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Memorandum

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FROM : ASIA/DP/E, Gail Heston GH

SUBJECT: Debriefing: Checchi Project LUWU Evaluation Study

Attached is the supplemental paper prepared by Mr. Manly of Checchi which I referred to in the notice of the debriefing dated July 1, 1980.

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SUPPLEMENT TO THE
PROJECT LUWU EVALUATION STUDY

CHECCHI AND COMPANY
July 1980

PREFACE:

The purpose of this supplement is to expand on the methodology used in the special Project Luwu Evaluation Study and the favorable findings that resulted in the face of the criticisms that the project had been encountering. The question under considerations is thus, whether the findings truly measure project progress or whether there are methodological weaknesses that leave the criticisms unanswered?

I. PROJECT DESCRIPTION

Project Luwu proposed to improve the well being of small farmers by raising production per farmer to achieve marketable surpluses, increases in real incomes, and improved local per person consumption. The approach adopted was large scale, US$43 million, and multisectoral in an attempt to achieve interactive synergism. That is, four ministries and their directorates general were asked to act cooperatively so that the total effect would be greater than the sum of individual effects, if taken separately.

Kabupaten Luwu was selected as the project location because rural incomes were low, farm ownership was rather uniformly small, it was an approved transmigration area, and was topographically isolated. Together these features raised the probability that changes over time due to project implementation would be sufficiently large relative to other factors so they could be readily identified.

Six interactive projects, frequently called subprojects, were funded by the GOI (65%) and AID (35%).

1. Transmigration of farm families from overly congested areas of Indonesia

2. Irrigation of farm land to overcome frequent deficiencies in rainfall for agriculture

3. Rural extension or knowledge centers (RECs) to transfer modern agriculture technology to farmers

4. Farm cooperative centers (FCCs) to assist farmers in receiving modern supply inputs advantageous processing and marketing of their surplus outputs and credits

5. Road improvements to facilitate communications and raise real incomes by lowering transportation costs

6. Headquarters operations to assist in coordinating the many project activities

In addition, the GOI previously had funded separately and put into operation two projects, without which, synergism would have been much reduced.

7. BULOG grain program to purchase surplus rice so as to stabilize prices on the down side

8. Bank Rakayat to provide readily available farmer credits

Development economics has long recognized the multiplier effect of credit-investments in favorable situations but has always had trouble quantifying them except in aggregate terms. Small-scale agriculture increases the problem through the multiplicity and wide distribution of loans in almost random patterns. The isolation of Luwu tends to consolidate aggregate phenomena and encourages spontaneous credit-investments as selected by the rural community to increase production and consumption in a most effective manner.

Kabupaten Luwu extends over about 25,000 square kilometers and the population was increasing slowly from about 315 thousand in April 1971 to some 391 thousand at the beginning of project implementation in January 1976, when 79.5% of the people lived on food farms. The cultivated land at this time was about 2% of the total area, much of which was mountainous and not well suited to agriculture. Nevertheless, there was still much unsettled land that could be used to increase cultivated areas two or three times with proper treatment and investment.

II. PURPOSE OF SPECIAL EVALUATION

The purpose of the special evaluation effort undertaken in August 1979 some 43 months after project implementation got underway, was asked to address a number of evaluation questions that had arisen as the project progressed.

1. Review Hasanuddin University evaluation reports.

2. Review Logical Framework Matrix and revise, if necessary.

3. Investigate available data and sources.

4. Identify key subproject data.

5. Identify useful information that could be gathered and analyzed in a cost-effective fashion.

6. Develop an evaluation strategy built upon the above information, data and circumstances.

7. Implement the strategy with current data and recommend staffing and method of carrying on the program.

A review of progress reports showed that attention was being focused on management and field problems that were resulting in slippage both to inputs and outputs. This situation was leading to friction between directorate generals as well as dissatisfaction among mission staff. It had progressed to the point where replacement of the project manager was being seriously considered.

Upon arrival in Palopo, the designated special evaluator soon recognized that partial analysis and evaluation was the root problem on which much of the difficulties rested. The farm and community point of view was not being evaluated or reported. The needed strategy was immediately clear. Any approach adopted had to measure farmer benefits as well as the many other factors, within the time and resources available.

This concept developed its own problem for several reasons. It appeared to the project management as duplicating the work of the Hasanuddin University team, which had been criticized by a Cornell University review group and emotions were involved. Further, the strategy adopted involved using the large data base available in government offices rather than the more costly and time consuming survey techniques that have their own reliability problems.

III. METHODOLOGY

The evaluation methodology adopted closely follows the standard AID design for such studies [1], with two major excertions as illustrated in Exhibit A. The sampling technique was replaced by strata according to independently observable criteria, and a time series was added preceding the start of the project. Both changes were carried out in a standard statistical manner.

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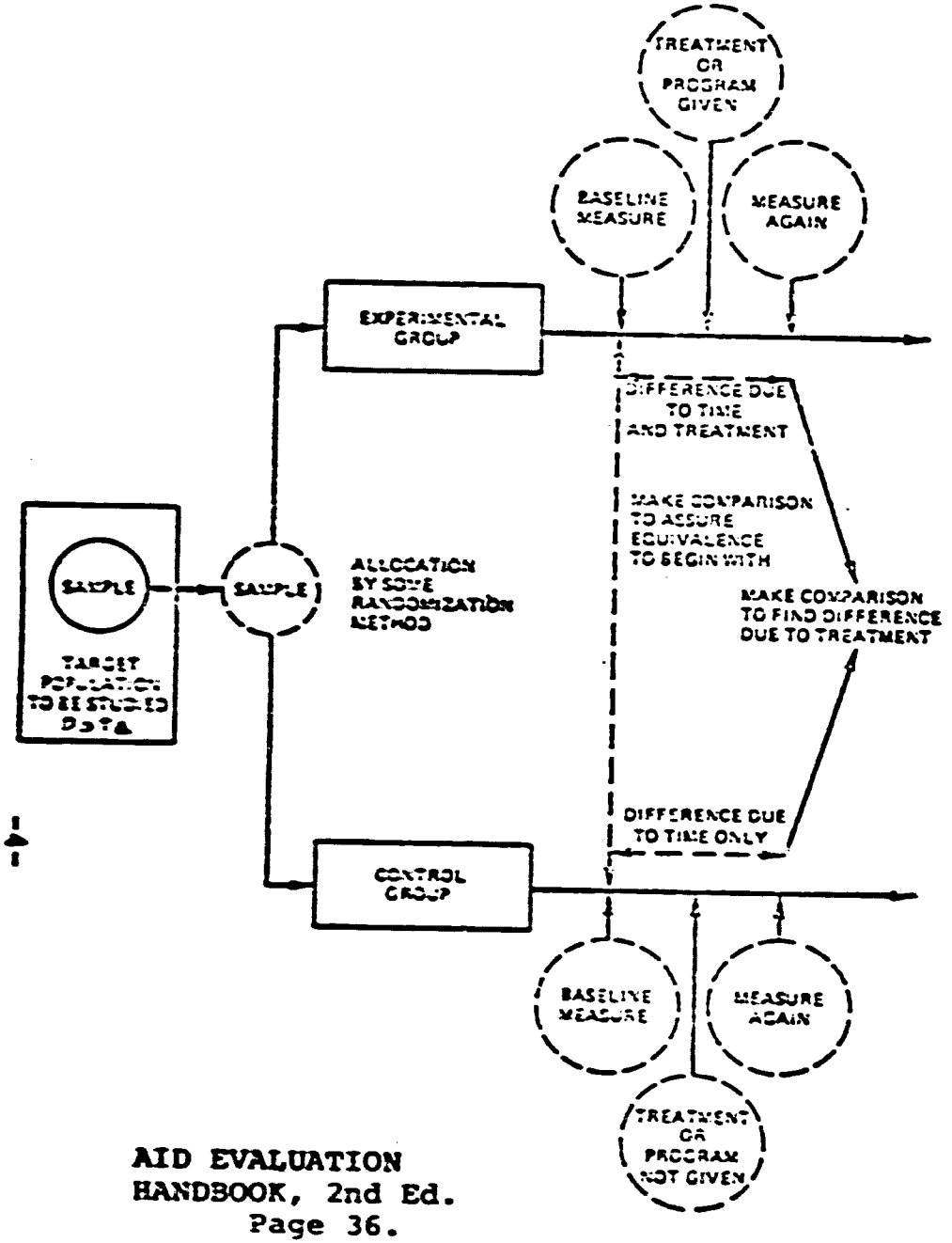
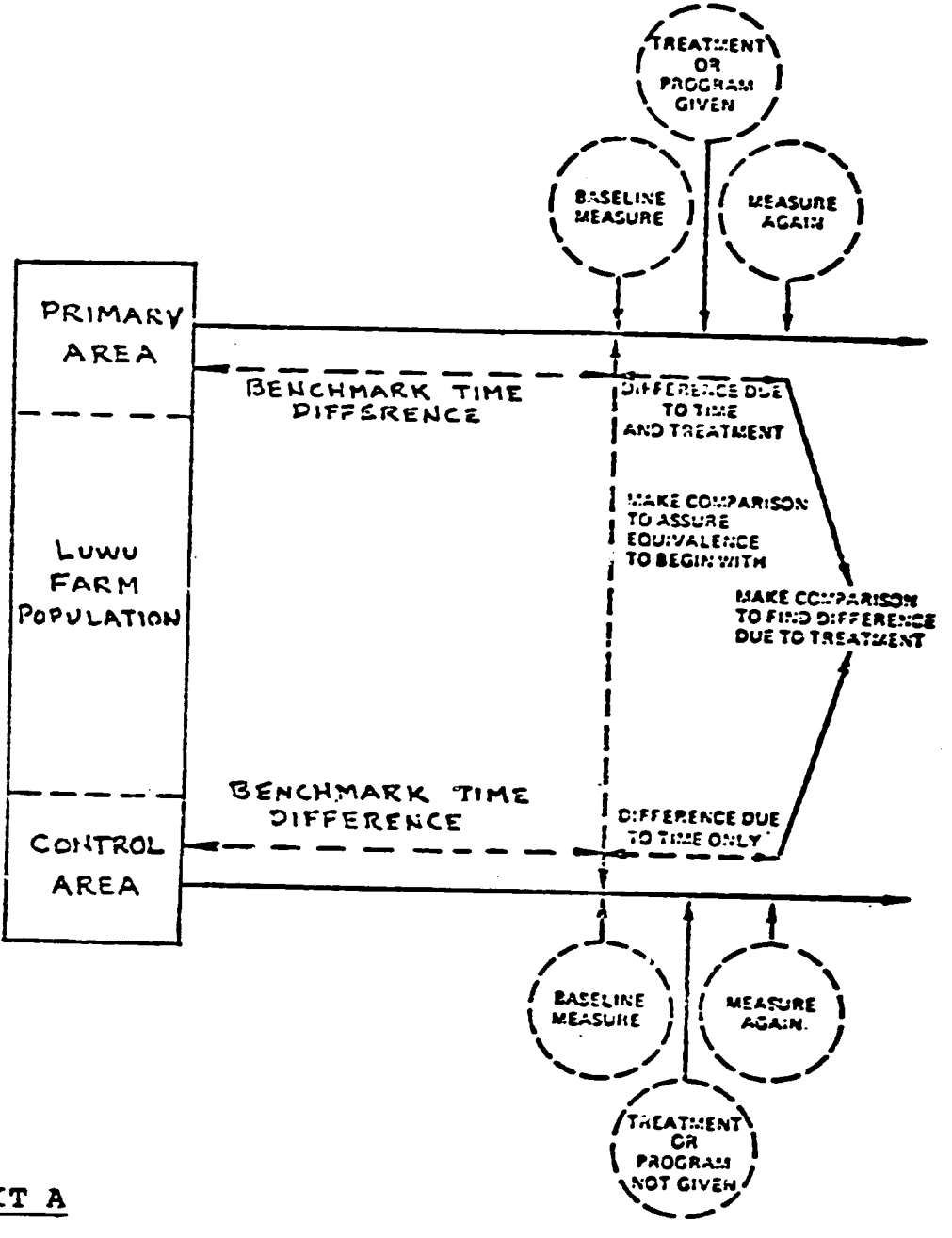
[1] Evaluation Handbook Second Edition; Agency for International Development, Washington, D.C., September, 1976, p. 36.

"IDEAL" STUDY DESIGN FOR MAKING COMPARISONS



LUWU DESIGN APPROACH

PROJECT LUWU EVALUATION STUDY



AID EVALUATION HANDBOOK, 2nd Ed.
Page 36.

EXHIBIT A

Benefits Allocation

The special evaluation study measured subproject performance in terms of the planned schedule of fund inputs and physical outputs compared with actual disbursements and field accomplishments. This is a partial evaluation that highlights slippages often due to circumstances beyond the control of subproject managers. They, of course, would like to have the evaluations also measure accompanying benefits.

Industrial and other highly-controlled and bounded projects do lend themselves to such treatment. Agriculture and social projects such as Project Luwu are quite the opposite. Their parts interact in unpredictable ways and their influence and benefits often extend far beyond normal project boundaries. For example, the Bone Bone FCC developed a grain market in Palopo that originally benefitted its members through higher prices than offered by BULOG, the government purchasing organization, but it was soon observed that non-members were also enjoying such benefits. At the same time the road improvements were lowering transportation costs for the grain delivered. In turn, non-participating farmer groups in the project area were encouraged, as intended, and obtained needed credits from government-sponsored banking institutions in order to increase production and take advantage of the project-generated situation.

If only the FCC costs and the direct member benefits are taken into account, the cost-benefit ratio is understated and the subproject manager is again unhappy. If, on the other hand, the area-wide improvements are measured as in the special evaluation, how are the additional benefits to be fairly distributed to the road, the credit institutions, and BULOG which maintained a floor price for the grain in the first place?

As a matter of fact, considering only direct benefits in open-ended agricultural situations is not an equitable method of measuring effectiveness or the effort that goes into them. In this regard, Project Luwu offered a rare opportunity to attempt the broader evaluation technique of stratifying a large population in a manner that, if successful, could be applied to other projects in less well-defined areas.

The advantage in the case of Luwu arose because its economy is isolated by surrounding mountains and the sea. Channels of trade with other areas are strictly limited, and the volumes moving were traditionally recorded. As a result, economic changes could be identified, and through an appropriate methodology active and less-active sub-areas could be compared so as to measure net changes attributable to the project.

It would thus seem that sub-project managers are better off being associated with a broad measure of project benefits than with only their relatively small direct benefits. This is certainly true for project sponsors and overall managers. The

trade-off is thus between a direct benefits methodology that under measures project impacts and one that includes more broadly based area benefits on the basis of sound statistical strata and inferences.

If the time and resources had been available to measure direct sub-project benefits using survey techniques as well as the strata approach, the differences could have been quantified. A survey of the associated but non-project participants might also have been undertaken to narrow the differences. Nevertheless, the problem of assigning non-participant benefits to individual subprojects would have remained arbitrary because these questionnaire respondents cannot be expected to weight accurately the benefits due to sub-projects.

Strata Criteria

The locally available data covered nine discrete time periods and was organized by sixteen kecamatans with political boundaries within Kabupaten Luwu. Relating these kecamatans to project activities identified three strata.

- Primary project area
- Palopo market area
- Other areas

These area strata are illustrated on the map, Exhibit B.

The Primary Project area is distinguished by being concentrated in three kecamatans with one quarter of the Luwu farm population, all of the project transmigrants plus most of the transmigrants who came under other projects, all of the irrigation project, four KECs, four FCCs, and about half of the road project.

The Palopo market area is also concentrated in three kecamatans and includes the one major urban community in Luwu. The headquarters project is located in Palopo and complements the market characteristics. The area has one KEC, two FCCs, and about a quarter of the road length.

The Other area covers ten kecamatans while including only one KEC and a quarter of the road length. Though not as exclusively separate from the project as one could wish, the limited project activity makes it possible to consider this group of kecamatans as a comparative control area. To the extent that project benefits accrue to this area, they reduce primary benefits when, to arrive at comparative net benefits, they are deducted in accordance with the standard methodology adopted. The effect is to lower slightly project impact calculations,

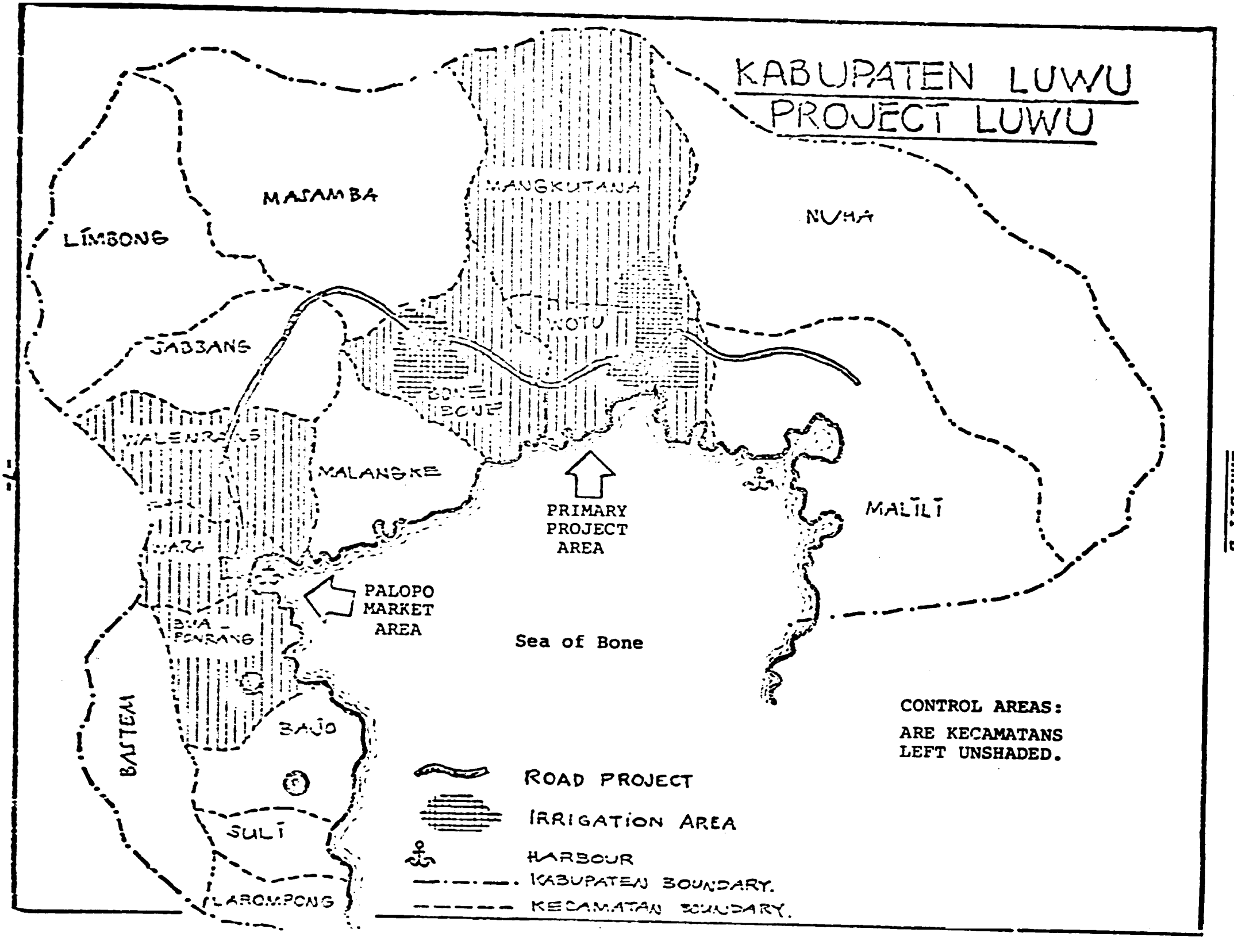

KABUPATEN LUWU
PROJECT LUWU
MASAMBA
MANGKUTANA
NUHA
LIMBONG
KOTU
JABBANG
BONE BONE
WALENRANG
MALANGKE
PRIMARY PROJECT AREA
MALILI
PALOPO MARKET AREA
BUA-PONRANG
Sea of Bone
BASTEM
BAJO
SULI
LAROMPONG
CONTROL AREAS:
ARE KECAMATANS LEFT UNSHADED.
ROAD PROJECT
IRRIGATION AREA
HARBOUR
KABUPATEN BOUNDARY.
KECAMATAN BOUNDARY.

EXHIBIT B

which serves to improve confidence in the results when benefits are high as they often are in interactive projects.

A Single Trend Line

A methodology expressing results as a single trend line may lower the indicated rate of change, as in the case of Project Luwu. The evaluator must, therefore, determine if a single trend line best represents the data or whether it actually masks the observable phenomena. Further, there is the need to analyze trends both with and without the project.

Given that Project Luwu was started within the nine data periods recorded, it is logically sound that the data trends prior to and subsequent to project implementation should be tested separately as well as overall. When this approach is adopted, the results clearly show a change in phenomena after the start of the project, as might be expected, and that a single trend line is less representative of the data than two trend lines. For example, the farmer income per person in the primary project area yields a coefficient of determination of r2 [2] equals 0.08 when treated as an undifferentiated single trend line. Dividing the data into before and after the start of the project yields quite different results with r2 values of 0.86 and 0.97 respectively. Thus, by the method of least squares the goodness of fit is at least ten times stronger than when the division is not made.

A reviewer of the methodology, nevertheless, recommended a single trend line through nine periods because the year before the start of the project was a poor one for agricultural production and the last data year was a particularly good one and together they supposedly made the project period trend line overly optimistic. In all probability both the averaging effect of least squares and the netting effect of control area methodology were overlooked in arriving at the above conclusion. The methodology of least squares permits calculating an estimated average figure for the beginning of the project period. In this case the figure was about 3% less than for the previous two years so the results were not overly biased on this account. Regarding the second point, the control area experienced the same good harvest and as its rate of change is deducted from that of the primary project area, the harvest effects are cancelled out so the results were not overly biased on this account either. What the methodology really identified was the effect of population mobility when there is a chance to benefit from a multi-sector, interactive project.

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[2] r2 = a statistical calculation indicating the goodness of fit of a line fitted to the data by the method of least squares.

The control area farm population increased 2.2% annually for five years prior to the project, the primary area farm population increased 9.7% annually. This population increase according to the data and reports was about two-thirds transmigrants who were recipients of food and other assistance, which helped them to subsist until project implementation got under way and after which food production per person increased sharply. The benefits were worth waiting for and may be reasonably attributed to the project. The overall and two trend line methodologies adopted do not appear to be contradicted by the evidence gathered.

Two Time Series

The benchmark time period [3] preceding the start of the project was added to the methodology so that seasonal variations, so typical in agricultural data, could be minimized in establishing baseline measures by linear regression techniques. Evaluators may elect to use the raw baseline data to save time and effort, or when earlier data is not available, but confidence in the results is thereby lowered. The special Luwu evaluation was judged to require the extra effort.

The benchmark time period has an additional advantage in that it provides longitudinal insights of changing conditions prior to the project. For example, the incomes per person at the start of the benchmark period were nearly equal in both the primary and control areas. Subsequently, the control area incomes improved prior to the start of the project but incomes in the primary area declined. It was for this very reason that Project Luwu was targeted in the primary area. This increasing income gap and the implications for evaluation are worthy of consideration using the following simplified data set as derived from the study.

ANNUAL INCOME PER FARM PERSON IN US DOLLARS

Year		Primary area	Control area	Income gap
1970-1	) Prior to	41	41	-
	)- project			
1975-6	) (actual)	26	53	- 27
1978-9	(projection if no project)	18	61	- 43

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[3] The baseline and benchmark curression used here have their meaning reversed as compared with the study report.

If the project had not been implemented, serious conditions would have developed in the primary area with an income gap of possibly $43 per person. The project was implemented, however, and recorded results showed instead that the income gap narrowed to $9 per person.

1978-9 (recorded)	55	64	- 9

Without the baseline data the project benefits appear as $18 per person.[4] With the expanded data effort, however, a potential benefit of $34 is indicated. The lesser figure completely misses the early downward trend in the primary area. In order to accept the higher figure, however, it must be assumed that the down trend would have continued. This is difficult to establish in view of the sharpness of the decline. What can be said with some certainty is that confidence in the $18 gain has been increased by this added analysis.

Data Processing

The following subsections are set forth in the order of data collection. This order was adopted to fit the methodology to the Logical Framework as an evaluation standard and by minor modifications to fullfill the purpose of the study. Methodology comments are added to assist procedural description. The sources of data are listed in Figure 13, page 66, of the study report.

A. Goal Data

Emphasis on goal data is needed to develop strata characteristics and measure farmer incomes according to the basic methodology for project and control areas. Detailed time series of the goal data are presented in the study report annex.

1. Population

Total Luwu population by kecamatans was used to develop food farm populations as the target and control groups.

2. Hectares

Hectare data in conjunction with food production data was developed in order to observe changes in yields over time and in response to extension and cooperative technological inputs.

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[4] The calculations are as follows: $55 less $26 equals a gain of $29 per person in the primary area from which a $11 gain ($64 less $53) is deducted to arrive at a $18 net gain attributable to the project.

3. Food production and prices

Changes in food production over time are the basis of farm income calculations and require comprehensive treatment. See Note below. Prices in 1978 were applied to all productions to remove the effects of monetary inflation while recording the benefits from changing crop patterns.

4. Purchased inputs

Technological inputs changed in response to extension and cooperative efforts but must be deducted to show net benefit to farmers from increased production.

5. Food imports and exports

Food consumption equals production plus imports less exports. The balance between food imports (+) and exports (-) either adds to or reduces net food consumption.

Note: Is a one crop indicator equally effective?
The study methodology adopted included analysis of a broad range of farm crops and livestock known to be produced throughout Kabupaten Luwu. Available data covered 34 such commodities. An observable feature of these data is that rice as a proportion of income per person in constant dollars has been declining at an annual rate of about 2% in both the control and prime project area. On the other hand, the seasonal variations of rice production in the control area has been much less than in the primary project area where low production was particularly acute just before the start of Project Luwu. The effect of this variation resulted in benefits due to rice alone increasing at a 35% annual rate as compared with the 20.1% using the broader range of farm commodities. Thus, rice production as a surrogate for farm income would have lowered the confidence level in the final results.

B. Purpose O&M Data

Purpose in the logical framework is often a near duplication of goal objectives. It has been focused in this study on project operations and maintenance as being necessary during the active life of the project. When the evaluators asked the subprojects for their O&M budgets it was as though a new chapter in project planning had been opened. Local government was apparently unaware of the obligations for future taxation and funding that was being incurred. Overall this change brought project management and local government officials into much closer contact than previously.

1. Manuals Produced

The number and completeness of O&M manuals need evaluation to insure realistic and on going budget preparation.

2. Budgets Planned

Determining O&M costs as the project progresses concentrates the attention of management on often overlooked field problems.

3. Funds availability

Determining sources of funds to keep the project functioning after the implementation phase is completed intensifies attention and brings user relationships into much finer focus. Potential problems may be resolved much earlier by these means. The proportion of funds committed to budget costs is a measure of the needed understanding. See page 55 in study report for details.

C. Output Data

1. Scheduled outputs

Scheduled outputs are of two kinds. See page 47 in the study report. There are the originally planned outputs and there are revised outputs. Both are important but they lead to much controversy and defensive statements by current implementors to the effect that, "The CAP is not important". More attention ought to be devoted to clarifying the reasons for output revision because of their importance to evaluation.

2. Accomplishments

The reason for the above comment is readily appreciated when accomplishments as a percentage of scheduled outputs are reviewed. Revisions change the percentages and the time period in which accomplishments are to be achieved.

D. Input Data

1. Scheduled inputs

See page 42 in the study report. The AID inputs follow a rather standard format but local currency treatment is more complex in practice when a portion of the costs of these inputs is reimbursable by AID. Considerable difficulty may arise in determining the output portions that are reimbursable and those that are not. The data shows DIP/M as the input not reimbursable and DIP/B as the reimbursable portion.

2. Disbursements

Determining disbursements is an interesting exercise because accounting practices follow their own classifications that may not coincide with the real world in the field. Disbursements as a percentage of scheduled inputs are a measure of project progress to be further compared with output percentages. As above revisions usually cause slippage, the reason for them needs to be stated.

IV. FINDINGS AND RECOMMENDATIONS

Findings

a. The net rate of change in farmer income per person in the primary project area, the target group, and attributable to the project was found to be increasing 20.1% annually.

b. The gross rate of change in income per person in the same area was found to be 24.4% while that in the control area was 4.3% and is deducted for a net of 20.1% as above.

c. The levels of income per person in the two areas were found to have changed from the beginning of the project to the end of third year as follows:

	Income per person in US dollars in March of each year			
	Prior to project		Project period	Gain
	1971	1976	1979	76-79
Primary project areas	41	26	55	29
Control area	41	53	64	11

The net gain per person attributable to the project is $18 per year or the difference in the above gains.

d. Another purpose achieved was in jobs created which were estimated to be 6040 as shown on page 39 in the study report. With 34% of the project funds disbursed (see below) the investment is about $2430 per job.

e. The percentage of O&M funds estimated to be available is shown on page 55 of the study report. Except for road

maintenance the results are in the 80 to 90 percent range and should improve as more work is done in this area. Special attention must be directed to funding of road maintenance.

f. The percent of outputs accomplished at the end of the third year varied from 100% to less than 1%. The ratio of outputs to expenditures, however, was nearly 1.0 except for the Farm Cooperative Centers (FCCs) where the outputs were rescheduled to concentrate on Bone-Bone without increasing the funds for other centers.

g. The funds disbursed as a percentage of those scheduled were found to vary from 18% for the road to 100% for the headquarters. Much of the delay was due to revision of plans in face of site conditions. For example, land clearing for agriculture was insufficient for the irrigation works as planned; the road also proved to be under-designed in the face of surface water conditions experienced soon after the start of construction.

> Note: Delays can be unnerving and generate dissatisfaction among project personnel at all levels. However, rural development is still very much an art because there are so many unknown variables involved. It is, therefore, important to maintain perspective between input disbursements, output accomplishments, and goal achievements. It is one thing if outputs are behind disbursements and few benefits are being generated and quite another if they are all moving ahead together. The three need to be evaluated regularly and not just the first two, if perspective is to be maintained and close cooperation among sub-projects achieved.

Recommendations

a. Subproject disbursement vouchers at the Directorate General level in the Ministry of Finance faced serious problems because of submission procedures, which, for lack of personnel, allowed vouchers for AID reimbursement to enter the system with insufficient or improper output documentation. In view of AID reimbursement delays caused in this manner, many project slippages were caused in the field. It would thus be well to support project finance officers, in projects of this type, by providing funds for a position in the Directorate General's office. Such a person would be expected to coordinate with the project finance officer and sub-project managers to see that vouchers for AID reimbursement were correctly documented.

b. Engagement of evalution contractors indirectly associated with multi-sector activities can introduce methodologies, which though sound, lack sensitivity to the problems of project input-output accountability. A suitable methodology needs a total systems approach comparable to the system being evaluated.

For example, a theoretical survey approach often requires a disproportionate amount of time and effort in converting the design into pragmatic survey documents that (a) gather factual evidence and minimize reliance on the memory of the respondents, (b) relate questions to project activities as a system as well as to beneficiaries, (c) are thoroughly tested and revised before use in the field, and (d) lend themselves to logical framework answers and are readily comprehensable to the AID approach.

A common arguement advanced in favor of surveys is that their data are more accurate than available government data. It is not so much the availability, as it is the level of detail that is being criticised. Working at the desired level of detail requires concentrated attention and cooperation with local officials, often in two languages, in order to obtain the wanted information. Suspicion and frustration frequently result. The usually unexpressed cause is to be found in evaluation funding where no provision is made to pay the small amounts needed for the extra work being asked of the local clerical staff. Evaluators, like many others, want all of the funds for themselves and recommending surveys is an easy solution where planners and managers are quite ready to accept the arguement that available data is inaccurate. What they are overlooking is the long time element in quality survey design and testing. They are perfectly willing to accept short time estimates that promise prompt answers, but which lead to even greater problems and inaccuracies or discouraging delays.

The special evaluation study demonstrated the relatively short time and lower cost of gathering and using local data and this method is recommended to AID for consideration. It is not an attack on surveys. Rather it suggests that there are situations where surveys may not be the best approach. Twenty five years ago this might not have been true but, today, in face of past AID and other institutional efforts and governmental response in experience and practice, to deny the extensive resource of usefully available data at the local level is a contradiction in itself.

A recommendable solution is to build small evaluation units into project headquarters groups and then contract with local and independent evaluation groups to review the methodology and calculations. A needed two-way technological transfer could be achieved in this way.

c. Continuation of the phased project is recommended in spite of slippages and the questions raised by a backed-up funds pipeline. The methodology provides the following reasons. First, the relationship between goal achievements and disbursements was found to be highly favorable. Second, funds remaining are producing outputs at a high level and will undoubtedly continue to increase benefits. Third, the delays

were of a largely unforseeable planning kind, a recognized element in development, and as they did not cause serious imbalance among inputs, outputs and goals (as already mentioned) they do not reverse the recommendations. Earlier methodologies that were applied did not include this concept of balance and told quite a different story.

V. POLICY RECOMMENDATIONS

a. The question of realism in planning input and output schedules has always been an interesting one. At the time planning is undertaken there is always the pressure of time, funds and opinions to be satisfied. Once approved, unforeseen and unforseeable field conditions intrude. Drawing a policy issue between these two positions as time passes becomes more awkward.

It would appear on the basis of this special evaluation that AID might well adopt a policy of making revisions more widely recognized and formally acceptable by designating the task to someone at mission level. To be told by mission personnel that schedules in capital assistance papers (CAPs) are wrong and should be ignored, is evidence of a problem that needs to be corrected. CAPs are usually seen by host country officials to be serious documents and to be treated differently by anyone is detrimental to project relationships.

b. The road sub-project was developed on the premise that the responsible departments could successfully prepare the designs and carry forward implementation. Undoubtedly the capacity was there but in the event the design was inadequate and there were serious implementation delays, following which a road engineering firm was engaged and progress was then made. The policy issue to be addressed is whether or not intermediate policy should be adopted. For example, if road consultants were engaged early enough to examine site conditions, review designs, then continue on to observe implementation, with deficiencies reported at each step of the way, they would be serving as continuous evaluators. A mechanism then needs to be included to resolve potential conflicts between facts and opinions in an amicable manner. In view of the large sums usually associated with road projects, evaluation efforts of this kind need to start at the beginning of a road project, and not long after problems have developed.

c. It is not quite clear if there is a policy issue between multi-sector, interactive project packages and single sector projects or not. Single sector project evaluation has evolved by concentrating on direct benefits to participants and accepting goal indicators developed by general economic measurements. The question of single sector interactive benefits is not thus

resolved. Shall we suppose that this is because the interaction of single projects is relatively small as some studies have indicated or because theory of measuring them is weak, which may actually be the same thing? In any case, goal progress can frequently be observed in multi-sector project areas that is certainly in excess of the sum of the direct benefits being reported for sub-projects. The present study approached this problem by adopting a methodology to measure the overall impact with the favorable results reported.

No attempt was made to measure the direct participant benefits, which would have resulted in a benefit difference equivalent to the indirect or interactive benefits. Following such a determination, if it had been made, the real problem of disaggregating interactive benefits in fair proportions to the sub-projects would have remained.

From this point of view, a policy to research methods of assigning indirect benefits to single sub-projects in an interactive group may be desirable.