

Tentative Translation

**Report of the External Evaluation of
National Institute of Science and Technology
Policy (NISTEP), Fiscal Year of 2002
[Summary]**

November 2002
External Evaluation Committee
National Institute of Science and Technology Policy
(NISTEP)

I. The Settings for the Second External Evaluation

< Objective >

The main objective of the second external evaluation is to evaluate the general running of activities in NISTEP since the previous evaluation (conducted in 1998), based upon the relevant guidelines for the governmental R&D Evaluation. This is to secure and distribute resources in a more appropriate manner, and to overcome existing operative problems, thereby achieving a higher quality of institutional management, as well as a more effective and efficient promotion of research activities of NISTEP. Since this evaluation was commissioned by the Director-General of NISTEP, it was taken for granted that the new administrative structure for science and technology (S&T) policy after the reorganization of ministries and agencies is appropriate.

(For NISTEP as a national research institution, the medium-term research plan and the institutional evaluation are regarded as intrinsically different from those for independent research institutions (Independent Administrative Institutions), of which missions are to conduct tasks for particular objectives, as specified in the relevant law and order. Therefore, the External Evaluation Committee for NISTEP is considered as a sort of advisory committee for assessment of institutional management in general, which means it should, as one of its tasks, check the appropriateness of the Medium-term Research Plan itself.)

< Evaluation Items >

1. **Aspects of Institutional Operations:** the present state of budget and personnel managements; the processes of decision-making and of shaping research outputs; the state of cooperation and exchange with relevant institutions in Japan and overseas.
2. **Aspects of Research Activities:** the approach toward the setting of research topics and the processes of research planning; achievements in each of the major research topic since the last external evaluation; the degree of performance in presentation, dissemination and utilization of research outputs; the approach toward the performance-evaluation of researchers.

II. Outcomes of Evaluation of Institutional Operations and Research Activities

The environment surrounding S&T has dramatically changed since the last institutional evaluation in various ways, namely, the stipulation of nation's picture as a country based on the creativity of S&T, and drastic changes in the framework for S&T policy such as the reorganization of ministries and agencies, and the drawing up of Science and Technology Basic Plans for two consecutive terms (5 year for each term). Accordingly, the expectation toward NISTEP is becoming ever greater, and thus it should promptly promote its presence and significance widely. For the next 5 years, it should carry out research activities with the utmost priority placed upon 'policy-orientated' issues.

1) Outcomes of Evaluation of Institutional Operations in General

< Progress of Follow-up Measures to the Suggestions by the Last Evaluation Committee >

It should be regarded as an achievement that the Medium-term Research Plan had been set by September 2001, on the consideration of the suggestions produced by the last evaluation committee. However, the fact that the deliberation of the Plan had taken more than two-and-a-half years since it was suggested is somewhat disappointing, despite of various unavoidable difficulties. Consequently, the duration of the period the Plan had been in force before this evaluation was less than a year, and thus, there arose a problem of insufficient evaluation, especially of the achievements in terms of realization of the Plan.

It is recognized that several courses of actions have been taken, in response to suggestions other than the deliberation of the Medium-term Research Plan. These have been rendered with a consideration of the changes in surrounding circumstances including the administrative reform after the last external evaluation. Some of the follow-up measures to the suggestions by the last evaluation committee have been incorporated into the contents of the Medium-term Research Plan, as a part of future action plans. The progress in the realization of these action plans should be hereafter observed in a timely manner.

< The Contents of the Medium-term Research Plan >

It is realized to be problematic that the directions of research activities indicated in the Medium-term Research Plan was numerous and highly diverse, and that they were not prioritized. Based on the consideration of the present state of resources for research activities, a strategic prioritization should be made immediately. The issues which need to be addressed newly should be dealt with by allocating a fraction of existing resources, or by securing new resources specifically for this purpose.

On setting the priority strategically, it is important to build concrete measures, such as a practical distribution of tasks to external organizations, and to strengthen the cooperation with universities in order to avoid potential problems arising from the limitation of operational resources.

One of the objectives specified in the Medium-term Research Plan, that is, the aspiration 'to become a world-class research institute,' can be appreciated. However, it should not suggest anything but a goal reachable only as a result of the daily practice of various activities in the institute. There is no organization in Japan, of which research areas and objectives are comparable with NISTEP, and therefore, it should set its primary goal as performing its missions as the 'one-and-only' policy-oriented research institute on S&T in the nation, that is, to deal with subject matters which correspond to the social requirements, and to exhibit its functional excellence in policy suggestions.

< The Missions of NISTEP >

The contribution toward policy-makers by taking a sort of taskforce role (functioning as a short-term think-tank), of which main clients are policy-making institutions, and by preparing papers for what should be regarded as 'waylay' research activities with the prospect of potential needs of the clients and 'fixed-point observations' (functioning as a medium-/long-term think-tank), should be considered as the primary mission of NISTEP.

Concerning the latter (the functions as a medium-/long-term think-tank) especially, even the clients, that is, the administrative bodies, have not been able to obtain clear pictures in some aspects of future policy issues. Therefore, it is important for NISTEP to have a direct grasp of the trends in 'clients of the clients,' such as the industrial sector, in order to produce timely and appropriate suggestions.

< An Effective Scheme for Accomplishment of the Missions: Expansion of the Human Network >

As S&T policy has not yet become well established in Japan, NISTEP should involve more researchers (both Japanese and overseas), encourage the 'give & take' of data, and aim to become an institute which is able to effectively process and disseminate the data obtained through such pursuits.

Especially for the articulation of missions, the access to the 'brains' who would be able to grasp the global trends from macroscopic viewpoints needs to be secured (in addition to the advises from prominent Western experts, information from key persons from countries of common interest, such as China, should be regarded as important).

From the consideration of the necessitated formation of international networks for such enrichment of information, efforts should be put into grasping and participating in informal networks of researchers and policy-makers. It should be recognized, in addition, that the 'give & take' spirit provides the basis for such communication, and therefore, the crucial issue here is the creation and the accumulation of information NISTEP can offer.

< Working Toward a Better Recognition of NISTEP >

Efforts should be put into a better recognition of NISTEP, through various undertakings (a sort of 'marketing' activities) aimed at a better infiltration / a raised recognition of NISTEP conceived by the clients, such as the improvement of client satisfaction in accomplishment of the missions, and the exhibiting of the 'attractiveness' of the institute, which would draw the attention of talented people.

For such activities, it is essential to produce what can be regarded as the 'killer products' of NISTEP, that is, the unique outcomes of its activities which are difficult for other research institutes or private firms to attain. There is a need to make a number of outcomes known widely, while keeping the quality of the contents as high as, or even higher than, the reports which have been well-regarded overseas, such as *Science and Technology Indicators* and *Technology Foresight*. By these means, the merits of NISTEP will be demonstrated and promoted to the clients, as well as to other Japanese and overseas organizations.

Although it is an ordinary practice for overseas research institutions to announce their comments on S&T policy in Japan, the reverse, that is, Japanese announcing comments on overseas policies is virtually non-existent. However, it will become important henceforth to actively announce opinions on foreign S&T policies to overseas audiences, and to disseminate information regarding Japanese S&T policy in an enthusiastic manner. From these considerations, it is essential that the major reports of research outcomes of NISTEP are translated into English.

< Establishment of Evaluation Systems >

It is necessary to establish an evaluation system, which would institutionally assure the directions of NISTEP's activities as described above. Together with the regular external evaluation, an evaluation cycle with the feedback from the practice of 'Plan-Do-See' on the daily basis also should be established. (At the same time, it is important to deliberate the methodologies of the research evaluation and the program evaluation.)

2) Outcomes of Evaluation of Each Section

< Theory-Orientated Research Groups >

In dealing with issues such as the start-up businesses and the S&T policy system, there has been, in some part, a production of meaningful outcomes, which are significant in terms of policy or academic values. There is also a considerable contribution toward the international recognition of NISTEP, by disseminating information through participation in academic conferences and hosting international symposiums. In addition, it is apparent that a substantial effort has been put into corresponding to consultations from policy authorities.

On the other hand, according to the ex post facto evaluations for activities in individual research topics, there have been some cases where the initial objectives are not well fulfilled, or where efforts on the dissemination of research results were not sufficient. Therefore, there is a need to work on a securer management for the progress of research activities, and on the information dissemination. Also, while efforts for a further cooperation with universities are important in improving the operation of each research group, as well as to set up appropriate research topics, there should be a conscious differentiation of the quality of research conducted by each research group, from that of universities by, for instance, focusing onto the demonstrative investigation of practical issues on S&T policy.

< Policy-Orientated Research Groups >

It is evident that efforts are put into research linked to important national policy issues, such as the S&T indicators, the promotion of public understanding of S&T, and the promotion of regional S&T. Moreover, policy formation is well-supported in this section, by distributing reports and communicating research outcomes with relevant administrative bodies on various occasions of consultation.

However, ex post facto evaluations on individual research activities and other information indicate that inadequacy remains in the consultation with policy authorities, and in the dissemination of outcomes to wider audiences. Therefore, an attempt to enable a sufficient communication with the administrative authorities is desirable, in order to achieve a better agreement on the direction and the contents of research activities from the early stage of the planning. With regard to the relations with the academic and other sectors, there have been some cases where the presentations of research outcomes in opportunities for a better international recognition, such as academic conferences, did not appear to be sufficiently active. Therefore, it is necessary to achieve a well-balanced engagement in the on-going activities and the pursuits of strengthening international dissemination of research outcomes by extending the communication with potential audiences worldwide.

< Science and Technology Foresight Center >

Science and Technology Foresight Center (STFC) was established within NISTEP, by increasing budget and the number of personnel on the occasion of the administrative reform of ministries and agencies. It has demonstrated outstanding abilities beyond expectation, especially in the provision of timely and useful information to the relevant bodies such as the Council for Science and Technology Policy (CSTP) and the MEXT. Its excellence was also observed in the dissemination of information for the general public. STFC is seen as becoming the core and pivotal section, in terms of policy suggestions to the administrative bureau, as well as in terms of raising the recognition of NISTEP as a whole to a wider society.

STFC should continue to establish and extend its activities / networking function steadily, and work toward a higher quality of 'added values' of research outcomes. Simultaneously, it is important to make its presence better recognized, and to expand potential clients to major domestic enterprises, universities and high schools, and further to major overseas organizations.

3) The Direction for Institutional Operations Hereafter

As for the direction of general operations hereafter, besides the timely engagement in the issues of today's society, and the conducts of policy suggestions and policy simulations, there should be efforts to reinforce and encourage a 'fixed-point observation' type of survey research, namely, the accumulation / sorting / analysis of basic data on the national S&T system, and the development of usability of research outcomes, such as the dissemination of data within and outside of Japan, by allocating a reasonable amount of resources (from the perspective of continuity and agility).

In order to promote this type of research, a more efficient and intelligent running of activities should be sought for. This includes the search for, and the effective utilization of, external funds, and the proficient distribution of tasks by outsourcing the routine duties to external think-tanks and such. Furthermore, it must be noted that an organizational principle for flexible formation of research teams inside NISTEP should be introduced and established, in order to effectively promote 'waylay' research activities with the prospect of potential needs in the future.

III. Suggestions toward the Future : *To Become a Distinctive Institution, of which Primary Mission Lies in the Contribution toward Policy Planning*

NISTEP should make efforts on the following issues (Items 1. and 2.) in its future operations, in order to effectively accomplish the fundamental mission.

1. Clear Definition of Clients and Mission Accomplishment that is Sensitive to Client Satisfaction: *Improvement of the Quality of Research Outcomes and Active Contribution toward the Process of Policy Formation*

1) Setting, Focusing and Emphasizing of Research Topics which Correspond to the Policy or Social Requirements

- Undertaking the evaluation / review of the 1st Term and 2nd Term S& T Basic Plans toward the preparation of the 3rd Term S& T Basic Plan
- Efforts into issues of today's society such as 'safety and security of the society (human security, regulatory sciences etc.),' 'fostering of S&T personnel from the perspective of improving the international competitiveness,' and 'trends in emerging R&D fields'
- Strengthening of research activities for assisting regional R&D and innovation activities
- Achieving a good balance between the studies of short-term 'taskforce'-like topics, and the medium-/long-term 'waylay'-type of research for anticipated needs
- Strategic prioritization of research sub-topics listed in the Medium-term Research Plan
- Revision of the on-going research topics at the time of the replacement of a group leader

2) Development of Function as a Body for Policy Suggestion

- An appropriate and prompt organization of a small-scale elite team (a taskforce), which includes external experts, for strategic surveys and a support for policy formation
- Strengthening of efforts into the presentation of concrete policy options and policy simulations
- Promotion of exchanges among various expertise and the creation of new areas of research by the active utilization of the STFC's network of experts, and by strengthening the function in suggesting policy options with the encouragement of interactive communication with the administrative bodies
- Strengthening of researches on, and exchanges with, other Asian countries

2. A Strategic Expansion of Resources for Research Activities, and the Reinforcement of Disseminating Function of Research Outputs , in Order for a More Effective Mission Accomplishment

1) Further Efforts into the Acquisition of External Research Funds

- Promotion of active applications to various external competitive funds, including those of the private sector
- Preparation of more competitive research proposals, and improvement of skills for the presentation of these proposals
- Active utilization of external think-tanks by commissioning a part of research

2) Expansion of Human Network and a Support toward Fostering and Securing of Human Resources in Research Activities

- Organization of a global network of which active nodes are the ex-staffs of NISTEP
- Cooperation with organizations where NISTEP's research staff had belonged to in the past
- Improvement of the quality of international cooperation and exchange (invitation of overseas visiting fellows, and commissioning of research etc.)
- Strengthening of the cooperation with relevant universities
 - Consideration of the introduction of a cooperative graduate school
 - Conduct of demonstrative investigations on practical issues involving researchers in graduate schools

3) Dissemination of Outcomes within and outside of Japan, Improvement of the 'Marketing' Activities, and Efforts toward a Better Recognition

- Efforts toward a better recognition of major outcomes, and improvement of the quality of 'added values'
 - Strategic expansion of distribution of *Science and Technology Trends* (a monthly report) (to private firms, university departments and high schools)
 - Promotion of service provision to the administrative officials in the form of lectures and seminars, and the conversion of research outcomes into the knowledge-base
- An increase in dissemination of data from 'fixed-point observation' type of surveys in English (for a high added-value of research outputs that enable the 'give & take' communication of information with leading overseas research institutions)
- Reporting of research results, as well as comments (and/or suggestions) on overseas S&T policy, to international scientific journals

3. Improvement of Incentives at the Research Sites

In order to efficiently embody the proposals described above (1. and 2.), provision of incentives to research staff, as described below, is recommended .

1) **Brushing-up of competence of researchers and establishment of appropriate evaluation criteria, that reflect the principle mission.**

- Improvement of the quality of training programs
- Consideration of varied weight-putting on items in the performance-evaluation of researchers and the evaluation of individual research topics;
- Consideration of introducing various evaluation items which correspond to the goals to be accomplished, such as 'consideration of foresight,' and 'degree of cooperation' for the evaluation of research topics, and 'degree of mobilization' and 'leadership' for the performance-evaluation of researchers

2) **Improvement of Research Environment**

- Preparation of the space for exchanges of information and ideas to inspire high-quality research outcomes (the 'intellectual salon')
- Improvement of the space and environment for each research group, with the consideration of its characteristic activities
- Attainment of the working space for affiliated fellows and other participating researchers from external organizations

In addition to above, a support from the MEXT and other administrative sectors toward the following suggestions is expected.

- Securing sufficient budget for research activities which are to form the foundation in the deliberation of next term's S&T Basic Plan, and building a good linkage between administrative sectors and NISTEP for effectively promoting this type of research.
- A visible citation and utilization of research outcomes for the purpose of increasing the motivation of policy researchers.
- Application of research outcomes and information to the strategies in foreign affairs undertaken by the MEXT and the Ministry of Foreign Affairs.
- Establishment of a rotation system where the administrative officials dispatched to NISTEP are able to make a good use of their experiences and knowledge when they return to the posts in the administrative organizations.

Member of External Evaluation Committee[As of 12 April, 2002]

[Chairman]

Tetsuhiko IKEGAMI **President, Aizu University**

[Members]

Naoki IKEZAWA **Chief Industry Specialist, Research and Consulting,
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Kazuko MATSUMOTO **Professor, Department of Chemistry, Waseda University**

Taizo YAKUSHIJI **Professor, Department of the Law, Keio University**

Chronology of External Evaluation Committee Meetings

- 1st Meeting: Friday 26 April (A discussion on the framework of external evaluation, the overview of main activities, results of the preliminary evaluation by foreign experts etc.)
- 2nd Meeting: Tuesday 28 May (A discussion on the institutional operations, a hearing from a senior official of the S&T Policy Bureau of the MEXT, the evaluation of activities of each groups and of major research topics, follow-up measures to the suggestions by the last Evaluation Committee <Pt.1>)
- 3rd Meeting: Friday 21 June (A hearing from the Director of NSF Tokyo Regional Office, follow-up measures to the suggestions by the last Evaluation Committee <Pt.2>, a discussion on the realization of the Medium-term Research Plan, hearings from research staffs of NISTEP)
- 4th Meeting: Thursday 25 July (Performance-evaluation of researchers, discussion on main items to be put into the Committee's report, inspection of the office environment)
- 5th Meeting: Thursday 29 August (Discussion on the skeleton of the Committee's report)
- 6th Meeting: Friday 25 October (Concluding of Committee's report)