



Management Systems International, Inc.
2316 18th Street N.W., Washington, D.C. 20009

Working Paper No. 73

¹³⁴
PN-ABE-990

(202) 483-0491

Cable: MANSY WASHDC

To: Annette Birnendijk and Ray Solem
From: Larry Cooley and Bruce Mazzie
Date: June 3, 1983

Use of Sample Survey Methodology for Project Evaluation

A brief investigation of the feasibility and implications of using structured sample survey methodologies for evaluating project impact was carried out by Larry Cooley and Bruce Mazzie between May 25 and June 3, 1983. The investigation was carried out pursuant to, and in accordance with, the scope of work outlined in Annette Binnendijk's memorandum to us of May 27. This document summarizes the results of our brief examination of this issue.

BACKGROUND AND APPROACH

A recent assessment of survey activities carried out by BuCen for AID was, in general, extremely complimentary. It praised the professionalism of the research and the personnel involved, and noted the contribution made by many of BuCen's activities to strengthening the institutional capacity of statistical organizations in developing countries. In a chapter omitted from the final report, however, the assessment seriously questioned the feasibility and value of using rigorous sample survey methods of the sort sometimes practiced by BuCen for purposes of evaluating impact at the project level. It suggested, in particular, that such surveys were: (1) frequently not completed, (2) extremely expensive, (3) normally unable to address all issues of impact or attribution in a persuasive manner, and (4) infrequently used for making management decisions. By implication, the study endorsed the use of alternative ("unstructured") approaches to project evaluation as more cost effective for purposes of project

11

evaluation.

The original study presented little evidence in support of these contentions. In view of the potentially significant implications of these assertions, we were asked by PPC/E/ESDS to examine several relevant cases, hold discussions with the individuals involved, and offer corroboration and/or suggested modification to the position as originally expressed.

Initially, consideration was given to several systematic methods of selecting cases for investigation -- i.e., matching BuCen with non-BuCen cases or structured with unstructured methodologies, controlling for sector and/or region, or making an explicit effort to encompass as wide an array of sectors and regions as possible. In practice, given the limitations of time and budget, and the relatively small number of relevant cases and informed respondents, the investigation was unable to employ any systematic procedure for selecting cases. Final selections were based on the recommendations of evaluation officers and other informed personnel. The studies reviewed included:

Colombia - Education
El Salvador - Small Farm Irrigation
Indonesia - Water
Ghana - Danfa (Population)
Guatemala - Education
Morocco - Lower Mououya (Irrigation)
Philippines - Water
Senegal - Joint Assessment
Sri Lanka - Nutrition
Thailand - Land Settlement

While the procedure employed for case selection was obviously less than rigorous, each of the cases reviewed yielded several valuable insights. Moreover, the seven projects on which we obtained information included:

NUMBER OF CASES

METHODOLOGY	
Multi-Round Sample Survey	6
Other	4
CONTRACTOR	
BuCen	4
Other	6
REGION	
Asia	4
Latin America & Caribbean	3
Africa	2
Near East	1
SECTOR	
Water	2
Irrigation	2
Land Settlement	1
Education	2
Nutrition	1
Population	1
Overall Country Program	1
STATUS	
Completed as Planned	4
Modified	4
Terminated	2

In addition, the interview protocol we employed included several unstructured questions soliciting respondents' views on the general issues under investigation and encouraging them to draw on experience from other cases in their experience in formulating their responses. The findings thus include conclusions drawn from the overall experience of those interviewed as well as from review of the particular cases selected. A list of those interviewed is attached as Appendix I to this memorandum and profiles of the cases reviewed are attached as Appendix II.

OBSERVATIONS AND CONCLUSIONS

The following observations and conclusions are drawn from our assessment of the cases reviewed above and from our discussions with the individuals listed in Appendix I of this memorandum. Neither the cases reviewed nor the individuals selected constitute either an exhaustive listing or a random sample, and hence we make no extravagant claims concerning the reliability of these findings. Further, it would be inappropriate to suggest that any clear "consensus" existed among those interviewed. Rather, these remarks are best viewed as insights and opinions formed by the authors on the basis of a brief but systematic review of the issues and evidence.

1. Rigorous Multi-Round Sample Surveys of the Type Performed by BuCen and Others in the Past Have Not Proven to be Cost Effective for Purposes of Project Evaluation.

The majority of such studies which have been initiated have not been completed. Of those few which have been completed, there is little evidence that study findings have been used in important ways to funding or design decisions concerning the project under review, follow-on projects, similar projects in other countries or overall Agency policy.

The cost of these project evaluations has generally ranged between \$300,000 and \$1,500,000.

The most frequently cited reasons for non-completion or non-use of these evaluation studies include:

Non-Completion

- (i) Poorly stated or inaccurately stated "Hypotheses" or Issues
- (ii) Removal of External Pressure for Evaluation
- (iii) Vagaries of Incremental Funding
- (iv) High Cost of Studies Relative to Actual Use Made of the Results

Non-Use

- (i) Reports which targeted technical issues rather than management issues
- (ii) Failure of Studies to Address Pending Management Questions
- (iii) General Lack of Confidence in Methodology Employed or Transferability of Findings
- (iv) Lack of Clear Audience or Use for Evaluation Findings

2. Rigorous Multi-Round Sample Surveys Intended for Purposes of Project Evaluation Have Sometimes Contributed Significantly to Purposes Other Than Project Evaluation.

There is some evidence that rigorous multi-round sample surveys intended for purposes of project evaluation have sometimes contributed more significantly to objectives other than project evaluation. In particular, these studies have sometimes:

- (i) Established countries' only reliable data on a geographical area, sector or problem.
- (ii). Led to the establishment or strengthening of ongoing statistical services or research capabilities.
- (iii) Contributed to worldwide research and knowledge.

These achievements are normally, however, outside of the stated objectives of project evaluation studies.

3. The Alternative To Rigorous Multi-Round Sample Surveys of The Type Performed by BuCen Is Not Necessarily "Unstructured Evaluation".

Our brief review identified four major approaches to project evaluation within AID. These are:

- (i) Special Multi-Round Sample Surveys (Baseline Plus Longitudinal)
- (ii) Low Cost Surveys (often single round) focused on Key Operational Issues or Decisions
- (iii) Ongoing National/Regional/Sectoral Systems of Monitoring and Evaluation
- (iv) "Unstructured" Project Evaluation (often using key informant and/or direct observation methods).

Attention in the ESDS study of BuCen activities focused on alternatives (i) and (iv). Our brief review suggests, however, that alternatives (ii) and (iii) frequently offer the most promising approaches to project evaluation. We were advised of some interest in the Asia Bureau in fostering alternative (iii), and identified several examples of alternative (ii) among the cases we reviewed. Recent World Bank experience with respect to both of these alternatives is also extremely valuable.

BuCen staff feel that you can still conduct a scientific study without rigorous multi-round sample surveys in order to evaluate projects in an information system integrated into the budget.

→ refine process

- ?

/ ?

4. While There Are Relatively Few Examples of Data-Based Project Evaluations Within AID, The Examples Include Several Illustrations of Innovative and Cost Effective Evaluation Methodologies.

Our review and our own experience suggest that a number of low-cost data-based methodologies have been developed and used -- often quite effectively -- for purposes of project evaluation. Although it goes well beyond our terms of reference to catalogue or evaluate these methodologies, we do wish to observe that:

- (i) The best of these studies begin with a clear articulation of the operational issues or decisions to be addressed and the hypotheses to be tested.
- (ii) These studies employ a variety of creative measures to establish control groups and valid comparisons, often on a cross-sectional basis.
- (iii) These studies often make extensive use of sub-sampling within census or other existing data, particularly for baseline purposes.
- (iv) Many of these studies do address explicitly the issues of attribution.
- (v) These studies often make use of proxy indicators (e.g., methods for using wealth and changes in wealth to proxy or estimate income).
- (vi) The best of these studies are written up as brief reports in readable prose which address explicitly management and design issues related to impact.
- (vii) Because these studies normally involve major compromises with the methods and standards of traditional experimental or quasi-experimental research design, they are rarely documented in the evaluation literature.
- (viii) These studies typically cost less than \$100,000, and are often less expensive than "unstructured" approaches to evaluation.

5. Systematic Evaluation Efforts Have Been Generally Hampered by Several Systemic Factors and The Apparent Absence of Clear Agency Policy On, and Support For, Evaluation.

Certain of the problems contributing to the failure to complete or use project evaluations of the type performed by BuGen and others appear to reflect systemic difficulties with AID's evaluation system. While these difficulties have been much discussed and appear to be receiving active review, we wish to draw special attention to the following:

- (i) The absence of clear and consistent guidance on evaluation policy (e.g., which projects get evaluated and why, what questions should be evaluated, who is to use the information, etc.) appears to produce considerable confusion for those doing the evaluating and those expected to review these evaluations.
- (ii) The relationships between evaluation and accountability and between evaluation and project design are unclear, except in the special case of phased projects. It is very difficult to determine how best to evaluate a project in the absence of clear decisions as to why it is being evaluated.
- (iii) It appears that project evaluation activities would be more effective if they were either more fully integrated into project activities (as part of a management information system) or given greater autonomy (as part of an accountability system).
- (iv) If multi-round project evaluations are to be undertaken, some device should be identified for ensuring multi-year funding for these studies and for reviewing periodically the issues and hypotheses to be addressed. In the absence of multi-year funding, more attention should be paid to cross-sectional analysis of the "baseline" data in recognition of the high proportion of studies terminated after baseline data collection.
- (v) In certain cases, it may not be feasible to assess project impact meaningfully until several years after the completion of project implementation. This fact has obvious implications for funding and managing the implementation of such evaluations.

APPENDIX I

LIST OF INDIVIDUALS INTERVIEWED

Annette Binnendijk	AID PDC/ESDS
Stewart Blumenfeld	URC
Samuel Daines	SRDI
Edward Donoghue	AID AFR/DP
Jan Ennis	BuCen
Bernice Goldstein	AID LAC/DP
Molly Hageboeck	AID PPC
Mick Hartz	BuCen
Roma Knee	AID LAC/DP
Richard Martin	AID LAC/DR
Henry Miles	AID AFR/DP
William Menth	BuCen
John McCarthy	AID ASIA/DP
Maureen Norton	AID ASIA/DP
Leonard Rosenberg	AID NE/DP
Richard Solem	AID PPC/ESDS
Robert Zimmerman	AID NE/DP
Clarence Zurekas	AID ASIA/DP

APPENDIX II
CASE PROFILES

The following profiles describe briefly each of the cases reviewed in terms of their purpose, methodology, completion or non-completion, cost and apparent impact. Other issues or observations particular to each case are also noted. The cases are presented alphabetically by country.

COLOMBIA - NONFORMAL EDUCATION PROJECT

The purpose of this extensive field evaluation was to conduct an in-depth examination of the mode of operation and ultimate impact of a radio education program (ACPO, Accion Cultural Popular) which has served as a model for the development of most of the radio-based non-formal education programs in Latin America. As the oldest large-scale non-formal education program in the world, many programs, not just in Latin America, have looked to ACPO as a source of knowledge and expertise in this field.

This study involved a very elaborate design to randomly interview rural families, stratifying them according to clearly identified criteria, e.g., a certain number of direct users and a certain number of indirect users; served by a minimum number of program components, etc. A survey was first conducted to identify the families located in 60 municipios or villages selected through a stratification procedure from 940 municipios served in Colombia by the program. From an alphabetical listing of the families in these 60 municipios, 10 families in each were randomly selected for development of in-depth case studies.

The study design which began very rigorously was subject to innumerable changes and adaptations along the way. Information on file used in the initial selection of municipios turned out to be insufficient or erroneous -- municipios selected for survey could not be located or consisted of only two or three families. Assumptions made about the degree of accessibility to questioning or campesinos proved faulty. In practice it was found impossible to differentiate between direct and indirect users.

While the analysis of the findings did indeed indicate that the program had considerable impact on the lives of its target audience, causality linkages did not clearly emerge indicating what worked or how it worked. The study cost between \$500,000 and \$1 million. There is no evidence to indicate that the results of the study have been utilized by the Colombian or other non-formal education programs.

What did study?
multi-annual?

EL SALVADOR - SMALL FARM IRRIGATION PROJECT

While not technically a project evaluation, this feasibility study is relevant because it employed a sample survey evaluation methodology to prior irrigation efforts in order to establish the probable impact of proposed irrigation activities.

The study was carried out in 1978 by Samuel R. Daines and Dale Allred. The methodology used for the financial and economic analysis of the project made extensive use of sub-sampling from existing census tapes in the country. The 1971 census of El Salvador identified 2,525 irrigated farms, each of which was extracted from the census tapes and placed on a separate tape as the "experimental group". A computerized process was then employed to match each irrigated farm with a randomly selected, non-irrigated, farm within the same census tract (i.e., within a very small distance of the relevant irrigated farm). Farms larger than 10 ha. were then excluded from the analysis.

The financial and economic analysis of the data was based on a with/without comparison of production, productivity and income of irrigated vs. non-irrigated farms. The results of these comparisons were used to estimate the potential impact from proposed irrigation activities. The study found substantial potential economic gain from small scale irrigation investments.

The study also used a random sampling technique to assess technical feasibility (i.e., irrigation potential and cost). The existing area frame sample of the county was used as a pre-list from which to select 40 segments randomly distributed in all regions of the country. Using aerial photographs and field reconnaissance, an expert investigator then estimated the

area in each segment which could be irrigated using gravity techniques. Expansion factors supplied by the Ministry of Agriculture were then used to expand these estimates to the national level and adjustments were then made to exclude larger farms from these projections.

Overall, this study cost less than \$100,000 and was used as a basis for designing a significant small scale irrigation project in El Salvador.

GHANA - DANFA PROJECT

The purpose of this well documented study carried out between 1970 and 1979 in Ghana was to test an explicit hypothesis concerning the most cost effective means of delivering family planning services. Four matched and proximitous geographical areas were selected, one to receive family planning as part of a comprehensive health program, a second to receive family planning services alone, a third to receive family planning services plus health education (motivation), and a fourth to serve as a control. One thousand households were randomly selected for intensive survey research. Six multi-round surveys were administered three times each to this group. In addition, annual demographic surveys and a continuous register of vital events were administered to the entire population of the region. The survey research was conducted by UCLA and the Ghana Medical School who administered the overall project. The multi-round surveys consumed between \$300,000 and \$500,000 of the project's 6.25 million and additional data collection activities cost a further \$1 million. Similar efforts were carried on during the same period in India and Thailand.

This project evaluation was unique in three respects. First, research and explicit hypothesis testing were the major objectives of the entire project, not merely of the evaluation. Second, the major hypothesis the study was designed to test was essentially abandoned mid-way through the project when conventional wisdom worldwide shifted to concede the point being examined -- i.e., that family planning services are most cost effectively administered as part of a comprehensive health service package. At that point (1975) the project abandoned its original rigorous research design and concentrated instead on testing and demonstrating the best way to deliver the

comprehensive package.* And third, the data collection conducted by the project, despite its regionally limited nature, nevertheless constituted by far the most extensive and meaningful data on rural health in Ghana.

It appears that this very elaborate and systematic research served two major purposes. First, it reconfirms empirically the new conventional wisdom concerning the delivery of family planning services and contributed to changes in practice in Ghana and perhaps elsewhere. And second, it provided the data base and incentive for establishing an ongoing health planning unit within the Ministry of Health. It has been questioned, however, whether the considerable amount of time and money expended on this research activity were justified given the diminution of interest in empirical testing of the original hypothesis.

* In spite of this change, project personnel insisted on conducting the final round of the original survey (in 1977) and on analyzing the results of the longitudinal analysis, and did so despite the initial reluctance of AID personnel.

GUATEMALA - BASIC VILLAGE EDUCATION PROJECT

The Basic Village Education (BVE) Project of Guatemala was designed to test the effectiveness of several different media combinations in producing changes in knowledge and behavior in a population of subsistence farmers. The project was developed as a rigorous field research study with designated experimental and control conditions replicated in two different geographical and cultural areas. Radio was used alone and in combination with various other communications media to study the effectiveness and relative costs of selected media mixes potentially useful in development programs. Under all conditions of treatment and control a baseline survey was conducted before programming was begun. The programming was applied as an independent variable and post-testing was done for the measurement of impact. During the process, sub-samples were selectively studied for immediate feedback to the program. A total of 15,000 individual interviews were conducted.

Results of the rigorous evaluation indicated that measurable change does indeed take place over a two-year time span, the period of the experiment. Findings also indicated that all BVE media combinations (radio alone; radio and monitor; radio, monitor and agronomist) had measurable impact on knowledge about, attitudes toward and/or use of modern agricultural techniques. It appeared from the findings, however, that there is no single most effective media combination for all situations.

Since the entire project was an experimental research study it is difficult to segregate the study component from the educational component, but it is estimated at over one million dollars. There is ample evidence to suggest that the study findings had significant impact on the content and evolution of the program, but the study failed to provide conclusive

evidence on its original research hypotheses and there is no evidence to suggest that the findings have been particularly relevant or useful to other radio/nonformal education programs, beyond positive reinforcement for use of media.

who did study?

INDONESIA - SURAKARTA WATER PROJECT

This evaluation was intended to establish the impact of a major AID infrastructure project. This information was to contribute to overall knowledge about the impact of this and similar projects. The relationship of this evaluation to any set of pending operational or funding decisions is not clear.

The study was conducted by an evaluation team from Cipta Karya with guidance and assistance from BuCen. It was designed as a multi-round sample survey, addressing questions of quality and quantity of water availability to the household, household members' feelings about their water supply, economic impacts of the water on the household, and health effects.

The methodology to be employed included a baseline survey in 1981 and a follow-up survey in 1983 or 1984. The surveys were intended primarily to compare households in service areas (i.e., areas receiving the water) before and after receiving the water. Control areas (i.e., areas not receiving water) were identified for additional comparison and for assisting in the statistical control for changes not related to project interventions. The baseline study also identified those households within the service area that were already receiving water prior to the project and made some rough comparisons with other households in the area.

Employing a quasi-experimental design, the study proposed to assess the difference between the observed changes in indicators in the population or groups receiving the "treatment" (i.e., water) from changes observed in a matched "control" group over the study period.

In the baseline study, area frame and other sampling techniques

were used to select a probability sample of 900 households in 318 geographical clusters. Questionnaires were then administered to these households and the results were analyzed and published.

Following the baseline study, a decision was made by AID not to fund the follow-on portion of the study.

Activity by BuCen under this project included substantial assistance to Indonesian researchers in building individual and institutional capacity to design, conduct and analyze sample surveys. BuCen officials estimate that this institutional strengthening aspect of their involvement essentially doubled the level of effort that they would normally have required to manage such a study themselves. Expenditure on this evaluation study was between approximately \$450,000 and \$500,000 at the time the study was terminated.

We were not able to assess the use being made in Indonesia of the baseline data^{or}_^ of the strengthened capabilities of Cipta Karya.

Why not fund follow-on?

MOROCCO - LOWER MOULOYA IRRIGATION PROJECT

The purpose of the evaluation was to determine whether AID should be involved in large scale irrigation projects. The cost of the evaluation was between \$300,000 and \$500,000. It was conducted by the University of Minnesota and was the result of an unsolicited proposal by Robert Holt.

The project had been underway for three years before the baseline data was collected. The evaluation team went back through historical information in an attempt to establish what might have happened without the project. Complicating the data collection effort was the fact that not only was there little data available but there were two languages involved (Spanish and French).

Data was collected by sample survey in a variety of areas and control groups were used to measure the effect of the irrigation scheme on beneficiaries.

Although considerable data was collected by means of sample surveys the evaluation overall is considered controversial. Several people were interviewed but little was learned since there was no single informant who could speak from experience about this evaluation.

)
implied Holt?

PHILIPPINES - PROVINCIAL WATER PROJECT

Of the several sample survey project evaluations AID has asked BuCen to perform, this study is the only one to be funded through completion. It thus provides perhaps the best available evidence on the nature, limitations, cost and results of multi-round sample survey evaluations of this sort. The study was explicitly mandated as a precondition to additional AID funding for water project activity in the Philippines. The stated purposes of the evaluation were to:

1. provide information on the health impacts of improvements in water systems;
2. assess the performance of the LWUA in constructing and maintaining the water systems; and
3. establish a framework for the evaluation of future water projects.

The nature of the study is further described in the executive summary of the baseline report as follows:

The evaluation was designed to address important questions concerning the effects of providing improved quality and availability of water to households in the two provincial towns. In particular, it will examine the actual changes, if any, in the quality and availability of water at the household level, the uses made of this water, the effects on health, nutrition and sanitary practices, and other impacts of the project. The evaluation will also investigate statistical relationships among many of the variables included in the study and the health and nutrition indicators in order to attempt to "explain" the effects of these variables on health and nutrition.

Data were collected by means of 10 household surveys conducted over a four year period. These surveys included a baseline study (2,500 interviews), eight smaller scale monitoring

surveys (250 interviews each) and a follow-up survey (2,000 interviews).

Primary responsibility for the evaluation was given to the Research and Evaluation Division of the Philippines Local Water Utilities Administration with technical assistance from BuGen. A major intent of the study was to institutionalize within the Philippines the skills and procedures for routinely conducting such evaluations.

The cost of the entire study was between \$700,000 and \$1 million.

results? / Important to see something since only
example of completion of a multi-round survey
→ validity? usefulness for management decisions?

SENEGAL - JOINT ASSESSMENT

This evaluation was conducted jointly by USAID/Senegal and the Government of Senegal. It was unusual in that it examined the entire program in Senegal and included four separate AID projects: dryland cropping, irrigated agriculture, livestock and village health. This "program assessment" examined the four projects in the overall context of the economic situation in Senegal.

The findings of this assessment were to be used in subsequent program and project planning. The evaluation team included members of AID/Senegal staff, officers of the GOS and a BuCen professional. The evaluation team maximized grass roots participation by involving GOS and AID officers responsible for project design, implementation, evaluation and policy. This collaboration resulted in increased contact and significant relationship building.

The "grass roots" effort in this evaluation took the form of a sample survey taken by questionnaire of the beneficiaries of two of the projects, livestock and health. A random selection process was considered but in the final analysis a census was conducted of 60 livestock beneficiaries and 400 beneficiaries in the health project.

Although the planning for the survey and the budget for it were minimal, the results had a significant influence on the redesign of all four of the projects. While it was deemed too early at the time of the evaluation and the sample survey to measure the impact, all four projects were ready to be refunded and refunding/redesign decisions were in fact based on the evaluation.

SRI LANKA - PL480 NUTRITION PROJECT

The purpose of this evaluation was to assess the nutritional impact of the PL480 feeding program in Sri Lanka and to determine the cost effectiveness of the several components of the program. More specifically, AID had several operational questions (e.g., whether the rations size provided was sufficient to produce desired nutritional effects). The answers to which would influence the nature and level of their future support for the ongoing feeding program of the Sri Lanka Government. In addition, the Sri Lanka Government had a number of operational and policy issues they wished to address in a systematic way through this evaluation effort.

The study was conducted in 1982 by the Community Systems Foundation. Teams of local data gatherers working with CARE visited selected clinics to retrieve longitudinal records on program participants. Data was collected on 1799 children in 42 clinics. The research design entailed a comparison of the nutritional status of children of a given age who had been receiving services for a sustained period of time to the nutritional status of children of the same age who had had less exposure to the program services.

While the research design and methods were less than fully rigorous and relied extensively on the use of retrospective records to conduct longitudinal analysis, individuals both in AID and in the Sri Lanka Government have found the data to be an adequate basis for making major policy and programming decisions.

The study cost between approximately \$80,500 and \$120,000 to complete.

THAILAND - LAND SETTLEMENTS PROJECT

The intended purposes of this project evaluation were:

- (1) To observe and document actual project implementation.
- (2) To examine immediate project effects and impacts, and
- (3) To measure long-term project impacts on the target population in the eight land settlements.

The methodology to be employed was similar to that described in the Indonesia water and Philippines water cases described above. The study was to be undertaken by Khon Kaen University in Thailand with technical assistance from BuCen.

Project implementation began in 1981 and shortly thereafter a baseline survey was conducted. The stated objectives of the baseline study were threefold: (1) to provide measurements on project-relevant characteristics and behavior in the study population prior to project implementation which can be compared with post-implementation measurements of the same variables as a means of evaluating the impact of the project, (2) To assess the extent to which the comparison groups to be studied differ prior to implementation so that observed differences can be taken into account in evaluating the impact of the project, and (3) To describe the study population with respect to socio-economic and demographic characteristics, economic activities, agricultural practices and productivity, and other relevant characteristics.

Multi-stage, stratified cluster sampling of villages followed by systematic random sampling of households was used to identify 1,485 households to be interviewed.

As with other BuCen assisted studies, considerable attention was devoted to sampling design, survey procedure and statistical analysis/interpretation of results.

Following the baseline study, AID decided to terminate its original plan to conduct follow up surveys on this project. It is unclear at this time whether or not Khon Kaen University will continue this project. This decision appears to have been related to the cost of initial activities, between \$150,000 and \$250,000 and the fact that the cross-sectional analysis included in the baseline study satisfactorily addressed several of the design and impact issues which the study had planned to investigate longitudinally.

We were not able to assess the use being made in Thailand of the baseline data or the strengthened capabilities of Khon Kaen University.