

AGENCY FOR INTERNATIONAL DEVELOPMENT
 WASHINGTON, D. C. 20523
BIBLIOGRAPHIC INPUT SHEET

FOR AID USE ONLY

1. SUBJECT CLASSIFICATION	A. PRIMARY Education
	B. SECONDARY General Education

2. TITLE AND SUBTITLE
 The impact of participant training on the attainment of development goals: analysis of two sectors

3. AUTHOR(S)
 Krug, R.E.

4. DOCUMENT DATE 1976	5. NUMBER OF PAGES 50 p.	6. ARC NUMBER ARC
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7. REFERENCE ORGANIZATION NAME AND ADDRESS
 American Institutes for Research, 3301 New Mexico Avenue, NW, Washington, D.C. 20016

8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publishers, Availability)
 (In Report No. 4)

9. ABSTRACT

In March 1974, a study was made of whether techniques could be devised to measure the effectiveness of participant training by the impact of returned participants on the development of their countries. The conclusion to this was affirmative and took the form of a prototype methodology for carrying out such assessments. This report is of the methods and procedures designed for future field assessments. Two sectors (agriculture and economic planning) were examined, and the substantive findings for each are presented here. It is important to note, however, that the real objective of these findings was methodological, not substantive. That the participants in these training programs have had a significant impact on their countries' development is not surprising, and it is the overwhelming consensus in both the United States and abroad, that the USAID participant training effort has been a very productive form of technical assistance. Rather, what is new in this study is the specificity of the definition of impact and the demonstration of specific linkages to training.

10. CONTROL NUMBER PN-AAB-652	11. PRICE OF DOCUMENT
12. DESCRIPTORS	13. PROJECT NUMBER
	14. CONTRACT NUMBER AID/CM/otr-C-73-201 Res.
	15. TYPE OF DOCUMENT

THE IMPACT OF PARTICIPANT TRAINING ON THE ATTAINMENT OF DEVELOPMENT GOALS

Report No. 4 ANALYSIS OF TWO SECTORS

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March 1976

Submitted to: Office of International Training, U.S. Agency for International Development,
Washington, D.C. 20523

Contract No: AID/CM/otr-C-73-201, Work Order No. 8, Project No. 926-11-995-031-61



AMERICAN INSTITUTES FOR RESEARCH / 3301 New Mexico Avenue, NW, Washington, DC 20016

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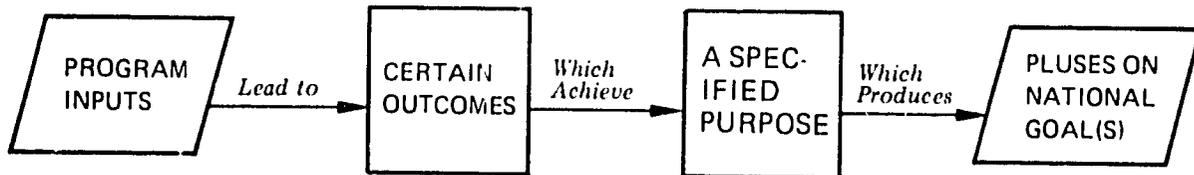
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PROLOGUE: THE PHASE I FEASIBILITY STUDY

In March 1974, the American Institutes for Research submitted its report on Work Order No. 3 of Contract AID/csd-3377*. The scope of Work Order 3 was essentially that of a feasibility study. The question which the study addressed was whether techniques could be devised for measuring effectiveness of participant training in terms of the impact produced by returned participants on the development of their countries. The answer was in the affirmative and took the form of a prototype methodology for carrying out such impact-oriented assessments. The course of the Phase I development will be recapitulated as a prologue to the work to be presented in this report.

The Methodological Problem of Phase I

In AID's Logical Framework, the input-impact relationship is displayed as a sequence of four kinds of events, as follows:



The "rationale" of any type of technical assistance activity can be conveniently displayed in this manner as a guide to planning or impact assessment. In the case of participant training,

- the inputs might be defined as the learning experiences that are provided to the trainee;
- the outcomes as the new performance capabilities that he acquires;
- the purpose as the greater effectiveness of the operations to which the participant applies these new capabilities when he returns; and
- the increment in national goals as the ultimate payoffs of these more effective operations on the development targets that they directly affect.

*Assessing the impact of participant training on the attainment of development goals. Phase I: Methodological Research. Final Report. Washington, D. C.: American Institutes for Research, March 1974.

In this way, the link between participant training and technical assistance objectives is made explicit.

For general analytic purposes, the simple schematic is sufficient. But, for the derivation of specific indicators of impact that one might use in an actual field assessment, it is too abbreviated a representation. One reason for this is that the flow from the achievement of the immediate outcomes to their eventual impact on national goals normally consists of a linked chain of many, many specific events. It is conceivable, perhaps, that a trainee in geology could come back to his country and promptly discover unknown oil deposits that change the economy overnight. But, more typically, an action he takes on the basis of his newly acquired skills will trigger a change in some procedure that will in turn have some modest effect that will in turn cause another person to change his behavior that will in turn . . . etc., etc., etc.

A second complexity that must be considered is that the participant is obviously not the only player who gets into the act. Other elements (people, laws, customs, etc.) interact with the things that he does or tries to do. And these other elements can transmit, increase, decrease, or block the impact of the participant's action.

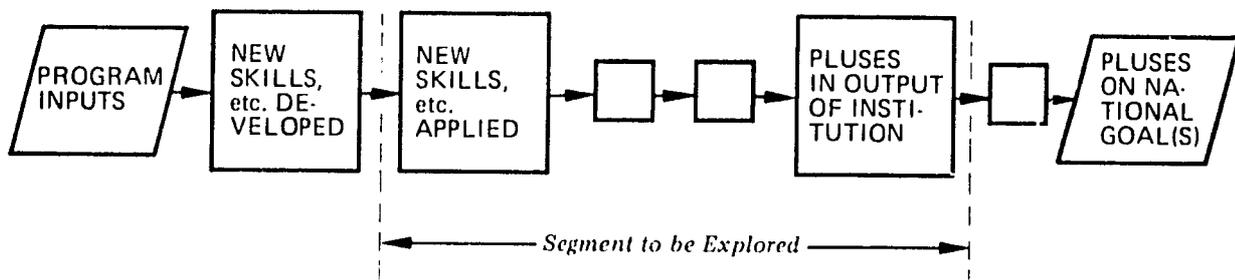
The upshot of these complexities is to create a tug-of-war between the two basic requirements that have to be met in impact assessment, of not only identifying the contributions that have been made to national goals, but of also attributing these contributions to a specified input, such as participant training.

If the checklist used for assessment counts an event such as "participant introduced an evaluation questionnaire into the courses that he is teaching of the type used in the training workshop that he attended" as an indicator of impact, for example, there is no problem in attributing this outcome to his training. But there is a real problem in claiming tangible impact in support of any national goal. If, on the other hand, the indicators are limited to such ultimate outcomes as "developed a new method of sericulture which doubled the amount of silk produced," there can be no

question concerning the importance of the contribution, but there may be great difficulty in attributing part or all of the change to a specifiable facet of the participant training.

The Approach Taken

The AIR approach was based on two strategic decisions. The first of these was that we would concentrate the search for suitable indicators within a fixed segment of the long chain of events that links the training inputs to the ultimate goal of national development gains. The earliest event that we would consider as a potential indicator for purposes of assessment would be an application of a skill or attribute the participant acquired in training to the actual operations of the institution to which he is presently assigned. The most distal event that we would consider as a potential indicator would be a visible change in the output of this institution, in terms of the quality of the services or products that it provides. In schematic form, the following segment would be the one on which we would focus our search:



Events to the right of this segment, we felt, would be too far removed from participant training to permit credible attribution, while events to the left would be too tentative to be counted as contributions. As a rock-bottom minimum, the returned participant would have at least to have applied the presumed training outcome to the improvement of internal job operations.

The second strategic decision was that we would look for indicators in this segment with a search process precisely opposite to that used in earlier participant follow-up studies. Instead of beginning with the outcomes of the training program and looking for their effects in or on the institution, we would begin with the identification of visible improvements or achievements, and then trace these "backward" to their antecedents, if

any, in the training experiences the participant had received. Our first cast of the net would try to surface any and all events that might prove serviceable as indicators for assessment, without reference to their relationships to participant training.

In accordance with these decisions, we proposed a three-step process for developing the indicators required. Step 1 would be to obtain from a sample of former participants and their supervisors, reports of specific improvements that have occurred in the output of the institution or in its operations since the participant's return. Step 2 would be to seek from the same respondents such evidence as they might be able to cite concerning the relationships, if any, of these achievements to experiences during participant training. Step 3 would be to deduce from these data the types of achievements that most effectively straddle the contribution-attribution dilemma, and to fashion these into prototype indicators for impact assessment.

The major product of Phase I was to be the master list of indicators; detailed procedures for applying them in operational assessments would be developed in a later phase, provided that the initial task could, in fact, be accomplished.

The Field Studies in Ghana and Thailand

In accordance with the basic study design, the first stage of the data collection process concentrated on the contribution part of the problem. The two major objectives of the survey in Ghana were:

1. To devise a data collection procedure that is efficient and effective in cataloging tangible improvements in the output or operations of the institutions to which returned participants have been assigned, and
2. To apply this procedure to a sufficiently large sample of participants and institutions to identify the kinds of improvements that are most likely to occur and be noted.

One hundred people, at levels at or above senior officer, were interviewed.*

*Several data collection approaches were used, but we will be concerned here only with the one which proved most effective; the details are available in the cited Phase I report.

Each participant was asked to report and describe events in which he or she participated (or observed) which were illustrative of his or her major achievements. Reports that did not describe a specific event or that did not meet the minimum criterion of representing a tangible improvement were dropped from the data base. This left a total of 292 usable reports as the major outcome of the study in Ghana. Except for such information as the interviewees volunteered about training antecedents, nothing was learned about the attribution characteristics of the potential indicators that had been assembled.

Overall, the Ghana study demonstrated that returned participants effect a variety of improvements in the output or operations of their institutions, that these impacts can be cataloged by a simple interviewing technique, and that the kinds of impacts that emerge from these data occur with sufficient frequency to be potentially useful indicators for impact assessment. The outcomes, in brief, demonstrated the feasibility of the basic idea.

The design of the Thailand research was based directly on the findings in Ghana. Its two major objectives were:

1. To assemble additional reports of participant achievements, so as to amplify and enrich the set of potential indicators developed in Ghana, and to check the generalizability of these indicators to other cultural settings, and
2. To assemble the best possible information about the antecedents of the achievements reported, to determine which of them reasonably could be attributed to participant training.

In view of the limited information that had at that stage been assembled about the attribution problem, the latter was the crucial objective.

Three types of questions were asked each interviewee. The first was totally unstructured questions about specific achievements since returning from training. The second set of questions asked for achievements, if any, in a number of specified areas that reflected the kinds of impacts most often reported in Ghana. The third set of questions asked for attribution comments on each of the achievements the participant had reported.

A total of 200 additional reports of specific participant achievements was assembled from 34 interviewees. This was approximately double the rate of reports per interviewee that had been achieved in Ghana, and was no doubt attributable to the additional "triggers" to recall that the structured questions derived from the Ghana findings provided.

The kinds of impacts reported confirmed both the comprehensiveness and the generalizability of the catalog of potential indicators developed in Ghana. The Thailand reports produced no indicators that did not fit within one of the categories derived from the Ghana data, and all but one of the Ghana categories reappeared in the Thailand sample. This suggested that the catalog was reasonably complete and that further data collection was not likely to expand it.

Adding the Thailand reports to those collected in Ghana did much to sharpen the categorization, however. With a combined sample of 500 reports, the nature of the potential indicators could be delineated much more precisely, and the initial catalog was modified in a number of important respects. The information on attribution collected in Thailand represented a significant addition to the data base. For, unlike the fragmentary attribution comments assembled in Ghana, each of the achievements reported in Thailand was accompanied by an explicit statement of its probable antecedents.

Overall, the Thailand research confirmed the generalizability of the data collected in Ghana, permitted a more precise definition of the indicators that can be applied in assessments, and established the linkages between achieved impacts and experiences during participant training. In conjunction with the Ghana findings, they provided the raw data for the development of prototype assessment procedures.

The Catalog of Participant Achievements

Each of the 492 reports collected in Ghana and Thailand described a certain segment of the impact sequence that was described earlier as a chain of discrete, successive events. Some focused on outcomes at or near the point of impact on national goals. Some reported more intermediate

accomplishments in improving the output, capacity, or operations of the institution in which the former participant works. Some were reasonably broad segments, extending from the point of impact all the way back to participant training; some revealed only a few links of the chain. Each showed a slice of one of the sequences whereby impacts occur, and the main task in the analysis of the data was to sort these slices in accordance with the sequence from which each was snipped, and then to fit the pieces together.

As a first step, we sorted the reports on the basis of the nature of the impact that was the end product of the participant's input or action. In each report we identified the final event of the segment described, and then we grouped the reports that ended in similar types of achievements. We obtained 20 separate groupings, as shown below.

IMPACT ON DEVELOPMENT TARGETS

1. Influenced development strategies or emphases, or a specific investment decision
2. Introduced a new agricultural, industrial, or commercial enterprise in the country
3. Developed a local capability for an activity formerly dependent on external resources
4. Discovered a solution or a more promising approach to a significant development problem
5. Stimulated the more widespread adoption of a preferred practice or other desired public response

IMPACT ON INSTITUTIONAL OUTPUTS

6. Initiated a new service or program
7. Raised standards of products or services provided
8. Changed rules or procedures to be more responsive to needs of clients
9. Avoid disruption of service by timely action, despite difficulties or risk
10. Performed task that required special effort or skill

11. Improved or expanded dissemination programs, techniques

IMPACT ON OUTSIDE SUPPORTS

12. Expanded institution's authority, status, or charter
13. Developed more effective working relationships with local agencies or sources of external aid

IMPACT ON INTERNAL OPERATIONS

14. Introduced or expanded the use of analytic, data-based management aids
15. Introduced cost- or time-saving measures, ideas
16. Imposed tighter structure or controls on staff or vendor performance
17. Improved the allocation or organization of responsibilities and functions
18. Upgraded the caliber, capabilities, or morale of the staff
19. Upgraded physical facilities or equipment
20. Improved record-keeping or information retrieval systems

These twenty categories (defined and illustrated in the Phase I report) range from highly dramatic impacts to achievements that do no more than set the stage for impact. But the data suggest that these latter events should not be discounted as indicators of tangible development gains. For impact is a sequence of events and an adequate assessment procedure must tap in at varying places in the chain.

These twenty categories constituted the project's answer to the contribution half of the contribution-attribution problem. But, as end-points of the reported segments, they provide no information about their antecedents, and consequently establish no links to participant training.

The Impact-Producing Characteristics

To identify the various paths the participants took to bring about these 20 kinds of achievements, we reexamined the reports from this point of view. We found that 464 of them specified the path as well as the result, and from each of these extracted the "impact-producing characteristic," which we defined as the specific skill, attitude, or other resource that the participant brought to the situation to effect the impact reported. Then we categorized the reports a second time, in accordance with these characteristics, and obtained fourteen groupings, listed below.

- A. Technical capabilities, sophistication
- B. Awareness of other possibilities, approaches
- C. Appreciation of nature and magnitude of inputs required
- D. Acceptance of new or expanded objectives
- E. Commitment to principles, convictions
- F. Willingness to take responsibility, act
- G. Data orientation
- H. Goal orientation
- I. Efficiency orientation
- J. Skill in human relations
- K. Familiarity with equipment
- L. Familiarity with workable operating routines
- M. Access to external sources of information or help
- N. Credibility and credentials

If each of these fourteen characteristics could produce each of the 20 types of achievements, there would be a total of 280 separate sequences for which indicators could be developed. But many of these theoretically conceivable sequences are too remote or improbable to be useful for impact assessment. In the existing data base, 111 of the 280 possible sequences were reported, 70 of them two times or more. These 70 sequences were prime

candidates as appropriate foci for impact assessment. But one final question had to be answered: Which of them typically are initiated by an experience provided by participant training?

Attributions to Participant Training

Three hundred and fifty-four (354) reports contained sufficient information to permit attribution decisions. On the basis of the attribution information contained in the reports, they were classified into five groups, representing decreasing attributability to participant training. The resulting classification is shown below.

- I. Reasonably clear-cut links to training
 - (a) Specific technique or theory applied
 - (b) Specific practice or model adopted
 - (c) U. S. source or product applied
 - (d) Practical job experience cited
 - (e) Incidental skill learned
 - (f) Credentials applied
 - (g) Before-after changes observed

- II. Probable links to training
 - (a) Technical background cited
 - (b) U. S. work style cited
 - (c) Timing of the event
 - (d) Requirement for technical knowledge
 - (e) Conformity of approach to U. S. standard

- III. Possible links to training
 - (a) Claim of increased self-assurance
 - (b) Claim of attitude change

- IV. Doubtful links to training
 - (a) Personal characteristics
 - (b) Clever ideas

- V. No links to training

In the data base of 354 reports, nearly 80 percent were classified in Categories I and II.

This analysis added a third dimension to the classification of the reports. At this stage each had been allocated to:

- a. one of twenty categories of achievements,
 - b. one of fourteen categories of impact-producing characteristics, and
 - c. one of five categories of attributability,
- representing three "points" of the impact sequence that it described. An example of a report and its classification is given below.

ILLUSTRATIVE REPORT

Solved problems of cotton spoilage by setting up research study that identified six fungicides as effective cures for the causal disease. Three of these fungicides are now being used and are giving good results.

Credits U. S. journals for information on the specific fungicides that it would be most promising to try.

Classification:

Impact Category	4: Discovered solution to significant problem
Characteristic	M: Access to external sources of information
Attribution	Clear-cut; use of U. S. sources

Reports of this type, classified along three dimensions, were the basis for the development of prototype indicators.

Prototype Indicators for Impact Assessment

Table I summarizes the impact sequences which were most frequently attributable to participant training. There were 36 clear-cut sequences (indicated by X in Table 1) and six which appeared promising (indicated by ? in Table 1). From this analysis, 39 prototype questions were derived, such as

- (7) Have you had any success in encouraging your country's farmers (or other client groups) to invest more time or energy in a particular operation, by convincing them that this is important?

and

- (13) Have you had occasion to detect a technical error or shortcoming that no one else caught, and that you had to take special steps to correct?

Table I

Combinations Most Frequently Attributable to Participant Training

	A : Tech. Soph.	B : Possibilities	C : Requirements	D : New Goals	E : Convictions	F : Take Resp.	G : Data Orient.	H : Goal Orient.	I : Efficiency	J : Hum. Rel.	K : Equipment	L : Routines	M : Sources	N : Credentials
1: Development Decisions				X										
2: New Enterprises		X												
3: Local Capabilities		X												
4: Discoveries/Solutions	X												X	
5: Public Adoption	X	X	X								X			
6: New Programs	X	X	X											X
7: Higher Standards	X		X								X		X	
8: Client Needs				X										
9: Timely Actions						?		?						
10: Demanding Tasks	X												X	
11: More Dissemination	X	X											X	X
12: Institutional Charter														
13: Outside Relations														
14: Data-Based Aids							X							
15: Cost Savings												X		
16: Tighter Controls	X		X				X					X		
17: Organiz. Structure												X		
18: Better Staff	X		X							?		X	X	
19: Equipment											X			
20: Record-Keeping	?		?								?			

These 39 questions formed the master list; it was suggested that actual assessments would use a subset composed of those most appropriate for the sector being assessed. It was also suggested that further development of the procedures might be accomplished in the context of actual assessments; the central objective of the feasibility study had been accomplished.

I. INTRODUCTION

Objectives of Phase II

The Phase II scope of work included the following activities:

1. Select two fields or sectors that contain a sizable participant training component on which detailed, diagnostic feedback data would be of special interest to AID and a host country;
2. Prepare, for each of these two training activities, a step-by-step field assessment procedure, based on the prototype methods developed during Phase I;
3. Apply these procedures in one developing country to generate follow-up data on a sample of fifty former participants in each of the two fields selected;
4. Introduce procedural modifications as necessary during the conduct of the assessment and in the subsequent analysis of the results and prepare revised second-generation procedures;
5. Apply these revised procedures in two additional developing countries on samples of former participants comparable to the above;
6. Analyze the results in terms both of their action implications for the conduct of participant training in these fields, and of their further methodological implications; and
7. Prepare diagnostic evaluation reports on the two participant training activities, and a final methodological report that includes materials and instructions for the conduct of regular field assessments.

Sector selection (objective #1) depended, first, on identifying sectors which had sizable groups of participants in a large number of countries. The Phase I findings suggested that regulatory agencies, such as economic planning, and agencies that conducted development-related research, such as in agriculture, were especially fertile data sources, and this provided a second criterion dimension. It would also be desirable to select sectors which would be active areas in future AID programming, and, finally, since host government approval would be required, the sectors would have to be of interest to the three governments which would be hosting

the field studies. Based on these criteria, the fields of agricultural research and economic planning were tentatively selected.

Protocols for these two areas and for two back-up candidates (education and industry) were prepared (objective #2).

Difficulty was encountered in arranging for host country participation; it was necessary to extend the contract period in order for AID/W to obtain approvals for the required three countries. In April 1975, the procedures were applied in Korea (objective #3) and subsequently modified on the basis of the Korean experience (objective #4).

Since only three suitable countries agreed to participate, there was no real selection of countries. But in June and July 1975, Brazil and the Philippines were sites for the application of the revised procedures (objective #5).

The Korean study was conducted by a three-person team (Drs. Robert E. Krug, Jane G. Schubert, and Scott A. Bass) in the period 10 April to 8 May. The government of Korea and USAID/Korea approved agriculture and economic planning as the sectors to be studied. The work is presented in the first report in this series.*

The Philippines also approved agriculture and economic planning as the sectors to be studied, but broadened the latter to include certain categories of fiscal and public administration. The study was conducted by Drs. Jane G. Schubert and Kathleen Fernandes in the period 16 June to 1 July and is described in the second report in the series.**

In Brazil, USAID/Brasilia preferred for a variety of reasons that no interviews be conducted in the agricultural sector; consequently, the Brazil study was limited to interviews with participants in the economic

*Schubert, J. G., and Krug, R. E. The impact of participant training on the attainment of development goals: Report no. 1 the study in Korea. Washington, D.C.: American Institutes for Research, November 1975.

**Fernandes, K., and Krug, R. E. The impact of participant training on the attainment of development goals: Report no. 2 the study in the Philippines. Washington, D.C.: American Institutes for Research, November 1975.

sector. This work was conducted by Dr. Daniel Felker and Mr. Michael Casserly from 8 June to 5 July and is presented in the third report in the series.*

In this report, an analysis of the funding for the two sectors is presented (objectives # 6 and part of #7) by pooling the data across the samples from the individual countries. An additional report (No. 5) presents the materials and procedures to be used in regular field assessments (remainder of objective #7).

*Felker, D. B., and Krug, R. E. The impact of participant training on the attainment of development goals: Report no. 3 the study in Brazil. Washington, D.C.: American Institutes for Research, November 1975.

II. DESCRIPTION OF THE SAMPLES

Samples within each of the substantive areas were drawn from the most recently published Participant Directory and the updated lists on file at USAID in each country. Criteria for the sample selection were:

1. Length of training. We tried to select participants with a minimum of six months' training overseas. Training tours of less than six months frequently consisted of observations at various sites, requiring extensive travel with little opportunity to become acquainted with a place or with trainers. Six months overseas residence seemed a minimum time for an individual to be able to take advantage of available resources and to gain experience independent of the more formal course of study.
2. Location. Although it appeared highly desirable to interview respondents living and working in both urban and rural settings, constraints of time and money suggested that travel be limited. In Korea and the Philippines, sites were restricted to those within a few hours driving distance of the capital city. In Brazil, interviews were conducted in Brasilia, São Paulo, Rio de Janeiro, and Belo Horizonte.
3. Job level. The samples were drawn from all job levels; the spread ranged from Directors of Ministries to administrative assistants and from Bureau Chiefs to junior researchers.
4. Time of training. The sample was to include participants who received training any time from the late 1950s and early 1960s through 1974, with emphasis given to the post-1965 group. Close coordination with USAID provided an opportunity to expand the data base; updated records of participants who returned after 1972 increased the number of potential respondents from which to draw a sample.

Tables II-1 and II-2 describe the actual samples interviewed in terms of two of the above criteria: length of training and time of training.

Table II-1 indicates that the length of training criterion was met reasonably well; only 14 percent of the sample had participant training of less than six months duration. On the time of training, 61 percent of the

Table II-1
Length of Training as a Participant

	<u>Agriculture</u>	<u>EP/PA</u>
Less than 6 months	13	39
6 to 11 months	42	108
12 to 23 months	32	44
24 to 35 months	8	37
36 or more months	1	1
Not known	14	25

Table II-2
Time of Training as a Participant

	<u>Agriculture</u>	<u>EP/PA</u>
Before 1965	52	88
1965-1966	6	21
1967-1968	8	64
1969-1970	11	34
1971-1972	20	20
1973-1974	5	12
Not known	8	15

sample had been trained in the post-1965 period and 25 percent had been trained within the past five years.

The target was to obtain 500 usable incidents per sector per country, producing a pool of 1,500 incidents per sector. Since the agriculture sector could not be studied in Brazil, the effective targets were 1,000 incidents for agriculture and 1,500 for economic planning/public administration. Table II-3 shows that both targets were met.

The number of persons interviewed exceeded the targeted figure of 50 participants per sector per country. For planning purposes, an average

Table II-3
Interviews and Incidents by Sector

	<u>Agriculture</u>	<u>EP/PA</u>
Interviews	110	254
Incidents collected	1,119	1,752
Usable incidents	1,003	1,697
Average usable per interview	9.1	6.7

of ten usable incidents per interview was projected. As seen in Table II-3, the actual averages were 9.1 and 6.7, respectively. While higher averages would doubtless be obtained by more experienced interviewers, an average of seven or eight is a reasonable projection for future planning.

III. INTERVIEW PROCEDURES

In Korea, members of the AIR staff conducted about 60 percent of the interviews, the remainder being conducted by local personnel hired and trained by the field team. This split was consistent with the plan; Korea was the final "try-out" site and the AIR staff was responsible for translating the prototype materials into operational packages.

In the Philippines, virtually all of the interviews (about 98 percent) were conducted by local interviewers; AIR staff interviewed a few very senior officials on the recommendation of the Philippine staff. The Philippines, therefore, provided the planned test of the suitability of the procedures for local use.

In Brazil, USAID/Brasilia informed the AIR team that for AIR to hire local interviewers without being registered as a foreign business would constitute a violation of Brazilian law. Consequently, all interviews in Brazil were conducted by AIR staff, and the test of local suitability could not be made.

In this chapter, then, the description applies essentially to the procedures applied in the Philippines.

A two-day orientation was held for the local personnel to familiarize them with the methodology of the study and with the interview format and reporting procedure. Each person read the training material on the critical incident technique, completed the attached exercises, and then met as a group to practice identifying and recording the information necessary in an incident. The AIR staff provided the group with background on the development of the methodology and the goals of the Phase II study, and distributed portions of the Phase I report to use during the period of data collection. The AIR staff role-played an interview, then had the group work in pairs to practice collecting and recording incidents. Some of the topics discussed during the orientation included identifying the necessary information for an incident, asking the right questions to probe for information, understanding the concept of an incident, and knowing

when all of the necessary information has been collected. Each person was given an interview outline and a list of suggested probe questions to use in addition to copies of the materials that the respondent would be reading and marking. Following the first interview, each person met with an AIR staff member to review and critique the incidents collected. Necessary changes were discussed, and incidents were revised or, in some instances, rewritten. Review sessions of this type were held every few days with each interviewer so that training continued throughout the period of data collection. All of the incidents were reviewed in this manner.

Scheduling of Interviews

Interviews were scheduled through a senior agency official and, when more than one participant was available, were frequently scheduled in groups. An AIR staff member accompanied by several interviewers sometimes met with all of the participants at an agency to give them a brief overview of the study. Interviewers were then assigned to participants, and the pair returned to the participant's office where the interview took place. Sometimes, the AIR staff member would interview the senior member among the participants or would conduct a group session where the participants completed the written forms. Each interview lasted between one and two hours, averaging about one and one-half hours. In instances where the participant's schedule did not allow for this amount of time, the interview lasted 30 to 45 minutes or was conducted during two or more separate sessions.

Data Recording

Data from the oral interviews were recorded on cards. Each card contained (1) the interview and incident number, (2) the number of the impact area to which the individual was responding, (3) the position and agency of the individual, and (4) spaces for recording the three-tiered classification. In addition, space was provided for the interviewer to describe the behavior, outcome, enabling characteristic, and attribution information for the incident. On the first data card of each interview, the interviewer also recorded the date, length, and location of the participant's training and the topics studied. On the written form, the participants recorded the incident number in the space provided and the impact

area to which they were responding, then answered six questions designed to elicit the necessary information about the incident. Space was available at the bottom of the page for the classification to be entered. In the written version, respondents were asked to record the date, length, and location of their training and the topics studied.

Format of the Oral Interviews

The interviews usually began with some introductory statements by the interviewer which reiterated the purpose of the meeting. These statements were frequently quite brief if many of the respondents had attended a group meeting prior to the interview at which the background of the study had been described. The interviewer confirmed the position and agency of the respondent, then asked him to give a brief description of his job. This description oriented the interviewer to the kinds of impact statements that might be expected from the respondent and to the kinds of probe questions that might be useful in eliciting the information necessary for each incident. The respondent then read the pages on the purpose of the interview and on the critical incident approach. Any questions that he had were answered by the interviewer. The respondent was next given the list of impact areas and asked to circle those in which he had taken specific actions. The circled items were used by the interviewer to structure the remainder of the interview. The respondent was asked to describe a specific action that he had in mind when he circled an item. The interviewer had to recognize when the respondent stated a behavior or event that had impact; once the behavior was identified, the interviewer collected the remainder of the information about the behavior that was necessary for the incident. For example, one respondent reported that he had been involved in drafting the performance budgeting legislation which eventually became law. The interviewer would then want to find out what effect the legislation would have, what the respondent's role had been, what factors enabled him to perform the task, and where he had learned about this type of budgeting.

The interviewer frequently had to question the respondent about the action being described in order to focus upon the specific behavior involved

before the interviewer could proceed to collect the remainder of the information needed to complete the incident. The interviewer was assisted in this task by the set of suggested probe questions which had been distributed during the orientation and by the information that the respondent had provided at the beginning of the interview about his job. The latter information was also useful in eliciting behaviors from respondents who felt they could not relate their jobs to any of the impact areas listed. Although a tentative structure had been imposed on the interview, the interviewer was responsible for constructing many of his own probe questions, for picking up cues about possible impacts from the respondent's job description, for focusing the respondent's thinking on events he may not have otherwise considered, and for recognizing when an impact event had been fully reported.

The interviewer progressed through each of the circled impact areas, collecting as many examples from each area as the respondent could provide. The interviewer asked if there were any aspects of the respondent's job that were not covered in the list of areas, then collected incidents on those aspects. The last portion of the interview dealt with the respondent's overseas experiences and asked questions about the influences that his experiences have had on his life. In addition to eliciting some important information about the effects of training on the individual, these questions provided a final opportunity to collect incidents which might not have occurred to the respondent. Following the interview, the interviewer reviewed his notes and transferred the information to data cards which were submitted to the AIR staff for review.

A written procedure was tried out in both the Philippines and Brazil. The number of usable events per interview was disappointingly low in both countries. To have continued to experiment with the approach would have exhausted the pool of available participants, and the procedure was, therefore, dropped.

IV. THE IMPACT OF PARTICIPANTS TRAINED IN AGRICULTURE

As noted in Chapter II, 1,003 usable incidents were collected from 110 former participants in the agricultural sector. A wide range of organizations was covered; some 37 distinct units were included. As indicated previously, there also was a wide spread of job levels represented, with the bulk of the sample being characterized as middle management or middle-echelon staff. As a representation of such a broad sector as agriculture, the sample is about as good as could be obtained within the limit imposed by sample size.

The Nature of Impact

The five categories of Impact on Development Targets (categories 1 to 5) contained 112 reports, which is 11% of the total. The bulk of the 112 (77%) were in categories 4 (discovery of a new solution or approach) and 5 (stimulating widespread adoption of a new practice). This subset of events constitutes the most direct link to ultimate impact on national goals. Such events as

- developed a new variety of peanut with a 30% increase in yield,
- introduced new procedures in rat control, reducing crop loss by 20%,
- developed new method of harvesting garlic which reduced transport costs, thereby raising farmers' income,
- produced new variety of soybean used as meat substitute.

are dramatic examples of far-reaching effect. The 112 reported events represent impressive evidence of pay-off for the participant training effort. For this sample, these major impacts averaged one per participant, which implies a very favorable benefit-to-cost ratio.*

* No benefit-cost analysis was included in the project, nor was any intended. Nonetheless, the conclusion is not glib. If one could expect a 30% increase in peanut yield as the average benefit resulting from the investment in a four-year college education, the value of education would presumably not be debated. The actual training investment in our sample averaged slightly more than one year.

The six categories of Impact on Institutional Outputs (categories 6 to 11) included 405 reports, or 40% of the total collected. Of these, 72% were included in categories 10 (used special skill or effort...) and 11 (improved dissemination programs). The two categories are often related in the agriculture sector; a major theme of both is to extend services to the rural areas where technical assistance was badly needed and where improvements would be of immediate benefit to the small farmer. Reported events include such things as

- conducted training sessions on soybean production for farmers,
- developed training program on agricultural cooperatives,
- introduced population program for housewives,
- constructed special equipment for research on soil erosion,
- published agricultural information in several languages so that more farmers could read the bulletins.

These impacts are less dramatic than those in the first set; they occur earlier in the sequence of events which may ultimately impact on national goals. The construction of special equipment may lead to a breakthrough, but this cannot be guaranteed. The reports are evidence of 405 events, each of which produced some immediate benefit, and some of which are likely to lead to more far-reaching outcomes.

The third set of categories, Impact on Outside Supports (categories 12 and 13) are represented by 110 reports, or 11% of the total. Category 13 (developed working relationships with other agencies...) accounted for 70% of the subtotal. The reported events include

- worked with two other Ministries in developing plans for supplying fishing boats,
- negotiated an external (foreign) loan to support wheat research,
- arranged a formal communication link for exchanging technical information with other Ministries,
- obtained grant from Canada for an evaluation of cooperative development program.

The final set of impact categories, Impact on Internal Operations, accounted for 376 reports, or 38% of the total. The most frequently reported categories are 18 (upgraded staff morale or capability) which accounts for 35% of the subset, 14 (use of data-based management aids) which includes 20% of the reports and 19 (upgraded physical facilities, equipment, etc.) represented by 16%. The other four categories (15, 16, 17, and 20) account for the remaining 29%. The reported events include

- obtained vehicles for field staff so that more communities could be reached by the program,
- distributed better tools to farmers,
- obtained computer to expand analytic capability of research station,
- taught new procedures to his staff interviewers,
- taught programming to his technical staff to facilitate their use of a new computer.

In common with the two preceding sets of impacts, events of this type occur early in the sequence. Some will lead to further events; the new analytic capability can lead to more powerful research results, which may lead to improved yield, to higher income and to improvement in the nation's export-import ratio. Ultimate impact is always the last event in a lengthy sequence, the earlier steps are always essential.

The Impact-Enabler Sequences

The preceding section described the kinds of impact which have been achieved by former participants. In Table IV-1, the joint distribution of impact and impact-producing characteristics is displayed. The right-hand totals simply recapitulate the preceding section; the column shows the number of reports for each of the twenty impact categories. The totals across the bottom of the page show the number of reports for each of the fourteen impact-producing characteristics. Each entry in the body of the matrix shows the number of reports for each of the 280 possible combinations (blanks indicate zero). For example, the combination of 11 with A (dissemination event made possible by technical sophistication) is

Table IV-1
 Combinations of Impact Categories and
 Impact-Producing Characteristics: Agriculture

Categories	A. Tech. Soph.	B. Possibilities	C. Requirements	D. New Goals	E. Convictions	F. Take Resp.	G. Data Orient.	H. Goal Orient.	I. Efficiency	J. Human Relations	K. Equipment	L. Routines	M. Sources	N. Credentials	Totals
1. Development Decisions	5	1	1				1	1					3		12
2. New Enterprises	3	7	2	1											13
3. Local Capabilities	1														1
4. Discoveries/Solutions	23	10		6	1	1	1				1	1	7	2	53
5. Public Adoption	8	10			1		2	2	2	2	1		5		33
6. New Programs	14	8	2	2		2	1	4	1		1		9	3	47
7. Higher Standards	16	6	3	1		2	3		4		1	1	1	4	42
8. Client Needs	4	4	1	1		1	1	1	3	2		1	1		20
9. Timely Actions	1			1									1		3
10. Demanding Tasks	44	15	4	3		2	23	2	1	5	3	1	21	4	128
11. More Dissemination	65	16	10	8		5	6	7	5	3	5	1	11	23	165
12. Institutional Charter	3	1	6	5	3	3	2	4	1				1	4	33
13. Outside Relations	14	6	4	1		2	5	4	2	9	1	2	21	6	77
14. Data-Based Aids	22	8	3			2	23	3	5	2		1	6	1	76
15. Cost Savings	3	5			1	2	1	1	9		5	2	1		30
16. Tighter Controls	2			3		2	4	1	2	4	2			1	21
17. Organiz. Structure	2	4			1	5	2		7	3		1	1	2	28
18. Better Staff	25	13	14	2	4	12	2	3	3	27	3		9	13	130
19. Equipment	4	1	8			3	2	4	5		26		5	3	61
20. Record-Keeping	1	2	1				2		9			1	13	1	30
Totals	260	117	59	34	11	44	81	37	59	57	49	12	116	67	1003

represented by 65 reports, which is more than 6% of the total number of reports,*

There are thirty-six combinations which have eight or more reports; of these, 23 have 11 or more. There are 101 empty cells and 54 which have but one report. By any conceivable definition of "frequent" there is a small number of frequent combinations and the matrix is largely empty. Both of these outcomes were expected and are in agreement with the Phase I result.

In the following section, we will consider the thirty-six combinations which are represented most frequently in terms of their attributability to participant training.

The Attribution of Impact

The basic data are presented in Table IV-2. For each of the frequent combinations appearing in Table IV-1, Table IV-2 shows the percentage of reports attributed to participant training.** Overall, 59% of the events have plausible links to some aspects of the participant experience. Some reports make a specific reference to a course, or a practical experience, or a former professor, or to a procedure learned or observed during the period of training. These are examples of clear-cut links. Other reports make more general reference to technical background or to a U.S. work style, or to doing something that conforms generally to a U.S. standard or approach. Reports of this type are examples of probable linkages, and are counted as attributions. Some reports claim increased confidence or a change in attitude as a consequence of the participant experience; while such claims may be true, we take the conservative approach and do not count these reports as attributions. We therefore believe that the 59%

* Since there are 280 cells and 1,003 reports, the "expected value" for each cell is 3.6 reports. One crude definition of "frequent" might be a cell with at least eight reports, this number being more than twice the expected value. A more precise statistical definition is neither necessary nor warranted.

** The five categories of attribution developed in Phase I are 1 = clear-cut, 2 = probable, 3 = possible, 4 = doubtful and 5 = no link to training. Table IV-2 shows the percent of events where the report indicates a clear-cut or probable link to training (categories 1 and 2).

Table IV-2

Percentage of Reports Attributed to Participant Training:
High Frequency Combinations in Agriculture

	A. Tech. Soph.	B. Possibilities	C. Requirements	D. New Goals	E. Convictions	F. Take Resp.	G. Data Orient.	H. Goal Orient.	I. Efficiency	J. Human Relations	K. Equipment	L. Routines	M. Sources	N. Credentials	No. of Reports	% Attrib.
1. Development Decisions																
2. New Enterprises																
3. Local Capabilities																
4. Discoveries/Solutions	57	60													33	58
5. Public Adoption	100	100													18	100
6. New Programs	71	88										100			31	84
7. Higher Standards	88														16	88
8. Client Needs																
9. Timely Actions																
10. Demanding Tasks	59	80					70					76			103	68
11. More Dissemination	49	63	40	13								45	70		133	51
12. Institutional Charter																
13. Outside Relations	57									33		38			44	43
14. Data-Based Aids	55	50					52								53	53
15. Cost Savings									67						9	67
16. Tighter Controls																
17. Organiz. Structure																
18. Better Staff	64	38	50			75				22		67	38		113	48
19. Equipment			50								73				34	68
20. Record-Keeping									33			69			22	55
No. of Reports	231	80	32	8		12	46		18	36	26		84	36	609	
% Attrib.	60	68	47	13		75	61		50	25	73		63	58		59

figure is a reasonable lower-bound estimate.

There is considerable variability in the entries of the table; the range is from 13% for the eight reports on combination 11-D (dissemination event involving acceptance of a new objective or goal) to 100% for combinations 5-A, 5-B, and 6-M. The variability is difficult to interpret, in part because many of the entries are based on only 8 or 9 reports. One way to circumvent this is to focus on the marginal totals which are, with only a few exceptions, based on respectable numbers of reports. For the impact categories, the marginal variability is obviously smaller, ranging from 43% for category 13 to 100% for category 5. One further aggregation can be made by looking at the four broad classes of impact discussed earlier. The results of this summary are as follows.

Impact on:	Reports	Attributed
Development Targets	51	73%
Institutional Outputs	283	63%
Outside Supports	44	43%
Internal Operations	231	53%

The apparent trend is for the more significant events to be attributed more often than are the events which occur earlier in the impact sequence. This is a surprising result since several factors would lead one to expect an opposite trend. Opportunity for impact most often increases at the higher job levels, and higher job levels are associated with longer tenure, which in turn is associated with a longer time period since training. And events which occur long after training are less likely to be attributed to that training, since the accumulation of on-the-job experience takes on greater weight. But for the sample of participants in agriculture, influences of this kind are apparently not dominant. It may be that the technical requirements for significant impact are such that recent graduates can make major contributions. For whatever reason, the finding is clear: the more important the impact, the more likely it is to be attributed to training.

Further discussion of the findings will be deferred to the final chapter; we now turn to the impact of participants in the second sector studied, Economic Planning/Public Administration.

V. THE IMPACT OF PARTICIPANTS TRAINED IN ECONOMIC PLANNING AND PUBLIC ADMINISTRATION

This sector is represented by 1,697 events reported by 254 former participants from three countries. The participants were employed by 55 distinct organizational elements, covering a wide range of activities. All agencies with responsibilities in national level economic planning were included in each country, as were the national banks. The participants occupied positions ranging from middle to very senior levels.

The Nature of Impact

Of the 1,697 events, 152 (9%) were classified as Impact on Development Targets. Most of these were in categories 1 (influenced development strategies...) and 5 (stimulated widespread adoption of new approaches...); together these two categories accounted for 122 of the reports (80%) included in this level of impact. Among the events reported were

- wrote the National Tax Law that tripled the tax on private cars and reduced the tax on mass transit vehicles to encourage use of public transport,
- conducted an economic analysis of the impact of roads on agricultural marketing and production; as a result, the allocation of funds for rural highways increased by 60%,
- developed an information campaign which showed how tax money is used to help rural areas; the percentage of villagers paying income tax increased,
- conducted study which led to legislation which made government-owned lands available to the public, to increase production of cattle, soybeans, wheat, and rice,
- established a cash budgeting system for all agencies to eliminate the deficit spending which had been common,
- wrote the legislation creating a Civil Service Commission, defining the merit system and procedures for appointments and promotions.

In each of the above examples, the impact produced has far-reaching effects which touch the lives of many people. Research and analysis conducted by the former participants influenced major investment and policy decisions which bear directly on the national economy. Given the need to boost production and develop a viable economic base which characterizes the nations of the developing world, the significance of the participants' contributions is evident.

The second level, Impacts on Institutional Outputs, was represented by 675 reports, representing 40% of the total. Five of the six categories had substantial numbers of reports, which include such events as

- devised a simplified credit procedure for directing the flow of funds to farmers,
- introduced computerized scoring of civil service exams to speed up the publication of results,
- developed a price structure model to forecast long-and short-term price trends,
- developed a new methodology for calculating balance of payments,
- developed a set of economic indicators to monitor the degree of government participation in the private sectors,
- designed the sampling procedures used in national surveys of wealth and wages.

All of these events produced visible effects on the quality and kind of services being delivered by the institutions involved. Some have immediate and important consequences; others are the early links in an ongoing chain. All are examples of "economic modernization" which move the nations forward.

The third level of Impact on Outside Supports contains but two categories and is represented by 159 events, constituting 9% of the total. Some of the reported events are

- coordinated requests of all ministries seeking support from external donors,
- convinced the administration to establish a computer center as an independent entity to serve all agencies,

- secured funds from the government and two external donors to establish a consortium of graduate centers of economics,
- supplied data to World Bank to convince Bank to purchase farm equipment from local manufacturers,
- wrote successful proposal to reduce redundancy in national planning effort by centralizing responsibility in one place.

The final seven categories of Impacts on Internal Operations, contain 711 reports, which is 42% of the total number. The most heavily represented categories are 19 (upgrading staff...) 14 (use of data-based aids...), and 15 (introduction of cost-saving procedures). Some illustrative examples are

- introduced the use of Gantt charts to monitor construction projects,
- prepared qualification standards for positions in newly created bureau,
- developed detailed procedures for staff processing of tax returns,
- developed detailed data on hospitals, beds, patient loads, etc., as basis for locating regional sales and distribution centers,
- conducted staff seminars on use of descriptive statistics,
- used an economic rate of return analysis to evaluate requests for bank loans.

The above examples represent early events in impact sequences. The use of a Gantt chart, as one example, has little immediate impact. But it offers better monitoring of construction costs and quality; better construction should result; future maintenance costs should be reduced; and the burden on the taxpayer will be reduced by some small amount. But the combined impact of 711 such events may be very great, and the 711 are but a sample of some much larger population.

The Impact-Enabler Sequences

Table V-1 presents the joint distribution of reports classified both by impact category and enabling characteristic. It is identical in format to Table IV-1 in the preceding chapter.

In Table V-1, the "expected value" for each cell is 6, since there are 1,697 reports and 280 cells. We will therefore arbitrarily define "frequent combination" as any cell containing twelve or more reported events. By this definition, there are 46 combinations which appear frequently. Of the 46, there are 22 which have 18 or more events (three times the expected value). There are 60 cells with no events reported and 91 more with three or fewer events. As in all previous applications, a small number of combinations account for a large percentage of the reports, and the matrix contains many "empty" cells.

The following section will focus on the degree to which the events reported in the 46 frequent combinations can be linked to the participant training experience.

The Attribution of Impact

The basic data are shown in Table V-2, which is identical in format to IV-2 in the preceding chapter. Overall, 58% of the reports document a clear-cut or highly probable link to participant training. For reasons cited previously, we view this figure as a conservative estimate.

Variable attribution rates are again evident, ranging from 90% for combinations 6-II, to 18% for combinations 18-J and 18-N. Category 18 was characterized by low attribution rates in the Agriculture sample also; other comparative findings will be discussed in the following chapter.

When the data of Table V-2 are aggregated within the four broad areas of impact, the following results are obtained.

Impact on:	Reports	Attributed
Development Targets	63	60%
Institutional Outputs	426	70%
Outside Supports	76	32%
Internal Operations	430	49%

Table V-1

Combinations of Impact Categories and

Impact-Producing Characteristics: Economic Planning/Public Administration

Categories	A. Tech. Soph.	B. Possibilities	C. Requirements	D. New Goals	E. Convictions	F. Take Resp.	G. Data Orient.	H. Goal Orient.	I. Efficiency	J. Human Relations	K. Equipment	L. Routines	M. Sources	N. Credentials	Totals
1. Development Decisions	19	8	3	7	3	1	13	2	1	2			6	4	69
2. New Enterprises	2	7	1							1			1		12
3. Local Capabilities															0
4. Discoveries/Solutions	3	6	1					1	1			1	3	2	18
5. Public Adoption	17	4		1	1	3	2	1				2	8	14	53
6. New Programs	40	9	5	3	12	1		20	11	1	2	4	8	14	130
7. Higher Standards	35	8	1		3	5	6	6	12	1		8	13	14	112
8. Client Needs	22	17	8	5	7	1	3	7	11	2	1	2	5	7	98
9. Timely Actions	2	1	1		3			2						1	10
10. Demanding Tasks	117	6	3	7	6		22	8	2	5	1	5	17	32	231
11. More Dissemination	24	11	3	1	5	2		10	6	4		3	10	15	94
12. Institutional Charter	17	5	3	4	1	5	2	6	6	1		3		7	60
13. Outside Relations	13	10	3	1	4	3	3	12	4	16		1	13	11	99
14. Data-Based Aids	30	11	1	1	1	2	31	7	9		2	2	15	5	117
15. Cost Savings	9	18	6		3	3	2	5	31		6	6	5	8	102
16. Tighter Controls	5	9	3		5	4	6	2	12	3	2	5	1	9	66
17. Organiz. Structure	20	7	1	1	2	3	1	6	19	4	1	5	2	13	85
18. Better Staff	25	21	21	5	6	14	1	13	24	45	1	7	24	17	224
19. Equipment	10	4	4			3	2	4	8	3	12	1	4	6	61
20. Record-Keeping	4	5	3		3	1	3	3	12		6	1	13	2	56
Totals	419	167	71	36	65	51	97	115	169	88	34	56	148	181	1697

Table V-2

Percentage of Reports Attributed to Participant Training:
High Frequency Combinations in EP/PA

	A. Tech. Soph.	B. Possibilities	C. Requirements	D. New Goals	E. Convictions	F. Take Resp.	G. Data Orient.	H. Goal Orient.	I. Efficiency	J. Human Relations	K. Equipment	L. Routines	M. Sources	N. Credentials	No. of Reports	% Attrib.
1. Development Decisions	53						29								32	44
2. New Enterprises																
3. Local Capabilities																
4. Discoveries/Solutions																
5. Public Adoption	82												71	31	77	
6. New Programs	80			83			90						79	86	83	
7. Higher Standards	77							25				85	71	74	69	
8. Client Needs	64	53												39	59	
9. Timely Actions																
10. Demanding Tasks	76						64					59	69	188	72	
11. More Dissemination	42												47	39	44	
12. Institutional Charter	47													17	47	
13. Outside Relations	22						25	31				31		59	27	
14. Data-Based Aids	60						48					60		76	55	
15. Cost Savings		56						61						49	59	
16. Tighter Controls								33						12	33	
17. Organiz. Structure	55							26					23	52	37	
18. Better Staff	40	71	33			21	38	71	18				79	204	43	
19. Equipment										83				12	83	
20. Record-Keeping								58				85		25	72	
No. of Reports	384	56	21		12	14	66	45	110	61	12		95	119	995	
% Attrib.	64	61	33		83	21	50	58	50	21	83		67	55		58

While this pattern is not identical with the one reported in chapter IV for agriculture, the same generalization can be made. The events which are near the ultimate end of the impact continuum are more likely to be linked to training than are the events which occur early in the sequence. In both sectors, levels I and II have higher attribution rates than III and IV.

VI. A SUMMARY OF FINDINGS IN TWO SECTORS

The principal motive for the present study was to devise methods and procedures which could be used in future field assessments. In order to do this, two sectors were studied and the substantive findings for each are presented in this report. But it is necessary to view these findings in proper perspective; the real objective was methodological, not substantive. The demonstration that participants in agriculture and economic planning have had significant impact should surprise no one. It has been the overwhelming consensus, in the United States and abroad, that the USAID participant training effort was a very productive form of technical assistance. This study, in common with many previous studies, confirms this consensus. All that is new is the specificity of the definition of impact and the demonstration of specific linkages to training.

The Magnitude of Participant Impact

The data clearly show that USAID-sponsored participants have made and are making significant contributions to the development of their countries. Further, there is clear evidence that a substantial portion of these contributions (58%) can be linked to some specifiable aspect of the participant experience. And the benefits will continue to accrue. The individual participants will make new contributions, and in addition, they serve as multipliers of institutional capability; improving staff capability was the second most frequently reported impact category, represented by 354 discrete events.

Doubtless, many of the cited contributions would have been made by these individuals had there never been a USAID participant program. The people chosen were those identified as the most promising candidates; there was nothing random about their selection. Our data provides no estimate at all of the contributions which would have been expected in the absence of the participant program,* but common sense tells us that some would have occurred.

* Such estimates could theoretically be derived from comparisons of matched samples of participants and non-participants. In reality, the matching task could seldom be accomplished adequately, and studies of this kind would rarely provide meaningful results.

But common sense also tells us that much of the training received by participants was simply not available in-country at the time the training was received. The fact that this situation has been significantly improved is itself a testimony to the USAID contribution. Our data include many examples of new courses being taught, textbooks being written, new facilities and institutes being established; in this way also, the participant contribution has been multiplied, thereby reducing the need for further participant training in many fields. Upgrading the local educational capability has been a major achievement of the USAID program, and one which will have great impact over the long term. While this achievement was in process, other participants were filling the immediate need for skilled personnel. New tax laws were written, new varieties of seed were developed, water resource management was planned and implemented, new industries were established; in short, all of the activities involved in the process of modernization were taking place, and USAID-sponsored participants provided the critical mass which made the process possible.

As noted earlier, we cannot attach a dollar value to the benefit side of the program. The economic gain for some impacts could be computed; for others the impact sequence is so long and complex as to defy any rigorous measurement of gain. The present study has documented the nature of the benefits realized, and provides some lower-bound estimates of frequency. In agreement with earlier assessments, our data provide a strong endorsement of the participant program.

Note on Methodological Implications

We found in Phase I that a small number of impact-enabler combinations accounted for most of the reported events. This characteristic has great practical utility; one can design efficient procedures by focusing on specific combinations of high potency. It is of interest then, to consider the comparability of the two sectors examined in this report.

Economic planning and agriculture are distinct and reasonably well-defined fields and appear on the surface to differ considerably. Each field is populated by specialists; each has its own body of knowledge and its own set of methodological tools; the organizational structures tend to

differ also, with agriculture being a far more decentralized operation. From this point of view, there would be no reason to expect similarities in the nature of impact, in the enabler-impact combination, or in the pattern of attribution.

But a closer inspection reveals some clear commonalities between the two sectors. For one thing, they share the area of agricultural economics and within this area, the forecasting of agricultural production, marketing, and prices may be accomplished in both a ministry of agriculture and a central planning ministry. Beyond this area of common functions, there is a much larger area in each field which shares a common language derived from the quantitative orientation of training which is characteristic of both. Both fields are data-oriented; they share a way of looking at the world and of deriving implications from the observations made. From this point of view, one would expect some similarities in the patterns of impact-enabler-attribution found in the two sectors.

The above portrayal is untidy; it fails to specify how much similarity and how much difference, but only notes that there should be some of each. The state of the art does not permit a complete specification.

In the following paragraphs, we report on the extent of similarity (and uniqueness) found.

The right-hand marginals in Tables IV-1 and V-1 give the number of reports in each of the twenty impact categories for the two sectors. The correlation between the two sets is .64, indicating that 41% of the variance in the nature of impact is common to the two.

The marginal totals at the bottom of the two tables are the frequencies with which the fourteen enabling characteristics were cited. The correlation between these two sets is .74, indicating that 55% of the variance is common. For these samples, there is thus somewhat more commonality in the way that impact is achieved than in the nature of the impact. But since the error of measurement is considerable for both coefficients, the difference cannot be taken as demonstrated; it is a

plausible finding but not a proved one.

The commonality in frequency of impact-enabler combinations is comparable to the results for each taken separately. For agriculture, 36 frequent combinations were found; for economic planning, there were 46. Twenty-four were common to both sectors; there were therefore 12 combinations found only in agriculture and 22 found only in the economic sector.

One further comparison is available. Taking the 24 combinations which are common to both sectors, we can compute the extent to which frequency of attribution is correlated between sectors. The coefficient in this case is .57, indicating that 32% of the variance is common.

Our summary statement is that the commonality between the two sectors is considerable, approximating 50% of the variance. Inspection of the combinations which are common as opposed to those which are unique suggests a rational basis for the commonality. Eight (of the 24) involve Enabler A (technical sophistication), two involve G (data orientation), two involve Enablers M and N (external sources and credentials), which may be common to nearly all participant groups.

It would appear that, for any given sector, a small number of potent combinations could be identified. It is at least possible that some twelve to fifteen combinations will be useful for any sector, and that ten to twenty more will be adequate to represent the unique features of a particular sector.

This is one of five separate reports issued in Phase II of the Participant Impact study. The first three describe the country studies conducted in Korea, the Philippines, and Brazil. This report, the fourth in the series, presents an analysis of the two sectors studied (agriculture and economic planning), independent of the findings peculiar to a particular country. The Final Report (No. 5) assembles documents and instruments for use by local interviewers; it comprises the evaluation package for future field assessments.