PD-AAP-695

CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

Report Symbol U-447

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
Development of Sub-Tropical Lands	527-0163	PERU

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) 08/84

☒ REGULAR EVALUATION ☐ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES	6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 78	A. Total $ 46,500,000	From (month/yr.) 6/78
B. Final Obligation Expected FY 83	B. U.S. $ 19,000,000	To (month/yr.) 9/82
C. Final Input Delivery FY 83		Date of Evaluation Review 9/83

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., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
The attached evaluation review summarizes the conclusions and recommendations contained in the final evaluation of this project. Due to the length of the evaluation (eight volumes containing a total of some 560 pages), the Mission prepared this summary rather than translate the entire document from Spanish into English.		

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☐ Implementation Plan e.g., CPI Network
- ☐ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. ☐ Continue Project Without Change
- B. ☐ Change Project Design and/or ☐ Change Implementation Plan
- C. ☐ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Jack D. Rosholt
Project Manager

12. Mission/AID/W Office Director Approval

Signature: John Sanbrailo

Typed Name: John A. Sanbrailo

Date: 6/14/84

AID 1330-15 (3-78)

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EVALUATION REVIEW

SUB-TROPICAL LANDS DEVELOPMENT PROJECT

Frank Low

January 1984
USAID/Peru
Lima, Peru

EVALUATION REVIEW: SUB-TROPICAL LANDS DEVELOPMENT PROJECT

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PART I - Introduction and Summary

A. Introduction:

This review addresses the many issues contained in the Evaluation Report and offers suggestions concerning future action by AID in the Project area and in other development projects in the High Jungle.

The Project area covers the major part of the Department of San Martín, an area recognized as having considerable agricultural potential, with a long history of settlement and a varied rural community with well-defined ways of life and farming systems: these were almost exclusively subsistence-oriented until the arrival of air transportation in the 1950's which made possible the growing of cash crops like cotton, cacao and coffee and the commercial raising of livestock. For two decades air and river were the only forms of transport between S. Martin and the rest of Peru.

Throughout the 1950's and early 1960's Arq. Fernando Belaúnde advocated highways as a colonization measure rather than only as a means of connecting origin to destination. His Marginal Highway concept was to be supplemented by lateral penetration highways and an intense network of feeder-roads that would put innumerable rural areas "on the economic map".

Partial implementation of his concept began with th Marginal Highway program in the first AP government 1963-68 during which period Peru signed an agreement with the UNDP under which FAO conducted an exhaustive feasibility study for the development of the Central Huallaga Valley (1963-69).

Priorities changed under the military de facto government (1968-79); the "Marginal" lost momentum and the concept of integrated development advanced by FAO was given lower priority. True, the Huallaga Central Project still occupied an office in Agrarian Reform but attention was turned to piecemeal development activities such as Azucar Selva and the Sauce and Gera hydroelectric schemes; later came the Pasarraya irrigation project as part of the agrarian frontier program.

One thing that was not lost sight of was the great agricultural and colonization potential of this area, rightly valued for its fertile soil and amenable climate - with few of the restrictions apparent in the Low Jungle.

In the mid 70's when the need was felt to make good Peru's flagging food production, the potential of San Martín became increasingly attractive. The Military government planned to complete the Northern Transverse Highway which would link San Martin to the nortern coastal area. Completion was scheduled for 1978.

In 1976 AID became actively intrested in participating in the development that this road link would make possible. It was rightly realized that if only the main highway were built, the existing trend toward

concentration of population in urban centers would be aggravated, with new urban centers springing up along the highway, as has happened for instance in Nueva Cajamarca which in a short time mushroomed to 10,000 inhabitants. There would also be a change in land occupation with immigrant commercial farmers acquiring good valley land while former small or medium peasant farmers eihter moved out to the hills or joined the urban proletariat in Tarapoto and Moyobamba.

The Sub-Tropical Lands Development Project was conceived as a means of distributing as widely as possible in the region the economic benefits accruing from its integration in the national economy through the highway link. Logically a major emphasis was placed upon the building of an extensive network of feeder-roads that would give hitherto isolated areas access to markets, inputs, and services, and upon the improvement of a number of existing local roads. This would provide an infrastructure that would permit San Martín to supply up to 10% of the nation's needs in maize, rice and edible legumes (according to Project Paper forecasts).

However, for this object to be achieved, certain critical questions had to be addressed. Hitherto, arable land was farmed through shifting agriculture on hand-cleared plots that quickly became weed-infested and had to be abandoned. If the production goal was to be met, this system would prove too wasteful of land and would have to be replaced by continuous cropping.

Continuous cropping had been shown experimentally to be possible on some local soils by the Dutch technical mission (COPERHOLTA) using modern inputs and technology on mechanically-cleared land. SENAMA already operated a machinery hire service in the area, and would receive Project support. This combination was believed to offer the solution that would enable traditional shifting agriculture to be transformed to a modern, commercially-oriented production system that would stop the wasteful clearing of more farm land and the creation of unproductive "purma". It would also economize in the use of scarce labor.

In order that farmers might take advantage of these technologies, they would need extension and credit services; also for the increased volume of produce, mostly destined to distant markets in the coastal region, an adequate network of grain stores would be needed. Therefore the Project included extension, credit and grain storage components.

In order for a farmer to obtain credit and to make long-term investments in his holding, he must have a legal title or certificate of possession. Few of the existing farmers held such documents before the new highway was built. With the expected influx of new settlers, the demand for land and the pressure upon existing holdings would increase. Cadaster and land-titling, barely able to cope with the former needs, would have to be stepped-up. Hence the inclusion of this very important Cadaster and Titling component in the Project.

The Project comprising these six components was designed and was found to be economically viable-although we did not have access to the methodology or the calculations used.

An environmental evaluation judged that the Project would have a net positive environmental impact "since the destructive, traditional slash and burn system of shifting agriculture would be replaced by a permanent mechanized system with safeguards against soil erosion." (Project Paper).

In addition, the elaboration by ONERN of an overall Environmental Protection Plan was programmed, the Plan to be presented not later than 24 months after the signing of the Loan Agreement in June 1978. A preliminary Plan, also prepared by ONERN, was presented in March 1979. The Project Paper did not specify whether or how these plans were to be put into effect.

The Project was originally to be implemented on the part of the GOP by a Regional Development Committee under the direction of a nominee of the Prime Minister. As this committee had no executive or budgetary powers and suffered from other organic weaknesses AID later recommended the seting up of a Special Project under the Prime Minister's Office, similar to those already operating in Coastal irrigation schemes. This was done and the "Proyecto Especial Huallaga Central y Bajo Mayo" (PEHCBM) was established. This change was indispensable for the implementation of the AID Project, but it involved a delay of 14 months in Project start-up.

Table 1 shows the summary project cost estimate as given in the Project Paper.

Table 2 compares the land-capability inventory of ONERN (1979) with the 1973 FAO inventory quoted in the Project Paper. Direct comparison by classes is not possible in all cases owing to the use of different clasification systems. However, it can be seen that ONERN gives a very much lower figure for land with a pasture capability. This is due to ONERN's much stricter limitations on gradient, which have been borne out by Tosi (1981) in respect of the Palcazu valley. This discrepancy was to have serious implications in terms of the pasture potential of the areas to be opened up by the feeder-road program.

Table 3 shows existing land-use as estimated by ONERN in 1979. It will be noted that ONERNin 1979. It will be noted that ONERN identified 40,000 hectares of pastures, five times more than the area classed as suitable for this use.

The implications of these diferrences are discussed in the appropriate sections of this report.

TABLE 1

Summary Estimated Costs (Project Paper)
(US$ '000)

		AID	Peru	Total
1.	Penetration Roads	7,132	373	7,505
2.	Road Maintenance	1,170	246	1,446
3.	Medium-Term Credit	3,230	1,500	4,730
4.	Machinery Parks	3,100	625	3,725
5.	Marktg. Collec. Centers	460	380	840
6.	Land Surveying & Titling	170	650	820
7.	Extension Service	398	750	1,148
8.	Resources Studies	100	20	120
9.	Project Direction	110	380	490
10.	Technical Assistance	1,190	380	1,570
	Sub-total	17,060	5,304	22,364
	Inflation factor & conting.	1,940	1,196	3,136
	Total	19,000	6,500	25,500

TABLE 2

Land-Use Capability

ONERN (1979)		Project Paper (pg. 12)		
		I	14,852	
A	110,690	II	49,087	11,807
		III	47,868	
C	29,691	IV	18,569	
P	8,441	V		
		VI	88,857	
F	238,307	VII	not classified	
X	477,016	VIII	" "	
	864,145 Has		219,233 Has*	

* Apparently, some of the 88,857 Has. shown as classes V and VI were classed as "F" by ONERN.

TABLE 3

Present Land-Use (ONERN 1979)

I.	Arable & Grazing	Has.	Has.	%
	Food Crops	39,760		4.6
	Industrial Crops	3,742		0.4
	Fruit caspo	3,150		0.4
	Pastures	40,000		4.6
	Recent regrowth (purina)	40,348		4.7
	Freely available	19,000		2.2
	Sub-total		146,000	16.9
II.	Forestry production		210,129	24.3
III.	Protection		468,016	54.2
IV.	Urban areas		40,000	4.6
	Total		864,145	100.0

B. Summary:

1 Summary by Project Components

The review by project components assesses performance in respect of Project goals and discusses its implications. The following is a brief summary by components.

1.1 Extension

Goals were numerical (staff increases, equipment purchases, number of visits, demonstrations, beneficiaries etc.). Achievement was good through September 1981, then slumped with INIPA's introduction of the Training and Visit system with insufficient field testing. The Training and Visit system works through direct beneficiaries known as "enlaces" who are supposed to influence their neighbors, achieving a multiplier effect. Extension is performed by middle-level technicians called "sectoristas" who receive an extension message at fortinightly briefing sessions at the Tarapoto experiment station and pass it on to their "enlaces". In practice the enlaces were not well chosen; also, farmers were seldom convinced by the message which was stereotyped and not always adapted as to time or place. Consequently there was no multiplier effect, neither were significant yield increases recorded, though this would need more than one year to make itself felt.

Both the evaluators and the present reviewer agree that the Training and Visit system needs trying for a year or two on a pilot scale with improvement in the training of sectoristas, in the choice of direct beneficiaries and in the adaptation of the message to each locality, culture and season.

1.2. Credit

This program aimed to complement short-term AGBANK credit with investment loans for land clearing and preparation, livestock improvement, equipment purchase and for tree-crop and forest plantations. As of September 30, 1982, 51% of both the programmd number and value of loans had been approved. There was over-emphasis of equipment purchase-often of unsuitable items and low performance on land-clearing loans. Initially AGBANK charged only 7% interest (with inflation at 33%); this gave rise to speculation and consequently to suspension of AID funds. This, plus a cumbersome credit mechanism in which AGBANK, INIPA and the Project were involved, kept disbursement down. Also, at the present interest rate of 32.5% with over 100% inflation, the loan fund is suffering rapid decapitalization. Suggestions are made on ways to halt this - indexing and outright grants or subsidies are among possible solutions-and to improve the efficiency of the mechanism, including better programming among end-uses, and streamlining of procedures, so that credit is no longer a bottleneck for important land-improvement activities.

1.3 Road Construction and Maintenance Program

This basic infrastructure component was completed largely on schedule. Its cost was higher than budgeted and studies are recommended in order to arrive at lower-cost designs for feeder-roads: Maintenance of existing roads

was not adequate and the new roads had received no maintenance to-date. Recommendations include more funds and equipment for road maintenance, technical assistance in machinery operation, and care and regular inspection to control erosion and other adverse environmental effects.

1.4 Cadaster and Land Titling Program

This component made a reasonably good showing but two botttlenecks held up titling; these were cadastral survey and reversion of lapsed titles. Above all, the Peruvian legal mechnisms for land titling are among the most complicated in Latin America. Study is recommended of these mechanisms with a view to speeding up land titling; one concrete and urgent measure would be to open a land registry office in Tarapoto which would obviate long and often fruitless journeys by would-be landowners.

1.5 Grain Storage Program

The stores were installed on time and in the correct locations. They suffer from two defects: insufficient ventilation and lack of protection of platform scales against rain. These should and can easily be rectified. Study is recommended of ways to raise a maintenance fund and to provide an incentive for truckers to operate between the stores and distant markets.

1.6 Farm Machinery Program

SENAMA received the machinery and implements provided by the Project and initiated land clearing and preparation on schedule. Delays in granting of credits, over-emphasis on loans for equipment purchase, and inadequate maintenance by SENAMA contributed to poor performance. Only 810 Has. out of a 1981-1983 target of 4,504 Has. had been cleared by Sept. 30, 1982. The KG blade was found to be unsuitable for non-rigid vegetation and needs changing. Soil conservation measures, precautions and specifications are needed. Field trials should by conducted in order to improve land-clearing methods. SENAMA's plant maintenance must be improved.

1.7 Resource Evaluation and Environmental Protection Program

The lack of an integral environmental approach was a serious defect in project design, permitting project initiation two years before the scheduled preparation of an environmental protection plan; other defects were the omission of a forestry component from the Project and no mention of soil conservation in the extension doctrine, notwithstanding that the Project was being implemented in a region already suffering serious localized resource depletion.

Recommendations include the creation of a forestry component in the project, re-structuring of the forest districts according to a forest management plan, declaration of protection forests, revision of logging contracts, prevention of logging or farming in protection forests, closure of steep lands previously freed for settlement, and more credit funds for reforestation.

Above all ONERN should be urged to complete as soon as possible its 3-years overdue Environmental Protection Plan, and the mechanism and responsibilities for its application should be defined.

2. Overall Summary

For convenience, the overall summary by components is presented in tabular form in Table 4, which records for each component:

a) Efficiency, expressed as the degree to which goals set for the Project were attained;
b) Effectiveness, or impact expressing as far as possible the end results;
c) Corrective action required in the Project area; generally this assumes a continuing AID presence in the area but leaves open the decision as to what form such presence should take.
d) Guideliness for AID in ongoing or new Selva Development Projects.

2.1 Efficiency

Attainment of Project goals was highest in the purely infrastructural components: roads and grain stores. These are essentially public works programs with well-defined technical specifications and responsibilities.

Attainment of goals was less satisfactory in the components involving more or less complex inter-institutional arrangements.

2.2 Effectiveness (Impact)

Attainment of goals set for the Projecct does not necessarily imply that the desired end-results were achieved. Thus, in the extension component, even after the sudden change of system by INIPA attainment of goals might be termed "reasonable".

However, there was no measureble end-result. This is partly due to the inherent difficulty of measuring the contribution of extension, but also in large measure to the numerous defects in the T & V system as applied by INIPA in the Project area after October 1981.

Likewise, attainment of goals by the credit component was by no means disastrous in terms of the volume of disbursement and the repayment record. In terms of impact, however, the results were less satisfactory. The proportions of loan volume by end-uses differed widely from those programmed, with heavy over-emphasis on loans for the purchase of equipment (which often was too big or otherwise unsuitable). Also, with subsidied interest-rates associated with high rates of inflation, credit funds will soon be decapitalized. Loans were found by farmers to be hard to get and often arrived too late; also much favoritism was reported. One of the main reasons for the poor performance of the machinery hire service was the difficulty of obtaining credit. In short, the impact of the credit program as a contribution to development was almost negligible.

The impact of the machinery hire service also was poor. However, in this case, owing to inappropriate techniques and equipment, there was a negative correlation between attainment of land-clearing goals and impact, i.e. had more hectares been cleared, it is likely that there would have been more environmental damage, particularly in the form of erosion.

In the case of cadaster and land-titling, impact went more or less hand-in-hand with the attainment of numerical goals.

2.3 Corrective Action required in the Project Area

In should be borne in mind that more than a year has passed since the evaluation was made, and that the AID Project has now run its course. Most of the corrective actions suggested for the Project area will require the provision of technical and financial inputs. The Evaluation's recommendations for the creation of additional project components naturally presuppose that at least the Huallaga Central Special Project will remain in existence. In those cases in which the present review calls for ongoing action of this or similar nature, it seems desirable that a two or three year exatnsion of the Loan Agreement be negotiated.

2.4 Guideliness for AID in ongoing and new Selva Development Projects

Lessons learnt in this project have to some extent already been applied in other Selva projects, notably the need for a prior resource inventory and environmental protection plan, and for an integrated approach to project planning. The basing of project justification on a technological package is dangerous unless the package and all its implications have been thoroughly tried out beforehand under typical local conditions. (See Part VII B).

PART II. REVIEW BY COMPONENTS

A. Extension

1. Goals

The goals set for the extension program are numerical. For the most part they measure the actions performed, not their consequences.

The goals include staff increases, equipment acquisition, number of farmers' courses, meetings and visits to farmers; they also include, in the case of the Training and Visit system, the number of "agricultores de enlace" (contact farmers) and the number of "irradiados" or second-stage beneficiaries.

In the case of the group approach syostem known as "Proyectos por Cultivos y por Crianzas", the goals included yield increments for the principal crops.

2. Attainment of Goals

In the period up to October 1981, under the familiar group-approach system, attainment of the numerical goals set was quite good, excepting that no evidence was detected of significant increases in crop yields.

After October 1981, with both the old system and the newly-introduced "Training and Visit" method in use, the scores obtained were lower, particularly in respect of the latter (T.& V.) method introduced in October 1981.

This system is based on the designation of contact-farmers, or "agricultores de enlace" who receive the extension message and pass it on to second-stage beneficiaries or "irradiados", achieving a multiplier effect.

It was intended that 2,080 contact-farmers be designated in 1982 and that they would pass on the message to 906 "irradiados". (This means nearly 20% of the registered farmers in the project area). Only 1,007 contact-farmers were designated and no "irradiados" were recorded.

The small number of contact farmers actually designated is no doubt one of several consequences of the hasty switch to the T & V system, and of too optimistic a goal.

The failure to generate "irradiados" was due to:
(a) an innate reluctance on the part of the local farmer to pass on information to his neighbor;
(b) incorrect choice of "agricultores de enlace", itself a consequence of the hurried adoption of T. & V. and of the fact that their selection was in the hands of inexperienced middle-level technicians;
(c) an unconvincing extension message (too stereotyped, often untimely, not adapted to local conditions and problems); if a contact-farmer will pass on anything at all, it must be something he has proven to be beneficial on his own farm and which will persuade his neighbor to accept, apply and in his turn pass it on.

Although 100% yield increases of rice and corn were recorded experimentally, there is no evidence of farm-scale yield increments. There may have been some, but the extensionists were not taught how to record them: however, it is unlikely that the T. & V. system would generate such increments in view of its short time in operation and of the defects observed.

3. Implications for the Project

The change to the T. & V. system, and the hurried manner in which the change was effected, were the basic reasons for poor performance. The system itself has merits and has been successful in some countries, but it should only have been introduced gradually, in communities chosen after careful study and through pilot-projects. It can work if the message is of good quality, timely and adapted to local conditions, also if the extensionists have an adequate professional education and experience and if suitable studies are made of the social, economic and cultural factors affecting farmer behavior, leading to an appropriate choice of "Agricultores de enlace". These are "musts" if an individual extensionist-farmer relationship as distinct from the group approach is to be successful.

The T. & V. system was not envisioned when the AID project was conceived and designed. The nature of AID support was geared to the already well-established group approach. The relative lack of success is to be attributed in large measure to this hasty change of system by INIPA - an institution that did not exist at the time the Project was designed. AID should confer with the new management of INIPA and with representatives of INIPA/APODESA and the Project to consider:

a) continuing and improving the group-approach system;
b) conducting the necessary studies and pilot scale evaluation of the T. & V. system in selected zones;
c) continuing the T. & V. method on lines determined in b) with new and well-reasoned selection of contact-farmers ("agricultores de enlace").
d) upgrading the technical caliber of the extensionists (sectoristas).

These issues are of vital interest to the success of agricultural extension throughout the country, in view of the fact that in most departments of Peru the T. & V. metod has encountered similar problems to those met with in the area of this Project.

B. Credit

1. Goals

In the period between October 1979 and the end of 1983, a total of US$3,152,000 was to be disbursed in 8034 loans, with an average loan size of US$4,209. The inferred target figures as of September 1982 were 511 loans with a total value of US$2,201,146. The breakdown by activities is given below.

2. Performance in relation to Goals

As of September 30, 1982, 256 loans had been disbursed, for a total value of US$1,122,244 and an average loan size of US$4,384, in accordance with the following breakdown by activities:

	Goals for the Program 9/30/82		Loans Approved 9/30/82		
	US$	%	US$	%	% of Goal
Mechanized land-clearing	770,401	35	151,503	13.5	19.7
Integrated ranch development	440,229	20	334,429	29.8	76.0
Irrig. works & farm structures	330,172	15	25,812	2.3	7.8
Farm mach. & equip. purchase	330,172	15	61[illegible] 500	54.4	184.9
Fruit orchards	220,115	10	-	-	0.0
Reforestation	110,057	5	-	-	0.0
Totals	2,201,146	100	1,122,24[illegible]	100.0	51.0

In late 1980 and early 1981, AID suspended disbursements of credit funds because the Agbank's 7% interest-rate (a highly subsidized rate given the inflationary situation) was causing irregularities on the part of bank officials. The suspension was lifted when the Agbank raised its interest rate to 32.5%, but its effect was to restrict loan disbursements in this period. However, procedural aspects contributed most to the shortfall in credit movement. The mechnism set up could have worked under the old extension system in which farmer relations were handled by graduate extensionists whose numbers wre to be increased under the Project. But it could not work efficiently under the new T. & V. system introduced with little warning by INIPA in October 1981, in which extension is in the hands of middle-level technicians, apart from the upheaval of the change itself. Under the new system INIPA withdrew its extension agents (graduates) from identification, promotion and follow-up on loans, while the Agbank handed over to the Project the task of economic evaluation of loan applications for which it had neither staff nor capability. The role of the Project in this connection would appear to have been somewhat too passive.

With regard to the employment of loans approved, the major share went to machinery and equipment purchases, no doubt because they are easy to process (a proforma invoice is the only supporting document needed) and, at least in the 7% interest era, because they were open to peculation by Agbank officials. Not only was money diverted from other more necessary activities, but also much of the equipment required was unsuitable since the only technical evaluation was that of the dealer. There being no forestry component in the Project, it is not surprising that no loans were approved (or sought) for reforestation. Land-clearing (20% of target) also suffered, but this may have been a good thing as the techniques and methods used still need perfecting in order to avoid damage to the soil.

Loan recovery rates were 74% in 1981 and 70.5% in 1982. With a more aggressive collection procedure the rate should exceed 90%, which is acceptable.

Since the program was initiated, inflation has risen from 33% to over 100%. The Agbank's interest rate has not kept pace with inflation, so that farmers have been receiving interest from the bank - at present in the order of 34% p.a. in real terms. As a result, the US$3.15 million credit-fund, instead of revolving, is being eroded wasy. A loan portfolio which, at zero interest (real) would rotate $3.15 millions, at minus 34% (real) would eat up $4.2 millions.

The implications of this decapitalization process are twofold: the fund will need replenishing at quite frequent intervals, which means that the GOP, instead of repaying loan funds assigned to the credit program, would have to ask for more; and, to the extent to which such replenishment could not be secured, the number of beneficiaries would be limited and many deserving cases would go unattended, as many as half the intended 15,000 if no replenishment is obtained.

Farmers,. Agbank officials and a broad segment of Peru's officialdom, object to the charging of real interest rates when there is inflation. The arguments used are diverse, but the commonest is that farm prices do not keep pace with farm costs. This may be true in some periods and in some instances, but the divergences are small compared with the net real transfer from credit system to beneficiary. In the present case, the Project Paper showed the agricultural and livestock modules to be comfortably profitable at a 16% real interest rate. If they cannot break even without a 34% subsidy either there was something seriously wrong with the Project Paper, or the price-cost structure has changed dramatically since it was written. Only a thorough, objective economic and financial study of this problem will bring out the truth. This study should address the concepts of subsidies, grants, real interest rates and indexing as practiced by the Central Bank. Grants for land improvement are a recognized practice in many countries, so are subsidies. It is usually better to call these practices by their real names and make them available "across the board" than to hide them under the cloak of a credit program which then becomes available only to the favored few. It seems unlilkely that the advocates of negative real interest rates are aware that a $1,000 loan at 32.5% interest with a 3 year grace period and an 8 year term at 100% inflation becomes a grant of $642;

3. Implications for the Project and for INADE

The implications for the Project of the problems referred to above are self-evident. Farm credits must be the joint concern (a) of INIPA (through an improved extension system: see Section 2.3 of this review) (b) of the Agbank (with the assignment of additional, more experienced professionals to the area and acceptance of responsibility for economic and financial evaluations of loan applications), (c) of the Project office as leader and coordinator in the project area and (d) of INADE, as the central agency responsible for safeguarding the interests and objectives of the Special Projects in Lima and, through APODESA, of the execution or commissioning of the necessary studies.

4. Implications for AID

It is in the narrower interests of AID as lending agency to examine any measures, such as indenxation or real interest rates, that will insure maximum recovery of loans funds.

In the broader sense it is hoped that AID shares the concerns expressed in this review, which include the fostering of more objective thinking on interest-rates and of measures taht will make it easier for the small farmer to obtain credit; such measures should include streamlining of the mechanism for granting loans and the opening by the AGBANK of branch offices nearer to the farming areas.

Measures proposed by the evaluators to raise professional standards and improve the organization of the extension service and its participation in the evaluation, administration and follow-up of loans will help to secure AID's objectives in this area.

C. Cadaster and Land-Titling

1. Goals

By September 30, 1982, cadaster should have been completed on 12,100 units out of a total of 30,000, adjudication contracts effected in respect of 10,700 out of 15,000 units and reversion resolutions issued in respect of 2,180 units out of 4,200. Topographic survey and mapping was to have been completed in 1980 to enable these targets to be met.

2. Performance in relation to Goals

As of September 30, 1982, 3,667 adjudication contracts had been effected (34.3% of target) and reversion resolutions had been issued in respect of 1,673 units (76.7% of target).

3. Discussion of Results

The goal of 15,000 titles for the overall period 1980-83 was based on what may prove to have been too conservative an estimate of the rate of immigration to the project area. If so, the poor performance in attaining only 34.3% of the September 1982 target of 10,700 units is more serious.

Even at the predicted immigration rate and with no delay in topographic survey and mapping, it is doubtful whether the cadastral and land reform offices could have attained the goals set for them. With a year's initial delay in completing topographic survey and mapping, the chances of getting back on schedule are small.

In order to correct this situation both these government offices must increase the staff they have engaged on work for this project to a level that will enable the outstanding 11,000 titles to be cleared, if not by the end of 1983 as scheduled, at the very latest by December 31, 1984. This means stepping up the output from 111 titles a month to over 800. If it is not done the land tenure situation will get completely out of hand.

Among other remedial measures, the Project should replace its piecemeal contractual arrangements with a single multi-party contract in which the Project's directing and coordinating role is clearly defined; also multiple reversion resolutions should replace the existing individual ones.

4. Implications for Special Development Projects in General

In an area to be opened up by a highway, basic topography, mapping, soil and land capability surveys, resource inventory and environmental plan should be completed preferably before main and principal feeder roads are built so that cadaster and land titling programs can be initiated in time to insure orderly land-tenure and land-use in accordance with land-capability. In order to achieve this, the cadastral and land reform offices must be adequately staffed and suitable contractual arrangements made to insure efficient action under the coordination of the Project.

In the basic studies leading to the design of farm modules for titling, APODESA should act as coordinating and supervising agency. INADE has an important role to play in maintaining liaison between the special projects and government offices in the capital.

D. Farm Machinery Services

1. Goals and Performance

In the period 1981-1983, land clearing and land preparation should cover an area of 4,504 hectares each, and 16,000 hours of threshing time are scheduled to be provided to farmers. The project-life goal for land-clearing is put at around 43,000 hectares in ten years. At slightly over 10% of this figure in 33% of this time the three-year goal was modest and the annual rate would need to average over 5000 hectares thereafter, once teething troubles were overcome.

In the event, these modest goals were not attained: in land-clearing nearly 3,700 hectares remained of the 4,504 Has. scheduled by end 1983; in land preparation the outstanding area was 2973 Has; a mere 3% of the threshing time had been worked.

The land clearing equipment came into service as planned during 1982; equipment thus was not a limiting factor in performance. Credit was the main problem, as only 340 out of a scheduled 834 loans were approved and most of the funds loaned were for machinery and equipment purchase which should have received only 15% of loan funds. This type of loans are the easiest to process and are attractive to some bank officials. Delay in start-up of threshing operations was due to the late arrival of equipment.

2. Implications of Results

More careful study is needed concerning the choice of equipment and methods for land-clearing. As most of this work is done in secondary (scrub) growth, the KG blade is unsuitable as it is designed for handling large trees. The use of bulldozers is not recommended as they scrape off the fertile topsoil. Also, some soil types suffer serious compaction by crawler tracks. Experience in the Upper Huallaga showed that soil fertility was damaged by mechnical clearing to the extent that crop yields were insufficient to repay the loans received for land-clearing.

Clearer guidelines are needed concerning soil conservation precautions in land-clearing, particularly in respect of limiting gradients. The technical assistance in this area called for in the Project Paper was not provided to SENAMA.

The principal arable crops for which land-clearing is required are rice and corn. Rice is grown on alluvial terraces where priority should be given to land-conditioning for irrigation and for the application of cultivation techniques and equipment developed for this purpose elsewhere. As rice now

occupies most of the more level land, corn tends to be grown increasingly on hill sites which often are too steep for arable cropping. Without clear guidelines and restrictions, mechanical land-clearing will encourage the misuse of these lands and aggravate the danger of erosion.

Less emphasis should be placed on area targets for land-clearing until suitable field trials have been carried out and criteria established that will insure that his activity, which is important in this labor-short area, is conducted without undesirable side-effects. The long-awaited Environmental Protection Plan will provide valuable criteria in this repect.

E. Grain Storage and Marketing

1. Goals and Performance

Storage capacity for rice, corn, sorghum, soya and beans was to be increased by 11,500 MT during 1980 and 1981 in order to cope with the expected increases in production follow road construction. The Tarapoto slaughterhouse was to be reconditioned and work completed on the one at San José de Sisa.

Owing to official delays with the bidding procedure, these goals were only attained by September 1982 - not on schedule but in time to handle production volumes.

2. Quality of Marketing Services

Nearly as important as the physical infrastructure are the services that go with it. In some cases, as at Picota, inxperienced staff cause unnecessary delays in the clearing of corn into ENCI's warehouse. More serious are the delays of up to 2 months in payment to farmers by the AGBANK owing to its liquidity problems and to the long distance from farm to bank in most cases.

In face of these problems farmers commonly resort to farmer-merchants who pay cash at a 25% discount and resell to ENCI with their own produce.

ENCI has financial problems due to the fact that by law it receives no margin for freight charges to final destination. This means ENCI cannot pay economic rates to truckers and, as a result, there are insufficient vehicles and the sores are jammed full at peak seasons.

3. Implication for the Project and for Cooperating Agencies

It is in the interests of the Project that these bottlenecks be removed. Action should include the following:

- liquidity problems of AGBANK must be overcome;
- additional AGBANK branches should be opened in or near the principal farming areas;
- ENCI's financial policy should be modified to privide a suitable margin for transportation costs.
- improvement of the technical standard and sense of responsibility of ENCI's warehouse personnel.

F. Road Construction and Maintenance

1. Goal and Attainment

Goals set by the Project were the construction of 110.5 kms. of new feeder-roads and the improvement of 76.8 kms. of existing feeder-roads. These were expected to open up 65,143 of potential arable land and 98,000 Has. of pasture land. The budgeted cost of the new roads was US$ 136,039/km. and the improved roads US$81,732/km. Completion was to take place before September 1982.

During 1982, maintenance was to be performed on 1,170 kms. of new existing and improved roads.

The road construction and improvement goals were attained; costs were higher than forecast.

A total of 1,093 kms of roads received maintenance during 1982, but owing to insufficiency of equipment this was limited to areas most seriously damaged.

2. Implications for the Project

The land-capability information assumed in Project design was proven incorrect by ONERN (1979). Consequently the expectations, especially of potential pasture-land, were over-optimistic as over 90% of the land thought fit for pasture in 1976 was assigned forestry capability in 1979 due to its steep topography. Thus the roads can play an active part in encouraging land misuse.

Criteria for the avoidance of erosion and runoff problems in road construction were prepared by ONERN in 1980. It is not clear whether they were studied by the road engineers but there is some evidence that they were not applied. Inspection of road cuts, fills and drains for erosion damage, overfills etc. should be more frequent. Roads drains should be cleaned and roadside brush cut regularly. The additional maintenance equipment recommended should be provided as soon as possible.

G. Environmental Protection and Resource Evaluation

1. Projects Goals and Attainment

The Project's environmental protection and resource evaluation provisions include:

(a) the making of studies, inventories and evaluations of natural resources; (Contractor: ONERN)

(b) the preparation of an environmental protection plan based on the results of (a); (Contractor: ONERN)

(c) the choice, design and application of environmental safeguards in the different project components.

(d) provision of technical assistance in resource conservation.

The studies and inventories of natural resources, for which ONERN was contracted, include soils, geomorphology, land capability, vegetation, fauna, water resources and socio-economic aspects. In general they have been well-executed, and are in keeping with ONERN's usual quality. However, their completion has suffered serious delays due to SAN's failure to provide air photography on time.

Consequently the overall environmental protection plan due for completion in 1980 is still incomplete (it is now promised for January 1984 the last year of the Project).

A preliminary Basic Environmental Protection Plan was prepared by ONERN and issued February 1979 under an AID donation agreement in partial fulfillment of Condition Precedent Section 5.2 of the present project.

The choice and design of suitable environmetal safeguards has had to be made onthe basis of this preliminary plan and of criteria from other sources. They will probably require modification on the publication of the definitive environmental protection plan.

In recognition of the environmental risks involved in mechanized land-clearing SENAMA was required to prepare specifications for this activity including slope limitations, soil selection, drainage and erosion control. Technical assistance in soil conservation was to be provided to SENAMA and to the extension services.

In another priority area for environmental safeguards ONERN was to provide soil conservation guidelines for road alignment, construction, protection and maintenance.

From the information at the disposal of the evaluators it would appear that no effective specifications were applied by SENAMA in respect of the environmetnal aspects of mechanized land-clearing. Consequently there have been problems due to soil erosion, depletion and compaction in land cleared by that agency.

Neither SENAMA nor the extension service received the required technical assistance in soil conservation nor was this important subject given the necessary emphasis in the training of extensionists or in the extension message.

With regard to road alignment and related matters ONERN did provide a set of guidelines on environmental safeguards for the road program. These were excellent guidelines but they were not presented until March 1980 when construction was already well under way.

2. Implications in respect of Project Concept and Design

These goals had they been fulfilled both in content and in timing would have gone some way to halt environmental damage in the project area. However it is evident that they would not have gone far enough.

The Project as conceived was to provide key inputs that would enable agricultural production to benefit optimally from the infrastructural integration of the Central Huallaga in the national economy. These inputs were to be applied to a region already showing symptoms of over-population and resource depletion. Logically the process of integration if not accompanied by appropriate control measures was bound to aggravate these ills.

In these circumstances the highway program should have been preceded by a thorough evaluation of natural resources as they then existed and by a resource utilization, rehabilitation and conservation plan. As this requirement was not fulfilled before the highways were built the need for it was even more pressing as a pre-requisite not only for the design of this project but for its very conception.

The resource-depletion symptoms observed by the evaluation mission in 1982, including erosion due to the widespread clearing of steep forest lands for cropping and grazing, the extensin areas of "purma" with slopes of 70% and more and the degradation of forest vegetation and soils due to officially-authorized selective felling in protection areas, are not new phenomena in the Central Huallaga. The present reviewer can vouch for their existence as far back as 1966. The steady population growth - later accelerated - coupled with very limited reserves of agricultural soils has merely accentuated processes already underway.

If even ONERN's preliminary environmental protection plan had been prepared before the conceptuals of the project were fixed some serious problems could have been avoided. In any event when the plan was issued in February 1979 there was still time to effect some design changes that would have been salutary for the project. One discrepancy the plan shows up is in the areas of new land suitable for crops and pasture that would be made accessible by the new roads; these areas are much smaller than those used in justifying the feeder-road and land-clearing programs.

If project goals for land-clearing are attained therefore a significant proportion of land cleared will be in non-agricultural capability classes and will suffer deterioration. This is already happening in land cleared for pastures and for corn growing - the latter spurred by extensive conversion of Class A valley-bottom land to irrigated rice.

No clearer evidence could be sought of this conflict between production-oriented goals and environmental restraints than the fact reported by both the evaluators and APODESA specialists that the Project is regularly granting credit, extension and farm machinery services to farmers cultivating

land unsuitable for arable crops owing to its steep topography and susceptibility to erosion. A proper and timely land inventory in the hands of persons with suitable experience would have averted this. The land-clearing component would have been assigned a more limited role while watershed and forest management-absent entirely from the present project-would have occupied a dominant position.

3. Implications for Other Projects

Fortunately the implications for other projects have mostly been taken to heart already. In all of the Central Selva development projects and in the Jaen-Bagua-San Ignacio Special Project the basis has been the resource evaluation and environmental safeguards receive their due emphasis. In the Pichis project the economic feasibility study took into account social costs of resource depletion which provided a clear justification for a project concept centered on the rational use of natural resources. With modern resource evaluation techniques such as GIS there should be no excuse for launching any rural development project without first making an inventory of natural resources and an environmental protection plan.

PART III. CONCLUSIONS OF THE EVALUATION MISSION (SUMMARY)

A. General Conclusinons

1. The evaluation assessed the efficiency and the effectiveness of the component programs of the Project, drawing conclusions and presenting recommendations. It may be concluded from this that save for delays in the natural resource evaluation (not the fault of the Project) and for delays in some programs the Project has attained its programmed goals. For a project of this size and complexity this may be considered satisfactory.

As a consequence of the presence of the Project a number of factors that are positive but are difficult to evaluate quantitatively are being developed: increased employment, increased commercial activity, more agricultural investment, incentives to private investment, technological improvement of agriculture, up-grading of institutions in Tarapoto and opportunities for agroindustrial investment.

With the correction of some deficiencies in the planning, execution and operation of Project components, the investments made in the area may be expected to constitute a valuable contribution to regional and national development.

The fact that the Project has not yet terminated leaves open the possibility of applying corrections or adding new components which should have been included from the start of the Project, for the need or which has only become apprent during its execution.

2. The Project* suffered from the handicap of not having taken part in the selection of priority components or in defining their content; consequently the Project has had the task of executing programs conceived by other agencies.

Another handicap is the fact that although works and equipment have been transferred to other agencies the Project remains responsible for the attainment of goals in the components concerned, but lacks the authority needed for their operation. Likewise the planning and execution of component activities have been carried out without adequate coordination with some future receiving agencies.

3. Coordination is also deficient among components of the Project itself which are or should be complementary such as extension, credit, mechanization and marketing. This is because there is no suitable coordinating authority. Consequently the goals of each program have been established independently without regard to the sequencial or causal relation between goals of the different programs as for instance in the cases of cadester & titling and of credits.

4. Not enough attention has been paid to GOP resources for operation and maintenance of works and services, implying the risk of losing costly investments, particularly in roads and in agricultural machinery. In the case of roads there is an imbalance between investment in construction and in maintenance.

5. Given the distance between the region and the main centers of consumption, emphasis should be placed on value-added. In this connection the Project should have included an agro-industrial component which would help to optimize value-added as well as integrating different productive activities. Industries should include animal feeds, meat and milk processing.

6. No studies seem to have been made of the comparative profitability of livestock raising, forestry, farming and agroforestry. It may be that in some areas well managed forestry would be a more profitable and permanent activity than crop or animal husbandry and would require less protection or subsidy support.

7. The lack of a research component in the Project is striking. This component is needed in order to back up existing research capacity in the area.

8. The Project area possesses valuable forest resourcess which hitherto have been tapped only through the selective felling of mahogany. The Project includes credit provisions for reforestation which have not been used. The Project should have a forestry component in order to achieve better and more rational use of these valuable resources.

*In the conclusions and recommendations of the Evaluation Mission the term "Project" refers to the Proyecto Especial Huallaga Central y Bajo Mayo (PEHCBM).

9. In view of the heavy investment in machinery by GOP and private enterprise there is a need for technical assistance in operation and maintenance and for repair workshops.

10. In order to insure efficient performance in project coordination there is a need for a follow-up mechanism for Project components, including a reporting system based on indicators. These should include social and productive indicators which are important in assessing project impact.

11. The multiplicity of agencies performing similar or ill-defined functions which typefies government institutions in the country in general has contributed to the Project's coordination problems.

12. Little attention has been paid to personnel selection or training in connection with the operation and maintenance of the equipment and services provided by the Project.

13. The "low-cost" concept claimed for the Project may be realized if full use is made of the installed capacity of all the public agencies in the region but to determine whether the cost was low or high would need an analysis in terms of the output-capital ratio. In the case of roads for instance, was the cost of the Project's approach lower than assigning funds to the Ministry of Transport and letting it do the rest? It would seem that the benefits of the Project rather than cheapness are to be found in the greater ease and efficiency of having it all under the Project's responsibility. Likewise low cost might be achieved at the expense of quality; cost then is not the only criterion.

14. The Project's impact is being felt in the growth of cities in the region such as Tarapoto, Bellavista and Juanjui, where deficiencies are now being felt in social services and infrastructure, especially in public health.

15. Finally, the placing of the Executive Direction of the Project directly under the Prime Minister's Office assures it more support at the policy-making level but does not give it the authority it needs for effectively coordinating the agencies that participate directly or indirectly in the different programs of the Project.

B. Evaluation Mission's Specific Conclusions by Project Components

1. The infrastructural components have provided a valuable base for the promotion of socio-economic development through the various service programs.

2. Performance has been evaluated in terms of
   (a) the efficiency wilth which programs have been conducted;
   (b) their effectiveness or impact.

3. Efficiency includes progress in acquisitions, installations and construction and in the operation of the corresponding services. Nearly 100% fulfillment was achieved in respect of the former (roads, extension equipment, grain stores and agricultural machinery). Fulfillment in respect of services was less complete:

(a) In extension after a good start achievement dropped in 1982 to only 46% of goals set. Apart from numerical deficiencies there were others o a methodological nature peculiar to INIPA; 76% of the personnel programmed were engaged.

(b) The credit program achieved 67% 1/of the programmed number of loans and 61% 1/ of the total programmed value in dollars with a 1982 decline from higher figures in the earlier years.. Deficiencies in extension have been an important contributing factor.

(c) Road maintenance has suffered from insufficient personnel and equipment.

In Land Titling cartography achieved 100% but cadaster lagged, holding up titling which in consequence logged partial percentages between 20% and 58%.

(d) Grain store operation under ENCI has shown steady growth in volume; there are some deficiencies in personnel training.

(e) In Mechanization 70% of land-clearing goals and 93% of land-preparation goals were attained2/. A limiting factor was the lack of credit facilities.

(f) The Natural Resource Evaluation program is well behind schedule becuas SAN failed to provide ONERN with the programmed aerial photographic flights.

4. A general conclusion that emerges from the operation of the different components is that the tasks and goals assigned to agencies such as INIPA, SENAMA, ENCI, Agriculture and Transport were not always programmed in consultation with these agencies so that execution tended to suffer from financial and personnel limitations.

5. In general it is premature to make a full evaluation of the Project's impact in its area of influence, but there are some indicators that permit a (preliminary) assessment such as:

(a) Integration of hitherto isolated areas;
(b) Contribution to the increased cropped area, in particular the aras under corn and rice;
(c) Higher employment levels;

1/ But see Part II B.
2/ But see Part II D.

(d) Increased commercial activity due to improved incomes and to incorporation of previously isolated areas;
(e) Capitalization due to acquisition of improved livestock, equipment and intallations.
(f) Incentives to the private sector in commercial and service activities in function of increased agricultural activity.
(g) Initiation of the multiplier effect in farm technology improvement;1/
(h) Settlement of farmers on their land;
(i) Up-grading of existing public and private institutions in Tarapoto and creation of others as a result of the agricultural activities.
(j) Increase in volume of grains stored, insuring their marketing and profitability, also increased slaughterhouse capacity;
(k) Creation of opportunities for future agroindustrial development in the zone.

1/ But see Part II A.

PART IV. CONCLUSIONS ARISING FROM THE PRESENT REVIEW

A. Institutional Structure

The Project is evolving from a package of activities with a strong emphasis on infrastructure to an integrated regional development project. This trend will be further accentuated to the extent to which the Evaluation Mission's recommendations concerning additional components are implemented.

Some of the defects in the fulfillment of project goals have been due to lak of authority on the part of the Project Office vis-a-vis cooperationg GOP agencies with which the Project Office has entered into agreements, for example in cadaster and titling, credits and extension.

The addition of further components such as forestry, research, agroindustries and social services, will aggravate this weakness. In any event a viable institutional mechanism will be needed to ensure the efficient future administration of services set up through the agency of the Project.

Recommendations arising from the foregoing are formulated by the Evaluation Mission (Part V of this report) and by the present reviewer (Part VI).

B. Resource Use Technology

Study of the Project rationale and of the Project's performance raises basic questions concerning the viability of the Project concept.

1. The Change to Continuous Cropping

The Project Paper assumes that:

(a) it is technically possible to convert land previously under

shifting cultivation to a system of continuous cropping using the technology developed by the Dutch mission at Tarapoto;
(b) it is techically and economically feasible to apply this system on a commercial scale;
(c) the extensionists can get the farmers to successfully implement the system throughout the Project area
(d) the incremental cropped area programmed would be achieved by mechanized clearing of land formerly under shifting cultivation and the application thereon of the above-mentioned technology.

In the event, the combined areas in rice, corn, cotton, tobacco and bananas in the Tarapoto, Lamas and Cenral Huallaga zones expanded by 37,000 hectares (a 111% increase) between 1978 and 1982, compared to a programmed increase of only 26,000 Has. in the whole Project area. Mechanized land-clearing only began in 1981 and had not reached the 1,000 hectare mark at the time of the evaluation. Therefore virtually all the incremental area may be assumed to have been achieved by the traditional slash-and-burn method.

Gross production increased in approximately the same proportion, revealing essentially unchanged yields.

The Dutch technological package has not been adopted to a significant extent. As the Evaluation Report (Volume 2) states, the spread of improved practices and inputs has been confined to a small group of direct beneficiaries under the T. & V. system, and there is no record of their having adopted the Dutch technology, which involves a substantial degree of innovation and is costly.

More farm-level adaptive research is needed on this aspect before it can be assumed that farmers in the area can make the change from shifting to permanent agriculture.

The fact that doubt exists on this point suggests that the Project concept may prove to have been over-optimistic in an aspect that was basic to the Project's success.

On the other hand, irrigated rice growing on river-terrace lands with adoption of appropriate technology and equipment shows excellent prospects in the Project area.

2. Natural Resource Evaluation and Environmental Protection

The Project was introduced in a region that was already suffering the effects of pupulation pressure; land-rotation cycles were shortening year by year; logging and farming of steep hillsides were widespread; erosion and related environmental problems were clearly in evidence.

The Project's answers to this were:
a) to make new land available by means of the feeder-road program;

b) to avoid wasteful use of farm-land by introducing permanent cropping systems and use of machinery;
c) to commission a full environmental protection plan by ONERN;
d) soil conservation precautions to be applied by SENAMA;
e) technical assistance in conservation to SENAMA and to the extension service.
In the event:
a) The extent of new farm-land made available by the feeder-roads was exaggerated, according to ONERN's preliminary environmental protection plan, and resource evaluation published in March 1979.
b) The feasibility of the change from shifting to permanent agricultue has not yet been demonstrated (except on some terrace lands that are mainly used for rice-growing).
c) The full ONERN environmenal protection plan, due in 1980, is still awaited.
d) SENAMA apparently did not apply soil conservation measures or precautions in land-clearing; there is evidence of erosion in land cleared by that agency.
e) No technical assistance in soil conservation was given to SENAMA or to the extension services.

No action appears to have been programmed or taken by the Project to stop selective logging and farming on steep slopes. The Evaluation rightly recommends the addition of a forestry component to the Project and the declaration of protection forests.

The lack of an integrated resource use and conservation approach is one of the Project's most serious weaknesses, the effects of which are increasingly evident as the Project broadens in scope to become, as it must, an integratd regional development project.

Recommendations to correct this deficiency are presented in Part V and VI.

C. Credit Program

In addition to the problems revealed by the Evaluation, emphasis is given in the present review to the implications of a high inflation rate and negative real rates of interest, in terms of decapitalization and of inability to reach more than a small proportion of the potential beneficiaries. These implications and alternative solutions such as indexing, positive interest rates, outright grants and subsidies, are discussed in Part I.B.

The Project Paper (p. 14) claims that "credit and extension services will be made available to at least 15,000 farmers on a regular basis." It also claimed an expansion of 26,000 hectares in the cropped area and the establishment of permanent pastures and tree crops on another 50,000 hectares. The clearing of this land is one of the main objectives of the credit program. Of these areas, it is proposed that at least 23,000 hectares

of crop land and a further 20,000 hectares for pasture will be incorporated by mechanical clearing, at an estimated average cost of $350/Ha. - a total cost of around US$ 15 millions. However, the total sum provided for credit by the Project is US$3,152,000 of which 35% or $1,103,200 is assigned for land-clearing, sufficient for clearing only 3,152 hectares.

In the event, the demand for farm-land resulted in the incorporation of some 40,000 hectares of farm-land without resource to the Project's credit or farm machinery programs, presumably by the slash-and-burn system, which the Project was supposed to eradicate.

The average size of loans was $4,834. With the complete decapitalization of the loan fund under the influence of inflaton and negative interest rates, there will be no rotation of credit funds. Consequently, the $3,152,000 will provide loans for only 652 farmers instead of the 15,000 proposed in the Project Paper.

The number of beneficiaries could be doubled if indexing or positive interest-rates were adopted. Assuming 100% rotation of the funds during 20 years, the total loan volume would attain $6,304,000. If this fund were to reach 15,000 beneficiaries, the average loan size would have to be reduced to $420, less than 10% of the average to date. If all of this were devoted to land-clearing this would mean only 1.2 hectares per beneficiary, which is an uneconomic area for mechanized land-clearing, but would permit the clearing of 18,000 hectares. If 35% were devoted to land-clearing as programmed, either the individual area would be reduced to 0.42 hectares or the number of benficiaries would be proportionately reduced. At the present average of 12.53 Has. per beneficiary with 100% rotation of credit funds, and 35% devoted to land-clearing, 495 land-clearing loans could be granted, equivalent to 6,304 Has.

The implication for the Project is that the credit program is too small. If it could be demonstrated that the program exerts a leverage effect, encouraging other sources of credit and machinery services, a credit program of these limited dimensions might be justifiable. However, the fact that 40,000 hectares have been cleared, without credit, suggests that no such leverage has been obtained.

PART V RECOMMENDATION OF THE EVALUATION MISSION (SUMMARY)

A. General Recommendations

1. Insure the necessary budgetary provisions at the termination of the Project so that each component can continue to operate.
2. Set up a mechanism to coordinate actions of the different project components, especially extension, credit, mechanization and marketing.
3. Speed up the resource evaluation program so as to proceed as soon as possible with the environmental protection plan.

4. Reprogram component activities so as to insure better timing and the concentration of funds and personnel on critical activities which constitute potential bottlenecks.

5. Design and initiate five new components:
   i. Research, in coordination with extension, with emphasis on rice and corn varieties, irrigation and animal nutrition.
   ii. Agroindustries, including feed compounding, meat and milk processing.
   iii. Forestry, with emphasis on forest managment so as to insure a better and more rational utilization of forest resources.
   iv. Fisheries and fish-farming
   v. Social services (not included as a project component)

6. Extend the Loan Agreement so as to develop these five proposed components.

7. Evaluation of the profitability of the investments in crop, livestock, agroforestry and forestry activities so as to orient producers in their investments.

8. Establish under contract with INP or the university, an information system that will permit a satisfactory ex-post evaluation of the project. The study made in 1980 by the University of Berlin would offer a good methodology.

9. Intensify relations between the project and the local population and local governments in order to avoid the Project becoming merely a technical and administrative liaison office for physical planning.

10. The GOP should in the coming years, de-emphasize investments in physical infrastructure and make good the deficiencies in social services in the area, leaving the role of expanding production to the private sector.

11. Insure the implementaion of the Tarapoto urban plan and intensify urban services in Juanjui and Bellavista to cope with dynamic population growth.

12. Special study by the Project in order to develop specifications for low-cost feeder roads suitable for the region.

13. Establish an effective supervision mechanism which will insure that recipient institutions manage properly the works and equipment transferred by the Project. Alternatively, the Project Office might continue to manage some components until termination and ultimate hand-over to the Regional Corporation.

14. Some institution should identify, evaluate and program investments among sectors and, for each sector, determine the resources that should be devoted to new works or to the opeation and maintenance of existing works and services. This institution should logically be the Regional Corporation.

15. Make a comparative analysis of the efficiency of administering certain components such as the machinery services for example, by SENAMA in Lima, by the Project or by the Regional Corporation.

16. Examine the desirability of CORDESAM participating in the following activities:

(a) Coordination with local agencies in charge of works, installations, resources and activities and the taking of such actions as will insure their effective operation after Project termination.

(b) Ownership of the equipment and installations acquired through the Project, handing over only their management to the respective local agencies.

(c) Establishment of a study and coordination committee to make ongoing evaluation of the impact of activities initiated by the Project, in terms of:
- integration of outlying areas;
- expansion of farm production in area and/or intensification;
- job opportunities;
- increased purchasing-power and its effect on the development of different sectors;
- technological intensification of agriculture as a result of investment, technical assistance and evaluation;
- permanent settlement of farmers as a growing productive force;
- institutional presence of the different official agencies at regional level;
- organization of second-stage private institutions;
- progress in logistic implementation in respect of storage, marketing, input supplies and haulage of produce to and from the Project area;
- agroindustrial development generated or induced by the Project.

17. Consider the following alternative solutions to the problem of the continuity of actions and policies initiated by th Project:

(a) Maintain the Executive Direction and widen its functions as the authority incharge of institutional coordination;

(b) Transfer everything to CORDESAM;

(c) Leave maintenance and operation of services with the GOP agencies now in charge;

(d) Combine a) and b), maintaining the Executive Direction as a technical arm of CORDESAM.

18. Dimension the activities of each component, jointly with the receiving agency, so as to ensure correct and timely allocation of resources;

19. As a general recommendation in the light of experience in this Project, any similar project should begin its activities with an introductory regional seminar attended by all the institutions in any way involved in any phase of

the project. This would provide an opportunity to modify its content in accordance with the experience of locally-established institutions. The same participants should make a quarterly evaluation of works and activities performed. The Regional Corporation will be the institution to achieve this inter-agency coordination.

20. INP to consider study of river transport as a complement to road transport.

B. Evaluation Mission's Recommendations by Project Components

1. Extension Program

i. Redesign the program adapting the T. & V. method to the reality of the Project area, with special reference to the following:

a) The program to be confined to a pilot area;

b) Message to include topics of local interest such as irrigation, land-clearing, economic and market aspects;

c) New choice of direct beneficiaries in accordance with social criteria, as explained in the Evaluation Report on the Program;

d) Inclusion of technicians from other agencies.

ii. Make provision for the future of the staff at present financed by the Project.

2. Credit Program

- Speed up the granting of loans,
- Assign functions and responsibilities to the Credit Committee;
- In the event the funds assigned by GOP are not sufficient to speed up the credit programs, negotiate an increased AID participation, up from 35% to the original 58% of the total fund;
- Up-date the technical assistance agreement to establish actions relating to the credit program.
- Program remaining credit funds, specifying types of investment loans;
- Improve the present reporting system, including decision-making criteria and a better evaluation of Program execution.

3. Road Construction and Maintenance Program

- Study and adopt design specifications for highways and feeder-roads in Jungle regions, having regard, inter alia, to progressive upgrading of highways, provisions in respect of climate and soils, and the matching of equipment to width of road-bed.
- Initiate the maintenance of the roads built and improved by the Project with due attention to budget requirements and measures to prevent damage in rainy periods.

4. Land Titling Program

- Study modification of the legal formalities in order to speed up titling.
- Put more emphasis onthe reversion of lapsed titles which would, in a short time, double the area titled.
- Set up an office of the Public Register in Tarapoto.

5. Grain Storage Program
   - Improve stores installed, to provide suitable ventilation, protection of weighbridges (platform-scales), and equipment for pre-cleaning and drying.
   - Investigate how to set up a fund for maintenance and replacement based on a margin between buying and selling prices of maize and sorghum.

6. Mechanization Program
   - Provide sufficient credit funds to finance machinery services.
   - Include in the Extension Program instruction on maintenance and operation of farm machinery.
   - Acquisition of more appropriate land-clearing equipment for the vegetation to be cleared.

7. Resource Evaluation Program

   i. Re-structure and put on an operational footing the Forestry Districts in the zone, so that they can, in accordance with a Forest Management Plan, take action on such aspects as the following:
      a) Declaration of protection forests as conservation units
      b) Revision of logging contracts and permits and proper control of the location of new ones.
      c) Derogation of legislation declaring the Shanusi-Alto Mayo and Saposoa forests as "freely available".
      d) Study of the comparative economics of forestry and agriculture.
   ii. Espand the Extension, Credit and Mechanization programs to include forestry, and initiate credit activities for reforestation.

PART VI. RECOMMENDATIONS ARISING FROM THE PRESENT REVIEW

A. General Recommendations

1. The present review bears out the general recommendations of the Evaluation Report. However, as these are numerous, while time and resources are limited, it is desirable to determine priorities and, where alternatives are put forward, attempt a selection.

2. Several of the evaluators' recommendations relate to the institutional structure needed for the future exercise of Project functions. (See recommendations 1,2,4,5,6,13,14,16,17 and 18 of Part IV-A).

3. The Project's interests and responsibilities have broadened considerably. Additional components are proposed. Social services and implications should be covered. This means a need for the Project's continued effective presence in the area.

B. Specific Recommendations by Project Components

1. Extension Program

1.1 In the proposed pilot-scale application of the T. & V. method, in addition to the recommendations of the evaluators, steps should be taken to up-grade the technical standard of the sectoristas. This can be done by:

a) selection among existing staff

b) training at research centers, and courses in extension methods

c) improved salary conditions and arrangements for continuity of employment.

1.2 With the introduction of the research component to the Project, there should be closer integration between research and extension, including the conduction of on-farm adaptive research by members of the extension service under the supervision of research staff.

2. Credit Program

2.1 In view of the adverse effects of inflation and negative real interest rates in terms of decapitalization of credit funds and the consequent inability to reach all the potential beneficiaries, an in-depth study should be made of possible solutions, such as indexing, real interest-rates, replacement of the subsidy element in present credits by a system of price subsidies, and the introduction of land-improvement grants.

2.2 De-emphasis of equipment loans in favor of farm-improvement and reforestation loans.

2.3 Improve the efficiency of the loan placement and follow-up procedures, defining more clearly the institutional responsibilities.

3. Road Construction and Maintenance Program

3.1 The proposed ONERN inspection of roads in the Project area to assess environmental damage and the degree of compliance with ONERN's guidelines should be carried out and be repeated annually, with the aid of remote sensing.

3.2 Increased provision of personnel and equipment for road maintenance.

4. Land Titling Program

No additional recommendations, but the need to streamline and to speed up the cadaster and titling procedures is emphasized.

5. Grain Storage Program

5.1 Modifications of ENCI's price structure for corn and sorghum to allow a reasonable margin for transportation to Lima and other distant markets, as a means of encouraging long-distance truck operators.

6. Mechanization Program

6.1 A program of field trials should be conducted in order to determine the equipment and methods that offer optimal technical and economic feasibility for land-clearing under the conditions prevailing in the area.

6.2 Preparation of soil-conservation guidelines for land-clearing.

7. Resource Evaluation and Environmental Protection Program

7.1 In addition to the evaluators' recommendations, the provisions in the Project Paper for technical assistance in soil conservation to SENAMA and to the extension service should be implemented.

7.2 Because environmental protection is a relatively new concept involving many sectors and groups, a central environmental protection unit should be set up to conduct studies, collect and process data on resouce use and environmental damage, prepare norms and specifications, channel international technical assistance and provide supervision and guidance to agencies and programs concerned with resource management.

7.3 The recommendation concerning the prompt completion of the long-overdue Environmental Protection Plan by ONERN in underlined.

7.4 Representations should be effected at high level to evercome obstacles due to non-fulfilment of SAN's aerial photography commitments.

PART VII. SUGGESTED POLICY GUIDELINES FOR AID

A. In respect to the present Project

1. In spite of many difficulties and some defects, the Project has made an important contribution to the orderly development of the area. The department of San Martín is one of the most-studied ares of tropical America and has been the subject of several international technical assistance projects, but the present project is the first that has attempted something approaching an integrated development program in the area. In the five years since the signing of the loan agreement, AID staff have become familiar with the region and its problems and Peruvian officials have acquired valuable experience in the application of AID procedures. A team approach has been worked out.

2. The September 1982 evaluation has shown that, despite numerous previous studies and T.A. programs, this region still needs outside help if it is to realize its development potential. The present project has broadened in scope and the evaluators rightly recommend a number of additional components, particularly in research, forestry, resource evaluation, environmental protection and social services. If these recommendations are adopted, the Project will complete its transformation from a largely infrastructural program to an integrated development project.

3. This transformation constitutes an opportunity for AID to play a leading role in the development of one of the most promising areas of Peru.

The continued presence of AID in the region is therefore desirable both for Peru and for the United States Government.

4. The actions required to implement the evaluators' recommendations imply several years of concerted effort and a substantial ongoing investment. The latter will logically be devoted less to physical infrastructure than to services -and, to a lesser extent, to equipment.

5. The first step therefore should be a round of discussions with Peruvian officials, leading to the negotiation of an extension of the present loan agreement to cover a second stage with a two or three-year duration. AID's contribution in this second stage should address particularly the following aspects:

a) Agricultural research, specially in irrigated rice-growing and adaptive research for continuous cropping as an alternative to shifting cultivation.
b) Agro-industries: assistance in the identification of investment needs and opportunities.
c) Forestry: development and application of appropriate managemenet systems, and technical support to the DGFF in the area.
d) Environmental protection: execution of watershed management programs, implementation of the ONERN environmental protection plan and of the proposed Environmental Protection Unit; guidance in environmental education, and the monitoring of land-use with the aid of remote sensing.
e) Social studies: study, evaluations and interpretation of social parameters and constraints in development and in technology transfer.
f) Urban planning and development, particularly in Tarapoto, Bellavista and Juanjuí.
g) Energy as related to rural and agro-industrial needs.
h) Project evaluation: establishment of an appropriate information system and indicators for ex-post evaluation. This is currently being worked on by APODESA.

6. In the conception, design and planning of the proposed second stage of the Project, care should be taken to insure the participation of the agencies in whose sectors or areas of responsibility the various project components will operate.

B. In respect of other Junge projects in Peru

Several of the lessons learnt in the execution of this Project have already been applied in others.

1. In the Pichis Project -also related to the Marginal Highway- ONERN presented a full natural resources inventory in 1981, twelve months before the signing of the Loan Agreement with the IDB, and before the start of road-building in the area. This gave time for the preparation of a space occupation plan and, subsequently, of a land-settlement or colonization plan with demarcation and declaration of protection forests. All of these actions were completed before inmigration to the area reached unmanageable proportions. This should be a requirement for all future regional development projects.

2. "Sub-Tropical Lands" according to the Project Paper, does not pretend to be a colonization project. However, it has had to address land-settlement and titling in a region which already has a long history of human settlement and which is undergoing rapid population growth and redistribution. No development project can afford to overlook existing problems of population-pressure and resource depletion.

3. Much as one may wish to limit a project to a few aspects of rural development, the interactions among the many activities will inevitably involve the project. An objective evaluation may well be forced to address a given parameter even though the evaluation criteria proposed by the project exclude it. A case in point was the ommision of a forestry component from the present project and its consequent omission from the evaluation indicators, which did not however absolve the project from evaluation on this point.

4. Production-oriented rural development projects must be based on appropriate technology, known to be technically and economically feasible and acceptable to the farmers of the area, not on technological packages developed in research programs and relatively untried on typical local farms.

5. For the proper evaluation of project performance during execution and ex-post, a suitable set of evaluation criteria must be established, and the types of information needed and their sources identified before the initiation of the project.

6. All possible influence should be exerted to overcome two serious bottlenecks in Selva development:

a) The lack of fulfillment by SAN (Servicio Aerofotográfico Nacional) of its obligations and its monopoly position which precludes recourse to other contractors;

b) The extremely cumbersome legal and bureaucratic procedures in cadaster and titling.

PART VIII. SUGGESTED ROLE OF APODESA

Many of the recommendations, both of the evaluators and of the present review, involve topics that are in APODESA's area of competence. These include:

- sociological and anthropological studies and research;
- economic studies, for example of farm and forest production, agroindustries, credit, etc.;
- collection, analysis and dissemination of statistical and other information concerning the operation and impact of the Project;
- liaison between the Project and other projects and institutions involved or interested in jungle development;
- channeling of technical information from other countries or regions to the Project office.

APODESA should intensify its present program of activities, including periodical visits to all the jungle projects. Also, as soon as possible, it should complete its professional team and AID's technical advisors should be appointed.

A specific task assigned to APODESA and in active execution is the formulation of a program of environmental protection and resource management activities in the Central Huallaga region for which it is hoped to obtain financial support from the United Nations Environmental Program. This work will fit very well with the environmental activities proposed for the Project.

Another highly important activity at present under execution by APODESA is the preparation of a set of criteria and indicators for the evaluation of development projects in the Selva region.

TABLE 4. EFFICIENCY & EFFECTIVENESS OF PROJECT ACTIVITIES

Activity	Efficiency (Attainment of Goals)	Effectiveness (Impact)	Corrective Action Required in the Project Area	Guidelines for AID in ongoing or new Selva Development Projects
Road Construction Improvement & Maintenance	Construction 100% Improvement 100% Maintenance 50%	. Effectiveness depended on correct assessment of agricultural land made available and on action by other components to ensure correct land use. . Area was over-estimated. Other components didn't meet goal; as a result serious land depredation has occurred in high land made accessible by roads.	. More investment in personnel and equipment for road maintenance. . See recommendations for environmental protection and forestry. Apply soil conservation specifications in road building and maintenance.	. Revise policy for cost escalation, as the present MTC polynomial method inflates dollar costs excessively. . Avoid over-design of feeder-roads; do not accept MTC's Grade 3 just because this is the lowest grade MTC will maintain; specify maintenance by other agency if necessary. . Incorporate environmental parameters in road design specifications and maintenance program.
Grain Stores	Construction 100% Minor technical defects in some stores.	. Steady growth in volumes of grains stored and marketed. . Bottleneck due to lack of price margin for transport from stores to distant markets; some deficiencies in personnel training. . Lack of liquidity in AgBank has caused up to 2 months delays in payments to farmers.	. Correct minor defects in stores. . ENCI to re-design its price structure to allow adequate margin for long-distance transportation; improve personnel training. . AgBank to overcome liquidity problems. . Creation of an agro-industrial component in the Project.	. In some cases AID should supplement infrastructural input with technical assistance to ensure efficient operation of the system or agencies responsible for storage and marketing (examples: price structuring, training of store supervisors, accounting by payment systems). . Agro-industries will usually need encouragement through Project-sponsored promotion activities.

Activity	Efficiency (Attainment of Goals)	Effectiveness (Impact)	Corrective Action Required in the Project Area	Guidelines for AID in ongoing or new Selva Development Projects
Extension	Personnel 76% Equipment 63% Weighted average of indicators as No. of agr. de enlace, irradiados, courses, visits, demonstrations: Pre-Oct. 81 70% Post-Oct. 81 46% (T&V system) "Agr. de Enlace 48% "Irradiados" 0%	. No yield increases recorded. Crop production doubled but cropped area more than doubled (lower fertility land brought in). . Almost no use of high technology (Dutch system). . Message stereotyped, not adapted to local needs, culture or seasons. . Poor choice of "agr. de enlace". . Insufficient training of sectoristas. . Hasty introduction of T&V method. . No feed-back from sectoristas.	. Continue T. & V. method on pilot scale, with message adapted to local needs, cultures, crops, seasons, soil, climate; provide for effective feed-back from sectoristas. . Better choice of "agr. de enlace". . Increased involvement of the ENIEL Rural Communications Pilot Project. . Upgrade technical levels of sectoristas. . INIPA to evaluate pilot operation after 2 years. . INIPA to make budgetary provision for future operation.	. When there is a sure relation between project inputs and end-result, goals expressing supply of inputs are a fair evaluation indicator. This is not the case with extension as at present organized in Peru. . Before including extension inputs in any development project we should be satisfied with the potential effectiveness of the method in use, then identify and justify the inputs needed to realize this potential. (Extension methods are currently being examined by AID and INIPA).
Credit Program	Total Loan Volume 51% of goal No. of loans granted 31% of goal Loan volumes by end-uses: % of goal Mechanized land-clearing 20 Livestock development 76 Farm machinery and equipment purchase 185 Irrig. works & farm struct. 8 Reforestation 0 Fruit orchards 0 Repayment record 1981 71% 1982 70.5%	. In general the effectiveness was poor. Slow processing of loans due to inefficient mechanism involving AgBank, INIPA, and PE. . Favoritism: too many equipment loans to least deserving borrowers, at expense of land-clearing and other end-uses. . Inflationary erosion of credit funds due to negative interest rates is already under way and will result in rapid exhaustion of funds (i.e. no rotating credit), and the credit program will only reach a small fraction of potential beneficiaries.	. Restore cut in credit fund from $3.15 m. to $5.2 m. . Improve system for loan evaluation, approval and follow-up. . Ensure rational loan distribution among end-uses. . Examine the implications of decapitalization due to negative interest rates and consider alternatives such as: - indexing; - in-kind credits; - direct price subsidies and/or land improvement grants in conjunction with indexed or real interest loans.	. A critical analysis should be made of the implications of subsidized credit under inflationary conditions, and of possible alternatives that would ensure more equitable distribution of loan funds and their safeguarding against inflationary erosion (see previous column). . The credit component of any development project must include an efficient mechanism for loan placement and follow-up. . In-kind credits as included in the Central Selva Project should be considered for all Selva projects.

Activity	Efficiency (Attainment of Goals)	Effectiveness (Impact)	Corrective Action Required	Guidelines for AID in ongoing or
Cadaster & Land Titling	3667 adjud. contracts 34.3% goal 1673 reversion resol. 76.7% goal	. The project's goals for end '83 were 15,000 titles and 2,180 reversions. . At current immigration rates these goals seem low. Even if they are sustained, titles granted per month must increase to 800 from present rate of 111. . Bottlenecks were in cadaster and in the cumbersome legal mechanism for titling; also an unwieldy system of bipartite agreements between Special Project and government agencies. . Overall impact was not good; the land tenure situation could soon get out of hand.	. Replace existing agreements by a tripartite agreement. . More emphasis on reversion of lapsed titles. . Set up an office of Public Land Register in Tarapoto. . Increase staff and budgetary provisions in the cadastral and land-titling offices of the Ministry of Agriculture in order to achieve at least 800 titles per month.	. An overall study is required of the legal and administrative mechanisms involved in order to speed up cadaster and titling. . The opening of a land registry office in the project area should be a C.P. in all Selva development projects (as in the case of the Central Selva Project).
Farm Machinery Services (SENAMA)	Land-clearing: 804 has = 18% of 1981/83 goal Land-preparation: 1531 has = 34% of 1981/83 goal Threshing: 480 has = 3% of 1981/83 goal	. Low output was mainly due to delays and difficulties in obtaining credits. . Mechanized land-clearing was ment to be the spear-point of a mechanized high-technology farming system to replace shifting agriculture. As of the evaluation, the area of new farm land incorporated was around 40,000 has, with 804 has. mechanically cleared and the remainder under shifting cultivation. The land cleared by SENAMA is mostly suffering from erosion, due to types of equipment, methods used, and to lack of soil conservation practrices and precautions by SENAMA. . Operating and maintenance situation of SENAMA is desperate.	. Complete reorganization of SENAMA, especially in respect of machinery operation, maintenance and repair. . Implementation of the promised technical assistance to SENAMA in soil conservation. . Preparation of acceptable specifications concerning methods and equipment, prevention of soild damahe and limiting land sloped for clearing; these should be preceeded by a program of field-trials under expert supervision. . Resumption of land-clearing with suitable support from the credit program and the extension service.	. Before including a farm machinery hiring component in a development project, a careful study should be made of the technological, economic and environmental implications of mechanization, particularly as regards mechanical land-clearing; the latter should not be made the basis for project justification unless these implications can be shown through field trials under representative conditions to be favorable. Adequate funding and T.A. must be provided to the executing agency to insure efficient operation and maintenance. . Steps should be taken to insure sufficient and timely credit for machinery hiring.

Activity	Efficiency (Attainment of Goals)	Effectiveness (Impact)	Corrective Action Required	Guidelines for AID in ongoing or
Environmental Protection and Resource Evaluation	None of the goals set by the Project for this component was attained. a) The ONERN Environmental Protection Plan scheduled for 1980 is still not ready (owing to airphoto delays by SAN). b) No Technical Assistance in soil conservation was provided to SENAMA or the Extension Service. c) Soil conservation specifications for road building came too late of use.	The Project's goals were insufficient exacting . A 2-year time-lag in the presentation of the Environmental Projection Plan was unwise in an area already suffering serious resource depletion. .No forestry component was included in the Project, although it was known that much of the area required either complete protection or management for rational forest production. . There was no overall resource management concept in Project design.	. Completion of the ONERN Environmental Protection Plan as soon as possible. . Setting up of an Environmental Management Unit. . Creation of a forestry component in the Project. . Compliance with provisions in the Project Paper concerning soil conservation assistance to SENAMA and the extension service. . Implementation of ONERN's Environmental Protection Plan.	. The principal lessons learnt in this project have been the need for a thorough resource inventory including land-capability classification, and for an overall environmental protection plan, to be completed before project initiation. The actions and mechanisms needed for the plan's implementation should be incorporated in project design and operating plans, which also should include a suitable resource-use monitoring system, on the lines of the Continuous Land Use Inventory component of the Central Selva Project.

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