



## Abstract

It has been emphasized on the importance of performance evaluation of GRI(Government-funded Research Institutes) in Korea for the reason that the investment in GRIs is constantly increased and accounts for 45% of the national R&D budget in 2012.

For measuring excellence of R&D performances, the continuous improvements for evaluation system for GRI have been made in several decades. Nevertheless, incessant needs for developing more compatible and adaptive methods to review its own mission effectively has been increasing.

This study is introducing newly designed evaluation system of GRI, which is named as 'Mission-based approach' in GRI evaluation. It has several features. First, the original characteristics and mission of each institute is fully reflected from the plan review to the final evaluation. Second, it is composed of two levels of evaluations in order to enhance the accuracy of results. Lastly, the evaluation result is linked to the R&D budget based on the evaluation grade.

It is expected that this method can provide a insight for more effectively assessing research performance of GRI's.

# Contents

**I. Outline**

**II. Directions**

**III. Evaluation Processes**

**IV. Conclusions**

2

**I. Outline**

## 1. Purpose and Object

### Purpose

- To Set up Roles of GRI's and Promote R&D Productivity through Reviewing Research & Management Performances

GRI: Government-funded Research Institute

### Object

- 44 GRI's under the MSIP, DAPA, etc.

MSIP: Ministry of Science, ICT and future Planning  
DAPA: Defense Acquisition Program Administration

### Section

- Research Performances
- Management Performances
  - R&D Portfolio and Strategy, HR, Budget, Organization management etc.

4

## 2. History of GRIs Evaluation in Korea [1]

1991

- **First Evaluation**
- Performed by the Prime Minister's Office
- According to the Evaluation Results, Merge and Abolition of some GRIs made

1998

- **Management Diagnosis by Foreign Consultant**
- Benchmark of Foreign GRIs

1999-2005

- **Research Council System**
- 4 Research Councils were Established
- Each Research Council performed Evaluation of Affiliated Institutes

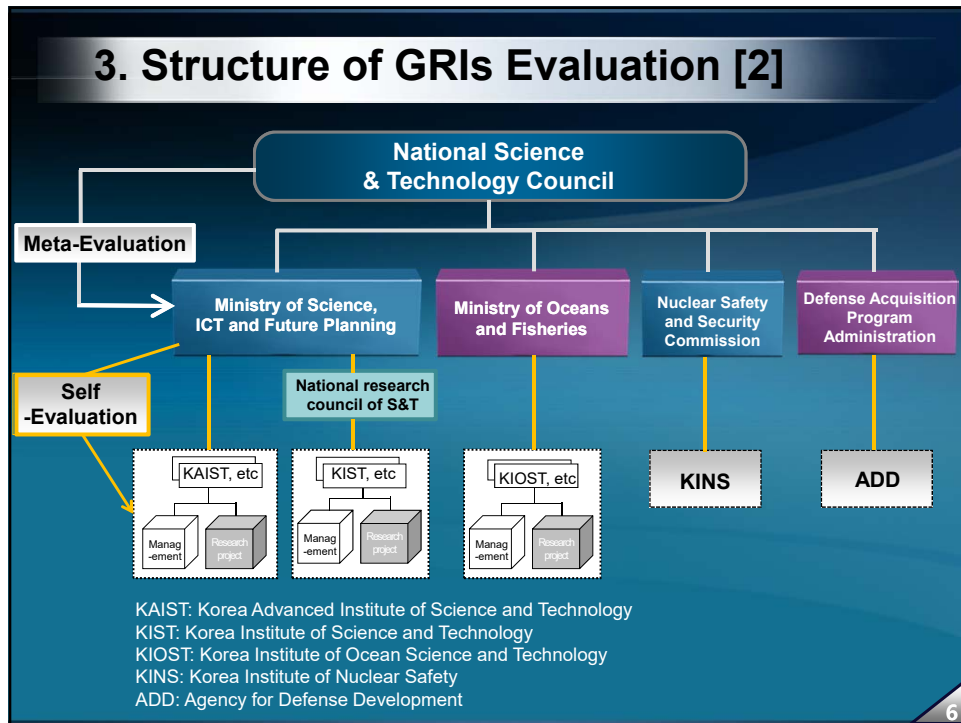
2011

- **Establishment of 2nd Performance-based Evaluation System**
- Change of Evaluation System (Relative Evaluation→ Absolute Evaluation)

2014

- **Establishment of 3rd Performance-based Evaluation System**
- Change of Evaluation System (Common criteria based Evaluation→ Mission oriented Evaluation)

5



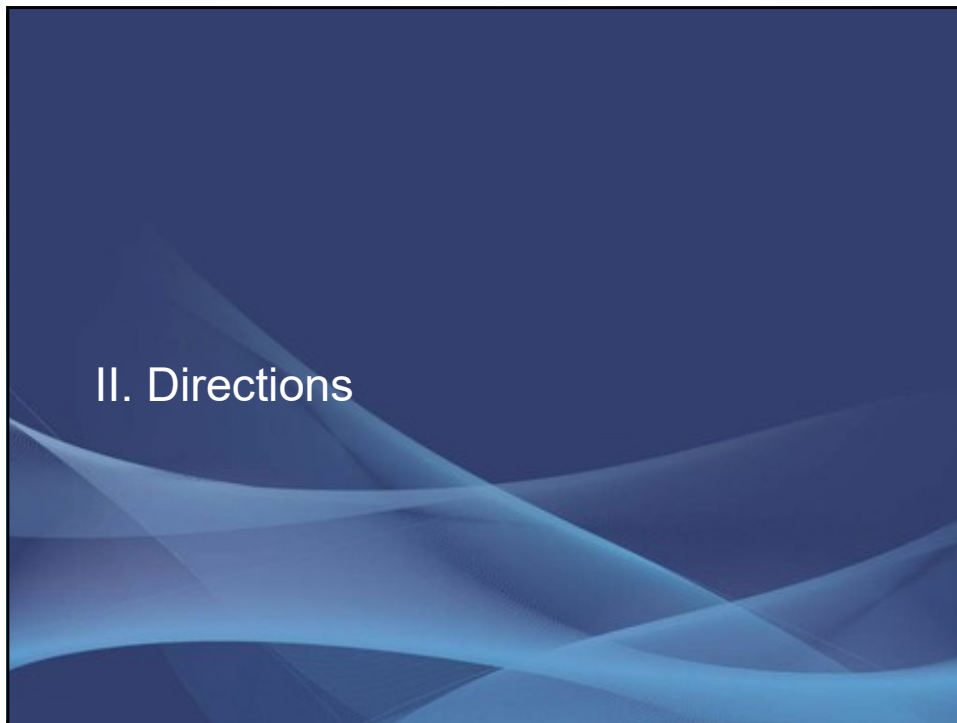
### 3. Structure of GRIs Evaluation

**Self Evaluation**

- Each Ministry evaluates its own GRIs in terms of both Research and Management section. Management sections include the evaluation of R&D Strategy, Social contribution of R&D results, HR, Budget and organization operation, etc. In Research section, the quantitative and qualitative accomplishments are evaluated in comparison with their initial goals.

**Meta Evaluation**

- The highest level organization (National Science and Technology Council) evaluates the appropriateness of self-evaluation system from the viewpoints of Evaluation Planning, Process and Results.



### 1. Directions [3]

#### Reflection of GRI's Characteristics

- To Promote Research Performance of the GRIs, **independent goals can be designed considering the GRIs' R&D Characteristics**
- Each Institutes has its own Characteristics according to its research field. Some of them like KIMM, KITECH, ETRI are focusing on Products Development more than Basic research. Others such as KARI, KASI, KIST are mainly working on the field of Fundamental Science.
- In order to evaluate their research abilities precisely and effectively, **Appropriate evaluation Indicators should be employed according to their Mission and Goals.**  
That's why we designed Mission-oriented evaluation method.

KIMM: Korea Institute of Machinery & Materials  
KITECH: Korea Institute of Industrial Technology  
ETRI: Electronics & Telecommunications Research Institute

KARI: Korea Aerospace Research Institute  
KASI: Korea Astronomy & Space science Institute  
KIST: Korea Institutes of Science and Technology

## 1. Directions (continued)

### Evaluation period

- According to the inauguration of the head, evaluation period is varied. Generally, the term of head is 3 years. In the middle of term, Consulting is executed on Research section. At the end of term, Evaluation is done on both Research and Management section.

### Evaluation Sections

- The intrinsic goal of GRIs is to conduct research on both fundamental science and technology development. So, we considered RESEARCH ABILITIES as the most important virtues. Next, MANAGEMENT ABILITIES that help researchers to work more comfortably and efficiently are also treated as crucial factors in evaluating GRIs.

10

## 1. Directions (continued)

### Reinforcement of Utilization of Evaluation Results

- Depending on Evaluation Results, Budget is Allocated Unequally to Research Institutes in order to strengthen the accountability of using Government funding sources.  
(10% Increase of R&D Budget to Excellent graded Institutes and 10% Decrease of R&D Budget to Unsatisfactory graded Institutes)

11

### III. Evaluation Processes

#### 1. Evaluation Section (Self-Eval.) [4]

- Research and Management section

Section	Object	Interval	Items
Research Performance	Research Projects funded by Government	3 years	- Achievement of Performance Objectives
Management Performance	Management Activities	1 year	- Improvements of Management Activities and Achievement of Management Goals

## 2. Evaluation Step (Self-Eval.)

- From the inauguration of the head,

Step	When	Items
Plan review	+ 6M	- Initial goals of Research and Management Performance
Mid-term consulting	+18M	- Midterm check of Research achievements
Final evaluation	+ 30M	- Quantitative and qualitative Achievement of Research and Management in comparison with initial goals

14

## 3. Management Evaluation (Self-Eval.)

Evaluation Items	Indicators
Establishment of Vision and Strategy of Institute	<ul style="list-style-type: none"> <li>• Excellence of President's Leadership and Level of Achievement of Management Goals</li> </ul>
Social Contribution of R&D	<ul style="list-style-type: none"> <li>• Efforts of Promoting S&amp;T Culture</li> <li>• Establishment of Cooperative System among Academia, Institutes and Industry</li> </ul>
Development of Human Resources	<ul style="list-style-type: none"> <li>• Employment of Excellent Manpower and Establishment of Global Research Networks</li> <li>• Efficiency of Institute Management and Utilization of Manpower</li> </ul>
Budget and Finance Management	<ul style="list-style-type: none"> <li>• Clarity of Budget Management and Execution</li> </ul>

15



## 3. Criteria in Management Evaluation

### 4. Meta Evaluation [4]

- To Review the Appropriateness of Self-Evaluation System

Items	Indicators
1. Appropriateness of Evaluation Planning (20)	<ul style="list-style-type: none"> <li>• Appropriateness of Evaluation Objectives</li> <li>• Appropriateness of Evaluation Planning</li> <li>• Appropriateness of Evaluation System (Indicator, Weight, etc)</li> </ul>
2. Appropriateness of Evaluation Process (40)	<ul style="list-style-type: none"> <li>• Fairness of Evaluation Committee's Composition and Operation</li> <li>• Appropriateness of Evaluation Indicators and Methods</li> <li>• Fairness of Evaluation Execution</li> </ul>
3. Effectiveness of Evaluation Results (40)	<ul style="list-style-type: none"> <li>• Composition of Evaluation Report</li> <li>• Objectiveness of Evaluation Results</li> <li>• Appropriate Utilization of Evaluation Results</li> </ul>

16

### 5. Grade of Meta Evaluation [4]

- Grade is divided into 2 Level

Grade	Score	Remarks
Appropriate	100 – 71	Approval of Self-Evaluation
Inappropriate	Under 70	Disapproval of Self-Evaluation and Re-evaluation

17

## 6. Utilization of Evaluation Results [4]

- According to the Evaluation Results of Management Performance
  - Increase or Decrease of **Operating Cost of GRIs** ( $\pm 2\%$ )
  - Increase or Decrease of President's Annual Salary of GRIs
- According to the Evaluation Results of R&D Performance
  - Decrease of **R&D Budget** in Unsatisfactory Institutes ( - 10% )
  - Increase of **R&D Budget** in Excellent Institutes ( + 10% )
- Through the peer reviews
  - Offer useful **consulting opinions about R&D Portfolio and Strategy** of the Institutes

18

## IV. Conclusions

## 1. Conclusions

- **Design Evaluation System that Reflects the Characteristics of Institutes**
  - Clarify the GRIs' Mission and Evaluate their Achievements
- **Apply two levels of evaluations**
  - Self evaluation and Meta evaluation for checking system's appropriateness
- **Enhance the Accuracy and Effectiveness of Evaluation**
  - Employ various evaluation indicator according to the characteristics of institutes
- **Strengthen the relationship between evaluation results and R&D budget**
  - Decrease of Budget in Unsatisfactory Institutes ( - 10% )
  - Increase of Budget in Excellent Institutes ( + 10% )

20

## References

- [1] D. N. Kim, S. H. Joo; "A Study on DEA Application for Evaluation Program Improvement of the Government-funded Research Institutes," Korea Production and Operations Management Society, vol. 26, no. 4, pp. 403-421, 2015.
- [2] T. H. Kwon; "Evaluation system of Government-Funded Research Institutes in Korea," AEA 2014, Denver, CO., October 15-18, 2014.
- [3] T. K. Lee; "A Study on the Improvements and Development of The Basic Plan for Evaluation of the National R&D Performances," KISTEP, 2014.
- [4] M. K. Choi; *The Yearly Plan for the Evaluation of National R&D Performances*, NSTC, 2014.

