputs of research projects must be clear in terms of quantity and quality, what novelty level to be achieved (international, national, sectoral or local grassroot).
- f) Science and Technology Council carries out acceptance on the basis of assessment of the project results achieved compared with set of indicators set out in the approved proposal.
- g) Allow the project owner to make budget revisions (increase or decrease, change of spending level, expenditure items compared with the cost estimates to meet actual requirement of the project implementation).

- h) Host institution, instead of project owner, of the research project is responsible for financial management of the project./.

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