Methodologies and Practices of Preliminary Feasibility Studies on National R&D Programs

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Contents

- Preliminary Feasibility Studies on R&D Programs
- General Guidelines
- Practices
- Further Developments
Preliminary Feasibility Studies on R&D Programs
Characteristics of R&D Programs

- Increase of R&D budget and uncertainties
- Systematic evaluation for on-going national R&D programs
  - Project selection process
  - Periodical program evaluation
  - Performance evaluation at completion
- Various types of economic benefit
  - Basic research, Applied research, Development
  - Infrastructure (equipment, human resources), commercialization
- Indirect benefit can be more important than direct benefit.
Implementation & Evaluation of National R&D Programs

- National S&T Plan
- Feasibility Studies
- Periodical Evaluation
- Final Performance Evaluation
- Tracking Performance Management

Specific, Self, Meta
Purpose & Subjects

Purpose

- Substantiate the feasibility of large-scale public investment R&D programs
- Enhance fiscal efficiency and productivity

Subjects

- Newly proposed programs of budget plans over $50 M
- Programs with concrete plans on technology development

The pre-feasibility studies system will be legislated by the end of 2006.
Preliminary Feasibility Studies

General Criteria
- Necessity
- Goals
- Contents
- Resources Plan
- Effects
- Alternatives

Overall Assessment
- Do?
- Do not?

Uncertainties
- Success
- Timing
- Benefits
General Guidelines
### Program-Specific Characteristics

<table>
<thead>
<tr>
<th>Programs</th>
<th>Specific criteria</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Research</td>
<td>• Training &amp; HRD&lt;br&gt;• Patents on fundamental technology&lt;br&gt;• Prior occupation of high-tech R&amp;D</td>
<td>• Infrastructure building for Academic Research&lt;br&gt;• Creative Research Programs</td>
</tr>
<tr>
<td>R&amp;D for Public Health &amp; Welfare</td>
<td>• Improvement of quality of life&lt;br&gt;• Reduction of energy use&lt;br&gt;• Reduction of environmental pollution</td>
<td>• Alternative energy development&lt;br&gt;• Technology development for Public health</td>
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<tr>
<td>Industry Technology Development</td>
<td>• Improvement of industrial competitiveness&lt;br&gt;• Potential to commercialization&lt;br&gt;• Potential to standardization</td>
<td>• Development of component materials&lt;br&gt;• Frontier R&amp;D program</td>
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Overall Assessment

- Overall Assessment based on Technical/Economic/Policy Analysis (Analytical Hierarchy Process)
  - Determine relevant importance of each criteria
  - Maintain balance between qualitative & quantitative analysis
  - Maintain consistency in the evaluation

- Basic Requirements
  - Complete understanding on the national R&D program
  - Transparency and objectivity of the evaluation
Results

Technical Analysis

Economic Analysis

Policy Analysis

Result
Do : Don't
0.32 : 0.68
Practices and Implications
Model cases

- Environment-friendly Vehicle Development
  - Ministry of Commerce, Industry, & Energy / $ 502.6 M
  - Main Issues
    - Relevance of on-going programs
    - Economic effects and appropriateness of government funding
  - Do : Don’t = 0.42 : 0.58

- Korean Large Telescope Development
  - Ministry of Science & Technology / $ 80 M
  - Main Issues
    - Technical advantages of the telescope
    - Potential to obtain key technologies
  - Do : Don’t = 0.76 : 0.24
Model cases

- **Digital Actor Development**
  - Ministry of Information & Communication / $30 M
  - Main Issues
    - Technological competitiveness
    - Economic effects and appropriateness of government funding
  - **Do : Don’t** = 0.77 : 0.23

- **Development of Medicine for Vascular Disease**
  - Ministry of Health $ Welfare / $9 M
  - Main Issues
    - Technical advantages of the target material
    - Economic effects including market size
  - **Do : Don’t** = 0.23 : 0.77
Implications

Technical Analysis

Economic Analysis

Economic analysis of scenarios based on technology analysis

Technical uncertainties on economic benefits

Technical and Economic analysis can not be separated!
Further Developments

- Revise “General Guidelines for Preliminary Feasibility Studies”
- Develop “Standard Guidelines Preliminary Feasibility Studies”
  - Basic Research
  - R&D for Public Health & Welfare
  - industrial Technology R&D
- Establish new valuation methods and improve guidelines
  - Extensive data collection
  - Fundamental academic studies on critical indices
Thank You!