

497-024200

2024B

UNITED STATES GOVERNMENT
PD-AAE-285
2-Way Memo

INSTRUCTIONS	
Use routing symbols whenever possible.	
SENDER: Use brief, informal language. Conserve space. Forward original and one copy.	
RECEIVER: Reply below the message, keep one copy, return one copy.	

Subject : Project Evaluation Summary

To : SER/MO/PAV
AID/W
Washington, D.C. 20523

DATE OF MESSAGE	Routing Symbol
11/16/79	PRO
SIGNATURE OF ORIGINATOR	
<i>Robert F. Zimmerman</i>	
TITLE OF ORIGINATOR	
Evaluation Officer	

BEST AVAILABLE DOCUMENT

FOLD INITIAL MESSAGE FOLD

Attached is a copy of PES for Sederhana Irrigation and Land Development Project I, Project Number 497-0242 for AID/W distribution.

REPLY MESSAGE

AGENCY FOR
INTERNATIONAL
DEVELOPMENT
NOV 27 11 51 AM '79
PRINTING SERVICE

From : Mr. Robert F. Zimmerman
USAID/PRO
Box 4
Jakarta, Indonesia

DATE OF REPLY	Routing Symbol
SIGNATURE OF REPLIER	
TITLE OF REPLIER	

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-147

1. PROJECT TITLE Sederhana (Simple) Irrigation and Land Development Project I			2. PROJECT NUMBER 497-0242	3. MISSION/AID/W OFFICE INDONESIA
4. EVALUATION NUMBER (Enter the number maintained by the reporting unit, e.g., Country or AID/W Administrative Code Fiscal Year, Serial No. beginning with No. 1 each FY) FY80-3			<input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	
5. KEY PROJECT IMPLEMENTATION DATES	6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION		
A. Firm PRO-AG or Emphasis FY 75	A. Total \$ 59.220 mil	From (month/yr.) June 75		
B. Final Obligation Expensed FY 75	B. U.S. \$ 23.7 mil	To (month/yr.) October 79		
C. Final Input Delivery FY 81	Date of Evaluation Review			

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., program, GFAR, PIO, which will present detailed request.)	E. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
A. Extension of TDDA to July 26, 1981 and of TDD to January 26, 1982 for Sederhana I.	AID/W	11/15/79
B. Obtain AID/W approval of and sufficient funding for TA contract	AID/W	11/15/79
C. A new critical path network (or similar alternative) should be prepared to incorporate USAID's experiences into a more realistic assessment of the timing of implementation and USAID participation.	Hawley/ Ackerman	12/31/79
D. The issue of whether or not USAID has a role to play in land-clearing and land-shaping activities related to Sederhana must be resolved by the GOI.	MOA/DGWRD/ USAID	
E. The validity of selection criteria for new subprojects should be re-examined and agreed upon in light of computerized questionnaire responses.	Warner/ M/Ismail (DGWRD)	January 1980
F. Completed manuals for O&M, water management, and Water Users Associations (WUA's) must be distributed by MOA to WUA's and appropriate local government representatives.	Drs. Tambunan, Mr. Otje (MOA)	12/31/79
G. A comprehensive Sederhana training program needs to be agreed upon with the GOI	Mr. Otje, Mr. Yunan (MOA)	
H. An evaluation of Sederhana beneficiaries should be carried out, including a focus on successes and failures of WUA's and possible alternate means of achieving beneficiary participation.	Ackerman, Warner, Rheingans, Barrau, Drs. Slameto (DGWRD), Mr. Yunan (MOA), Duelwel, Barrau, Ackerman, Hawley, Warner, MOA Okada	11/30/79 March 1980

9. INVENTORY OF DOCUMENTS TO BE REVISED FOR ABOVE DECISIONS	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT
<input type="checkbox"/> Project Paper <input checked="" type="checkbox"/> Implementation Plan e.g., CPI Network <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Financial Plan <input type="checkbox"/> PIO/T _____ <input type="checkbox"/> Logical Framework <input type="checkbox"/> PIO/C <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Project Agreement <input type="checkbox"/> PIO/P _____	A. <input type="checkbox"/> Continue Project Without Change B. <input type="checkbox"/> Change Project Design and/or <input checked="" type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)	12. Mission/AID/W Office Director Approval
William J. Ackerman, Project Officer Ir. Mamad Ismail, DGWRD Ir. Otje S.R. Bratamidjaja, MOA	Signature: <i>Thomas C. Niblock</i> Typed Name: Thomas C. Niblock Date: November 14, 1979

PART II

13. Summary

The project's purpose is to assist the Ministry of Public Works (MPW) and the Ministry of Agriculture (MOA) to establish relatively small-scale, technically unsophisticated (Sederhana) irrigation systems with the participation of farmer irrigator beneficiaries. The purpose of planning and constructing these systems is to enhance the incomes of farmers and the well-being of the rural poor in sub-project areas through increased food and other crop production. The Sederhana concept takes advantage of the numerous, previously unutilized fresh water streams throughout the archipelago by diverting them onto nearby arable lands by means of gravity distribution systems. Much of Indonesia's topography is appropriate for gravity systems, and the generally fertile volcanic soils are potentially productive year-round if the water supply is adequate. While the project encourages rice production, areas which receive limited water supply during the dry season can benefit from second crop production, for which readily available markets exist. In addition to the income and nutrition provided, alternating those crops with rice keeps the soil healthy and reduces the need for additional fertilizer for the rice crop, which is another economic benefit.

The construction phase of the Sederhana program consists of using labor-intensive methods to construct a diversion weir, primary and secondary canals, which constitute the major works, and which are designed to serve an area populated primarily by small land-holders (2 hectares or less). The MPW has the responsibility to operate and maintain the major works. Local communities are responsible for operating and maintaining the tertiary and quaternary canals.

Technical assistance and training, funded by AID, are intended to increase the competence of GOI professional staff to ensure better design and quality of the physical infrastructure. Thus, the Sederhana program is responsive to both the U.S. Congressional Mandate and the GOI's development needs as outlined in Repelita III.

Brief narrative on listed issues:

A. For reasons explained in detail in Jakarta 13517 (attached), USAID conveyed a GOI request to extend the TDDA and TDD for Sederhana by two years. AID/W has granted a respective extension for each date of six months. USAID finds this insufficient and is currently sending a second cable for approval of the original request.

B. USAID has also requested AID/W (Jakarta 14272) for 5 million in FY 80 grant funds for the continuation of technical assistance. After initial misunderstanding of funding requirements, USAID believes that AID/W now comprehends the level of assistance required to be effective, and in a subsequent cable is requesting concurrence of the original amount.

C. Need for a New CPI Network:

The application of the Sederhana program concept to hundreds of subproject sites throughout a country with diverse ethnic, social, religious, and political structures, and the coordinating of USAID activities and that of several GOI agencies have made the Sederhana program a complex and challenging undertaking with numerous problems. In the early stages AID's participation in the project was delayed because of negotiations for TA. As experience with the project increased, USAID became aware that many assumptions about how to achieve intended results were not necessarily correct. For example, organizing or establishing a Water User's Association in some communities can cause a conflict with the existing village social or administrative structure. Also, without the proper application of subproject selection criteria, some subprojects end up not irrigating cultivated land or are irrigating crops which do not require irrigation. Another difficulty exists in the inter-relationship of coordination, cooperation and responsibilities of the Ministry of Public Works (MPW) and the Ministry of Agriculture (MOA). A more comprehensive understanding of this relationship and interdependence of actions by various agencies, which could be provided by a new CPI, would improve insight needed for adjustments or alternative courses of action to guide the implementing of the program.

D. USAID Involvement in Land-Clearing and Land-Shaping Activities

Unresolved questions involving beneficiaries' and GOI's responsibilities, credit, land ownership, and titling have prevented AID from carrying out its original commitment to land-clearing and shaping. USAID is considering requesting AID/W approval to reprogram the Sederhana II funding commitment for this activity.

E. Selection Criteria for New Subprojects

USAID has just recently been given access to initial computer results from an MOA survey to evaluate present selection criteria; AID now needs to analyze these to determine the validity, applicability and utility of the criteria, and determine how

Doing?

well the questionnaire reflects criteria quality, and how the data are being interpreted. Once AID and the GOI have completed the analysis, the results should be communicated to rejected Sederhana sites to explain why that rejection took place. It is clear from field visits that local government officials and rural people often do not understand why certain subprojects are rejected.

F. Application of Manuals for O&M, Water Management, and WUA's.

Manuals for O&M (outlining responsibilities of both GOI and subproject beneficiaries), plans for water management, and the formation of Water Users Associations have been developed by project consultants and approved by USAID.

But are the manuals any good?

There has been an initial delay in transmitting final versions of these plans to the GOI because of problems in translating the plans from English to Indonesian. The timely distribution of these manuals and the effective application of the guidelines they contain appear crucial to the success of the Sederhana program. Once the manuals are in place, the next task will be to monitor implementation to ensure that training programs are helping to bring about effective application of the guidance provided by the materials.

G. Comprehensive Training Program

Who will answer these questions?

To date a total of 51 Sederhana project-supported courses have trained 236 participants from DGWRD and 650 from MOA in areas including engineering planning and design; supervision of construction; operation and maintenance; surveying and mapping; drafting and cost-estimating; principles and practices of irrigation; and construction of tertiary irrigation components. In addition, 123 employees from the two ministries have made observation tours to Taiwan, Philippines, and the United States. Another 950 farm leaders received training in operation and administration of WUA's. A draft training plan completed a few months ago has as yet not been agreed upon between the GOI and USAID. (A comprehensive plan) for training is necessary to resolve questions regarding the kind and amount of future training most appropriate for the Sederhana program; for example, is the present balance of individuals trained and course content correct? As the number of subprojects increase, do we need more courses organized more often? Is there a need for more overseas training? Should there be U.S. training? If so, in what fields? Is in-country training, including appropriate subject matter on project implementation, adequate?

H. Evaluation of Sederhana Beneficiaries

Experience has shown that Water Users Associations (WUA's) have failed to materialize in some areas of the country, and in others enjoy limited success. Explanations for these mixed results are elusive, but might include a combination of social, cultural, or administrative factors. If villagers view such organizations as being imposed on them they might be apathetic or resistant, and the essential cooperation necessary for effective system management and O&M might never be achieved. A beneficiary evaluation would provide added insight into the experience of existing WUA's and reveal how they can be effectively established.

The Sederhana I evaluation completed by Gray, Duewel, and Gembala in June 1978 was an analysis of 47 subprojects in 14 provinces. A complementary evaluation is now needed to update some of the suppositions and projections about beneficiaries and their related productivity in light of an additional year's experience, and also gathering data on subprojects in new areas.

The GOI, while now appearing to place a greater emphasis on beneficiary analysis than they did at the beginning of this project, has requested that AID finance the entire computer operation analysis of data already gathered, without having a specific proposal on what the analysis is expected to produce. AID should produce a counter-proposal to provide technical assistance for the analysis but only with the full commitment and financial participation of the GOI.

14. Evaluation Methodology

This present review is being conducted by USAID in consultation with the GOI. It is supplementary to the indepth evaluation conducted last year (1978), and is aimed at addressing the present status of the project and the need and justification for additional funding during US FY-80. It is anticipated that this interim justification will lead to an in-depth evaluation of the effects of the project regarding increased rice production and beneficiaries. These studies hopefully will be conducted in late 1979 or early 1980. This evaluation is the first PES on Sederhana, but will become an annual review. Its purpose is to define the present status of the project, suggest responses to identified problems, and reflect on contrasts between assumptions about the project in the PP and what has actually transpired. It also aims to show that despite many problems Sederhana is a sound concept, and that continued technical assistance will result in further overall program improvements.

Substance for the PES was obtained by discussions with host-country counterparts, USAID/U.S. and Indonesian professionals in the Rural Development and Agriculture Divisions who work on the Sederhana project, and contract employees who either currently are or recently have made inputs to Sederhana; files, reports, and other USAID documents on Sederhana; and from collective experience gained on visits to Sederhana subprojects.

15. External Factors

A prime factor in the slow start of Sederhana was the delayed participation of AID, because of difficulties in negotiating a contract for technical assistance with the U.S. Bureau of Reclamation. Initial emphasis was on completion of the physical structures rather than a balanced effort on all phases of project implementation which would ensure the continued irrigation of fields by those structures, and a commitment to management and maintenance by beneficiaries which would enable food production (and thereby their incomes) to increase. Most assumptions about conditions necessary for project success are valid; but some assumptions about the time needed to achieve that success are overly optimistic, and some of the mechanisms or conditions thought necessary to achieve success have had to be modified. Among those conditions found to be invalid are the following: GOI per-hectare funding allotments for survey and design, and operation and maintenance were initially too low and still have not caught up with actual costs. Implementation of almost all agricultural components has lagged considerably behind the completion of the major works components, but with some justification, because of dependence on the major works construction for effective implementation, difficulty in some areas in organizing WUA's, a lacking in MOA capability and field staff, which our technical assistance efforts have focused on improving, and inconsistent coordination between MOA and DGWRD. In addition, MPW's selection criteria for major works tends to be oriented toward technical considerations rather than on expressions of interest from local farmer/irrigator beneficiaries. MPW's application of selection criteria might sometimes hamper meaningful beneficiary participation.

In 1978 the GOI recognized that a number of previously-completed major works required repair or improvement, and so limited the number of new starts in IFY 78/79 to enable more emphasis to be placed on repair and/or improvement of existing major works. Responsibility for construction of tertiary and quaternary components has also now been shifted by the GOI from MOA to MPW in an attempt to facilitate project implementation. The number of technical advisors provided under USAID funding has also been increased to provide easier access to greater expertise at provincial levels and upgrade Indonesian professional staff capability at

*are they
going back to
any systems in
which are already
reimbursed?*

all levels.

16. Inputs

Primary USAID inputs are funds for reimbursement of subproject construction and for helping finance commodities, training, and technical assistance. A larger-than-expected loan pipeline has accumulated due mainly to delays in disbursing funds for construction and some of the commodity components. Major problems with commodities are lack of agreement between USAID and GOI on appropriate items, specifications, and availability of desired commodities from 941 or U.S. sources. Technical assistance has been satisfactory and is responsive to program needs. Major problems with inputs are related to responsiveness rather than non-availability. USAID would like to see more and better utilization of GOI manpower and more extensive training programs, which better respond to perceived weaknesses in technical and administrative capability.

17. The following table shows the number of subprojects planned, complete, and presently under construction. (major works only).

<u>IFY</u>	<u>Planned</u>	<u>Completed</u>	<u>Under Construction</u>	<u>Total Hectares</u>
76/77	215	205	10	60,545
77/78	187	168	19	68,458
78/79	<u>362</u>	<u>224</u>	<u>138</u>	<u>12,133*</u>
Total	764	597	167	141,136

*Figure is lower because most of 78/79 subprojects are improvements or continuations of previous new starts.

In 1978 an evaluation was conducted of 517 projects implemented during the 1974/75 to 1976/77 fiscal year periods. While USAID's involvement only commenced during the last year of this period, the data (which includes some estimates where subproject data was incomplete) provide useful information on the potential impact of the project.

At the time of the survey, there had been a 22% (or 26,000 hectares) expansion of gross wet rice hectarage (computed by adding wet and dry season totals) and a 26% (or 107,000 tons of dried, unhusked paddy or rice) increase in rice production. By the time the existing projects are completed and land improvements expected have been made by farmers, it is estimated that net increases in gross-rice hectarage from the pre-project phase will total 175,000 hectares (or 148%), and that of rice production 696,000 tons (or a net increase of 169%). Figured against the present per capita rice consumption*, that amount will feed over 5 million people for a year.

*Figured
for 51 projects*

18. Purpose

The project has three major purposes:

1. To increase the institutional capability of the GOI implementing agencies, in particular the technical professionals of MPW and MOA at the provincial level;

*275 lbs per annum, from a 1979 USAID economic report.

2. To double rice production in subproject areas between IFY 78/79 and 84/85;

3. To increase the income of farmers and employment opportunities in subproject areas.

Although a primary goal of the program is an increase in rice production, original projections appear to have underestimated the value of secondary crops as a means of increasing food production and income. In a number of subproject areas limited water supply to irrigated areas in the dry season precludes the possibility of a second rice crop, but not an ample income-producing harvest of other crops for which there is a ready market, including soybeans, tobacco, peanuts, and corn. Unless farmers are sure of an ample supply of water during the dry season, it is not realistic to assume they will risk planting a second crop of rice, even if the economic return were comparably favorable.

EOPS

- A. Increased rice production of about 101,000 tons in IFY 78-79 from subproject areas-not yet verifiable*
- B. All major works serving each subproject area in place and operational - about 90%.
- C. 40% of each subproject area dependably irrigated - 40% of goal achieved to date.
- D. Increased income of farmers in subproject areas of about \$210 per hectare - not yet verifiable*
- E. Increased employment opportunities in subproject areas in construction and land tilling - not yet verifiable*in specific numbers but most likely significant.

19. Goal/Subgoal

The goal toward which Sederhana contributes is to decrease Indonesia's dependence on food imports, particularly rice. The statistics shown in section 17 point out that Sederhana is achieving this. However, a previously under-valued benefit which also contributes has been a considerable amount of second cropping during the dry season in areas where the water supply is too limited for a second rice crop. Since most secondary crops grown are food crops, the assumption that they also reduce Indonesia's dependence on food imports seems reasonable. Sederhana's purposes are in line with GOI

*USAID currently lacks adequate data on farmer income in general and in Sederhana project areas in particular. Data on farmer income, rice and secondary crop production will be a focal point of our beneficiaries evaluation to be conducted over the next several months.

objectives highlighted in Repelita III.

Factors contributing to slower progress or a less than satisfactory level of achievement include lack of a clear GOI policy on land-clearing and land-shaping; selection of major works subprojects which do not correspond to farmers' perceived needs; slow or ineffective formation of Water Users Associations; insufficient budgeting levels and planning for operation and maintenance; and self-sustaining management of the systems.

On the positive side, major works completions and quality have improved over the last year. Technical assistance has been largely responsible for this improvement and has now provided the GOI with manuals on design and operation and maintenance as well as plans for water management. These will be distributed shortly and are expected to improve GOI technical competence and contribute toward increased farmer participation.

20. Beneficiaries

Resettlement families, indigenous small-scale farmers, and about 8 million people who live in the rural agricultural communities in subproject areas are the principal beneficiaries. 80 to 90% of these people earn less than \$150 per capita annually. Many are small landholders receiving irrigated water for the first time. The landless will benefit through increased employment needs in land preparation, transplanting, and harvesting activities. Construction projects also create employment opportunities which should approach a maximum of 11 million person-days (LOP). A long-term synergistic effect could be the increased capability of farmer/irrigator beneficiaries to further develop, operate and maintain their irrigation systems through organized cooperation (See also section 17).

21. Unplanned Effects

The Sederhana I PP anticipated that tertiary and quaternary canals would be constructed by the local farmers with only technical assistance and some commodities provided by the GOI through provincial agriculture services. Bank Rakyat Indonesia (BRI) was to make credit available to the farmer. In fact, few loans have materialized, primarily because most farmers do not possess land certificates required as collateral to secure the loans. Additionally, farmers have been hesitant to construct on-farm components until major works were constructed and functioning. With no proof of ownership they are reluctant to invest their limited resources of time, work, and income to

develop irrigation systems over which they might have little or no control.

This situation has resulted in a special GOI funded program, the construction of 360,000 hectares of tertiary systems where primary and secondary canals exist but where water distribution is limited due to lack of tertiary development. Responsibility for design and construction of tertiary components of future subprojects is now being transferred from MOA to MPW.

Similarly, current GOI policy is to place responsibility for land clearing and shaping on the farmers themselves, and to provide credit to them for this work through the Bank Rakyat Indonesia. Because this credit is, in fact, difficult to obtain and has proved insufficient incentive for farmers to undertake land clearing, the GOI policy is under review to determine whether the GOI should shoulder the financial burden for land-clearing and shaping.

22. Lessons Learned

Lessons learned are perhaps old lessons re-learned. The Sederhana program was conceived as a quick-impact program. As a result, responsible ministries received a substantial budget and staff and with it considerable pressure to produce. The unfortunate result is that although physical infrastructure elements are sometimes rapidly produced, the quality of the infrastructure might suffer, and both the O&M and the agricultural input with its services component often do not materialize in a timely manner.

The necessity of farmer participation does not appear to have been adequately appraised or appreciated by the GOI. It is unrealistic to expect Water Users Associations to form and develop water management plans with virtually no guidance or leadership. The innovative and challenging aspect of Sederhana is that to achieve its purpose the GOI must actively seek and encourage participation from rural inhabitants. When project success depends so heavily on attitudes of its participants, it is prudent to have assurance that those attitudes either exist or can be reasonably generated before making extensive, and irreversible commitments. Hopefully the distribution, and later monitoring the effectiveness of, the manuals mentioned in 13E will result in improvements in the area.

A policy change which reflects a new perception of more response implementation was in transferring the responsibility for construction of on-farm works from MOA to DGWRD. The apparent intent of this policy is to close the time gap between the

construction of these two components and get the completed subproject into operation sooner. USAID will be able to better evaluate the impact of such a change when there is an opportunity to see if 1) faster project completion actually does occur, and 2) if this can be accomplished while maintaining a satisfactory degree of farmer participation in the decision making and implementing process.

?
MOA also informed USAID that since DGWRD has taken on this new responsibility they have dissolved the joint MOA/DGWRD appraisal team which visited subproject sites to confirm availability of an adequate water source. USAID is currently in process of examining whether such dissolution has actually taken place, and to make sure that any change in responsibilities does not result in unilateral action which is detrimental to the need for continued and even improved inter-ministry coordination and cooperation.

REIMBURSEMENT STATUS REPORT OF SEDERHANA PROJECT

9254

I.F.Y.	Number of Subprojects	Number Inspected (B+D+E)	Not Yet Inspected	Number Accepted for Reimbursement		Number Rejected		Require further inspection (E)	Remarks
				A	B	C	D		
<u>MAJOR WORKS</u>									
1976/77	215	159	56	18	105	11	9	45	October 10, 1979
1977/78	187	141	46	3	78	15	7	56	
1978/79	362	69	293	0	36	103	8	26	
Total	764	369	395	21	219	129	24	127	
<u>ON-FARM WORKS</u>									
1976/77	215	4	211	0	4	11	9	-	October 10, 1979
1977/78	187	0	187	0	0	15	7	-	
1978/79	362	0	362	0	0	104	7	-	
Total	764	4	760	0	4	130	23	-	

NOTES: A - From certification
 E - From inspection
 C - Design criteria and cost estimate do not meet Sederhana Criteria
 D - Quality of construction, Selection criteria, etc. unsatisfactory
 E - Initial inspection shows these subprojects still lack some quality standards necessary for approval, but they are still potentially eligible for reimbursement if improvements and subsequent inspection take place prior to expiration of TDDA

BENEFICIARY ANALYSIS

Project Title : Sederhana Irrigation (0242)

I. Impact re Section 102(d) Criteria:

Increase Agricultural Productivity

This is one of the major project purposes. Progress questionnaires which will provide statistical information responsive to this objective will soon be distributed to sub-projects. The June 1978 evaluation survey indicated that wet season rice yields improved after the installation of Sederhana. A variety of second crops able to flourish with limited irrigation supplied during the dry season should also be producing additional income.

Reduce Infant Mortality

Any effect in this area would be peripheral. To the extent that irrigation gives families access to better foods because of bountiful harvest, it would have a slight positive effect. In some subprojects tertiary canals' special construction encourages bathing, and better water access would encourage it more frequently.

Control Population Growth

No significant effect perceived.

Promote Greater Income Distribution

Inasmuch as the great majority of Sederhana farmers are small landholders, increased productivity enhances income distribution. Many rural poor are among the indigenous workers who obtain employment laboring on construction and maintenance of the physical structures, land-shaping and clearing, and in harvesting activities. These laborers, many of whom are landless, are among the lowest income group. Sederhana subprojects extend throughout Indonesia into remote regions where a greater proportion of the rural poor live.

Reduce Under-Employment

Most of the transient workers mentioned in the previous section tend to be underemployed. Since mobility in rural areas is limited, especially in more remote regions where

many Sederhana projects exist, this poor population segment benefits considerably when given access to comparatively large-scale employment activity.

Strengthen/Create Institutions Which Aid Social/Economic Development

As previously stated, the program aims at increasing the institutional capability of relevant sections of the Ministry of Public Works and the Ministry of Agriculture to guide and direct the implementation of the Sederhana Irrigation Program. By virtue of this and the fact that the rural poor comprise most of the target population, the GOI is thereby stimulated to cooperate with the rural population and make them aware of positive government action on their behalf. Also, by forming Water User Associations or incorporating that responsibility into existing village social institutions, the participants enhance their own political and social well-being.

II. Benefit Incidence

A. Direct Beneficiaries (all are throughout Indonesia)

	<u>Who</u>	<u>Number</u>
<u>Income</u>	a) farmers with increased agricultural water supply	755,000
	b) members of their immediate families	3,000,000
	c) workers on the subproject construction.	80,000
	d) sellers of produce	unknown
	e) sellers of agricultural supplies	unknown
<u>Labor</u>	a) workers on the subprojects	80,000
	b) 1. agricultural labor (harvesting)	1,330,000
	2. increase in ag.labor for farmers because of second cropping	440,000
	c) additional transportation and merchant labor due to increased agricultural supply, and purchase of agricultural supplies.	unknown

<u>Who</u>	<u>Number</u>
<u>Agricultural Production:</u>	
Consumers receiving larger, more varied, and better quality food supply (includes farmers)	6,000,000
<u>Education/Training</u>	
a) engineers, surveyors, designers	37
b) Government Officials	440
c) Private contractor workers/supervisors	unknown
d) farmers	950
e) field and transient laborers leaning semi-skills.	unknown
<u>Medical Treatment</u>	
No perceived significant effect	
<u>Living Conditions</u>	
Residents receiving water by-product benefits (bathing, sanitation, livestock; fish ponds, fish farming)	3,750,000
<u>Provision of Power/Transportation</u>	
No significant Effect Perceived	
Estimated Overall Total	
	<u>Overall total</u>
B. General Population in Area indirectly benefits from: increased availability of food increased mobility in area general health improvement overall economic improvement	10,000,000

*Note

Estimates in the Benefit Incidence section are consistent with figures used in the FY 1980-81 Congressional Presentation. USAID formulated the following data as a basis for computing these figures, either from project records or estimates based on collective experience and observation.

Total hectares, Sederhana subprojects, IFY's 76/77, 77/78 & 78/79	-	377,580
Average land holding, country wide	-	0.5 hectares
Average rural farmer family	-	5 persons
Average person/power needed to plant, cultivate, and harvest .5 ha.	-	5 persons*
Average number laborers, Sederhana new start subproject	-	150
Average number laborers, Sederhana improvement project	-	50
Percentage of hired labor as related to total agricultural labor workforce in Sederhana areas	-	70%
Average hectare area of Sederhana subproject (Average hectares per site currently under irrigation)	-	350 ha
The belief that most double-cropping occurs in Java, South Sumatra, and South Sulawesi was subjectively factored into the calculations.		

* If buffalo is owned, area may be farmed with as few as two persons.