The Effectiveness of Strategic Environmental Assessment in China

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Research Center of Strategic Environmental Assessment
Nankai University
<table>
<thead>
<tr>
<th></th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Concept of SEA effectiveness</td>
</tr>
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<td>Research on SEA effectiveness</td>
</tr>
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<td>3</td>
<td>China: SEA implementation</td>
</tr>
<tr>
<td>4</td>
<td>SEA effectiveness: Case study</td>
</tr>
</tbody>
</table>
Definition
Research of SEA

SEA Main topics covered in papers (Elsevier 1993-2012)
Effectiveness is an adjective indicating that something is ‘adequate to accomplish a purpose; producing the intended or expected result’ or that something is ‘actually in operation or in force; functioning’.

Sadler (1996, p.37) defines effectiveness as “how well something works or whether it works as intended and meets the purposes for which it is designed”.

Sadler (1996, p.37) defines effectiveness as “how well something works or whether it works as intended and meets the purposes for which it is designed”.

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**Concept of SEA effectiveness**

Sadler distinguishes three types of effectiveness:

- **Procedural** – Does the process conform to established provisions and principles?
- **Substantive** – Does the process achieve the objectives set, e.g. support well-informed decision-making and result in environmental protection?
- **Transactive** – Does the process deliver outcomes at least cost in the minimum time possible, i.e. is it effective and efficient?”

SEA systems promote more incremental as well as direct effectiveness.

Bina, He Xu, etc. SEA in China, EIA review, 2011
2 Research
Researches on SEA effectiveness

Concept
- Effectiveness
- SEA effectiveness

Influencing factors
- Contextual
  - Procedural
  - Substantively
  - Incremental
  - Transactive

Criteria
- SEA reports evaluation
  - Specific Planning
  - Specific Country
  - Law or Directive
  - .......

Framework
- Institution and regulation
- Management
- Technology and capacity building
- .......

Case study
- Ex-post evaluation
- Quality evaluation
- Goal evaluation
- .......
Criteria Researches

- Research criteria
- International organization (IAIA, OECD)
- Specific country (Italy, North Africa...)
## Criteria - IAIA SEA performance criteria (2002)

### Theme  |  Criteria
--- | ---
**Integrated** | 1) Ensures an appropriate environmental assessment of all strategic decisions relevant for the achievement of sustainable development.  
   2) Addresses the interrelationships of biophysical, social and economic aspects.  
   3) Is tiered to policies in relevant sectors and regions and, where appropriate, to project EIA and decision-making  
**Sustainability-led** | 1) Facilitates identification of development options and alternative proposals that are more sustainable.  
   1) Provides sufficient, reliable information for development planning and decision-making.  
   2) Concentrates on key issues of sustainable development.  
   3) Is customized to the characteristics of the decision making process.  
   4) Is cost-and time-effective.  
**Focused** | 1) Is the responsibility of the leading agencies for the decision to be taken.  
   2) Is carried out with professionalism, rigor, fairness, impartiality and balance.  
   3) Is subject to independent checks and verification.  
   4) Documents and justifies how sustainability issues were taken into account in decision-making  
**Accountable** | 1) Informs and involves interested and affected public and government bodies  
   2) Explicitly addresses inputs and concerns in documentation and decision making.  
   3) Has clear easily understood information requirements and ensures sufficient access to all relevant information.  
**Participative** | 1) Ensures availability of the assessment results early enough to influence the decision making process and inspire future planning.  
   2) Provides sufficient information on the actual impacts of implementing a strategic decision, to judge whether this decision should be amended and to provide a basis for future decisions.  
**Iterative** |
<table>
<thead>
<tr>
<th>Module 1: Compliance review</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preliminary assessment</strong></td>
<td>i) Was there an explicit determination of whether to apply an impact or institution centred process?</td>
</tr>
<tr>
<td></td>
<td>ii) Did the SEA process undertake the following activities: a) Apply screening to determine the need for SEA and to begin preparatory tasks? b) Identify interested and affected stakeholders and plan their involvement?</td>
</tr>
<tr>
<td><strong>Detailed analysis</strong></td>
<td>i) Did the SEA process undertake the following activities: a) Scoping to identify key issues and impacts to be analysed? b) Collecting baseline information? c) Analyse potential effects of the proposal and alternatives? d) Identify measures to enhance opportunities and mitigate adverse impacts? e) Preparation of SEA report?</td>
</tr>
<tr>
<td></td>
<td>ii) Did SEA report preparation involve the following: a) Draft report on findings of the SEA? b) Engage the public on the draft report? c) Prepare a final SEA report incorporating public comment?</td>
</tr>
<tr>
<td></td>
<td>iii) Was the SEA subject to an independent review (quality control check)?</td>
</tr>
<tr>
<td><strong>Decision-making and implementation process</strong></td>
<td>i) Did the SEA make recommendations to decision-makers?</td>
</tr>
<tr>
<td></td>
<td>1)ii) Was provision made to monitor decisions taken on the proposal and the results of their implementation?</td>
</tr>
</tbody>
</table>
### Module 2: Technical quality review

<table>
<thead>
<tr>
<th>Criteria</th>
<th>OECD-SEA Quality Review (2010)</th>
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</table>
| **Presentation, usefulness and quality of information** | i) Has the purpose of the SEA been described, with a mention of the regulations which underpin the document?  
ii) Is the scope of the SEA discussed?  
iii) Was the information provided by the SEA process adequate for those responsible for developing the PPP? What was missing?  
iv) Was the information provided by the SEA process adequate from the point of view of the key stakeholders? What was missing?  
v) Did the SEA identify the issues most important to sustainable outcomes, rather than all significant environmental issues? |
| **Co-operation and stakeholder participation** | i) Was there working co-operation between the SEA team and those responsible for developing the PPP? Was this effective? How could this be improved?  
ii) Were opportunities provided for stakeholder and? Was this effective? How could this be improved?  
iii) Was there an effort to involve less powerful stakeholders in the consultation? |
| **Assessment of environmental impacts** | i) Are likely significant environmental affects, constraints and opportunities clearly described?  
ii) Is an effort made to prioritise those effects that most affect sustainability?  
iii) Are the methodologies for assessing environmental impacts described? |
| **Consideration of alternatives** | i) Are the potential alternatives for the PPP described and considered in terms of the SEA objectives? Have these included the „no change“ alternative?  
ii) If any alternatives have been eliminated, have the reasons been provided? |
| **Planned follow up** | i) Are the indicators for monitoring implementation of the PPP clearly defined?  
ii) Are the links to other potential follow-up procedures specified, |
## Module 3: Utility and benefits review

### PPP objectives

1. Does the report describe the goals and objectives of the PPP clearly, and define these quantitatively where appropriate?
2. Does the SEA report identify and describe any conflicts that exist between the objectives of the PPP being assessed and PPPs and strategies?

### SEA and its application

1. Does the SEA report describe the purpose/aim of the SEA, and mention any regulations, policies, directives and guidelines that underpin the document?
2. To what extent was the SEA integrated with existing policy and planning structures?

### Alternatives

1. Were alternatives analysed against a framework of environmental or sustainability principles and criteria? Is there an explicit justification for the selection of any preferred alternative and for the acceptance of any significant trade-offs?
## Criteria for PEIA in China

The Chinese University of Hong Kong/Nankai University

### Baseline
- Scoping
- Reference framework

### Formal consultation
- Assessment
- Link to Decision making

### Quality review
- Follow up

### Level 1 PEIA

<table>
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<tr>
<th>Criteria</th>
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<tr>
<td>1.1 Leads to an overview of the ecological</td>
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### Level 2 Transition

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<td>2.1 Includes a comprehensive review of social issues, with particular</td>
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### Level 3 SEA

<table>
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<tbody>
<tr>
<td>3.1 Draws upon and contributes to a system that provides good quality and affordable</td>
</tr>
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</table>
• **The ideal effectiveness evaluation framework**

- The framework of the theory starts from the macroscopic background of SEA system, and goes to the micro level and SEA case study. Then it moves to the evaluation of the effectiveness of SEA in terms of process, the method, data and other direct or indirect results.

- The structure of the theory’s framework is quite good. The analysis of comparison between macroscopic and microscopic level is clear, and the effectiveness of the influence of different contents is analyzed and studied.
**Input-output evaluation framework**

- adapts experience in the field of policy analysis to strategic level assessment. The framework is particularly useful as a means of structuring evaluation criteria.

- It was derived from evaluation criteria for policy analytic activities and reflects six categories of evaluation criteria, namely input criteria, content criteria, process criteria, results criteria, use criteria and effect criteria.

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**Diagram**

Thissen (2000)
Ex-post evaluation framework

- This framework could provide a holistic point of departure when designing effectiveness studies. In an effort to conceptualize ex-post evaluation, the framework depicts categories of activity subdivided in accordance with their primary purpose and main elements of approach as well as their relationship to different levels (Meta, macro and micro).

- It is argued that SEA effectiveness is a complex jigsaw puzzle which relies on all pieces to gain a holistic perspective.
Evaluation Method - SEA effectiveness

- Qualitative evaluation
  - Prescriptive approach
  - Policy and programme evaluation methodologies
  - Life-cycle approach
- Quantitative evaluation
  - Questionnaire survey
  - Report - Statistical analysis
SEA Implementation: Questionnaires analysis
SEA Center Introduction

• The Research Center is an academic and research institution set up by Nankai University and MEP (Ministry of Environmental Protection) Appraisal Center for Environmental Engineering jointly.

• It is the oldest strategic environmental assessment research center in China.

• It is one of the first planning environmental assessment units which are recommended by MEP.
Center Positioning

- Developing prospective, basic, and practical research for strategic/planning EIA to promote the development of EIA;

- Constructing the academic exchange platform of strategic/planning EIA for academic conferences and international exchange;

- Becoming the think tank of EIA administrative department and technical management department.
Objective: The institutional hurdles of effective SEA practice in China
- Interview investigation in Tianjin, Guangdong, Jiangsu
- Time: 2003 (EIA law) - 2013 (ten years since EIA law)
- Cooperation with The Chinese University of Hong Kong

Method: Literature & Questionnaires
- The third China Forum on Plan EIA (2008)
- The first China SEA forum (2009)
- The second China SEA forum (2011)
### Questionnaire Methodology

#### Tianjin, Nov, 2008

The third China Forum on Plan Environmental Impact Assessment

#### Hong Kong, Feb, 2009

China Strategic Environmental Impact Assessment forum

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<th>(percent)%</th>
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<td>44.4</td>
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<tr>
<td><strong>Total</strong></td>
<td>110</td>
<td>100</td>
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Major fields of SEA implementation

- Mainly focused on regional development, urban construction, Industries, and transportation
- Little interest on forestry, husbandry and agriculture
## Methodologies analysis—Questionnaire

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<td>Impact prediction</td>
<td>Impact evaluation</td>
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<td>%</td>
<td>Votes</td>
<td>%</td>
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<td>10.9</td>
<td>4</td>
<td>3.6</td>
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<td>21</td>
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<td>17.3</td>
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<td>4.6</td>
<td>60</td>
<td>54.6</td>
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<td>1.8</td>
<td>11</td>
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<td>15</td>
<td>13.6</td>
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<td>Carrying Capacity analysis</td>
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<td>4.6</td>
<td>30</td>
<td>27.3</td>
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<td>GIS</td>
<td>7</td>
<td>6.4</td>
<td>12</td>
<td>10.9</td>
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<tr>
<td>Others</td>
<td>2</td>
<td>1.8</td>
<td>4</td>
<td>3.6</td>
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</tbody>
</table>
Quantitative methods are adopted during prediction and evaluation processes:

* Scenario analysis
* Mathematical analysis
* Carrying capacity analysis … …

Different from Europe, Europe focuses on people’s opinions and knowledge:

* expert judgment
* public participation
* statutory consult…
Status of SEA Implementation

**Progress in the Theoretical Study**
- Very Good: 8.6%
- Ordinary: 75.3%
- Not Good: 16.0%

**Feasibility of the Technical Guidelines**
- Very Good: 8.6%
- Ordinary: 72.8%
- Not Good: 17.3%

**Alternative Consideration**
- Yes: 76.5%
- No: 19.8%

**Initial Time for SEA Implementation**
- At the beginning: 19.8%
- During planning: 33.0%
- After planning: 25.3%
- Prior to submitting: 18.7%
Public participation

**Modes of public participation**

- Meeting: 87.7%
- Questionnaire: 69.1%
- Media report: 12.3%
- Others: 43.2%

**Main problems in public participation**

- Insufficient and pro forma: 58.0%
- Information is not completely disclosed: 45.7%
- System is not well established: 44.4%
- Less than effective dissemination: 56.8%
- Insufficient environmental consciousness: 3.7%
- Others: 77.8%
Effectiveness of SEA in China

Acceptance of SEA reports

- 9.9% accepted
- 3.7% partially accepted
- 61.7% rejected
- 24.7% others
- 0% not applicable

Effectiveness of SEA

- 80% very effective
- 20% to certain extent effective
- 0% less effective
- 0% ineffective
SEA Effectiveness : An Case Study
Methodology

Framework development

Indicators design

data analysis and explanation
Framework - Effectiveness Evaluation

Developed by Nankai University SEA Center

SEA
Effectiveness
triangle
Framework

Policy (system)

Realization of purpose

Incremental

Application of process and

Performance (result)

Contribution to decision

Practice (process)

Noble (2009)
Framework and indicators design

Effectiveness SEA implementation

- Substantive Indicator A1
  - Contribution of SEA to decision-making and plan (A11)
  - Scientific and reasonable outcomes of the SEA (A12)
  - Enhancement of Environmental Protection in planning (A13)

- Procedural Indicator A2
  - Quality of SEA report (A21)
  - Quality of methods and techniques (A22)
  - Quality of SEA procedure (A23)

- Contextual Indicator A3
  - Explicit legal requirement (A31)
  - Policy Context (A32)
  - Organizational and management structure (A33)

- Incremental Indicator A4
  - Corporation of sectors (A41)
  - Transparency of plan (A42)
  - Environmental awareness of public (A43)
  - Environmental awareness of planning sectors (A44)
Factors—SEA effectiveness in China

2009
Factors—SEA effectiveness in China

- Information and data
- Institution Management
- Decision Making
- Legislation
- Public Participation
- Environmental awareness
- Method Process
- Expertise institutions

2011年 (91 questionnaires)
Potential **links** and **relationship** among factors

- **SPSS**
  - Path diagram
  - Multiple regression analysis
  - Path pattern
Potential links and relationship among factors

- Organizations/practitioners
- Information disclosure/Sharing
- Public Participation
- Management procedure
- Decision making Process
- Legislative and political Context
- Techniques and methods
- Effectiveness of SEA
- Career background
Case study - Tianjin BinHai New Area SEA

- Located in the north of the North China Plain, the lower part of the Yellow River Basin, and the east of Tianjin city centre
- Land area: 2270 square kilometers, Sea area: 3000 square kilometers
- SEA duration: 2008-2010
- Pilot project of MEP, supporting project of Tianjin government
<table>
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<tr>
<th>Effectiveness</th>
<th>Indicator</th>
<th>Sub-indicator</th>
<th>Good</th>
<th>Adequate</th>
<th>Moderate</th>
<th>Poor</th>
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<td>Policy Context</td>
<td>there is a supportive political culture at higher levels of government</td>
<td>9</td>
<td>1</td>
<td>0</td>
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<td>0</td>
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<td>Procedure</td>
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<td>Methods and techniques</td>
<td>Feasibility of methodologies</td>
<td>8</td>
<td>2</td>
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<tr>
<td>SEA report</td>
<td>SEA report</td>
<td>Comprises both qualitative and quantitative method</td>
<td>8</td>
<td>2</td>
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<td>6</td>
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<td>2</td>
<td>0</td>
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<tr>
<td>Performance/Substantive effectiveness</td>
<td>Effectiveness of recommendations</td>
<td>Reasonable and scientific conclusions</td>
<td>8</td>
<td>2</td>
<td>0</td>
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<td>Influence on sustainable and environment</td>
<td>Contribution to improved conditions of environment and natural sources</td>
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<td>7</td>
<td>2</td>
<td>0</td>
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<td>Incorporation of proposed changes</td>
<td>Justify or correct decisions with respect to improvement of SEA</td>
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<td>7</td>
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<td>Procedure</td>
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<td>Clarity of language faithful data with a clear viewpoint, sufficient argument, and explicit conclusions</td>
<td>0.33</td>
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<td>Effectiveness</td>
<td></td>
<td>Reasonable and scientific conclusions</td>
<td>1.00</td>
<td>0.177</td>
</tr>
<tr>
<td>Effectiveness</td>
<td></td>
<td>Influence on sustainable and environment</td>
<td>0.52</td>
<td>Contributed to improved conditions of environment and natural sources</td>
<td>1.00</td>
<td>0.270</td>
</tr>
<tr>
<td>Incorporation</td>
<td>0.14</td>
<td>Effectiveness</td>
<td></td>
<td>Justify or correct decisions with respect to improvement of SEA</td>
<td>1.00</td>
<td>0.073</td>
</tr>
<tr>
<td>Corporation of sectors</td>
<td>0.36</td>
<td>Effectiveness</td>
<td></td>
<td>Improvement of cooperation of different sectors</td>
<td>1.00</td>
<td>0.043</td>
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<td>Transparency</td>
<td>0.33</td>
<td>Effectiveness</td>
<td></td>
<td>More transparent</td>
<td>1.00</td>
<td>0.040</td>
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<tr>
<td>of plan</td>
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<td>Effectiveness</td>
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<td>Environmental awareness of public</td>
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<td>0.012</td>
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<td>Environmental awareness</td>
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<td>Incremental</td>
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<td>Effectiveness</td>
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</table>
Evaluating the effectiveness of HBNA SEA

<table>
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<tr>
<th>Indicator</th>
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<th>adequate</th>
<th>moderate</th>
<th>poor</th>
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<tr>
<td>Contextual</td>
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<td>Substantive</td>
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</table>
Results

- In BHNA case study, the comprehensive effectiveness of SEA is 0.54, which means BHNA SEA is relatively effective.

- Due to the support from government, and early implementation of SEA in the planning process, SEA provided clear information on the environmental effects, risks and consequences of options in planning, came up with some scientific and reasonable opinions (industrial structure, industrial layout, and ecological protection) for the planning, which were incorporated into policy-making process.

- Overall, evaluating the effectiveness is attributed to a number of interlinked factors including procedural compliance and political influence as well as the research methods employed to evaluate effectiveness.
Summary

The proposed methodology for performance evaluation of SEA has several innovative characteristics. (i) It establishes a comprehensive system of indicators with which to evaluate the SEA effectiveness, and proposes a hierarchical framework that integrates criteria in a single framework. (ii) Developing reasonable measures for the SEA effectiveness based on expert’s qualitative preferences together with quantitative data. The weighting method has been improved, thus, the performance evaluation model becomes more flexible and reasonable. (iii) Developing a method to solve the evaluating uncertainty problem given linguistic constraints. The framework can provide decision-makers and researchers a better understanding of SEA performance. Although the model was developed and tested for use in a specific case study, the experimental result shows that the proposed approach can be used, with some modifications, in other cases. This proposed model establishes a foundation for future research and is appropriate for predicting uncertain criteria.
Future job to promote SEA effectiveness

✓ Will and trust
✓ Organization
✓ Methodology
✓ Data and Information
✓ Resources and capacities
✓ Timing
More information


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Research Results—Academic Works
Thanks