

# Impact Assessment: Methodology and Its Application to the Management of Soil Erosion Consortium (MSEC) Project

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## Abstract

*A simple questionnaire was devised to make an initial evaluation of the impact of the Management of Soil Erosion Consortium (MSEC) project implemented in Indonesia, Lao PDR, Nepal, the Philippines, Thailand, and Vietnam. The impact was evaluated based on the responses by the researchers to the change indicators related to five project outputs and by farmers to two project outputs.*

*The highest positive response was in the effect of improved information dissemination strategies. This implies that the conduct of regular meetings with the farmers has resulted in very positive effects. For both researchers and farmers, the effect of the introduced intervention has not yet been strongly felt. While it may be too early to assess the impact in terms of productivity improvement, the responses by farmers clearly indicated their positive anticipation. The usefulness of the tools and guidelines and program management outputs has also not yet been fully realized by researchers.*

*In all identified outputs, it appears that there has been no positive change by the project in Thailand. The same is true for researchers in Nepal except for information dissemination strategies, which received a positive response.*

*While the study has provided some indications of the impact of the MSEC project, further evaluation of the methodology and analysis of the data are needed to complete the requirement of the framework. It should consider particularly the biophysical and economic impact of the project.*

## Introduction

Impact assessment is an important and integral part of research management. Nowadays, economic rationalism dictates that every enterprise justifies its existence in an explicit, preferably quantitative way. Impact assessment and evaluation is therefore subject to close attention in the international agricultural research community, especially among donors. Baur *et al.* (2001) state that impact assessment improves accountability for investments in development cooperation by trying to ensure that they truly effect changes in the lives of people, especially the poor.

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A variety of different methods and tools for assessing impact has been conceptualized and applied. These include indicators; spatial models and GIS, economic surplus models, farmer participatory techniques, and empirical surveys (Maglinao, 1998; Pachico *et al.*, 1998; Buenavista *et al.*, 2001; Rusike *et al.*, 2001; Meinzen-Dick and Adato, 2001; Kristjanson *et al.*, 2002; Ticehurst, 2002; Gottret and White, 2002). Particularly in cases of multistakeholder management of natural resources, impact assessment can be of direct relevance to communities, not just to scientists and research managers. Impact assessment is best implemented as an integral part of the entire research process rather than as a retrospective exercise that comes at the end of a research project.

The International Water Management Institute (IWMI) has recently incorporated impact assessment as a built in component of its research programs (IWMI, 2001). It has devised a road map for translating research into impact by 2005. A conceptual framework for impact assessment was designed to identify not only the types of impacts IWMI expects from its activities but also the pathways, both internal and external, to achieve these impacts (Giordano, 2002).

This paper presents an initial step in undertaking an in-depth evaluation of the impact of the Management of Soil Erosion Consortium (MSEC) project. The analysis is limited to benefits derived from the project's outputs by collaborating NARES and participating farmers. Analysis primarily focused on the changes in the knowledge, attitudes, and skills of researchers and farmers regarding soil erosion problems and solutions. It is anticipated that this will lead to a more comprehensive assessment of the impacts of the project from a broader perspective.

## Assessment Methodology

The assessment used the framework employed by Maglinao (1998) in the evaluation of the impact of IBSRAM as an institution (Figure 1). This framework followed the analysis adopted by the CGIAR in its analysis of ex-post studies of the impacts of international research centers, which shows linkages between the programs, activities, and expected outputs of the center and their potential or actual impacts (CGIAR, 1997). For most projects, the expected outputs and indicators that are used to monitor its progress are shown in the project logical framework.

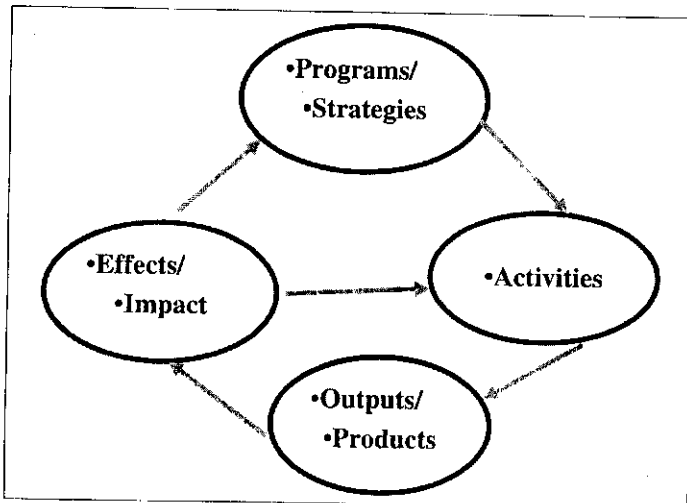


Figure 1. Conceptual framework for the analysis of project impact (Maglinao, 1998)

## ***Design of the Questionnaire***

The design of the guide questionnaire was based on the project's expected outputs as identified in the logical framework (Maglinao and Penning de Vries, 2002). These are: 1) decision support tools, guidelines, and methodologies for a better understanding of the on- and off-site effects of soil erosion; 2) alternative technologies and land management systems that are socially and institutionally acceptable to communities within catchments; 3) information and communication strategies to effectively disseminate the results of the research to farmers and other land users; 4) enhanced NARES capacity in integrated catchment management research; and 5) improved program management for catchment management research.

Questions were framed to gather information on changes that may have occurred for various stakeholders of the project. These clients include primarily the researchers and farmers, but could also apply to other stakeholders such as policy-makers and extension workers. The questions were translated into the local language and pretested, particularly for farmer respondents.

## ***Conduct of Surveys and Interviews***

The surveys and interviews were conducted in all six MSEC-participating countries. In most countries, the respondents were mainly researchers and farmers, except for Nepal and Thailand, which did not have any farmer respondents.

A total of 116 respondents from the six participating countries answered questions related to the change indicators defined under each of the project's expected outputs. Of this number, 33 were researchers who responded to 37 questions corresponding to five outputs. There were 83 farmers who responded to 13 questions corresponding to two outputs.

The surveys and interviews were conducted by the national researchers. Answers to the questions ranged from strong disagreement to strong agreement with the change indicator. As the questionnaire only serves as a guide, follow-up questions were asked to further clarify the responses.

## ***Data Analysis***

The weighted average of the answers of respondents to each question under each of the output categories was calculated and tabulated by stakeholders (researchers and farmers) and by country. The degree of agreement to a question was ranked according to the Likert Scale, which is derived by item-analysis techniques (Nunnally, 1979). The Likert Scale is classified as a summated rating scale of a set of attitude items to which subjects respond with degrees of agreement or disagreement (intensity). The scores of the items of such a scale are summed and averaged to yield an individual's attitude score.

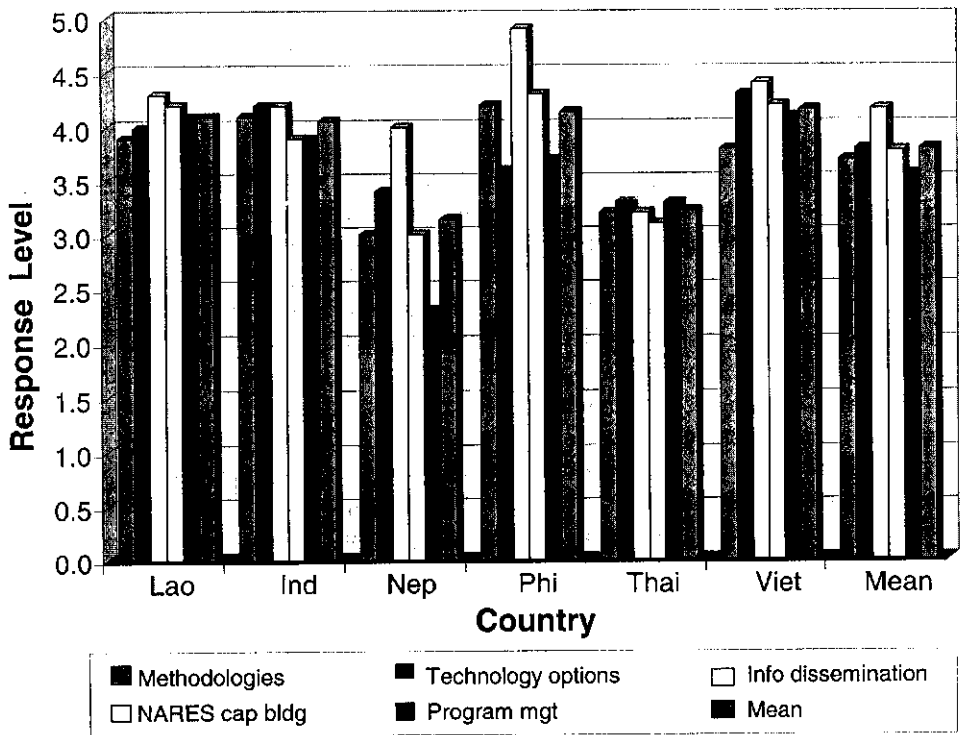
The Likert scaling procedure helps to ensure that the final score concerns only one general attitude and that each respondent can be located with at least moderate precision at different points on the scale. All identified outputs were evaluated for researchers, while only output 2 (alternative technologies) and output 3 (information dissemination strategies) were analyzed for the farmers.

On the final scale, the subject marks each statement in one of the categories of: 1.00-1.50 (strongly disagree), 1.51-2.50 (disagree), 2.51-3.50 (undecided), 3.51-4.50 (agree), and 4.51-

5.00 (strongly agree). The individual's final score is obtained by summing the item scores. The responses are then summarized by the respondent group by output and by country.

## Results and Discussion

The average response ratings of the researcher respondents according to the outputs of the project and by country are shown in Table 1 and Figure 2. The corresponding response ratings of farmers for outputs 2 (alternative technology options) and 3 (information dissemination strategies) and by country (except Nepal and Thailand) are presented in Table 2 and Figure 3. On average, the perceptions of both respondent groups agreed on a positive change that the project has made.



**Figure 2.** Response level of researchers to the change indicators with respect to expected output by country

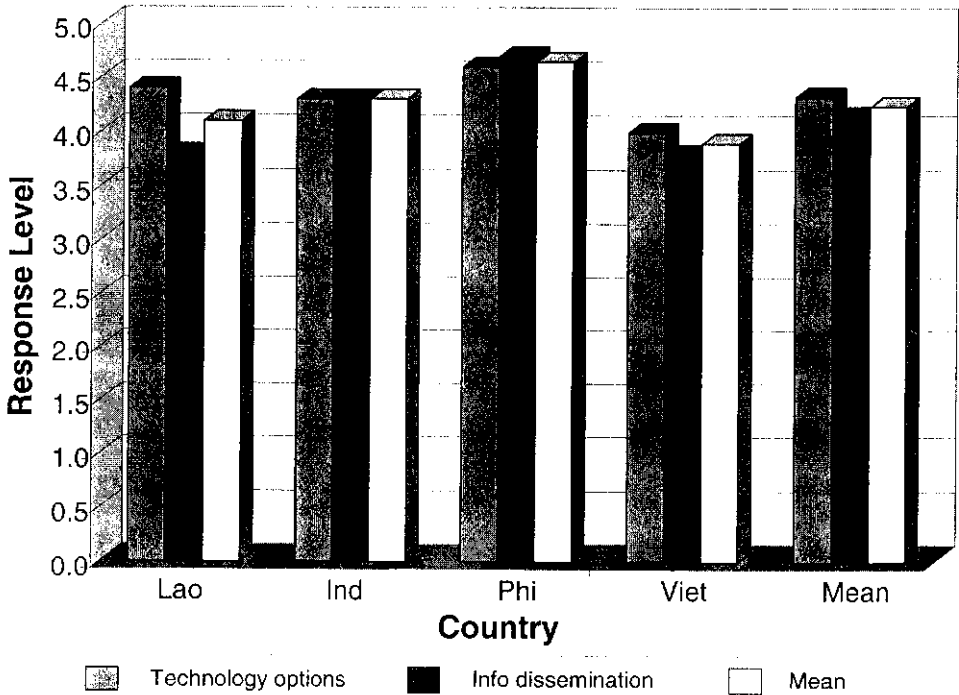


Figure 3. Response level of farmers to the change indicators with respect to the expected output by country

Table 1. Response of researchers with respect to expected outputs identified by the project by country

Expected outputs	Response level						
	Lao	Ind	Nep	Phi	Thai	Viet	Mean
1. Tools, guidelines, methodologies	3.9	4.1	3.0	4.2	3.2	3.8	3.7
2. Alternative technologies	4.0	4.2	3.4	3.6	3.3	4.3	3.8
3. Information dissemination strategies	4.3	4.2	4.0	4.9	3.2	4.4	4.2
4. NARES capacity building	4.2	3.9	3.0	4.3	3.1	4.2	3.8
5. Improved program management	4.1	3.9	2.3	3.7	3.3	4.1	3.6
<b>Grand mean</b>	<b>4.1</b>	<b>4.1</b>	<b>3.1</b>	<b>4.1</b>	<b>3.2</b>	<b>4.2</b>	<b>3.8</b>

Table 2. Response of farmers related to the expected outputs identified by the project by country

Expected outputs	Country				
	Lao	Ind	Phi	Viet	Mean
	n=6	n=21	n=35	n=7	n=69
2. Alternative technologies	4.4	4.3	4.6	4.0	4.3
3. Information dissemination strategies	3.8	4.3	4.7	3.8	4.2
<b>Grand mean</b>	<b>4.1</b>	<b>4.3</b>	<b>4.7</b>	<b>3.9</b>	<b>4.2</b>

## Response by Project Outputs

The researchers believed that the use of developed tools, guidelines, and methodologies facilitated project implementation; improved data collection, analysis, and interpretation; helped in decision-making; increased innovativeness/resourcefulness; increased appreciation of the project; optimized use of resources; and provided easier evaluation of project impact. However, this did not result in a reduced degree of supervision needed by the researchers in the implementation of the project (Table 3). The highest rating of 4.5 was given by the Philippines for the positive effect of the outputs in helping in decision-making. The lowest was a score of 2.6 as given by the researchers from Nepal in being able to reduce the degree of supervision. In most of the indicators, Nepal and Thailand had a lower degree of agreement.

**Table 3.** Response of researchers related to the tools, guidelines and methodologies developed by the project

Change indicator	Country						
	LAO n=7	IND n=5	NEP n=5	PHI n=6	THA n=3	VIE n=7	GM
1. Improved/facilitated project implementation	3.4	4.2	3.4	4.3	3.7	3.7	3.8
2. Reduced degree of supervision	3.5	3.9	2.6	4.0	3.0	3.6	3.4
3. Improved data collection, analysis, and interpretation	4.0	4.3	3.4	4.4	3.0	3.6	3.9
4. Helped in decision-making	4.0	4.1	3.8	4.5	3.0	3.6	4.0
5. Increased innovativeness/resourcefulness	4.4	3.9	3.4	4.3	3.0	3.9	3.8
6. Increased appreciation of the project	4.0	3.8	3.8	4.3	3.4	4.3	3.9
7. Optimized the use of resources (time, effort, money)	4.0	3.9	3.6	4.0	3.0	3.9	3.7
8. Provided easier evaluation of project impact	3.5	4.3	3.2	3.9	3.5	3.7	3.7
Grand mean	3.9	4.1	3.0	4.2	3.2	3.8	3.8
Response scale:	1.00-1.50 = Strongly disagree		3.51-4.50 = Agree				
	1.51-2.50 = Disagree		4.51-5.00 = Strongly agree				
	2.51-3.50 = Undecided						

With respect to responses related to alternative technologies, researchers did not agree that they have noticed any change in erosion rate because of the technology option (Table 4). However, they considered that erosion problems in their area are very severe and can be addressed through the application of appropriate technologies. They also believed that there will be better production because of the new technologies. Moreover, they agreed that observations at the study sites changed their thinking and improved their appreciation of the problem. The farmers in four countries agreed to all change indicators on alternative technologies (Table 5).

**Table 4.** Response of researchers related to alternative technologies identified by the project

Change indicator	Country						
	LAO n=7	IND n=5	NEP n=5	PHI n=6	THA n=3	VIE n=7	GM
1. Erosion problem very severe	4.2	2.6	4.8	4.5	3.7	4.4	4.0
2. Problem can be addressed by appropriate technology	4.4	4.3	4.0	4.3	3.3	4.6	4.1
3. Observations changed thinking about the problem	4.0	4.7	3.2	3.2	2.3	4.9	3.7
4. Better appreciated the problem	4.2	4.7	2.6	4.0	3.0	4.6	3.8
5. Ways by which options are introduced acceptable	3.8	4.3	3.0	4.2	3.0	4.6	3.8
6. Willing to continue to practice management options introduced	4.2	4.4	2.6	3.7	3.7	3.6	3.7
7. Noticed any change in erosion rate because of the technology	3.7	4.2	3.2	1.7	2.7	4.1	3.3
8. Agreed that there will be better production because of new technology	4.0	3.9	3.8	4.5	4.7	4.3	4.2
Grand mean	4.0	4.1	3.5	3.6	3.2	4.4	3.8

Response scale: 1.00-1.50 = Strongly disagree      3.51-4.50 = Agree  
1.51-2.50 = Disagree      4.51-5.00 = Strongly agree  
2.51-3.50 = Undecided

**Table 5.** Response of farmers related to alternative technologies identified by the project

Change indicator	Country				
	LAO n=6	IND n=21	PHI n=35	VIE n=7	GM
1. Erosion problem very severe	4.8	2.9	4.7	4.3	4.2
2. Problem can be addressed by appropriate technology	4.3	3.3	4.7	4.4	4.2
3. Observations changed thinking about the problem	5.0	3.5	4.6	4.0	4.3
4. Better appreciated the problem	3.8	4.0	4.6	4.4	4.2
5. Ways by which options are introduced acceptable	4.8	4.2	4.7	4.4	4.5
6. Willing to continue to practice management options introduced	4.7	4.1	4.9	3.3	4.3
7. Agreed that income will increase with new option	3.8	3.7	4.4	3.1	3.8
8. Noticed any change in erosion rate because of the technology	4.0	4.2	4.3	4.3	4.2
9. Agreed that there will be better production because of new technology	4.7	4.5	4.7	4.1	4.5
Grand mean	4.4	4.3	4.6	4.0	4.2

Response scale: 1.00-1.50 = Strongly disagree      3.51-4.50 = Agree  
1.51-2.50 = Disagree      4.51-5.00 = Strongly agree  
2.51-3.50 = Undecided

Both the researchers and farmers agreed that the information dissemination strategies were helpful. In this respect, both groups concurred that regular meetings with stakeholders helped in collaboration and adoption (Tables 6 and 7). They appreciated the regular meetings conducted, considering them useful and enabling them to enhance their research capacity.

**Table 6.** Response of researchers related to the information dissemination strategies

Change indicator	Country						
	LAO n=7	IND n=5	NEP n=5	PHI n=6	THA n=3	VIE n=7	GM
1. Regular meetings with stakeholders helped in collaboration and adoption	4.7	4.2	3.8	5.0	3.9	4.4	4.3
2. Appreciated regular meetings conducted	4.3	4.1	4.0	5.0	2.7	4.7	4.1
3. Considered the meetings useful	4.3	4.3	3.8	5.0	2.7	4.4	4.1
4. Meetings enhanced capacity	4.0	4.0	4.4	4.8	3.5	3.9	4.1
Grand mean	4.3	4.2	4.0	4.9	3.2	4.4	4.1
Response scale:	1.00-1.50 = Strongly disagree		3.51-4.50 = Agree				
	1.51-2.50 = Disagree		4.51-5.00 = Strongly agree				
	2.51-3.50 = Undecided						

**Table 7.** Response of farmers related to the information dissemination strategies

Change indicator	Country				
	LAO n=6	IND n=21	PHI n=35	VIE n=7	GM
1. Regular meetings with stakeholders helped in collaboration and adoption	4.2	4.2	4.6	4.3	4.3
2. Appreciated regular meetings conducted	3.7	4.3	4.7	3.9	4.2
3. Considered the meetings useful	4.5	4.3	4.9	4.4	4.5
4. Meetings enhanced capacity	2.8	4.4	4.8	2.7	3.7
Grand mean	3.8	4.3	4.7	3.8	4.2
Response scale:	1.00-1.50 = Strongly disagree		3.51-4.50 = Agree		
	1.51-2.50 = Disagree		4.51-5.00 = Strongly agree		
	2.51-3.50 = Undecided				

All farmers in the Philippines strongly agreed that they appreciated the regular meetings conducted and that these meetings with stakeholders were very useful and helped in collaboration and adoption. Farmers in Lao PDR, Indonesia, and Vietnam likewise agreed.

The effect of the training conducted by the project, on the average, did not have positive impacts on researchers in Thailand and Nepal (Table 8). All change indicators were rated low by Thailand while researchers in Nepal strongly disagreed that it increased their involvement in policy- and decision-making and increased their chances of job promotion. However, Nepal researchers believed that the training increased their interest and motivation, enhanced their opportunity to write scientific papers, and increased their confidence as trainers.

In terms of program management, the project did not contribute to a reduction in the cost of research, change of policy in the institute, improved resource generation, and optimal use of resources (Table 9). However, it improved the ability to share resources with others, broadened the collaboration base, and improved the evaluation of project results.

Table 8. Response of researchers related to NARES capacity building

Change indicator	Country						
	LAO n=7	IND n=5	NEP n=5	PHI n=6	THA n=3	VIE n=7	GM
1. Improved capacity	4.3	3.7	3.8	4.7	3.7	4.3	4.1
2. Assigned higher responsibility	4.3	4.3	1.8	4.5	3.3	4.1	3.7
3. Increased participation in scientific meetings	3.8	4.1	3.0	4.5	3.7	4.4	3.9
4. Chance of better job increased	4.0	3.4	1.0	4.0	2.3	3.9	3.1
5. Increased confidence as trainer	4.5	4.1	3.8	4.6	2.7	4.1	4.0
6. Increased confidence in dealing with colleagues	4.3	3.8	3.4	4.5	3.0	4.4	3.9
7. Enhanced opportunity to write scientific articles	4.3	4.1	4.0	4.0	3.0	4.0	3.9
8. Increased involvement in policy- and decision-making	4.7	4.2	1.0	4.0	3.0	3.7	3.4
9. Increased interest and motivation	4.0	3.4	4.4	3.4	3.0	4.3	3.7
10. Improved interaction with others	4.0	4.0	3.4	4.8	3.4	4.4	4.0
Grand mean	4.2	3.9	3.0	4.3	3.1	4.2	3.8
Response scale:	1.00-1.50 = Strongly disagree		3.51-4.50 = Agree				
	1.51-2.50 = Disagree		4.51-5.00 = Strongly agree				
	2.51-3.50 = Undecided						

Comparing the relative proportion of the responses *vis à vis* the project outputs, showed that more than 80 percent of the responses were rated as “agreed” and “strongly agreed” with the questions posed to the researchers indicating positive changes brought by the outputs of the project (Figure 4).

Considering the two outputs that were evaluated by the farmers, an average of 87 percent of the responses were rated as “agreed” and “strongly agreed” (Figure 5). The highest positive response was in the effect of improved information dissemination strategies with 25 percent of the responses strongly agreeing to the change indicators from both the researchers and farmers. This implies that the conduct of regular meetings with farmers has resulted in a positive effect. Frequent interaction increased appreciation of the project by both the researchers and farmers.

Table 9. Response of researchers related to improved program management

Change indicator	Country						
	LAO n=7	IND n=5	NEP n=5	PHI n=6	THA n=3	VIE n=7	GM
1. Improved ability to share resources with others	4.0	4.2	3.6	4.0	3.7	3.9	3.9
2. Increased collaboration base	4.4	4.3	3.2	4.3	3.7	4.1	4.0
3. Optimized use of resources	4.5	3.4	1.6	4.0	3.5	4.0	3.5
4. Improved evaluation of project results	4.3	3.9	3.8	4.0	3.7	4.0	4.0
5. Improved resource generation	4.2	3.8	1.6	3.4	3.0	4.0	3.3
6. Changed policy in institute	3.8	4.1	1.4	2.8	3.0	4.0	3.2
7. Reduced cost of research	3.2	3.3	1.0	3.4	2.7	4.3	3.0
Grand mean	4.1	3.9	2.3	3.7	3.3	4.1	3.6
Response scale:	1.00-1.50 = Strongly disagree		3.51-4.50 = Agree				
	1.51-2.50 = Disagree		4.51-5.00 = Strongly agree				
	2.51-3.50 = Undecided						

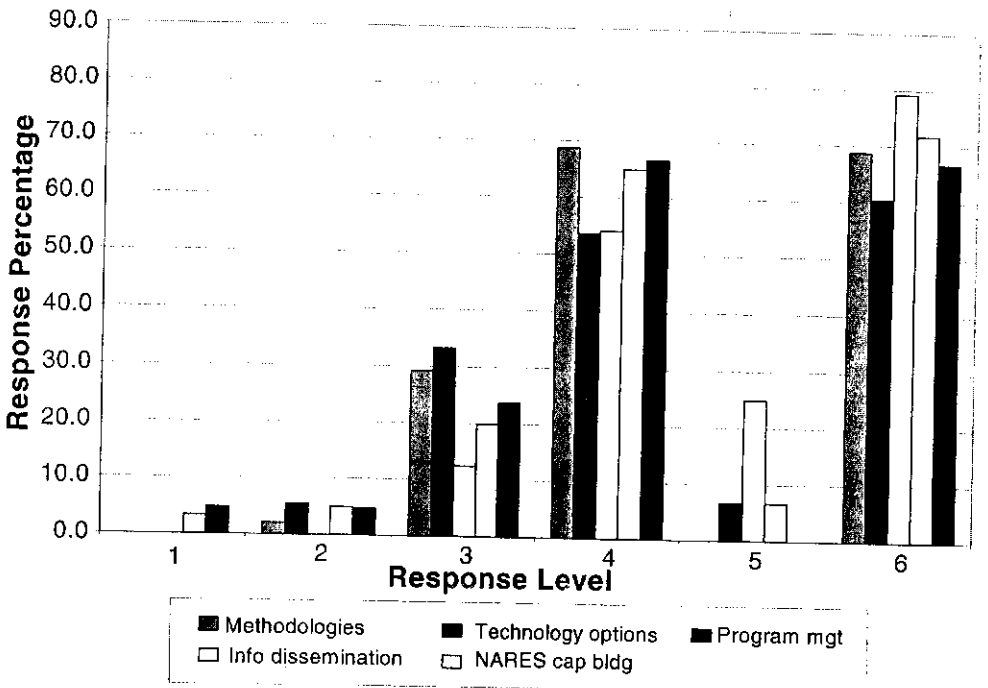


Figure 4. Percentage distribution of the response of researchers to the change indicators with respect to the expected output

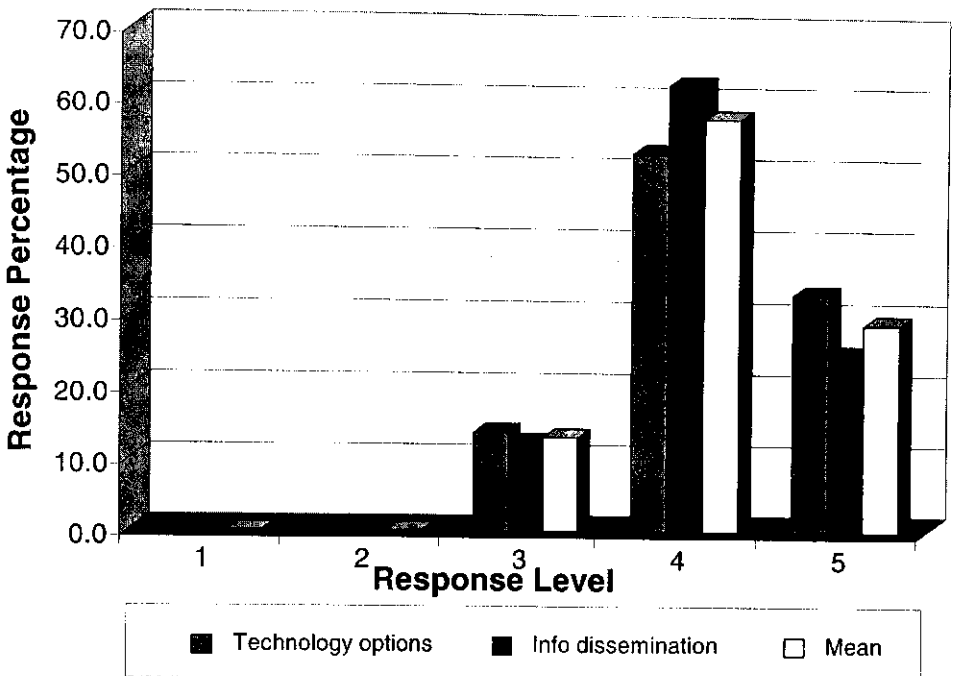


Figure 5. Percentage distribution of the response of farmers to the change indicators with respect to the expected output

For both the researchers and farmers, the effect of introduced intervention has not yet been strongly felt. The effect of this output still needs more time to be reflected in the productivity of the system of the farmers. While it may be premature to assess the impact in terms of productivity improvement, the responses by the farmers clearly indicated some degree of positive anticipation. The usefulness of the tools and guidelines and program management outputs has yet to be fully realized by the researchers.

The proportion of the "undecided" responses ranged from 12 to 33 percent with most of the responses being related to the effect of improved technology options. The researchers have yet to see changes in their institutes' policy supporting natural resource management, improvement in their resource generation, optimization of the use of resources, and the related benefits of reducing the cost of research. In essence, much more time is needed to see the effect on policy-makers.

### ***Response by Country***

All countries, except Nepal and Thailand, agreed with all indicators related to tools and guidelines as indicated in Table 3. In Nepal, the tools and guidelines only resulted in positive responses in terms of helping in decision-making, increasing appreciation of the project, and optimizing the use of resources. In Thailand, these helped only in facilitating project implementation.

Table 4 indicates that all researchers, except in Indonesia, acknowledged a high severity of soil erosion and all except Thailand agreed that the problem can be addressed by appropriate technology. All agreed that better production will result because of the new technologies, but only Indonesia and Vietnam concurred that income will increase with the new technology options. Lao PDR, Indonesia, and Vietnam agreed that there were observed changes in the erosion rate because of the technologies.

In Lao PDR and the Philippines, all responses were in agreement with the change indicators related to alternative technologies. In fact, in both countries, the farmers strongly agreed with six of the nine questions. In Indonesia and Vietnam, the farmers agreed that they now better appreciated the problem, and considered the ways in which options are introduced to be acceptable. In Vietnam, however, farmers were undecided whether their income would increase with the new option and whether they would continue with the practice introduced. In the case of Thailand, the farmers were undecided whether the identified technologies would bring benefits to them. In Vietnam, two change indicators did not get any positive feedback from the farmers.

All researchers, except those in Vietnam, remained undecided whether there is reduction in the cost of research (Table 9). All except Thailand agreed that it improved evaluation of project results. Only Lao PDR, the Philippines, and Vietnam considered the management of the program to optimize the use of resources.

In all identified outputs, it appears that the project has yet to produce positive change in Thailand. The same is applicable to the researchers in Nepal except for information dissemination strategies, which received a positive response.

In Lao PDR, the researchers believed that a positive change has been manifested by the project except for their perception that the approach that the project has employed has not brought a reduction in the cost of research. In Indonesia and the Philippines, the researchers did not believe that training increased their interest and motivation and that there is better

optimization on the use of resources and no reduction in the cost of research. Vietnamese researchers responded positively to all change indicators.

The relatively low agreement to the positive effect of the project on researchers in Thailand and Nepal seems to be a reflection of the problems that both countries have encountered in project implementation. Both countries experienced the problem of rapid turnover of staff involved. In the case of Thailand, some of the researchers who have been trained for the project were assigned other responsibilities. The project started rather late in Nepal and has likewise encountered security problems. Moreover, the project leadership in Nepal has been affected by the other internal problems within the organization.

## **Summary and Conclusion**

A simple questionnaire was devised to make an initial evaluation of the impact of the Management of Soil Erosion Consortium (MSEC) project implemented in Indonesia, Lao PDR, Nepal, the Philippines, Thailand, and Vietnam. The impact was evaluated based on responses by the researchers to the change indicators related to five project outputs and by farmers to two project outputs.

The highest positive response was in the effect of improved information dissemination strategies with a high proportion of the responses strongly agreeing with the change indicator. This implies that the conduct of regular meetings with the farmers has resulted in a positive impact and the frequent interactions have increased appreciation of the project by both the researchers and farmers.

For both researchers and farmers, the effect of the introduced interventions has yet to become evident. This implies that the effects of this output are all to be reflected in the productivity gains by farmers. While it may be too early to assess the impact in terms of productivity improvement, the responses by the farmers clearly indicated their positive anticipation. The usefulness of the tools and guidelines and program management outputs has not yet been fully realized by the researchers.

The researchers have yet to see changes in their institutes' policy supporting natural resource management, improvement in their resource generation, and optimization of the use of resources and the related benefits of reducing the cost of research. In essence, much more time is needed to see the effect on policy-makers.

In all identified outputs, it appears that there is still no positive change that the project has made in Thailand and Nepal.

While the study has provided some indications of the impact of the MSEC project, further evaluation of the methodology and analysis of the data are needed to complete the requirement of the framework. It should consider particularly the biophysical and economic impact of the project.

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