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INSTITUTO DE ANALISIS DE POLITICA AGRARL

COUNTERNARCOTICS SUSTAINABLE DEVELOPMENT PROJECT AID/PERU

A TECHNICAL, ECONOMIC AND SOCIAL SOUNDNESS ANALYSIS

- FINAL REPORT -

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ACRONYMS

ADEX	Exporters' Association
ADR	Rural Development Agency
AID	Agency for International Development
AIO	Agricultural Information Office
ANAP	Pichis Ashaninka Nations Association
ARROSAMSA	San Martín Rice Producers Enterprise
BANRUP	Rural Bank of Perú
BID	Inter American Development Bank
CAPMA	Amazonian Center for the Environment
CDIH	Center for the Integral Development of the Huallaga - Tingo María
CDF	Community Development Fund
CEDISA	High Jungle Development and Research Center - Tarapoto
CEDRO	Illegal drugs use prevention Center
CEPCO	Oriental Community Education and Promotion Center
CEPTENA	Amazonian Native Species Technology Studies and Promotion Center
CODEVA	A project of the United Nations
COFIDE	Financial Development Corporation S.A.
COOPOP	Popular Cooperation
CORESE-SM	Regional Seeds Committee - San Martín
CRAC	Caja Rural de Ahorro y Crédito
CRAC SAM	Caja Rural de Ahorro y Crédito San Martín
CSD	Counternarcotics Sustainable Development Project
DECAS	Countersubversive Defense Committee - Apurimac River Valley
EAP	Economically Active Population
E-IRR	Economic Internal Rate of Return
E-NPV	Economic Net Present Value
ECASA	Rice Commercialization Enterprise S.A.
EMDEPALMA	Palm-trees oil processing company.
ENACO	Coca National Enterprise
ENCI	Inputs Commercialization Enterprise
EP	Peruvian Army
F-IRR	Financial Internal Rate of Return
F-NPV	Financial Net Present Value
FADI	Foundation for the Integrated Development of the Amazon
FEPOHCRAE	Apurimac and Ene Valleys Coca leaf Producers Federation
FONAVI	National Housing Fund
FONCODES	Social Compensation and Development Fund
FONDEAGRO	Agricultural Development Fund - Agricultural Ministry
FUNDEAS	Jungle Agricultural Development Foundation - Tingo María
GOP	Government of Peru
IAPA	Institute of Agricultural Policy Analysis
IGV	Sales tax
IIAP	Research Institute of the Peruvian Amazonia
INADE	National Development Institute
INAP-ESAP	National Institute of Public Administration -Advanced School of Public Administration
INEI	National Institute of Statistics and Informatics

INFES	Education and Health Infrastructure Institute
INIA	National Agricultural Research Institute
'RDEPA	Regional Institute for Development and Environmental Protection - Tocache
IRR	Internal Rate of Return
JNE	National Electoral Court
LG	Local Government
MASELVA	San Martín Corn Producers Enterprise
MA	Ministry of Agricuture
ME	Ministry of Education
MH	Ministry of Health
MP	Ministry of the Presidency
MT	Ministry of Transportation
MRTA	Tupac Amaru Revolutionary Movement
NGO	Non-Governmental Organization
NPV	Net Present Value
ONUDI	United Nations Industrial Development Organization (UNIDO)
OARA	Apurimac River Ashaninkas Organization
ONU	United Nations Organization (UN)
PACUCHO	Cotton Commercialization Enterprise
PBC	Basic cocaine paste
PEAH	Upper Huallaga Special Project
PEHCBM	Central Huallaga and Lower Mayo Special Project
PEIS	Social Investment Special Project
PEPP	Pichis-Palcazu Special Project
PESCS	Central and Southern Highlands Special Project
PETT	Land Titling Special Project
PNP	Peruvian National Police
PRODEMU	Women's Promotion and Development
PROMICRO	Micro-business Funding Program
PRONAA	National Food Aid Program
PRONAMACH	National Program for Watershed Management
PROVIDA	Life Protection Center - Tingo María
RG	Regional Government
SBS	Banking and Insurance Superintendency
SELVAINDUSTRIA	A company of the Romero group
SL	Shinning Path
UN	United Nations
UNAS	Jungle Agrarian National University - Tingo Maria
UNICEF	United Nations Children's Fund
UNSM	San Martín National University - Tarapoto
UPCH	Cayetano Heredia University
USA	United States of America
USAID	United States Agency for International Development
USE	Unit of Educational Services
UTES	Territorial Health Unit
VRAQUS	Apurimac River Valley Cooperatives Association
VRA	Apurimac River Valley
WARMIMAYO	River Banks Women's Support Center - Tarapoto
WB	World Bank
WHO/PAHO	World Health Organization / Pan American Health Organization

INTRODUCTION

This report by the Institute of Agricultural Policy Analysis (IAPA) presents a social, institutional, technical and economic analysis on the Counternarcotics Sustainable Development Project (CSD) commissioned by AID under contract N° 527-0000-C-00-4355-00. The main objective of this Project is to generate alternative income opportunities, in or near coca - growing areas, for farmers and workers currently engaged in coca production.

To carry out this analysis, a multidisciplinary team visited Tingo María, Aguaytía, Tocache, Uchiza, Tarapoto, Biabo, Ponaza, Sisa, La Merced, Puerto Bermúdez, Ciudad Constitución, San Francisco, Quimbiri and Sivia. These field trips allowed to obtain primary source information about the aims and needs of the zone's producers. On the other hand, interviews with communal leaders, local authorities and technical personnel from different public and private institutions enabled the team to get knowledge about possible solutions to the coca problem.

Each component of this report, namely the social, institutional, technical and economic aspects, contains an assessment of the problems faced and includes proposals aimed at improving employment and income in the project's area.

The proposals take into account project sustainability and suggest activities that may allow to improve the farmers' economy. Another criterion considered is the support to the comparative advantages of legal activities: agriculture, livestock, household industries, breeding of lesser animals, and so on. This will lead to a shift from an economy influenced by coca to one where production is diversified.

We should take advantage of the present circumstances where the farmer is diversifying his portfolio crops. They are aware that growing coca gives them a better income than other activities although the costs including - payment for protection, repression of illegal activities, submission to drug - trafficking and/or terrorism - are high as well. This situation has led farmers to ask for more government economic and technical support to develop alternative activities to coca.

The analysis recommends to be careful in raising alternatives whose success may prove to be short - lived. The economic development of this region has been characterized by cyclic booms and busts in the production of first rubber, then wood, and later coffee/cocoa. More recently soybean/annotto-tree "achiote", and now coca are produced. What is worrying about these booms is that they have increased poverty and caused ecological imbalances. Thus, by proposing a project aimed at enhancing social and economic growth, our recommendations attempt to reflect the farmer's reality and aspirations for the long-term.

1. SUMMARY

1.1. Objectives of the analysis

The main objective of this study is to gather critical and necessary political, economic, social, and technical information to be included in the CSD project. A second important objective is to assess the social, economic, institutional and technical viability of the components and activities proposed in this study.

1.2. Scope of the task

The analysis has been made in five areas, valleys or road axes (See Map 1) with a total population of 308,596. Out of this grand total, 62,000 people may benefit from the project's development activities. The total land area is 124,177 ha.

TABLE 1
Land, Population and Native Communities in the Project Area

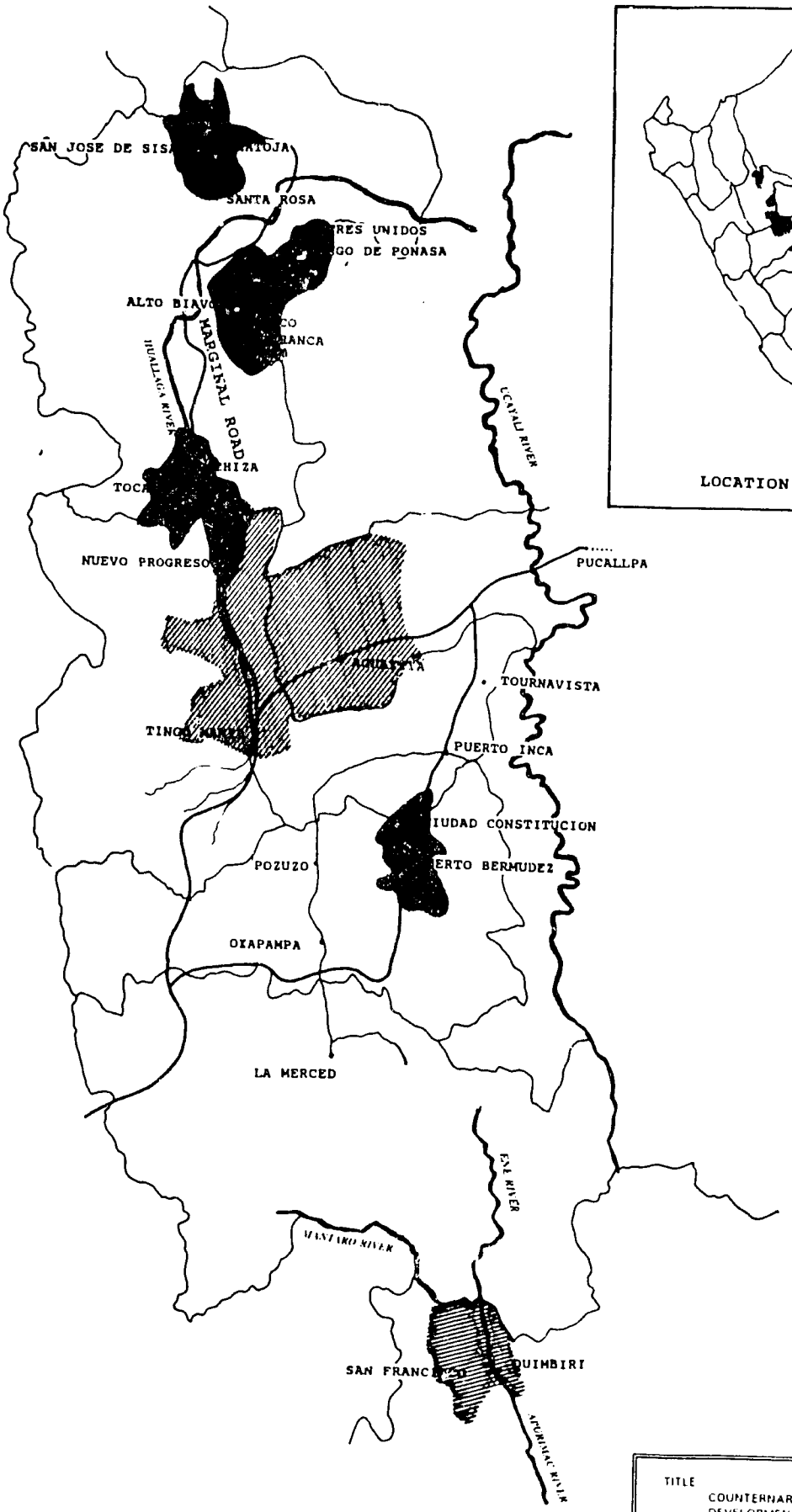
Zones	Land (has)	Population Total	Population Project	Native Communities Total	Native Communities Project
Biabo-Sisa-Ponaza	24,519	37,034	12,000	0	---
Tocache-Uchiza	27,866	62,625	14,000	0	---
Tingo Maria-Aguaytia	42,766	135,714	15,000	4	4
Pichis-Pachitea	6,897	20,508	12,000	108	40
Rio Apurimac Valley	22,129	52,715	9,000	8	8
TOTAL	124,177	308,596	62,000	120	52
			20%		43%

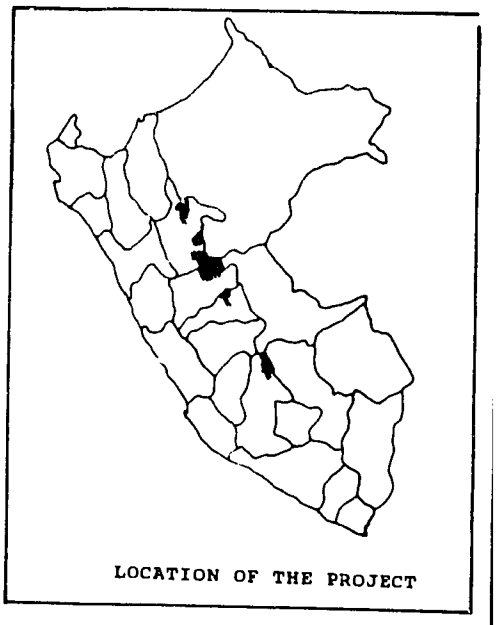
a) Biabo/Sisa/Ponaza

This area shows a great potential for the development of legal agricultural activities with the population willing to implement alternative projects to reduce coca production. The most important support to these basins will be in the form of grapes and cotton inputs. Moreover, an integral development approach should include community productive activities as a complement.

b) Tocache/Uchiza

People who have not migrated elsewhere (to grow coca) are in a situation of extreme poverty and and have started to grow legal crops again. The prohibition of illegal activities by farmers must be complemented by development actions that will open legal alternatives. To the extent that there is a suitable social infrastructure, the analysis advises to put more emphasis on productive aspects, training and organization of the farmers. In what concerns infrastructure, we suggest to repair and maintain the local feeding roads.





ZONE I: TINGO MARIA - AQUAYTIA

ZONE II: TOCACHE - UCHIZA

ZONE III: PONAZA - BIABO - SISA

ZONE IV: CIUDAD CONSTITUCION - PUERTO BERMUDEZ

ZONE V: VALLE DEL RIO APURIMAC

3

TITLE COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID PERU		
MAP ZONE OF INFLUENCE OF PROJECT		
AUTHOR INSTITUTO DE ANALISIS DE POLITICA AGRARIA IAPA		
SCALE 1 2000000	DRAWN BY EDUARDO TENA	DATE NOV 1994

c) Tingo María/Aguaytia

Farmers are returning to their original plots which they left as a consequence of the social chaos. Their first priority is to plant legal crops with the highest current profitability rate (papaya, bananas and cassava). If this effort fails, they will resort to growing coca again. Their dilemma brings forth the importance of supporting those crops. The community development component aims at giving support to the established population in the zones where the projects are developed.

d) Apurimac River Valley

In this valley we can see great progress in pacification. However, the population still lives in Los Pagos - a town built as a "fortress" to defend itself from terrorism - and their economy depends on coca. The small coffee and cocoa plantations, which have been practically abandoned due to violence, bad rows low crop prices.

Local settlers would like to diversify their production improve roads and basic social services. Because of social instability, it is strategic to support the local authorities to provide basic services in Los Pagos, expand and improve roads infrastructure, and support production of crops such as coffee, cocoa and fruits, among others.

e) Pichis Pachitea zone

This is a new coca - growing zone. Most farmers are engaged in this activity). This fact has created a great economic differentiation between the native settlers and recent migrants. The most disadvantaged are the native communities because they do not grow coca. The study also recomends this group should receive important support from the project together with those farmers that are searching for alternative sources of income than the coca. The study also recommends the improvement of the road infrastructure and to support community development.

Economic activities should be directed at livestock breeding (bovines and pigs) pasture enhancement as a complement. To improve nutrition levels and their income, we advise to prioritize the development of household agroindustry and breeding of lesser animals.

1.3. Benefits of the project

Agriculture

The analysis recommends support to cotton, grapes and pijuayo crops (in the Huallaga area). Additionally, the production of bananas, papaya and cassava should be emphasized throughout the area. It also recommends the multiplication of seeds and scions from the main crops in each zone (see Table 2). Another important action should be the validation on farm fields of pijuayo, cassava and cotton. The implementation of these activities will be accompanied by technical assistance and credit.

Credit

The main strategy of the project is to reach farmers and cattle breeders through credit. The analysis recommends to supply credits through the existing financial system, including the Financial Development Corporation S.A. (COFIDE), the commercial banks and Cajas Rurales (CRAC). To determine the credit amounts, modules for crops, breeding and agroindustry have been designed (See Agricultural Appendixes).

Land Titling

Access to credit in the zone has been hampered by insecurity of ownership rights. This situation has led to a number of conflicts among the occupants. For this reason, it is advisable to continue supporting the government-sponsored formalization of land titling.

Road Infrastructure

Support for rural road infraestructure should come mainly through the improvement and maintenance of feeding roads and for bridges, culverts, ditches, and so forth as a complement. In the Pichis Pachitea zone, this activity will be executed through a complementary support to the pool of machinery belonging to the Pichis Palcazu Special Project.

Agroindustry

This activity will be carried out through credits for working capital for plants and for the implementation of new ones. Among the different proposals, the processing of "uña de gato" and the respective reforestation program presents one of the highest profitability rates. Other complementary support activities include technical assistance, training and project management.

Marketing

This component covers the implementation of a system of price and market information, producers-to-consumers liaison services, organization of producers, and training in business management. Another form of support is through credits to enhance marketing activities. Our analysis recommends to involve key institutions, such as the Exporters' Association (ADEX), Chambers of Commerce and agencies of the Ministry of Agriculture.

Environmental Management

Objectives in this area include training of farmers and technicians, reforestation with productive trees (fruit - trees, uña de gato, sangre de grado, and others), multiplication of scions, and agroforestry.

Community Development

Priorities of this component are to lay the ground for the development of productive activities and to foster settler participation in alternative development projects.

The most important actions in this regard are a) training; b) building basic social infrastructure; c) supporting productive projects (by way of revolving funds directed at women and unemployed young people) and d) supporting social programs (community identity, family planning, primary health care, and so on).

By improving and expanding education and health coverage, this component would help various governmental agencies to fulfill their goals and programs. The success of all these actions hinges on the actual involvement of the beneficiaries in the alternatives proposed. Appropriate folow-up and security should likewise be contemplated, and guarantee the proper care and security of the activities. For more details about the components and activities of this project see Table 2.

Participation of Women

Women's participation in CSD is derived from the knowledge that they play a crucial role in improving family and community standards of living since they are charged with solving basic food and health problems.

Women's activities within the project will be aimed at enhancing their role in the community and should be seen in the context of wider actions such as enforcement of women's rights, literacy programs, family planning, home management and others. Among CDS priorities are technical and financial assistance through revolving funds for small scale industries such as lesser animal farms, family gardens, crafts, household industries, and other businesses run by the women themselves. However, women should not be seen as separate from men. We think women are a vital component of a new type of family which aims at substituting shared decision making between men and women for male-centered patterns.

1.4. Methodology

And analysis of secondary sources results of field visits and statistical date are the components of the general methodology used in this study. By approaching the rural population directly, we were able to identify their perception of and proposals to solve their problems. The proposals for activities included in this project are the result of such analysis. In addition, other tools have been used such as economic and financial indicators when carrying out the economic evaluation.

TABLE 2
Sample of Project Benefits

		Units.	HUALLAGA *	ZONES AGUAYTIA TINGO M.	P.PACHITE	APURIMAC	TOTAL
1.	AGRICULTURE						
	Technical Assistance						
1.1.	Proposed Crops	(ha)					
	Pijuayo		700				700
	Cotton**		1,000		150	150	1,300
	Grapes		700				700
	Bananas		2,000	2,000	500	500	5000
	Papaya		200	150	100	50	500
	Cassava**		500	400	150	150	1,200
1.2.	Seeds	(ha)					
	Rice**		200				200
	Maize**		100				100
	Cotton**		14				14
1.3.	Applied Research						
	Cotton		8				8
	Cassava		3	4			7
	Grapes		41				41
	Bananas		20	30			50
	Pijuayo		12				12
	Papaya		4	7			11
1.4.	Scions	Nurseries(ha)					
	Grapes		24				24
	Bananas		100	50	50	50	250
	Pijuayo***						175
	Papaya		55				55
	Cassava		40	30	15	15	100
1.5.	Agricultural Training						
2.	CREDIT	(Hectareas to be Financed)					
2.1.	Crops						
	Rice		3,818	278	6	168	4,270
	Cocoa		672	2	1	420	1,095
	Coffee		370	4	66	77	517
	Maize		4,003	153	76	229	4,461
	Bananas		6,525	429	134	56	7,144
	Papaya		135	2	1	2	140
	Cassava		3,268	129	79	987	4,463
2.2	Livestock	(Module)					
	Bovine cattle		100		500	100	700
	Pigs		150		400	200	750
	Poultry		50	20	50	50	170
3.	LAND TITLING		1500	1000	1000	1500	5000
4.	ROAD INFRASTRUCTURE						
4.1.	New roads	(kms)	8	--	--	22	30
4.2.	Rehabilitation with Platforms	(kms)	53	--	--	59	112
4.3.	Bridges	(meters)	175	--	75	244	494
4.4.	Wading structures	(units)	--	--	--	20	20
4.5.	Culverts	(units)	301	--	--	150	451
4.6.	Ditches and Drainage	(km)	117	--	--	54	171
4.7.	Maintenance of roads	(km)	1,260	--	--	500	1,760
4.8.	Fitting out	(units)	--	--	14	--	14

* *Includes Tocache/Uchiza y Ponaza/Biabo/Sisa*

** *Yearly output*

*** *In Iquitos*

Continued...

... Continued TABLE 2

	Units.	HUALLAGA *	ZONES AGUAYTIA TINGO M.	P.PACHITE	APURIMAC	TOTAL
5. AGROINDUSTRY						
5.1. Seed processing	(MT)	5,000			--	5,000
5.2. Dehydration of bananas and Cass.	(MT)	2,500	--			2,500
5.3. Pijuayo processing (15 oz. cans)		1,600,000	--	--	--	1,600,000
5.4. Uña de gato processing	(MT)	--	4,000	--		4,000
5.5. Training and validation	(Courses)	50	--	10	--	60
5.6. Coffee-cocoa processing	(MT)	--	--	--	3,000	3,000
6. MARKETING						
6.1. Liason office for Marketing services: Lima-Tarapoto-Tingo Maria	(Offices)	1	1	1	1	4
6.2. Markets Information - Ministry of Agriculture	(Branches)	1	1	1	1	4
6.3. Communications (Telephone-Fax)	(Units)		1	1	1	3
6.4. Producer's	(Multicommunity)			2	1	3
6.5. Training and Validation	(Courses)	3	3	3	3	12
7. ENVIRONMENTAL MANAGEMENT						
7.1. Agroforestry (reforest.)	(ha)	500	200	100	200	1,000
7.2. Environmental training	(Number of farmers)	1,000	400	200	400	2,000
7.3. Training	(Courses)	25	10	5	10	50
7.6. Vivariums and spreading	(#)	4	1	1	1	7
7.7. Scions	(thousands)	500	150	200	150	1,000
7.8. Reforestation for firewood	(ha)	200	100	100	100	500
8. COMMUNITY DEVELOPMENT						
8.1. Basic services/Community Development Component						
A. Training						
Local Seminars and workshops:						
- Workshops on road maintenance		20	5	7	8	40
- For primary sch. teach.		30	10	10	10	60
- For midwives		10	10	10	10	40
- For comm. health promoters		12	8	15	15	50
- Gen. Pub. on drug awareness		25	15	15	15	70
- Intervention community projects		13	5	12	15	50
TOTAL		110	58	69	73	310
B. Community Development Fund(CDF) Sample activities:						
- Potable water systs.		15	8	10	15	48
- Latrines		100	65	85	100	350
- Water wells		20	30	40	30	120
- Fish farms		120	20	93	50	283
- Apiculture		75	10	60	30	175
- Lesser animal farming		230	80	200	110	620
- Horticulture		400	150	200	150	900
- Productive projects		15	5	10	10	40
- Crafts		12	3	10	5	30
- Educational materials		170	30	100	100	400
- Family planning		8	5	7	5	25
- Community identity		30	15	40	15	100
- Health post equipment		20	25	12	23	60
- Health post		30	10	25	25	90
- Comm. primary school		25	15	30	30	100
- School desk		850	450	850	850	3,000
- Primary health services		10	4	6	5	25

2. SOCIAL ANALYSIS

The project covers a population of 308,596 inhabitants -approximately 60 thousand families. In spite of low average density, the areas' demographic's is very dynamic as reflected by the high average birth rate (over five live births per woman) and the high inflow of migrants from the neighboring departments, as compared to cities on the coast.

2.1. Poverty and Migration

According to the National Fund for Social Compensation and Development FONCODES, the areas' population belongs to levels 1 and 2, that is the **extreme poverty** and **poverty**[1] categories. It should be stressed that the situation is not as worrying as that of some other parts of Peru, e.g. the highlands of Ayacucho, Huancavelica, Puno, and Apurimac and some squatter settlements in Lima.

The extreme poverty affecting the area population is reflected by the following indicators: 90 per cent of children under 5 years of age are malnourished; 18 per cent are illiterate; life expectancy at birth is 47; 80 per cent of dwellings do not have a potable water supply. Clearly, there is a contradiction in an area where coca is produced and where there is a much economic activity for the benefit of drug lords and middlemen while the coca producers themselves remain poor.

The availability of land in the valleys covered by the CSD project has enabled the poorest families to engage in subsistence farming which is complemented by small stock raising. Corn, cassava, bananas and beans are cropped mainly for household consumption with a small part being sold in the cities. The poorest families raise chicken, pigs and ducks as part of their overall survival strategy. These animals are a source of protein and as a form of savings, which can be sold when conditions are critical.

In 1940 the Upper Huallaga area had a population of 11,623 which grew to 134,000 in 1981 and to more than 250,000 now. In the course of 54 years, the population increased more than 20 times. Although migration has diminished recently, there is a large deficit of essential services. This recent fall in migration is due to various factors including social unrest between 1986 and 1993 and diminishing sales of coca. (The organizations that buy coca paste have moved to other areas such as Bellavista, Aguaytia, Palcazu, Palmapampa and San Francisco). Police and military repression against drug traffickers and subversives forces is another reason why the area is now not considered "attractive".

In the Upper Huallaga area, most household heads (65 per cent) are migrants from other regions (Huanuco, Ancash, La Libertad, Lambayeque, Cajamarca). Originally, migration to the Huallaga region was stimulated by the Government of Peru (GOP) as part of a settlement program. After 1960, migration continued spontaneously with settlers growing legal crops (coffee, cocoa, rice and fruit) but later new colonizers arrived with the sole purpose of cultivating and trading illegal coca.

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[1] ***Poverty is defined as the absence and/or lack of basic services, inadequate nutrition, high-child mortality indexes and other factors.***

Approximately 42,000 new settlers arrived in the Huallaga Valley between 1972 and 1981.

In the Apurimac river valley 80 per cent of families are headed by settlers from the highlands of Ayacucho and Cusco. Large waves of immigration into this area occurred until mid-1985, attracted by coca cultivation. Since that date, the population has fallen as a result of violence by the Shining Path.

Migration to the Pichis-Pachitea area is different. Most of the population (70 per cent) are native Ashaninkas with a 30 per cent minority of migrant settlers from the central Peruvian highlands.

Throughout the CSD project area, both migrants and natives were devoted to agriculture and livestock husbandry until 1975; despite the problems and market constraints, they were able to cover their basic requirements. Only around 1980 did they begin to mix legal and coca leaf cropping in a pattern that still subsists.

Recent immigrants (from 1985 on) have moved to the area with the sole purpose of growing coca and/or engage in some other coca paste related activity. Typically they are seasonal migrants who live in the area during the coca harvest and sale season. Then, they return to their towns where they are involved in agriculture and/or livestock husbandry.

Study recommendations therefore are to focus on a target population of long-term immigrants (with more than 10 years of residence) and native people. These groups have invested in legal activities and have sufficient experience to work in unfavorable conditions (limited markets, low prices, social instability, and so on) and could make a greater contribution to the sustainability of project activities.

The conditions of poverty affecting the farmers of this area make the inhabitants receptive to actions which will enable them to improve their living conditions. At the same time, they feel frustrated because of unfulfilled promises and the failure of previous development activities. That is understandable as the only people hurt by such failures are themselves. National Government Institutions and authorities are regarded with some suspicion but we observed a greater degree of identification with local authorities (municipalities). It could be concluded that municipalities can increase the project's potential, given that they know what is happening on the ground and have credibility among the populare.

Participants of development activities are merely regarded as passive beneficiaries. On the contrary, this study recommends to involve potential beneficiaries not simply as labor supply, but rather by opening appropriate channels for their participation in the planning, implementation and evaluation of project activities and thus turn them into the driving force behind the project.

2.2. Social Organization

We found a number of social organizations in the area, most of which are related to productive activities. The most important are the producers' committees which are each organized around one crop or activity (rice, corn, bananas, cattle, coca and so forth). These committees exist in each district and are grouped by province,

department and region. The committees have progressed from a labor union-type phase (1980 - 1990) to one of production/business orientation - their activities are now focused on the production, organization and marketing of their products. In this situation, the analysis recommends that the CSD should implement its activities with the participation of these committees. This will distance them from remaining political/union tendencies and increase their production/business ability potential. Training courses as well as technical and financial assistance should help strengthen those institutions.

All the communities in the area have communal organizations which fulfill various roles. Principal among those are:

a) Defense committees (maintain relations with the military);
b) Development committees;
c) Parents associations (concerned with school issues);
d) Mothers' clubs.

While it is true that not all these organizations are equally effective in the implementation of their activities and there is variation between communities, that variation mainly depends on the support received from external agencies. It needs to be said that many of these organizations are generally inactive and only become active when there is a possibility of receiving some kind of outside assistance. For that reason, the study recommends to implement activities with organizations that will contribute to make them self sustaining, such as production and training actions.

In the CSD project area there are various instituions such as municipalities, the Social Investment Project (PEIS), FONCODES, and NGOs which, according to our diagnosis, should receive CSD support adapted to each institution's capacity and willingness to absorb it. Moreover, close coordination should exist between all CSD project subcontractors and diverse government agencies such as the Education, Health, Agriculture, Transports, Fisheries and other ministries, to involve them in those activities.

2.3. Importance of Coca Cultivation

The principal crop in the area is coca which is grown by 40,000 families. The CSD project area includes a total of 81,932 ha of coca. Coca monoculture has diminished in the Huallaga area whereas multiple crop associations with coca have been observed, principally with bananas, cassava and papaya. This demonstrates that the farmers want an alternative crop for compensate for the fluctuations in coca cropping. At present, coca leaf is no longer seen as a "perfect" crop due to problems such as pests, high production costs and market constraints. This is perhaps the reason why farmers are returning to the cultivation of integrated plots.

The study concludes that the Upper Huallaga area is experiencing a post-coca boom and post-pacification phase. For this reason, **immediate assistance to farmers "disillusioned" by coca and subversives** would be very timely. The implementation of activities should principally occur in rural areas.

We should consider the fact that approximately 70 per cent of farmers manage two plots. Subsistence and commercial crops (cassava, bananas, coffee, cocoa, corn, rice, papaya, and so on) are produced in the "legal" plot while coca is produced in the "illegal" plot (on average a 4-hour-walk away). The problems currently presented by coca are causing a kind of apathy with regard to its cultivation and the corresponding disposition to increase the production and productivity of legal crops. 90 per cent of farmers in the Apurimac river valley (for example) manage plots where most of the land is planted to coca (65 per cent on average) with the rest dedicated to other crops such as corn, peanuts, coffee and cocoa.

In consequence, the study recommends priority assistance to small farmers (4-20 ha) that are stable residents of the area and have traditionally grown legal crops. That assistance should not only cover economic and productive matters but also raise awareness of the present and future problems that coca cultivation can bring to the whole environment in which they live and work. At this time, the areas where coca cultivation is expanding most are Central Huallaga, Aguaytía and Palcazu.

The Biabo area (Central Huallaga) is special in that the land owners tend to have medium to large holdings in which they mainly produce rice and raise cattle. Coca producers are located in areas with steep slopes and are mostly migrants from the highlands of Cajamarca, Huanuco and La Libertad. Apart from coca, they also produce legal crops. Support for those crops (cotton, grapes, rice, corn, bananas, and so forth) would lead to reductions in the area dedicated to coca.

In the Apurimac river valley, approximately 16,900 ha are managed by 10,000 families, most of whom have an average of 1.5 ha in coca production. A particular characteristic of this area is that coca is almost considered to be a "legal" crop, as it is cultivated by every family. In general terms, it can be stated that legal crops, such as cocoa, coffee, maize and peanuts, occupy small areas within each farmer's plot (5 per cent of the total cultivated area).

2.4. Social and Political Diagnosis

Calm reigns in the area except for occasional subversive actions in isolated zones of Aucayacu, Uchiza, Tocache and the Apurimac River Valley. Common crime episodes are frequent in Bellavista and Picota. No terrorist actions have been reported in the last months of 1994 in the project area's towns and cities. However, reports from Tingo Maria, Tocache and the Apurimac River Valley mention three highly mobile Shining Path armed columns that seek to recover lost support. There are also reports that a few repented militants have been killed. These guerillas belong to the faction led by Ramirez Durand aka Feliciano who opposes the calls for a peace accord made by Abimael Guzman and who are thus termed traitors by Shining Path's Central Committee.

Over a decade of subversion have created a pattern of undemocratic behavior among some segments of the population who privilege force over ideas. Opponents are pointed as subversives (from the Shining Path or the MRTA movement), or else called collaborators (with the armed forces). Little space is left for consensus or the free exchange of ideas. To revive democratic behavior among the population, the

project should continually train community and local government leaders and authorities to foster grassroots participation in decision making.

So long as there are armed columns, particular care should be exercised not to support those communities subversives call support bases, open popular committees and liberated zones. In fact, these communities have urgent needs and they heve received support from special projects. However, no follow up actions were conducted due to security reasons. As a result, those communities cannot guarantee safe development activities.

CSD actions should not be linked to a political party platform. This can be achieved by training local experts for work in a context strongly influenced by subversive forces. Public officials have been terrorized by subversives to abide by a code of ethics comprising norms like honesty, avoiding contact with armed and police forces, behaving properly, not using project resources for private benefit, not participating in political campaigns, not creating false expectations among farmers, keeping promises, etc.

The Shining Path and the MRTA movement first succeeded in recruiting supporters among the area's teachers and in particular rural teachers. Through them, terrorists were able to rapidly indoctrinate students. Either unemployed or children of Andean migrant farmers, these young recruits were at the bottom of the social ladder and therefore had little chance of gaining any economic power. On the other hand, these teachers and their students were indiscriminately accused of belonging to the subversive forces. Thus, caught between a rock and a hard place, they took the worst part in the fight againg terrorism.

Training activities for teachers through the corresponding USEs should therefore be prioritized. Specific actions to be carried out with them include community identity training while young poeple should be more actively take part in production activities. In both cases actions should be implemented through representative organizations.

From the experience of development institutions already operating in the area, it would seem advisable to focus actions in accesible and relatively peaceful places. All actions should involve the community. Project beneficiaries will guarantee enhanced safety and security to the extent that these actions will improve their standard of living.

In spite of aparent relative peace and calm, and the absence of terrorist violence, extreme care should be exercised in distant rural zones. Although some 4,000 terrorists have turned themselves in to authorities just in the Huallaga region, the Shining Path and the MRTA are now shifting their strategy towards idological and political indoctrination and away from military tactics. Terrorist attacks have not disappeared. Rather, the Shining Path and the MRTA are gathering forces, recruiting new adepts and training new cadres while conducting sporadic attacks. To help fight the subversive ideological and political message, the CSD should strengthen local democratic governments such as municipalities, and educate the young and school age population on the nocive effects of subversion. Such an approach is justified by experience which has shown that in the area, coca and subversion go hand in hand.

To the extent that the project will be implemented in an area of potential social turmoil, our diagnosis includes the following recommendations.

a. Communities identified for development actions should be easily accesible and reltively calm and peaceful.

b. Activities should be promoted by local grassroots.

c. Project objectives should be free of political messages.

d. The project should be advertised as a tool for development.

e. Staff should be trained in the area's code of conduct.

f. Information from security forces should help identify subversive patterns of conduct.

g. Maintain close relations with local leaders, teachers, government officials, farmers and others to obtain quality information about the terrorists.

h. Maintain the best possible relations with security forces.

i. Remain independent from political parties.

j. At each community, a leader should be identified who can implement, monitor and evaluate activities when social unrest prevents field visits by project staff.

k. Wealth should not be apparent.

l. Pay due respect to local grassroots organizations.

m. All activities should be implementd through or in close coordination with municipalities. central government and ministry agencies, universities, chambers of commerce, farmers' commitees, etc.

CSD project and staff growth and functioning will be greatly facilitated by the above measures. They should not be taken as actions in the struggle against subversion which requires economic, social and security actions on the part of the State.

2.5. Situation of Women

In the project area, the prevailing culture defines the role of women principally in reproductive terms, minimizing the contribution made to the household economy by their productive activities. This overemphasis on domestic roles: food preparation, laundry, house cleaning, and child raising, health care and education has confined women's activities to the household and to reproduction.

Their reproductive role has led to a high fertility rate among the region's women. The average number of live births per woman of child-bearing age is 5.1 for the region as a whole. In rural areas it is a little over 6, while in urban areas it is close

to 4.5. These averages are considerably higher than the national average of 3.5 births per woman.

Confinement to domestic labor has also resulted in the persistence of high levels of illiteracy among women, 19% for the region the CSD as a whole. As we can see in the data base, there is a high correlation between illiteracy and high fertility.

The greatest gender difference in income received for similar work occurs in agricultural activities. Women's income from agriculture is only 24.8 per cent of the amount obtained by men even though this is the productive area in which women have the greatest participation. 58 per cent of the female economically active population (EAP) take part in agricultural activities. This situation is explained by the fact that women tend to be responsible for the less profitable agricultural activities such as raising lesser animals and production of staple food crops.

The greatest degree of participation by women in productive activities is found among relatively poor households -those with less than 2 ha of agricultural land per family (a fifth of the total) and in which female household heads predominate. These households are also characterized by reduced access to potable water or secure water supplies and to cooking fuel. All this demands that excessive work be carried out to fulfill domestic responsibilities.

On the other hand, the institutionalization of farm-land titling, has been favorable only to men. As a consequence, women are prevented from receiving credit, even if the formal and informal lending systems have credit lines available to women.

In towns, the women's most important community task is as part of organizations which aim at relieving children's hunger and avoid their malnutrition. This is the case of the "*Vaso de Leche*" (glass of milk) committees which work with municipalities and the Mothers' Clubs all of which respond to activities promoted by the Ministry of the Presidency (MP) and the National Food Assistance Program (PRONAA). Apart from being a means of access to food donations, these organizations carry out income-earning activities such as the sale of hand-made clothes, crafts and the products of primary level food processing.

Other important activities of urban women are street vending of food and the administration of small general stores from their own homes using small amounts of capital.

Principal lines of activity concerning women's situation are:

a) Develop educational activities on "responsible parenthood" and birth control so as to foster the commitment by women and men to reduce family size.

b) Locate women's productive agricultural activities within programs on integrated watershed management. This is especially important given their management of forestry and agricultural systems at family farm level and because of their consciousness of the need for conservation. Women tend to be more aware of the need to conserve water and forests because they are responsible for domestic chores such as washing and food preparation.

c) Carry out programs to grant land titles with special emphasis on the granting of titles to women. This will legitimize their access to agricultural production opportunities and to formal credits.

d) Promote agricultural training and extension activities for women on the management of more productive crops and livestock, especially horticulture and aquaculture as well as commercial vegetables and the substitution of illegal crops.

e) Capitalize on the presence of women in survival organizations linked to food and nutrition aspects, by introducing primary health promotion activities and income generation through economic and productive activities in urban agriculture and multiple services.

2.6. MUNICIPALITIES

For a long time (1982-1992) the municipalities have been the object of terrorist attacks; in Upper Huallaga alone 8 mayors were assassinated during that period. For the Shining Path, these political bodies constitute democratic types of government in opposition to the dictatorial alternatives of the subversives (Shining Path and MRTA).

The situation of the municipalities began to experience significative changes in 1990. Since that time, most elected mayors have been professionals; the political parties have been overtaken by independent movements; and the municipalities have received increases of 200 - 300 per cent in their budget from the central government. We should point out that some municipalities allocations did not invest in projects but rather purchased that has not been used optimally.

The municipalities presently conduct activities in the provision of basic social infrastructure and some social emergency projects, with the support of diverse institutions including the Special Program of Social Investment (PEIS), Social Compensation and Development Fund (FONCODES), and National Food Assistance Program (PRONAA). They also carry out some road maintenance work, though their limited stock of machinery restricts that task considerably.

The United Front approach at most municipalities is an important source of potential work which we should take into consideration. It predisposes the mayors to work for the benefit of their communities. Interestingly enough, the population no longer identifies the municipality with any specific political party, but rather sees it as their independent representative; this may explain why work planned by the municipalities is implemented in less time than at other institutions.

The analysis recommends that social infrastructure work should be conducted through the municipalities, so as to maximize the use of their resources and to strengthen the democratic changes which are taking place in the area. The municipalities could become models of peaceful development to improve people's standard of living.

At present, municipalities are the most dynamic institutions in the CSD project area. Garbage collection, price supervision, commercial licences all fall under their traditional scope of action. However, they now build water and sewerage networks, classrooms and health posts, distribute milk to school children, and so forth. Being highly representative of their constituencies, municipalities have become key actors in all community development projects.

Nevertheless, they might create the dangerous illusion that contracting public works will solve all problems. Our study therefore recommends permanent training for local government authorities to help them identify the true solutions to community problems. Building a health post or a school will not solve their health and education problems.

Likewise, mayors, without loss of their respective roles, should be aware that central government agencies such as the health and education departments must be involved in municipal public works, a fact that is often overlooked in the implementation of such actions. We therefore recommend strong relations between municipalities and central government agencies to prioritize actions and share resources.

It should be borne in mind that the municipal governments only represent a sector of the population which, in some cases, is a minority in relation to the voting public as a whole. For example, the mayors of San Jose de Sisa, Bellavista and Picota provinces were elected into office by 20, 22 and 19 per cent of their respective constituency. This situation is due to the lack of awareness of the populace regarding the election of their mayors. For that reason, the study recommends that, on the one hand, infrastructure activities should be implemented by the municipalities so as to increase their presence in the community and, on the other, that educational activities designed to increase public participation in the electoral process should be conducted.

The study recommends training of municipal government personnel, not only in technical and administrative matters but also to achieve changes in the attitudes of municipal staff (councilors, administrators and technicians) towards the population. The municipalities should also be made into the driving force of development, so that they may bring together the institutions which carry out development activities in the area.

As a result of a current perception that municipalities are awash with resources and of their efforts to carry out too many projects, communities are putting a lot of pressure on municipal authorities to solve various problems and finance diverse activities. Thus mothers' clubs request funding for their soup kitchens, farmers want funds for inputs, PTAs want to build classrooms for their children's schools with municipal money, neighborhoods request sports facilities, potable water, road repairs, etc.

Municipalities should in fact be supportive of community development actions. However, support should not be granted without a community development plan in the absence of which assistance is handed out on the basis of the authorities' individual criteria. Our diagnosis concludes that each municipality should design an

urban and rural master plan for the mid (5 years) and long (15 years) terms whereby problems and solutions may be adequately prioritized.

Financial controls are a recurrent topic in Peruvian municipal administration. Conventional wisdom holds that "mayors embezzle public funds and keep people happy with small projects." The resulting media scandals, judicial problems and even accusations with the subversives have become a growing source of difficulties for mayors. A recommended action would be for local governments to hold public hearings where representatives of the funding agencies report on the amounts and use of public monies. Additionally, initiatives by mayors should be supported by their constituencies while municipalities should involve representatives of all institutions in the management and administration of project funds.

2.7. SPECIFIC AREA CHARACTERISTICS

2.7.1. HUALLAGA AREA (BIABO, PONAZA, SISA, TOCACHE, UCHIZA, TINGO MARIA AND AGUAYTIA)

- Until mid 1993 there was a net outflow of coca leaf growers from this area towards places like Saposoa, Juanjui, Lamas, Moyobamba, Oxapampa, Puerto Inca and Pichis-Pachitea where they would envisaged not just to grow coca but also to engage in basic paste processing.

- This area is relatively peaceful after having suffered from the action of the Shining Path (Tingo Maria to Tocache) and the Tupac Amaru Revolutionary Movement - MRTA (Ponaza, Biabo and Sisa). Consequently, many farmers are returning to their parcels, some with the intention of growing traditional crops, others to grow and process coca.

- The study recommends support to the area's resident farmers through alternative development projects so as to avoid their migration to other areas to cultivate coca on a larger scale.

- The particular characteristics of this area suggest that the greatest emphasis should be placed on productive and educational activities. In that context, continuous work with grassroots organizations will be important so that these may become firm development partners and oversee the functioning of the projects.

- The implementation of fundamental social infrastructure projects should be limited as a basic level of those services already exists and other organizations are conducting such activities in the area (PEIS, FONCODES and Municipalities). Emphasis should be given to strengthening educational and health facilities so that they may improve the services that they provide.

2.7.2. APURIMAC AREA (QUIMBIRI, SAN FRANCISCO AND SIVIA)

- The La Mar and Huanta provinces of Ayacucho and the La Convencion province of Cusco are classified as very poor by the FONCODES Provincial Poverty Map. The principal indicators of that situation are: infant mortality above 100 per 1000; illiteracy rate between 20 and 35 per cent; and more than 75 per cent of dwellings without electricity, water and sewers.

  The majority of the population lives in a state of extreme poverty, characterized by food insecurity due to geographical isolation and the high cost of covering basic food requirements (more than 70 per cent of basic consumption is imported into the area). Basic consumption, which generally includes rice, bananas and cassava, is protein deficient given that milk, legumes and meat are consumed rarely and in less than the necessary amounts.

- The health system does not function as such because the great majority of health posts have neither adequate buildings, trained staff nor sufficient basic equipment. Community promoters have received very limited training and have neither the drugs nor the medical instruments necessary for emergency treatment. Given these serious limitations, primary health services - which preeminently concern preventive measures - have little real existence outside of vaccination campaigns. Health posts and schools do not monitor growth and development nor carry out education campaigns on the prevention of contagious and infectious diseases.

- Due to the above mentioned reason, and because of the poor diet, there is a high incidence of tuberculosis (TBC). In a recent control campaign in Santa Rosa, of 165 people examined 35 tested positive. The same is true of malnutrition as the rate of severe malnutrition is more than twice the national average rate. It should be remembered that other health problems caused by the virtual lack of safe drinking water and sewers go together with and aggravate those problems: parasitosis (affecting 98 per cent of the population); typhoid (rendered chronic by treatment difficulties); and previously eradicated diseases such as *Uta*.

- Study recommendations include the strengthening of health centers to provide priority attention to children from birth to 5 years old and to expectant and nursing mothers. The Project should give special attention to Health Posts so as to improve primary health services. Those are basically educational and campaigns to foster participation by the population in the different phases of dissemination, risk control and even health care. For that purpose, and to replicate the focalization program at local level, it is proposed that each Health Post receive an Equipment Module consisting of medicines and instruments for minor surgery. In addition, there should be training activities for health promoters and midwives and in disease prevention.

- Census data indicate that 25 per cent of the study area's population over 5 years of age have received no formal education, most of them being women. The data also shows that among primary school students the failure rate last year was higher than that of new pupils (28 per cent of the total number of students compared to 21 per cent). Moreover, 90 per cent of all teachers have not

received degrees in education. The Education Coordination Committees have proposed to reduce that figure to 50 per cent by 1995.

Military authorities in the valley have promoted "population concentrations" (Pagos); each contain around 40 or 50 families with a population of between 250 and 300 people. Each Pago has a school but 90 per cent of those lack both adequate classrooms, desks and educational materials and teachers. 85 per cent are staffed by a single teacher.

Given the predisposition of community members to live in concentrated areas rather than widely dispersed as before, the analysis recommends the implementation of activities to convert the Pagos into minor population centers. We should assist the local authorities to restructure their geographical space accordingly considering that the Pagos were formed to provide a center of defence against the Shining Path.

Appropriate and rational land occupation is prerequisite for sustainable development. Present occupation patterns reflect the defensive strategies of countersubversive warfare rather than criteria of conservation of the environment and the ecosystem. The concentration of population brought about by the formation of Pagos has eliminated the prior population dispersal, which was characteristic of extensive land use systems. At present, part of the population (10 per cent) wishes to return to the old forms of land occupation even though they recognize the advantages that concentration gives in terms of educational and health services and local administration. The majority of the population (90 per cent) indicate that they will stay in the Pagos, because of their strategic location.

To strengthen the Pagos as population centers, it will be necessary to consolidate their services. The strategy will be to assist their respective municipal institutions and community businesses in the implementation of vital social services (potable water, latrines, classrooms, health posts) and productive projects which will permit them to obtain sufficient income to satisfy their basic necessities.

For these reasons, and given the precarious position of the population centers, a Control Plan for Territorial Organization is essential. The plan would include a suitably stratified system of population centers and should be elaborated and implemented by the recently constituted Inter-municipal Association. The plan is needed to reinvigorate the process of granting titles to agricultural property and dwellings. Only 5 per cent of the total area is presently covered. On the other hand, this scheme and the titling process must resolve the problem created by the return of previous landowners to agricultural land which they had abandoned and which others have appropriated in the interim.

2.7.3. PICHIS/PACHITEA AREA (PUERTO BERMUDEZ AND CIUDAD CONSTITUCION)

Government agencies such as the National Institute of Statistics and Informatics (INEI), and FONCODES classify 80 per cent of the project area's population (27,600 inhabitants) as living in conditions of critical poverty. This has been confirmed by our field work, which showed the high rate of child malnutrition (80 per cent), lack of vital services (potable water, disease vector control, health care) and high infant mortality (96 per 1000). Educational services are deficient in both quantity (classrooms and school furnishings) and quality ("third category" teachers, lack of educational material, inadequate study programs).

There are wide areas within the project's sphere where the poorest families (mainly Ashaninkas and some settlers) carry out subsistence agriculture and small scale livestock husbandry. The settlers are principally involved in livestock raising though the current crisis has led to the development of a mostly subsistence agriculture (corn, cassave, bananas, beans, rice). Peasant survival strategies lead the families to also raise small animals and grow basic food crops. Experience has taught them that large-scale commercial monoculture is not a viable alternative under the present circumstances. Failures with coffee, cocoa, soybean and achiote have made them to return to mixed crops. In this context, the study recommends to support households through the improvement and/or expansion of their integrated production systems. This will allowed them to meet their food requirements and sell of excess production in the local market, thus laying the foundation for commercial production oriented to regional and national markets.

Ashaninka indians make up 70 per cent of the population (24,150 inhabitants) distributed throughout 103 communities and grouped together in ANAP (Pichis Ashaninka Nations Association). Settlers constitute the remaining 30 per cent of the total population (10,350) and come mainly from the Huancayo, Ayacucho, Apurimac, Cerro de Pasco and Huanuco areas. For the most part, they first migrated to the Oxapampa and Satipo areas, and from there to Puerto Bermudez and Ciudad Constitucion. The latter phase was encouraged by the colonization program of the second Belaunde Administration (1980-85) and, in turn, led to "spontaneous" migration with a view at developing livestock and agricultural activities. During that period, the occupation of Indian lands by colonists to conduct extensive livestock husbandry and commercial monoculture (cocoa, coffee, corn, soybean, fruit) led to the first clashes between colonists and native peoples. Despite that conflict, livestock raising developed to reach approximately 15,000 head of cattle in 1985. Since that date, livestock raising has diminished and there were only 3,000 head of cattle in the whole area by 1994.

More intense of social conflicts led to the exodus of approximately 30 per cent of the population between 1989 and 1990. Most of those people were large and medium-scale livestock farmers, some returning to their home areas and others to the central highlands.

Up until 1985 livestock production was prosperous allowing for the sale and air transport of meat to Pucallpa and Lima. The crisis began that same year with the attacks to Ciudad Constitucion (Shining Path) and Puerto Bermudez (MRTA),

who charged protection money, murdered livestock farmers and stole cattle. The murder of the overall leader of the Ashaninkas provoked their rebellion against the Shining Path and MRTA in 1988. While it is true that they succeeded in expelling the terrorists, it is also true that they committed some abuses such as stealing and killing cattle. As a consequence some livestock farmers left the area.

In 1992 extreme poverty was widespread in the area. In this context, coca first appeared in Ciudad Constitucion and later expanded to Lorenzillo (close to Puerto Bermudez). Coca was introduced into the area by coca growers from Upper Huallaga.

The study shows that projects would be well accepted both by colonists and native peoples, although their aspirations and needs differ. Colonists are mostly interested in developing livestock husbandry while the native peoples are interested in subsistence agriculture and small production projects. Both groups share the need to improve local infrastructure and the supply and quality of basic services.

Despite the failure of some projects (the most recent case being the production of 6000 ha of achiote (1986-1989), which could not be sold due to low prices) and the scarce support from government agencies, residents still have expectations to receive support from the Pichis Palcazu Special Project, the only development institution in the area. However they request greater investments by the project.

To a certain extent, the constituencies of Puerto Bermudez and Ciudad Constitucion still trust their elected mayors. Therefore, study recommendations include assistance to help them solve problems of social infrastructure and to strenghten municipal governments.

There is a widely-held conception among some of those interviewees that native people "are lazy and only want hand-outs". It should be mentioned that some settlers have resorted to natives as suppliers of cheap labor. For example, our field trips showed that failure in activities entrusted to technical personnel were justified by them on grounds that "natives did not cooperate much" or that "(they) were lazy and did not work to solve their problems".

To avoid worsening the "rivalry" between natives and settlers, the analysis has concluded that each group should be supported according to its particular aspirations and necessities but with greater emphasis on the native communities' interest as they represent the majority population and are poorer. It is also the case that the native peoples are a barrier to the expansion of coca cultivation as their customs, religion and organization do not permit illegal activities. However, many natives work as day laborers in coca and basic paste production. It is therefore necessary to promote productive activities among the native communities so as to reduce the supply of labor for illegal activities. Aid to the colonists will permit the revival of livestock production and provide employment for the Ashaninkas, thereby reducing the supply of labor for coca cultivation.

- Promotion and training should precede support to native communities with a view at reviving the tradition of communal labor. At present, development activities that require manual labor are viewed with a certain apathy as a result of paternalistic attitudes in activities conducted by government agencies.

  The social analysis concludes that cultural traditions need to be revived so as to motivate the participation of native peoples in development programs. Natives should not be considered as mere recipients of project assistance; rather they should participate from the start in each of the activities implemented. To that end, coordination is needed with their representative organizations - the Pichis Ashaninka Nations Assotiation (ANAP) in this case - and especially with the leaders of each community. Direct work with each community and their respective authorities is the most important factor, but formal relations should be maintained with ANAP, a strong organization (it is responsible for the native civil defence groups) which has consistently requested wide range and permanent assistance for the native peoples.

- There are approximately 6,000 ha of coca in the area, 70 per cent in the Ciudad Constitucion region and the rest in Santa Rosa de Shimbiraqui, Lorenzillo and Puerto Bermudez. Military interdiction in October 1994 has led the "firms" (buyers and exporters of basic paste) to temporarily leave the area (possibly moving to Aguaytia and Pucallpa) causing low demand for coca and, therefore, disconcerting the coca producers. This may lead many farmers to return to their traditional activities such as livestock production and agriculture. The analysis concludes that the Project should take advantage of the colonists' "fear" of continuing to plant coca and support them in legal activities such as the cultivation of corn, cassava, and bananas. Support should also be given in raising and fattening of lesser and large livestock.

  There are three types of social groups in the area: 1) natives, principally involved in subsistence agriculture, fishing and hunting, and small animal production; 2) colonists, principally involved in livestock production, basic food crop production and coca cultivation; 3) migrants, made up of those who have settled in the area in the last three years, dedicated to coca production and basic paste processing.

  The analysis recommends support for the first two groups as they could develop sustainable production activities with the help of the CSD Project. These groups already have the experience of surviving through difficult circumstances and remaining in the area. In addition, the colonists and natives are, to some extent, opposed to those who produce coca in monoculture and process basic paste because of the negative consequences brought in their train such as: increases in the prices of food, pollution of rivers and water bodies, deforestation, social unrest because of the presence of insurgents and the military, delinquency, and prostitution. Considering that, we recommend increased activity to raise the consciousness of natives and colonists, so that they may be direct opponents of the cultivation and processing of coca.

Apart from agriculture and livestock production, the settlers also grow coca but they are not involved in processing. The study concludes that immediate assistance to those colonists involved in pasture sowing, lesser animal raising,

cattle breeding, staple food crops, and so forth would lead to a reduction in the surface planted to coca.

With regard to vital services, the analysis considers that the deficit in educational and health infrastructure should be reduced through the construction and/or improvement of a limited number of classrooms, health posts and potable water systems. Training should be given priority to improve health (training of midwives, health promoters, nutritional education, rehydration fluid preparation, family planning with traditional methods) and education (teacher training, rediscovery of myths and customs, parent training, and so on). The various grassroots organizations should also be strengthened to foster their participation in different project activities.

- To the extent that the native communities have limited access to commercial credit, we recommend the use of revolving funds through the community development component to promote productive activities (bee keeping, small animal production, crafts, fish farming, horticulture, and so on).

2.8. DESCRIPTION OF ACTIVITIES

Activities in this social component are sustained by community promotion and are aimed at improving standards of living by providing communities with basic services and training, and promoting productive activities.

2.8.1. TRAINING

Local Seminars and Workshops are foreseen as follows:

a. Road Maintenance

Seminars with participation of local authorities and the general public to make them aware of the importance of maintaining local roads. Special care will be given to various maintenance tasks, such as cleaning of road edges and gutters, drain repairs, and so on.

The aforementioned events will be carried out at the same sites where road maintenance works are scheduled. These seminars could be implemented by municipalities and by the Ministry of Transport. These events will ensure long-lasting useful life of roads repaired under the project, because participants in the seminars will be better prepared to assume a role in road maintenance work.

In accordance with plans for the total project area, forty (40) seminars will be held during a five-year period. Each seminar will have an approximate cost of US$3,500. The project's beneficiaries will be 1,000 community leaders, municipal technicians, and other local authorities.

b. Primary School Teachers

Within the project's zone of influence, 80 per cent of teachers at primary and initial education levels are cassified as third category (they do not possess a teacher's degree); hence the importance of carrying out these training courses for in-service teachers. In this sense educational methodology will be given priority.

The Education Services Units (USEs) of the Ministry of Education will implement those training courses within their program of work. The project attempts to expand their coverage and improve quality.

Sixty (60) training courses have been programmed for all 5 project zones; each course will cost approximately US$5,000. This amount will cover per-diem expenses for lecturers, as well as experts' fees, and teaching and printed materials.

To make this support effective, the USEs will be committed to conduct supervisory activities related to the techniques disseminated through the training courses. Approximately 525 primary and initial education teachers will receive training through these activities.

c. Midwives

Traditional midwives are customarily accepted by rural populations or because there are no public health services available in those areas. Their services are voluntary (they are usually given some voluntary payment by the families they serve). Despite the usefulness of their services, children are delivered under deficient (mainly hygienic) conditions which may later lead to the death of the mother and/or child.

Through support activities programmed by the various hospitals (Territorial Health Units), we seek to train traditional midwives in modern methods. Courses will be conducted at provincial hospitals. The budget provides for room and board expenses for midwives attending said courses, and also covers educational materials and program supervision costs. The total number of courses programmed is 50, each one at an approximate cost of US$2,500. This activity foresees the training of approximately 160 midwives for the final benefit of 4,800 rural families.

d. Community Health Promotion

Most common diseases (respiratory and intestinal infections) are due in part to minimal public awareness of the health issues among the population. The project seeks to train health promoters and the population at large, on the importance of preventive health actions and encourage them to play an active role in primary health care.

Courses will be carried out in the main cities of each province and will be conducted by the following NGOs: Oriental Community Education and Promotion (CEPCO) and High Jungle Development and Research Center (CEDISA) (Biavo, Ponaza and Sisa); Integrated Development of the Amazonia Fundation (FADI) (Tocache and Uchiza); Center for the Integral Development of the Huallaga (CIDH) (Tingo María and Aguaytia). These NGOs should maintain close coordination with the various

hospitals in the area. In the Pichis/Pachitea area and the Apurimac river valley these activities should be implemented by Centers of the MOH.

50 courses have been programmed, each one at an approximate cost of US$ 3,000, with 250 health promoters as the direct beneficiaries of this activity.

e. Actions to Prevent the Use of Drugs by the General Population

Drugs abuse is growing constantly in the main cities of the CSD Project area. This is particularly true among young people who do not have access to drug prevention programs. This activity would provide awareness training to school children on the problems caused by drug abuse and how to protect themselves from it.

The Education Sector has responsibility for this activity and its implementation corresponds to Illegal Drugs Use Prevention Center (CEDRO). Courses will be tought at district schools. 60 courses have been programmed, each one having an approximate cost of US$3,000 to the benefit of some 3,000 school children.

f. Community Project Management

Local organizations in almost all areas communities are engaged in activities to impove communities standars of living. However they lack the know-how to manage, implement, control and evaluate their activities. These courses will train community leaders and local authorities so they can build greater sustainability into their own activities.

NGOs in the area have the experience needed to implement such activities, which will be developed in the main districts of the area. A total of 50 courses have been programmed at a cost of US$2,500 each. This activity will permit the training of 500 community leaders and local authorities.

2.8.2. COMMUNITY DEVELOPMENT FUND (CDF)

This activity will cover the following areas:

a. Potable Water

Potable water is one of the greatest needs of rural communities since when none is available they tend to consume polluted water instead.

The CDF activity seeks to implement 48 gravity-fed, potable water systems. They will only be equipped with public faucets, as, in the absence of sewers, household installations may cause the development of infection foci in the dwellings. Priority zones are: Central Huallaga, Aguaytia, Pichis-Palcazu and Apurimac.

This activity can be implemented by special projects, municipalities and by NGOs, because adequate community participation is needed to attain program objectives. The budget (US$25,000 for each system) does not include any payment for non-skilled labor that will be supplied by community members.

Expected benefits are: availability of potable water that will eventually reduce the incidence of child morbidity and mortality; the strengthening of community spirit to undertake other such activities of general interest; demonstrate the provision of specific publ works demanded by the population, thus gaining their trust and facilitating further implementation of alternative development actions.

Approximately 24,000 beneficiaries from 48 communities are expected to benefit from these activities.

b. Latrines

The disposal of excreta in most rural populations is conducted without any treatment whatsoever. This causes contagious-infectious diseases. We aim at providing latrines that will reduce infection foci and serve as a model to be imitated by other communities. This activity may be carried out by municipalities, hospitals, and NGOs. The aim of the fund is to build 350 public latrines, which would benefit a total of 80 communities (approximately 26,000 beneficiaries).

c. Health Posts

In rural zones distant from the cities, there are no health centers, inhibiting early treatment of diseases. The result is that sick people tend to be taken to the cities to receive care only when illness becomes serious.

With prior approval and in close coordination with health and local hospital authorities to secure staff and equipment we would build health posts in project priority zones.

Benefits provided by this activity are: enhanced health care coverage of the rural population and reduction of the time spent in health care by eliminating the need to travel to distant cities in order to receive medical assistance.

At an average cost of US$7,000 each, the 60 health posts planned would benefit 60 communities and some 24,000 people.

d. Community Primary Schools

A classroom deficit in the project area, restricts the ability of Education Sector representatives to provide appropriate education services. The project envisages the construction of 100 classrooms for initial education and primary school children.

The budget includes only procurement of materials and the salaries of construction foremen. The implementing organizations must involve community members. Priorities for each job must be determined in accordance with guidelines established by the Education Sector.

The implementing entities could be municipalities and special projects. The number of school children who will benefit is approximately 3,000. The cost budgeted for the construction of each classroom is approximately US$5,500.

e. Water Wells

In some small rural settlements (10-30 households) installation of potable water systems cannot be justified. However, the construction of water wells is possible. This will permit, on the one hand, to supply potable water for human consumption thereby helping to fight gastro-intestinal diseases. On the other, it would help to concentrate dispersed populations. These small water wells could be built in places where the water table is near the surface, and where there is no other way to obtain fresh water.

Municipalities and/or NGOs working in the area would be charged with implementing this project activity by building 120 water wells to the benefit of 120 communities and approximately 12,000 inhabitants.

f. Fish Farms

Fish farming could help to increase the incomes of small farmers and would also contribute to improve their diet. This activity considers the construction of small fish farms, with species of high nutritional and commercial value in the zone (mainly "tilapias").

The budget includes the procurement of fingerlings, nurture, infrastructure and technical assistance. 283 fish farms have been programmed, located mainly in areas near Tocache, Uchiza, Pomaza and Sisa. The average cost of each farm is US$ 649 to be implemented by: NGOs and the Ministry of Fisheries for the benefit of 908 families (4,500 people).

g. School Furniture

A serious deficit in school furniture hinders the ability of pupils to learn. School furniture to be provided by municipalities in coordination with educational auhorities will be used in primary and initial education classrooms.

The program's goal is to supply 3,000 two-child school desks, benefitting a total of 6,000 pupils. The approximate cost of each school desk is US$41.

h. Educational Materials

Lack of teaching books and materials also prevents adequate instruction of pupils. This is an alarming situation considering the fact that, at the initial and primary stages of education, teaching materials are essential to develop the learning capabilities of children.

About 14,000 school children would benefit from the provision of 400 initial and primary education modules comprising maps, filing cards, games, dictionaries, reference books, jigsaw puzzles, and other teaching props and materials.

This activity should be implemented by the corresponding USEs, in each province at an approximate cost of US$100 per module.

i. Family Planning

The high levels of child/infant morbidity and mortality are caused in part by the burden of large rural families who are too poor to take proper care of their young children. Family planning could allow some families to improve the education level, nutrition and well-being of their children. Currently, several institutions (both public and private) are implementing family planning programs but do not reach distant rural areas because of budgetary constraints.

We would support their work focusing on education of couples under a "responsible parenthood" philosophy. Provincial hospitals would implement the 25 programs for 5000 families at a cost of US$5,000 per program.

j. Primary Health Services

The main cause of child morbidity and mortality is the absence of a sustainable child primary health-care program. Many causes of death could be avoided if the Health Sector could carry out preventive and promotion activities.

This activity considers providing support to the Health Sector in aspects such as: mass immunization programs; oral rehydration campaigns, fluoridation, nutrition, and so on. These activities should be implemented by the Ministry of Health and NGOs in the area. The implementation of 25 programs is being considered at a cost of US$16,000 each. The beneficiary population will be 30,000 people, mainly children under the age of five.

k. Equipment for Health Posts

Many health posts (90 per cent) are unable to provide adequate care because they do not have appropriate sanitary equipment. This activity seeks to provide basic instruments and medicines to these health posts, most of which will be located in rural areas. The goal is to equip 90 health units, with modules costing US$800 each. The beneficiary population will total approximately 25,000 inhabitants.

l. Community Identity

Communities within the area of the CSD Project, are trying to find their way out of a process of social unrest which has affected their community identity. This activity attempts to recover the value of their traditions, customs, and beliefs and thereby allow the inhabitants to identify themselves with their social and cultural surroundings and strengthen their community organizations.

These activities should be developed at the level of small communities, with priority given to the Central Huallaga, Aguaytia and Pichis/Pachitea areas. 100 programs within an equal number of communities are envisaged. This activity's umbrella will include approximately 30,000 people. The cost of each program will be approximately US$2,000. These programs could be implemented by NGOs located in the area.

II. Productive Projects

Rural families are poor so they must be helped to increase their incomes. Proposed activities are: bee keeping, family orchards, handicrafts making, small animal farming and diverse production-oriented micro-projects.

These activities will represent new income opportunities, especially for women, unemployed young people and natives. These projects could be undertaken by the NGOs working in the area, in coordination with organizations which represent the interests of women and young people in the area.

The program goal is to implement 2,010 productive projects which will benefit approximately 9,300 families. The total cost of this activity is US$1,188,000, including implementation, follow-up and training stages.

2.9. STRATEGY

Given that the objective of the CSD Project is to promote integrated and sustainable development of the target area, the participation of communities is needed in order to improve the living standard of the population. The Community Development component will take the following aspects into consideration:

Community development should not merely be considered as a component with activities to be implemented; the consideration of this component as a methodology and concept is as important as the activities themselves. In this sense, community development is a mechanism for exchange between the project and its beneficiaries and gives direction to the social aspects of the other components. CSD activities should be implemented from the perspective of total quality, which signifies that the following should be taken into account: security,well-being, the sense of belonging and of self-worth, and self- fulfillment.

a) The implementation of activities related to basic services (education, health, transport, potable water and sewerage systems, and environmental health) will be carried out in close coordination with the corresponding central government sectors in order to optimize the rational utilization of technical and financial resources.

b) The entities charged with the implementation of these activities must be able to eventually continue their operations without the support of the CSD Project. The ones which appear to offer the greatest certainty to remain working in these areas are: ministries, municipalities, universities, higher education institutes, and so on. Principally private organizations may be charged with productive and promotion activities.

c) Although one should start considering the requirements expressed by community members, the implementing entities should also take into account the objectives of the project. In other words, our endeavors will not be limited to satisfy the needs of the area's residents, because not all their hopes will coincide with CSD's objectives.

d) The formation of small groups of community members has proven to be the most effective working tool, because it permits communities to identify their own priorities, and thus take part in the management, implementation and evaluation of activities.

e) Communities should not merely fulfill their responsibility to contribute with their labor, but they should also play a leading role in the development of activities. Community assemblies and forums may well become good channels for the participation of community members in order to maintain a constant flow of information about physical and economic progress of each activity.

f) The schedule for the implementation of activities should be established in accordance with the farmers' agricultural calendar.

g) Shared responsibilities entail: a) what the community considers a greater priority than other alternatives; b) that the beneficiaries, in an organized fashion, decide to contribute with their labor.

h) Small productive projects should be implemented through the use of revolving funds as the activities seek to aid the poorest families who do not have access to formal credit because of their extreme poverty.

3. INSTITUTIONAL ANALYSIS

3.1. OVERALL ANALYSIS

This section summarizes the situation of the key institutions which will be involved in the implementation of the project. An overview of the situation clearly shows the unequal institutional development in the Project areas, with the following characteristics:

a) The state of emergency continues in force giving the regional and zonal military commands authority to control and supervise public bodies and local social organizations.

   The military play an important role, especially in drug producing areas and in the cities more than anywhere else. Their presence is more obvious in some areas than in others. They are less visible in those places where there has been greater direct collaboration with civil defense organizations, such as the Central Jungle and the Apurimac river basin.

   Both the State and civil society have been militarized throughout the Project area. The state has greater presence in the regulation of major activities through the armed forces which are responsible for controlling the movement of people and vehicles on the major transportation routes. The military are even involved in construction and maintenance of the main roads.

b) The operational capability of the Regional Governments, especially sub-regional and micro-regional administrations, has been seriously weakened by the deactivation of the decentralization process. In their place, special projects - administered by the central government with direct dependency on the ministries - have increased in number and been strengthened.

c) The State and the special projects have not established their presence in the Apurimac basin but have concentrated their activities in the Huallaga and Pichis/Palcazu Basins.

   The nature of this watershed basin constitutes an homogeneous area which forms a natural planning unit that should be administered as such. However, the regionalization process has cut it into several parts: the left bank pertains to the Libertadores-Huari regional government; the right bank to the Inca region; and the Ene basin to the Mariscal Caceres region. The administrative headquarters of those governments are far apart and have virtually no operational capacity at present due to their deactivation.

   The Ministry of Health's Focalization Project has recently established an office there. The National Program for Watershed Basins (PRONAMACH), South-Central Highlands Development Program (PECS) and PEIS of the MP, INADE do not have offices.

   The MP agencies which have no presence in the basin include Education and Health Infrastructure (INFES), National Housing Fund (FONAVI), PRONAA and the

Construction Materials Bank. The regional offices of FONCODES are far from and have no real contact with the Apurimac River Valley (VRA).

d) Local governments and social organizations (autonomously created or fostered for self-defense by the military as in the Apurimac basin) are more active.

e) NGOs are limited to the Huallaga and Pichis-Palcazu basins, none are present in the Apurimac basin. They operate on a more general basis and include Producers' Federations, Producers' Committees, Cajas Rurales, "Glass of milk" committees, Mothers' Clubs, Health Committees and others.

3.2. MINISTRY OF THE PRESIDENCY (MP)

The Ministry of the Presidency has received a mandate to implement special development projects and is therefore the most important department for the implementation of the central government's rural and regional development policy.

Among the State institutions, the most important is the MP which has a larger budget for the project area than that of other state or private entities. The reason for this is that the principal institutions carrying out rural and regional development activities depend on the MP: INADE, PRONAA, Popular Cooperation (COOPOP), INFES, SEDAPAL, PEIS and others.

The MP also has great influence within FONCODES given that the Minister presides over the board of directors of this important body. At the beginning of 1994 the functions of the two organizations were defined so as to avoid duplication and interference between them. MOP is largely responsible for urban areas and projects costing more than $50,000 while FONCODES focuses on rural areas and projects with lower costs.

The entities under the MP umbrella act in coordination both at central and regional level, setting up common action areas and dividing tasks among them. The most important institution in terms of the size of its projects is the National Development Institute (INADE).

INADE has been involved in alternative development in the study area since 1981. Projects conducted by INADE include: Pichis-Palcazu Special Project (PEPP), Upper Huallaga Special Project (PEAH), Central Huallaga and Lower Mayo Special Project (PEHCBM), PEIS and, recently, the Return Migration Support Project.

INADE projects to cover the following activities:

a) Conservation of watershed basins and the environment, basically working on erosion and environmental protection.

b) Integrated production systems.

c) Transportation infrastructure. The principal activity in this area is maintenance of roads between the highlands and the jungle transition zone, for example the roads from Huamanga to San Francisco, La Merced to San Ramon and Puerto Humboldt via Villarrica, Puerto Bermudez and Ciudad Constitucion. The principal

problems are the provisional nature of the bridges and the lack of engineering work.

d) Industry and marketing. The main problem is that only a small minority of the urban population has electrical power. There is no energy supply in the productive and rural areas.

e) Land titling. The principal objective of this component is to formalize land ownership. The progress made so far has been unequal. While land titles have been granted to about 70 per cent of farmers in the Huallaga basin, less than 5 per cent of those in the Apurimac basin have received them. In addition, according to PEPP officials, in the Central Jungle titles have been granted to 150 indigenous communities (85 per cent) and 20,000 individual farmers (70 per cent of the total).

f) Promotion of social development in peasant and indigenous communities. INADE works in collaboration with FONCODES and PEIS.

g) Tourism. This is a new, self-financing component under which eco-tourism and health tourism are being considered. There is no current development model for native communities.

The experience and institutional ability of INADE can be useful to the project, especially in the following matters:

a) The implementation of projects through contracts with private entities and NGOs and by inter-institutional agreements with universities, research institutes and local governments has enabled them to train personnel specialized in the supervision and ex-post evaluation of projects.

b) Ability to convoke meetings and activities of distinct entities and experience of joint work with local governments and community organizations. INADE is a State organization that has taken seriously the need to promote participation by the target population in the definition and supervision of projects.

c) Cumulative technical experience, especially in the management of demonstration projects in the agriculture, food and agro-industrial complex: availability of inputs, crops and animal breeds, credit, revolving funds, training and marketing in the framework of agroforestry systems, which constitute the principal options for sustainable development.

This agency has gained a vast experience in alternative development through its special projects in the jungle area such as the Alto Huallaga and Huallaga Central and Bajo Huallaga Special Projects (PEAH and PEHCBH, respectively) implemented in the world's main coca producing areas. However, these projects' staff lacked the technical and administrative expertise to implement alternative development projects since in many cases they were appointed on the basis of political rather than technical criteria.

Suggestions

a) Hierarchical staff must be appointed on the basis of professional skills.

b) Professional skills should determine the position held by appointees contrary to INADE's practice of filling posts without regard for technical capabilities. For instance, positions requiring a social science training are often filled by professionals from other areas of knowledge.

c) At least three year work experience in the region should be required.

d) Technical staff should receive regular in training to better perform their tasks.

e) INADE headqurters should be staffed by true and tried alternative development professionals charged with monitoring the special projects offices that implement CSD project actions.

f) Minimum job tenure requirements should be two year contracts for CSD project employees who must be strictly screened. Hierachical staff should get AID clearance for optimum personnel selection.

Another important institution in the study area is the National Food Assistance Program (PRONAA). This body has recently adopted the strategy of food donation monetization to obtain a cash stock for the acquisition of agricultural products in its areas of operation. Purchases of rice in the area have notably improved farm level prices. It is also carrying out projects to improve canal irrigation systems and micro watershed management through food for work programs.

PRONAA could collaborate with the Project in the following manners:

a) Integration of the project's target population into the system of local purchases. This would help to promote substitute crops as there would be a secure market for legal crops offering attractive prices to peasants and farmers.

b) Using food-for-work payments in the execution of communal works: reforestation, social infrastructure, local roads and irrigation infrastructure maintenance.

INFES operates mostly in medium sized cities and urban areas. Given that the lack of adequate social infrastructure has been confirmed in the principal cities within the project area, agreements could be made with INFES to share in the investments they make at this level.

In the project area FONCODES and COOPOP are building health posts and school classrooms in rural areas making small investments and within a strategy of community participation and emergency generation of mass employment.

The project could provide coordinate at the inter-institutional level so that they can operate with an integrated plan. Coordination with these bodies could be established

through their central headquarters or the MP, as the regional offices lack decision-making capacity.

MP problems include excessive decision making power at headquarters in Lima as in the case of INADE, FONCODES, PRONAA, INFES, and COOPOP. Despite clear functional guidelines and regional coordination efforts, these agencies activities often overlap and cross borders with regional government initiatives.

The project must therefore coordinate closely with the MP so that project actions will be incorporated into the action plans of the various implementing agencies, in particular at INADE, FONCODES and PRONAA. Only preliminary task assignment will allow coordinated operations in the project area.

3.3. LOCAL GOVERNMENTS (LG)

The new Peruvian Constitution places the responsibility for rural and urban development planning on the LGs for their areas of influence. However, a new LG Law is required. Nevertheless, the LGs consider that they should already assume this new role, mainly because of the process of deactivation of the (Reginal Governments) and doubts that they will soon be reactivated.

The LGs, at provincial level, are improving their management conditions by coordinating some small projects with INADE, PEIS, FONCODES, NGOs and other institutions. All of them have some capability, although limited, to work with local communities in planning and carrying out socio-economic community development programs.

Despite their potential, local governments must overcome a number of obstacles before they can reach their best performance.

a) Lack of a Municipal Act to regulate local development planning as a whole.

b) Lack of norms regulating compulsory coordination between local and provincial municipalities, mostly in what concerns works of mutual interest and benefit such as watershed conservation, interdistrict roads, and community social infrastructure.

c) Lack of norms regulating investment of public funds for the appropriate monitoring of investments by local government agencies.

d) Deficient tax collection leading to increased reliance on central government grants and transfers.

e) Lack of trained personnel to manage social investment projects including planning, computer, follow up and ex-post evaluation.

f) Lack of an adequate control structure to prevent illegal actions.

g) Lack of appropriate channels for coordination with grassroots organizations.

In the absence of regulations to enforce constitutional provisions, actions are required along the following lines.

a) Training of permanent or professional municipal staff to manage social investment projects.

b) Support to coordination efforts among local institutions with important participation of grassroots organizations such as Works Committees, Local Development Committees, etc.

c) Support to interdistrict development and coordination efforts such as Work Sessions, Provincial Development Committees, etc.

Decree Law 776, which rationalized municipal revenue, has increased the resources of District Municipalities 3 to 5 fold in relation to previous years. Budget income per capita in 1994 has increased to $15 - 20 compared to the average of $5 in 1993. This increases the financial capacity of these local bodies to unite resources with the Project.

The greatest potential of local governments is derived from their communities' recognition as their most representative authority when the armed forces take political and military control.

A difficulty is the lack of core personnel sufficiently qualified for management of development projects and of an institutional environment conducive to coordination with public and private entities working in their areas of influence.

The project can establish an inter-institutional coordinating mechanism, involving public and private entities to develop permanent coordinated development actions. This will facilitate progress in the development of provinces within the project area which coincide with river basins or sectors thereof.

The study recomends appropriate courses to be implemented in coordination with the National Institute of Public Administration - Advanced School of Public Administration (INAP-ESAP) and with regional universities. INAP-ESAP conducted a course on Municipal Management of Social Investment Projects for mayors and professional staff of municipalities of Cusco in mid-1994.

Municipalities must become strong democratic institutions. The CSD must take advantage of its central position to promote the following activities.

a) Building basic social infrastructure.
b) Road rehabilitation and maintenance.
c) Reforestation
d) Small scale production projects (with women's and young people organizations).

Municipalities should become central development agents for the following reasons.

a) They are stable institutions.
b) They are politically independent from current administrations.
c) They can mobilize their constituencies.

d) They have worked under conditions of social unrest.
e) They have the legal means to support development activities.
f) They have some resources, machines and infrastructure that may be useful for the CSD project.

3.4 REGIONAL GOVERNMENTS (RG)

The project area spreads over the following regions: San Martin, Ucayali, Andres Avelino Caceres, Libertadores-Huari and Inca. Of these, the San Martin, Ucayali and Caceres regional governments are engaged in specific coca eradication projects under the auspices of CODEVA and UNDP.

The 1993 constitution provides for a new territorial demarcation of the regions after putting the issue to the ballot. In the Apurimac and Ene Rivers Valley, an increasingly popular initiative would lead to the establlishment of an Autonomous Authority as a step toward the eventual constitution of a new regional government. The Autonomous Authority would be comprised of representatives from municipalities of both rivers' banks and of the Libertadores-Huari, Inca and Caceres regional governments. As a result of central government designs to give local governments a crucial role in the decentralization process, they can become important agents to coordinate and plan integral development projects.

Likewise, we recommend to support all initiatives conducive to the creation of mechanisms for integral development in the area of each river basin. Coca eradication will succeed only through the development of such homogeneous spaces. Dispersion of administrative agencies will hamper all efforts in this direction, as is already happening in the Apurimac and Ene Great River Basin split among three distant administrative jurisdictions which can hardly provide institutional or qualified staff coverage in the area's peculiar high jungle environment.

Although mandated by law to plan, execute and supervise area development plans, these agencies lack sufficient resources and have therefore become political institutions under the direct influence of the executive office. Other than legal advantages and some infrastructure, these institutions do not provide interesting work prospects and therefore only formal relations should be maintained with them.

3.5. OTHER GOP AGENCIES

Other GOP agencies which are involved in MP projects, albeit on a small scale, include:

3.5.1. Ministry of Health (MH)

The MH is responsible nationwide for the planning and management of health care centers and water and sewerage systems. It has recently begun to implement special projects on "Focalization" and "Health and Basic Nutrition" which aim at improving the equipment of health posts and develop preventative health activities with expectant and nursing mothers and children under 6 years of age.

The MH has descentralized regional offices as well as provincial offices which are responsible within their area for planning, staffing, management and supervision of such activities. The regional and provincial offices have extensive experience working with the United Nations Children's Fund (UNICEF), World Health Organization (WHO/PAHO) and United States Agency for International Development (USAID). Nevertheless, the present deactivation of the regionalization process signifies that the only entities with new resources are the aforementioned Special Projects. The Project should coordinate with those special projects at central level so as to join forces for united action.

MH provincial offices (Unidad Territorial de Salud-UTES) are working with INADE's projects and local governments in health care related community projects. The participation of the UTES includes the assignment of staff to health centers, provision of specialized staff for training community members in health prevention programs, providing technical specifications for drinking water and sewerage systems, and so forth.

A study recommendation would be to sign cooperation agreements with health authorities to take advantage of their technical and logistic facilities in the frame work of specific actions such as family planning, primary health care, furnishing of health posts, etc. Our aim should be to strengthen Ministry of Health actions that are often hampered by insufficient resources. CSD support to the Ministry would revitalize its projects and solve some of the area's health problems.

3.5.2. Ministry of Education (ME)

The ME, like the MH, has regional decentralized offices that coordinate directly with regional governments, and also has provincial offices (Unidad Sectorial de Educación - USE). These offices coordinate with local governments and are currently coordinating the staffing of schools constructed by PEAH with INADE projects' Zonal Agencies (ADR). They provide technical specifications for the rehabilitation or construction of classrooms and schools.

INADE's projects also coordinate with regional education offices on the planning and implementation of training workshops and seminars for teachers, as well as activities to improve curricula on drug use awareness and prevention as part of the USAID sponsored Drug Awareness Project.

Educational sector agencies has expertise in conducting environmental and drug abuse education campaigns. Moreover, they have the technical and academic skills to train teachers in service. We recommend additional financial resources to this sector to make possible expanded or improved services for rural areas.

3.6. NON GOVERNMENTAL ORGANIZATIONS (NGO)

There are a great number of NGOs working in the Huallaga but not in the Apurimac valley or in Pichis/Palcazu. The way of working with those organizations in the project area is by contracting their services to implement some of the project's activities.

For example, the Integrated Development of the Amazon Foundation (FADI) has been working in PEAH's area of influence, during periods of strong presence of the subversives, by agreement with PEAH. Currently FADI is working with the Universidad Peruana Cayetano Heredia (UPCH) in a health program combatting nutritional anemia. There are other NGOs such as CEDRO that provide seeds for naturally colored cotton ("ecological" cotton).

Other NGOs have different zones of influence, for example the Women's Promotion and Development Association (PRODEMU) is working with women in the San Martin and Lamas provinces. A more detailed list of NGO is presented in the Table 12 of the appendix.

3.7. FINANCIAL INSTITUTIONS

3.7.1. Financial Development Corporation S.A. (COFIDE)

COFIDE is a State institution, regulated by provisions of private law, organized as a private limited company with administrative, economic and financial autonomy. It was created on March 18, 1971 with the aim of contributing to the national development process. The institution was later assigned the social objective of "conducting funding activities at national level in favor of small businessmen and farmers, preferably in depressed areas".

The new role of COFIDE is the support of the productive sector through medium- and long-term loans, acting as a "second floor" financial institution. That signifies that it only operates through qualified financial intermediaries and promotional organizations.

In support of the productive sector, COFIDE operates the following programs and credit lines:

a) PROPEM-CAF program, financing small and micro-business projects;

b) Multisector program, supporting investments by medium sized companies;

c) Credit lines making working capital available to different businesses;

d) Micro-business funding program (PROMICRO), implemented through banks and Municipal and Rural Savings and Loan Associations;

e) Credit program in support of the agricultural export sector;

f) Agricultural Capitalization Program.

COFIDE has had an office in Tarapoto since February of this year, providing information and advice to those who wish to request funding. This office is manned alternately by two members of staff from Pucallpa.

3.7.2. Cajas Rurales (CRACs)

CRACs were created in June 1992. Their social objective is to provide financial services in support of economic activities in rural areas. They operate by mobilizing financial resources from national and international sources and encouraging savings so as to provide access to credit for economic agents resident in their areas of influence and thereby improve the quality of life in rural areas.

CRACs are authorized to conduct the following operations:

a) Receive savings deposits in national and foreign currency;

b) channel resources from the National Development Bank (if such exists);

c) carry out credit operations and make deposits with national and international financial organizations;

d) provide direct loans to finance economic activities;

e) provide endorsements and letters of guarantee;

f) act in syndication with other national financial institutions to provide credit and guarantees;

g) provide money collection, transfer and account payment services for third parties;

h) acquire and negotiate certificates of deposit, warrants, exchange letters and commercial invoices.

The Caja Rural carry out most of the functions of commercial banks. They will have to act in a competitive market, so their consolidation and geographical expansion will depend on the business acumen of their directors, shareholders and managers.

The recently created Caja Rural de Ahorro y Credito - San Martin (CRAC-SAM) operates in the Tarapoto area. Its activities are concentrated in areas close to the city and, in the short term, Ponaza, Biabo and Sisa are not considered priority areas, though the location of an agency in Tocache has been considered. Friority has been given to agencies in Moyobamba, Juanjui and Bellavista for which studies were concluded and presented to the Banking and Insurance Superintendency (SBS).

The Caja Rural of San Martin has granted loans for soles $ 878,183. Of that amount 54 per cent is for agricultural activities, 13 per cent for industry, 12 per cent for the service sector and 21 per cent for commerce. The provinces which received the largest part of those loans are San Martin (39 per cent), Bellavista (17 per cent) and Moyobamba (17 per cent). Areas which will be served by the project received smaller amounts: Picota 8 per cent, Tocache 3 per cent and El Dorado 0.5 per cent. (table CR9 in appendix).

3.7.3. Communal organizations

Other than State agencies and NGOs, in the project area there is a relatively stable growth of the follwoing types of interst groups:

a) Organizations for the defense of production activities which are characterized principally by their independence from the State.

   This is the case of the Chambers of Commerce (e.g. the Tarapoto Chamber) and the Producers Committees created for the main regional products, in particular rice, cocoa, coffee and coca. Some have even reached federation levels of organization as is the case with the Apurimac River Valley's Coca Growers Federation (Federación de Productores de Coca del Valle del Río Apurímac).

   Their principal aim is to become valid interlocutors with the government and get credits for member capitalization and working capital for product marketing. Some of these committees such as ARROSAMSA and VRAQUS, among others, have created service cooperatives and marketing boards.

b) Survival organizations are community institutions that appeared as the low income population's response to critical food, nutrition and even income and employment emergencies. Funded by State transfers and subsidies, they cannot assure autonomous operation.

   Some organizations of this type are Glass of Milk Committees that rely on municipal and central government subsidies to budget their activities, soup kitchens (comedores populares), mothers' clubs which depend on PRONAA suport and international food assistance, health committees and community first aid posts supported by FONCODES.

c) Business promotion organizations. In the framework of a "teach your brother to fish" approach, the Ministry of Agriculture now promotes community and intercommunity businesses and provides training to turn peasant "campesinos" into farmers.

   In this light, the project's production components including credit, marketing, agribusiness and support to production infrastructure, should be coordinated with the first type of organizations.

   Organizations of the second type will be crucial interlocutors in what concerns support to social services and infrastructure including local roads. To promote investment opportunities for peasant settlers and native populations, organizations of the third type should prove to be valid interlocutors.

3.7.4. Cooperating Institutions

Insititutions that may participate in this project are presented in Table 3. They are clasiffied by zones and activities.

TABLE 3
Institutions that may Participate in the Project

INSTITUTION	POSSIBLE EXECUTION OF CSD'S ACTIVITIES
1. BIABIO, SISA, PONAZA VALLEYS	
COMMNUNITY DEVELOPMENT	
- Universidad Nacional San Martin	- Fruit processing capacity
- NGO WARMIMAYO	- Craftmanship
- NGO CEPCO	- Productive projects. Small ruminant breeding. Horticulture
- NGO CEDISA/UTES	- Training primary health care. Traditional midwives and construction of drinkable water systems. Communal identity
- Municipalities	- Social Infrastructure : Schools, medical posts and school supplies.
- NGO APECAM	- Fish farms.
- USE	- Teachers training. Teaching material, prevention of drug buse.
- UTES	- Post equipment, primary health care, family planning and latrines.
LAND TITLING	
- Ministry of Agriculture	- Land titling.
CREDIT	
- "Caja Rural" San Martin	- Credits.
MARKETING	
- Tarapoto's Chamber of Commerce	- Agricultural marketing services.
- Ministry of Agriculture office Agriculture	- Market information
- NGOs and Ministry of Agriculture	- Farmers Organizations
ROADS	
- Specialized contractor	- Rehabilitation and construction of new roads. Bridges and drainage systems and regular road maintenance.
- PEAH/Municipalities	- Regular road maintenance.
AGROINDUSTRY	
- PEPP y NGO-	- Family agroindustries
AGRICULTURE	
- Upper Huallaga Special Project	- Farming Tehcnical Assistance.
- CORESE-SM	- Coordination of the production of seeds and scions with seed, vivarium, procesing, marketing experts. Seeds and scions certification.

Continued...

INSTITUTION	POSSIBLE EXECUTION OF CSD'S ACTIVITIES
- INIA (Porvenir)	- Validation of new varities, agronomic technology, production of basic seeds and scions.
- IIAP	- Validation of technology on vivariums and grape plantations.
- UNSM	- Validation of Pijuayo's technology.
- ARROSAMSA	- Processing and marketing of rice seeds.
- MASELVA	- Processing and marketing of corn seeds.
- SELVA INDUSTRIA	- Processing and marketing of cotton seeds.
- PACUCHO	- Processing and marketing of cotton seeds.
- CRAC SAM	- Credit for agricultural production, seeds and scions. Credit for the processing and marketing of seeds and scions.
2. TOCACHE/UCHIZA	
COMMNUNITY DEVELOPMENT	
- Municipalities	- Social infraestructure. Schools. Drinkable water post, latrines and water wells, school supplies.
- NGO FADI/UTES	- Training of health promoters traditional midwives, productive projects, comunity management.
- PEAH	- Fish farmers, bee keeping, horticulture breeding of lesser animals.
- USE	- Teaching training, teaching material, prevention on the undue use of drugs.
- Health center	- Family Planification, primary health care, implentation of health of health post.
LAND TITLING	
- Ministry of Agriculture and PEAH	- Land titling.
CREDIT	
- Caja Rural San Martin	- Credits.
MARKETING	
- ADEX-PEAH	- Market Information
- Ministry of Agriculture office	- Agricultural Marketing Services.
- NGO and Ministry of Agriculture (Branches)	- Organization of producers.
ROADS	
- Specialized contractor	- Rehabilitation and construction of new roads, bridges, drainage systems and regular road maintenance.
- PEAH/Municipalities	- Regular road maintenance.
AGROINDUSTRY	
- Caja rural	- Loans for agroindustry.

Continued...

INSTITUTION	POSSIBLE EXECUTION OF CSD'S ACTIVITIES
AGRICULTURE	
- PEAH	- Farming technical assistance.
- CORESE-AAC	- Coordination of seed and scions production with the help of processing and marketing experts, and seeds and scions certification.
- FUNDEAS (Tulumayo) and UNAS	- Validation of new varities, agronomic technology, production of basic seeds and scions.
- ARROSAMSA	- Marketing of certified rice seed.
- MASELVA	- Marketing of certified yellow corn seed.
- ADEX-IIAP	- Extension and production of cotton
3. TINGO MARIA/AGUAYTIA	
COMMUNITY DEVELOPMENT	
- UNAS	- Training in productive projects, bee keeping, horticulture, breeding of lesser animals. Fish farms.
- Ministry of Health	- Training of traditional midwives, health promoters, primary health care campaign, latrines, family planning, implementation of health post.
- Ministry of Education (Unit of Edacitive Services USE)	- Teacher training, teaching material, prevention on drug abuse.
- Upper Huallaga Special Project	- Bee keeping, lesser animal breeding, horticulture, craftmanship, fish farming.
- Municipalities	- Basic services infrastructure: health post, classrooms, drinking water, drinking water wells
- ONG CIDIH	- Community indentity.
LAND TITLING	
- Ministry of Agriculture and PEAH	- Land titling
CREDIT	
- Banco Continental	- Credit in Tingo Maria.
- Upper Huallaga Special Project	- Credit in Aguaytia.
MARKETING	
- Chamber of Commerce-ADEX	- Agricultural marketing services.
- Ministry of Agriculture office	- Market information
- NGO and the Ministry of Agriculture (local office)	- Farmers Organizations
ROADS	
	- Components on roads have not been considered within the project. Rehabilitation of the Federico Basadre road (Tingo Maria-Pucallpa is in charge of the army).
- PEAH/Municipalities	- Regular road maintenance.
AGROINDUSTRY	
- Cajas Rurales	- Loans for agroindustry.

Continued...

INSTITUTION	POSSIBLE EXECUTION OF CSD'S ACTIVITIES
AGRICULTURE	
- Upper Huallaga Special Project	- Agronomic technical assistance.
- CORESE-AAC	- Coordination of seeds and scions production with the help of processing, marketing experts, and seeds and scions certification.
- FUNDEAS (Tulumayo) and UNAS	- Validation of new varieties, agronomic technology and production of basic seeds and scions.
- ARROSAMSA	- Marketing of certified rice seed.
- MASELVA	- Marketing of certified yellow corn seed.

4. APURIMAC RIVER VALLEY (QUIMBIRI, AYNA AND SIVIA)

COMMUNITY DEVELOPMENT	
- Municipalities	- Construction of social infrastructure: health centers, water, latrines, drinking water wells, classrooms, school supplies.
- VRAQUS	- Lesser animal breeding.
- USE	- Teacher training, teaching material, prevention of drug abuse.
- P.E.S.C.S.	- Fish farms, bee keeping, horticulture, community management, craftmanship.
- UTES	- Family planning, training of traditional midwives health promoters, prevention of drug abuse, posts equipment, primary health care.
LAND TITLING	
- Ministry of Agriculture and PESCS	- Land titling
CREDITS	
- Caja Rural of the Apurimac River and Ene Valley	- Credit
MARKETING	
- VRAQUS in San Francisco	- Agricultural marketing services
- Ministry of Agriculture office	- Market information
- NGO and Ministry of Agriculture (local office)	- Farmers information
ROADS	
- Special Contractor	- Rehabilitation and construction of new roads, bridges and drainage systems.
- Municipalities	- Regular road maintenance.

Continued...

INSTITUTION	POSSIBLE EXECUTION OF CSD'S ACTIVITIES
5. PICHIS/PACHITEA	
COMMUNITY DEVELOPMENT	
- ANAP (Native Association of Ashaninkas in Pichis)	- Communal identity, community management projects.
- Municipalities	- Social infrastructure: schools, health posts, school supplies, latrines.
- Pichis Palcazu Project	- Drinking water, productive projects lesser animal breeding, bee keeping, horticulture, fish farms.
- UTES (Territorial Unit of Health)	- Primary health care, family planning, medical posts implementation, health promoters training, traditional midwives.
- USE La Merced (Unit of Educational Services)	- Teacher training, teaching material, prevention of drug abuse.
LAND TITLING	
- Ministry of Agriculture	- Land titling
CREDITS	
- Caja Rural La Merced	- Credits.
MARKETING	
- Chamber of Commerce of La Merced-ADEX	- Agricultural marketing services
- Ministry of Agriculture (local office)	- Market information
AGRICULTURE	
- Pichis Palcazu Special Project	- Credit for cattle, pig and sheep breeders and family farms (chicken, guinea pigs and ducks) with commercial farmers under the credit scheme.
- Caja Rural Union and Pichis Special Project	- Formal credit by way of the Rural Union and revolving funds for the native communities.
ROADS	
- Specialized contractor	- Bridge construction.
- PEPP	- Management of maintenance equipment

4. TECHNICAL ANALYSIS

4.1 Agriculture

This section examines the problems affecting agriculture and livestock raising in the area under study. It presents alternative options to the production of coca that may generate income and employment. Consequently, the condition of agriculture is studied vis-à-vis coca leaf cropping.

Indicators show a falling growth rate of coca production in the Huallaga Basin (Tocache and Uchiza). It decreased by 6.9 percent according to data from the National Police Counternarcotics Department. Field work has also shown a reduction in basic paste production for the following reasons: a)bans on production; b) social and political unrest (protection payment by subversives), and c) Fusarium sp. fungus in coca plants.

As a consequence, the basic paste purchasing and exporting "firms" have moved to quieter zones (Saposoa, Juanjui, Aguaytia, Palcazu, San Francisco and Palmapampa.) Decrease in coca production in Tingo Maria, Tocache and Uchiza has been temporary, because it has been compensated by new crops in "promising and peaceful" areas. We may conclude that coca production is similar to production at the end of 1990. This does not mean that coca production is problem-free. Some difficulties are:

a) High production costs due to the increased use of agrochemicals.
b) A restricted market due to the absence of "firms". Basic paste used to be sold permanently and freely. Now it has to be stored until the buyers arrive.

Fortunately, there is a tendency to look at coca more realistically and many farmers are disappointed due to the problems they had between 1991 and 1993. Coca is now like any other crop with price, input and pest problems. Although they keep growing coca, they are expanding their legal crops.

4.1.1. Zone Analysis

a. Central Huallaga

The main crops in this area are rice, yellow maize, banana and cassava. Also, in a smaller proportion: cocoa, coffee and cotton (see Table 4).

Yellow Maize

This was the most important legal crop in the Central Huallaga during the 1980's. However, production decreased during the 1990's and was replaced by rice. The problem affecting this crop is its little competitive advantage. It is important to note that the sales tax (IGV) is applied to this crop when it is sold outside the jungle, area making it less profitable.

Rice

Rice is the most important legal crop of the region. It is grown under irrigation. The area planted to rice has kept growing: 6% annually in the 1980's and 8% in the 1990's. In 1980 16,900 hectares were planted to rice; in 1990 there were 27,700 ha and the planted area reached 34,400 ha in 1994. The price is set by that of imported rice. The latter is subject to taxes, tariffs, special rights and the general sales tax (IGV), thus giving rice from the jungle a competitive market advantage.

is this zone there are two harvest a year. The most popular variety is "line 14", which has a good yield (6t/ha) and a "superior" quality, as well as a better market potential than the traditional "improved standard" grade rice.

At present, the market for rice is limited. When the road from Campanilla to Tocache is finished, a new market will open, comprising Huanuco, Ucayali, Junin and Pasco. Also, it will be faster to move it to Lima, because this road is 500 km shorter than the Corral Quemado Chiclayo road.

Banana and Cassava

Banana and cassava are 2 important crops in the Central Huallaga (see table 4). Produce is used for different purposes. Bananas area cash crop while cassava is used mainly for household consumption. These crops are becoming more important every day. Also, they are used as input for the food industry.

Cotton

In 1980, 8,600 ha were grown. This area fell to only 50 ha in 1993. Cotton used to be grown on rained slopes and plains. This is a space coveted for growing coca. Cotton shows a promising potential. Prices have improved recently, especially for brown cotton ($0.72 kg) as compared to coarse cotton ($0.54) and the highland variety ($0.61 kg).

TABLE 4
Area Planted in the Central Huallaga Project, 1993 (ha)

Crop	Biabo	Ponaza	Sisa	Total
Rice	4,771	244	873	5,888
Cacao	332	47	61	440
Coffee	624	87	114	825
Coca	4,603	1,000	5,604	11,207
Yellow corn	2,600	1,295	476	4,371
Bananas	749	342	137	1,228
Papaya	33	5	6	44
Cassava	304	157	56	517

The crops with the higher production rates are: rice, banana, yellow maize and cassava. However, total amounts show that traditional agricultural technology is used.

In the Central Huallaga area, yields in t/ha are: rice 3.14, cocoa 0.69, coffee 0.7, coca 2.35, yellow corn, 1.53, banana 7, papaya 10.65 and cassava 8.31. Specific information by districts on surface, production and yield is found in Tables AG1, AG2 and AG3 in the appendix.

TABLE 5

Production within the Central Huallaga Project, 1993 (MT)

Crop	Biabo	Ponaza	Sisa	Total
Rice	15,272	440	2,794	18,506
Cacao	103	15	188	306
Coffee	463	31	85	579
Coca	11,231	1,500	13,674	26,405
Yellow Maize	4,038	1,942	739	6,719
Bananas	5,392	2,055	1,164	8,611
Cassava	2,565	1,315	420	4,300

B. Alto Huallaga Area

In this region (Tingo Maria, Tocache, Uchiza and Aguaytia), the most important crops are banana, papaya, and cassava. They are sold mainly in Lima (Tables 6 and 7). Productivity is low: rice 2.9t/ha, cocoa 0.3t/ha, coffee 0.4t/ha, coca 1.9t/ha, yellow corn 1.6t/ha, banana 8.3t/ha, papaya 12.5t/ha and cassava 8.9t/ha.

TABLE 6
Area Planted in the Alto Huallaga Project, 1993 (ha)

Crop	Tocache	Tingo Maria	Aguaytia	Total
Rice	739	135	584	1,458
Cacao	449	2,836	12	3,297
Coffee	41	1,564	29	1,634
Coca	21,716	12,609	13,500	47,825
Yellow Maize	1,070	2,190	291	3,551
Bananas	2,598	4,623	555	7,776
Papaya	30	318	7	355
Cassava	1,223	3,314	199	4,736
TOTAL	27,866	27,589	15,177	70,632

TABLE 7
Production in the Alto Huallaga Project, 1993 (MT)

Crop	Tocache	Tingo Maria	Aguaytia	Total
Rice	2,448	310	1,470	4,228
Cacao	166	788	41	995
Coffee	14	679	19	712
Coca	41,695	24,209	26,865	92,769
Yellow Maize	1,526	3,508	575	5,609
Bananas	21,662	38,510	4,440	64,612
Papaya	337	4,038	82	4,457
Cassava	11,958	28,583	1,585	42,126

c. Apurimac Valley

In 1965, the Ministry of Agriculture established settlements on the right bank of the Apurimac River (Mantaro,Pichari and Quimbiri). By contrast, farmers on the opposite bank were principally settlers (from the Huanta and La Mar provinces in Ayacucho). These settlers arrived in great numbers in 1970.

Coca

This is the most important crop in this area. According to ENACO, 1,869 ha of coca were grown here in 1981 and there were 3,400 farmers growing coca. A census by the coca growers themselves (Federation of the Apurimac and Ene Rivers Coca Leaf Producers - FEPOHCRAE) showed that there were 5,291 producers. In 1991, there were already 20,000 ha planted to coca and according to the United Nations 30,00 families are growing 35,000 ha of coca, with an annual production of 56,000 t (Table 8).

Cocoa and Coffee

From 1970 to 1980, many coffee and cocoa plantations were started because prices were attractive and made exporting possible. Since 1980 terrorism prevented the continuation of these crops and forced farmers to abandon their fields, with farmers taking up coca as their first source of income.

At present, the legal crops are cocoa, cassava, peanuts and coffee. Their production is limited due to transportation problems. The yields in t/ha are as follows: rice 1.2, cocoa 0.5, coffee o.2, coca 1.6, yellow maize 2, banana 6, papaya 8 and cassava 6. These yields show that traditional technology is still used.

The area morphology is basically made up of hills, ravines and slopes that are typical of the high tropical forest. Farmers have settled on the slopes where soils are appropriate for permanent crops and protection forests. This is why settlers at first planted cocoa and coffee, but these plantations were abandoned and have eventually been covered by secondary growth underbrush called "purmas".

TABLE 8
Area and Production in the Apurimac and Ene Valleys

Crop	Area (ha)			Production (MT)		
	1981(1)	1991(2)	1994(3)	1981	1991	1994
Coffee under cultivation	7,171	7,000	1,950	3,246	4,200	390
Abandoned coffee plantation		5,400	11,050			
Cocoa under	1,548	9,103	9,600	652	7,282	4,800
Abandoned cocoa plantation			2,400			
Coca	189	20,000	35,000	1,157	30,000	56,000
Yellow maize	1,164	661	1,700	1,862	1,300	3,400
Cassava	1,087	2,800	6,400	6,522	16,800	38,400
Cube-Barbasco	1,551			31,020		
Peanuts	1,660	1,200	1,900	2,057	1,800	2,850
Bananas	919	194	320	5,789	1,164	1,920
Others	2,561	1,625	8,680			

Sources:
(1) CARO, E. 1993. Present Condition of the Apurimac river and Ene Valleys and development perspectives. Sivia.
(2) ATACHAO, T. 1992. 1990 - 1991 Season Crops Stadistics. San Francisco CDR.
(3) LAZARTE, J. 1994. The problems of the Apurimac and Ene Valley. CODEVA- United Nations Project.

TABLE 9
Area Planted within the Apurimac Valley Project 1993 (ha)

Crop	Sivia	Ayna	Quimbiri	Total
Rice	134	23	196	353
Cocoa	883	152	1,292	2,327
Coffee	193	33	282	508
Coca	5,700	2,700	8,500	16,900
Yellow maize	166	28	242	436
Bananas	28	5	40	73
Papaya	2	1	3	6
Cassava	580	100	846	1,526
TOTAL	7,686	3,042	11,401	22,129

TABLE 10
Production in the Apurimac Valley Project 1993 (MT)

Crop	Sivia	Ayna	Quimbiri	Total
Rice	161	27	235	423
Cocoa	442	76	646	1,164
Coffee	39	7	56	102
Coca	9,120	4,320	13,600	27,040
Yellow maize	332	56	484	872
Bananas	168	30	240	438
Papaya	16	8	24	48
Cassava	3,480	600	5,076	9,156
TOTAL	13,758	5,124	20,361	39,243

d. Pichis-Pachitea

This area comprises the Puerto Bermudez and Palcazu districts. The main crops are coffee, banana, and cassava. Coffee production is stagnant due to terrorism and unstable prices. At present, coffee prices have risen because of a slight improvement in international prices. Livestock raising in extensive areas of natural grasslands has also decreased. The most important crops are shown in Tables 11 and 12.

TABLE 11
Area Planted in the Ciudad Constitucion and Puerto Bermudez Project 1993 (ha)

Crop	Puerto Bermudez	Palcazu	Total
Rice	8	4	12
Cocoa	4	2	6
Coffeo	300	135	435
Coca	1,200	4,800	6,000
Yellow maize	100	45	145
Bananas	120	54	174
Papaya	2	1	3
Cassava	84	38	122
TOTAL	6,897	1,818	5,079

Crop productivity is low as compared to the national average. Individual figures are: rice 2.3t/ha, cocoa 0.3t/ha, coffee 0.7t/ha, coca 1.6t/ha, yellow maize 1.5 t/ha, banana 8t/ha, papaya 9t/ha, and cassava 10t/ha.

TABLE 12
Production in the Ciudad Constitucion and Puerto Bermudez Project 1993 (MT)

Crop	Puerto Bermudez	Palcazu	Total
Rice	10	5	15
Cocoa	1	1	2
Coffee	213	96	309
Coca	1,920	7,680	9,600
Yellow maize	146	65	211
Bananas	960	432	1,392
Papaya	18	9	27
Cassava	672	304	976
TOTAL	3,940	85,965	12,532

4.1.2. Proposal and Justification

Crop Justification

According to analysis, the best crops for the project in the Huallaga area are cotton, grapes, banana, cassava, "pijuayo". Besides, this area should produce certified seed for rice, corn and cotton as well as grapes, papaya, cassava and banana plantlets.

Cotton

This crop was important during the 1970's and the early 1980's due to the industrial plantations promoted by the Romero Group, which founded SELVAINDUSTRIA. This company established two cotton separators, one in Juanjui and another in Tarapoto. They also installed a cotton seed oil plant in Tarapoto that also supplied seed.

Later, when terrorism plagued the area and coca crops were introduced, cotton production fell dramatically. The most critical period was in 1990, when only 50 ha were harvested. Cotton is again becoming an alternative crop thanks to peace making and the fall in coca leaf prices. Cotton could be a good alternative to the present slope crops like corn and coca, both erode the soil.

In San Martin there are also naturally colored varieties of cotton: yellow, light brown, beige, cream, lilac and green. Pacucho company buys these varieties, mills them and exports "ecological cloths". Cotton is again being grown in Biabo, Ponaza and Sisa, which are precisely the areas where coca and corn were formerly grown. There are now several companies which purchase cotton fiber in the area. Some (SELVAINDUSTRIA) mill cotton and others transport it on the branch to the Coast. The main ones are Fabril, Bicotton, CEDISA and Pacucho.

The highland variety requires a high technological and investment level as compared to the colored and coarse varieties, but it is more profitable and is labor intensive. Consequently, it is likely to become a good alternative on the slopes of the Biabo,

Ponaza and Sisa valleys, where coca is grown. At present, coarse cotton is accepted as an ecological product and has better prices than the other varieties. This variety should be improved by using ecotypes with higher yields.

Grapes

Grapes have been grown for many years in San Martin. The grapes were harvested up to three times in a year (1984). IIAP has been working here for several years and has suceeded in adapting the Thompson Seedless, Alphonse Lavellee and Cardinal varieties, which produce grapes that are demanded in the United States and in Lima.

Since it can be produced through out the year, harvests can be scheduled for January and October for export to the Northern Hemisphere, when international prices are high. As a result of the adaptive essays, with these varieties meet international standards for exports and imports.

El Dorado (Sisa), Picota (Ponaza and Shamboyacu) and Bellavista (Biabo) are the best places to grow grapes because of their favorable agroclimatic conditions. For instance, rain is less than 1400mm/year, thus limiting the development of fungi (see rainfall map in the appendix). Grapes can be grown in lands presently used for coca and corn. It is also an interesting alternative for family employment because they are labor intensive (see Table 13)

TABLE 13
Labor Requirements per Type of Crop

Crop	Labor Requirement
Grapes	295 days/ha/year
Corn	85 days/ha/year
Coca	86 days/ha/year

Grape growers should establish a grape marketing company. It should be in charge of harvesting, classifying and packing, so the production can be transported to the airport in Tarapoto and Picota and taken to Lima or Miami. An 8.2 kg box can cost form US$ 9 to US$ 15 in Lima and in the United States it can reach US$ 20 to US$ 40 during the November to January season.

Banana

Banana is the third most important crop for household comsumption in San Martín after rice and maize. In Tingo María and Aguaytía the banana crop is predominant. In Tocache and Uchiza, the decrease in coca production has brought an increase in banana growing. These producers market their produce in Lima. Banana can be appropriately combined with annual crops like corn, cassava and beans and with agroforestry activities, because it improves soils and diminishes erosion.

Banana represents an alternative crop that yields satisfactory profits. However, some varieties require field trials to determine their productivity. These varieties hold good promises for the Biabo, Ponaza and Sisa valleys.

There are now companies which make banana flour as an ingredient used in the "glass of milk" child nutrition program. This flour is well appreciated by the children in the jungle and has good prospects as a processed food product for domestic consumption.

Papaya

The decrease in coca production and the existing road connecting Tocache, Uchiza and Tingo María, has brought about increased papaya production for the Lima market. Middlemen from Lima collect this product at the farmgate. Papaya is quite profitable and they can be promoted in the Tocache and Tingo María valleys in order to be marketed as a fresh product in Lima.

Papaya is a permanent crop and it can be associated to corn, beans and cassava or to forestry species, thus improving soils.

Cassava

This is another important crop in the jungle, because it is the basis of the daily diet. Production must continue in association with annual crops and forestry species.

There are now some companies that process cassava flour and starch. These are being combined with banana flour and other products for school children nutrition programs promoted by PRONAA and some municipalities.

With improved varieties, cassava can be made profitable, but it needs a higher level of investment than exist to obtain higher yields and the use of more labor. Good lands for cassava are Ponaza, Sisa, Tocache, Uchiza, Tingo María and Aguaytía.

Pijuayo

This is a crop with a great potential abroad (USA, Spain and Chile). The United Nations has been working with pijuayo lately to adapt the crop, and is presently building a palm tree heart processing plant. Another company, Palma del Espino, operates smaller processing plant.

Technology and know-how provided by United Nations and PEAH make this a good alternative to coca production. Seed capital to start the plant (US $ 1517/ha) and maintenance are needed, but the plant could increase its production of "hearts", which could then be bought by the above mentioned companies.

PEAH has a pijuayo pilot program on farmers plots in Tocache and Uchiza. that is run in the farmers' plots. Plantlets are bought from CEPTENA, farmers transplant them to plots that have previously been selected and prepared by the program experts. The program gives farmers technical assistance. Plantations can consist only of pijuayo or pijuayo associated to cassava, banana and papaya.

Pijuayo has a good potential in Tocache. The first estimates show a high profitability, but these values are based on price projections with a fully operational United Nations processing plant. Prices have been projected for the moment the plant starts operations (see Table 15).

Coffee/Cocoa

Study results recommend the recovery of abandoned plantations in the Apurimac Valley through technical, seed, marketing and credit assistance in coordination with VRAQUS cooperatives and local producers committees. This assistance will be complemented with rehabilitation and improvement activities planned by CSD for the zone.

Seed

Rice and maize productivity can be increased in the central Huallaga region through certification of improved seed varieties. CORESE has a processing plant of certified rice, maize and cotton seed. This plant was financed by AID through the TTA project. Basic seed will be supplied by INIA (El Porvenir) for multiplication. Cost analyses show that seed multiplication is profitable, even at a smaller profit margin than that of other crops. Cotton also requires certified seed, which depends on multiplying improved and adapted seed at CORESE.

4.1.3. Comparative Advantages of Crops

a. Annual Crops Profitability

Table 14 shows the recommended crop profitabilities for the Huallaga Basin taking into consideration technological inputs. Indicators taken into account per hectare are: total income (production x price), total cost (input, labor and financial cost), net income (the difference between total income and total cost); the benefit cost relation (coefficient obtained by dividing total income into total cost: values over 1 indicate the crop is profitable). Also included are the labor input (salaries/hectare) during the agricultural campaign and the yield in kilograms per harvested hectare.

The most profitable crop is upland cotton which yields US $ 306.8 of net income with a cost/benefit relation of 1.38 per hectare during the agricultural campaign. Labor input is 123 work days per hectare per campaign and it yields 1,800 kg/ha. Ranked by relative importance, the other crops are: cassava grown with an intermediate technology, light brown cotton and cottonseed production (Table 14). These values have been obtained by figuring out the production cost structure for each crop for a given technology level (see Agricultural Appendix).

b. Plantation Profitability

Table 15 shows the recommended plantation profitabilities for the Huallaga Basin for each level of technological input. Indicators used for a crop hectare are: first plantation (input, labor and financial cost), internal return rate (IRR), which indicates the plantation profitability by comparing setting up and maintenance costs with the income generated at production start. IRR is expressed as a percentage. It is

compared with the financial market's annual active interest rate (an average of 15.8%). The plantation is profitable when IRR values are higher than this rate,.

TABLE 14
Alternative Crops Profitability per ha
(US$)

Crops	Total Income US$/ha	Total Cost US$/ha	Net Income US$/ha	B/C	Labor/ ha	Yield Kg/ha
Light bronw cotton	618.2	423.5	194.7	1.46	74	850
Coarse cotton	466.6	423.5	40.1	1.09	74	850
Upland cotton	1104.5	797.7	306.8	1.38	123	1800
Low Tech. cassava	572.7	434.2	138.5	1.32	74	9000
Medium Tech. cassava	954.5	706.8	247.7	1.35	90	15000
Rice seed	1200.0	1051.9	148.1	1.14	104	6000
corn seed	1036.4	870.3	166.1	1.19	40	4000
Cotton seed	1145.4	846.5	289.9	1.35	123	1800

(l) Low technology
(i) Intermediate technology

The present net value is another indicator that compares costs during the plantation's vegetative cycle from installation, with income obtained for harvests during the same period at the financial market's interest rate (an average of 15.8%). When the PNV shows values higher than zero, the plantation is profitable. Values are expressed in dollars.

Plantations with highest comparative advantages are grapes and the pijuayo. These crops require high amounts of investment at installation. Grapes generate an internal return rate of 46% and a present net value of US $ 3,098/ha per vegetative cycle. Pijuayo has a yield of 71% and a present net value of US $ 1,754/ha (see Table 15). These results also depend on a commercial marketing structure for vines and the operation of the palm tree heart processing plant in Santa Lucia. Production costs and profitability analyses are detailed in the agricultural appendix.

TABLE 15
Profitability of Coca and Alternative Plantations

Crops	Installation US$/ha	IRR %	NPV US$	Labor Daays/ha
Low tech. coca	559.4	47	220	86
Medium tech. coca	1,015.5	45	351	165
Low tech. Bananas	591.6	21	44	70
Medium tech. Bananas	702.5	37	222	64
Grapes	5,816.7	43	3,098	295
Papaya	1,446.3	21	54	108
Pijuayo	1,516.8	71	1,754	125

(b) Low technology
(m) Intermediate technology

4.1.4. Targets and Budget

In this section we present the area covered by the project in terms of crops supported through actions as agricultural credit, technical assistance, seed production, plantlets, and the costs of applied research, and others.

a. Crop targets

Cotton is important in Biabo, Ponaza and Sisa with 1,300 ha per year. Cassava is important throughout the region with the exception of Biabo, with 1,200 annual ha. Grapes are also important for Biabo, Ponaza and Sisa, but since installation cost is high, handling is labor intensive and because it requires a strong marketing structure, only 700 ha are proposed. We recommend 5,000 ha of banana distributed in all valleys, especially in Tingo María and Tocache. Due to its growing importance, we can start with 700 ha of pijuayo in Tocache, Uchiza and Nuevo Progreso. Papaya is concentrated in Tingo María and Tocache for which we recommend 200 ha in Tocache and 300 ha in Tingo María (see Table 16).

TABLE 16
Project Targets

Valleys	Annual Crops		Permanent Crops				
	Cotton ha	Cassava ha	Grapes ha	Bananas ha	Pijuayo ha	Papaya ha	Total ha
Biabo	500		200	300			1,000
Ponaza	300	100	200	100			700
Sisa	500	50	300	100			950
Tocache		350		1,500	700	200	2,750
Tingo Maria		500		2,500		300	3,300
Aguaytia		200		500			700
TOTAL	1,300	1,200	700	5,000	700	500	9,400

b. Technical Assistance Budget

Promotion of the proposed crops requires a technological transfer process from the project and the adoption of that technology by farmers. Technical assistance must be given all along the crops vegetative cycle and an agricultural extension program is required.

The project must include these costs and 5% of the production cost has been assigned to this purpose. Table 17 describes resource requirements for technical assistance. The total annual amount is US $ 560,030.

TABLE 17
Technical Assistance, Annual Budget in US $

Valleys	Cotton	Yucca	Crops Grapes	Bananas	Pijuayo	Papaya	Total
Biabo	13,960		51,011	13,016			77,987
Ponaza	8,376	2,474	51,011	4,339			66,200
Sisa	13,960	1,237	76,517	4,339			96,052
Tocache		8,659		65,078	51,090	18,997	143,823
Tingo Maria		12,370		108,463		28,496	149,328
Aguaytia		4,948		21,693			26,641
TOTAL	36,296	29,688	178,539	216,925	51,090	47,493	560,030

c. Seed multiplication budget

The fastest way to enhance crop yields is through improved seeds. There is a certified seed processing plant in Tarapoto. According to seed legislation, seed processing companies must identify and select seed producers. These have to be registered with CORESE and sign seed multiplication contracts from basic seed supplied by INIA. The process to obtain authorization from CORESE is as follows: CORESE does follow-up of seed bed installation during the vegetative cycle and at harvest. Once evaluated, companies purchase the grain, process it and, after quality control, certification is awarded to market the seed. Each company is in charge of distribution in the areas covered by the project.

Table 18 presents the budget for cotton, rice and corn certified seed production. Production will be made possible by credit assigned to seed producers. The annual cost for this item is US $ 306,796.

The project promotes all stages of cotton production while maize and rice will be supported only with certified seed.

The cost of seed is US $ 9,097 for upland cotton, US $ 55.20/ha for rice, and US $ 22.73/ha for hard yellow maize. with these values we can figure out the seed

multiplication budget. For example, in order to produce cottonseed we need US $ 1,1817 (US $ 9.09 x 1,300 ha) per annual agricultural campaign; to produce rice seed we need US $ 209,760, and for maize, US $ 85,219 (see Table 18).

TABLE 18
Annual Budget for the Production of Seeds

Seed	Costo of Seed US$/ha	Project Coverage ha	Total Cost US$	Installed Seed Beds ha
Upland Cotton	9.09	1,300	11,817	14
Rice	55.20	3,800	209,760	199
Corn	22.73	3,750	85,219	101
TOTAL			306,796	314

Rice is harvested twice a year, so we must take two campaigns into account. This Table also shows how many seed fields to install per agricultural campaign, namely this is, 14 hectares of cotton, 199 hectares of rice and 101 hectares of maize.

d. Plantlet Production Budget

INIA (El Porvenir) has cassava and banana germplasm. IIAP has commercial varieties of grape adapted to the Huallaga region. In Tingo Maria, the National Agricultural University of Amazonia has improved varieties of banana, papaya and cassava. CEPTENA, IIAP and, in Iquitos, Mr. Villachica, produce pijuayo plantlets. Tocache and Uchiza will be supplied with pijuayo plantlets from Iquitos. All these institutions, in coordination with the CORESE office for each zone, are ready to produce and supply with plantlets and cuts of improved varieties, and cover the project needs.

In order to supply each plantation during its vegetative cycle, we have estimated the number of plantlets needed according for each crop's production targets. The project budget results from multiplying this figure and the price for each plantlet. For example, in order to plant 700ha to grapes, 482,300 plantlets. This means US $ 327,924, at US $ 0.68 per plantlet. For papaya US $ 198,000; for banana, US $ 869,400; for Pijuayo US $ 350,000 and for cassava US $ 117,600. The total is US $ 1'862,964 per cycle (see Table 19).

Plantlets will be produced in greeenhouses. Table 19 shows the number of greenhouses that must set up per crop in order to cover the project needs.

TABLE 19
Planted Production Budget per Cycle

Crop	Project Planted Requirements	Planted Price US$	Project Cost US$	Greenhouses ha
Grape	482,300	0.68	327,964	24
Papaya	1'100,000	0.18	198,000	55
Bananas	4'830,000	0.18	869,400	242
Pijuayo	3'500,000	0.10	350,000	175
Cassava	8'400,000	0.014	117,600	60
TOTAL	18312300	556	1'862,964	556

e. Applied Research

In order to transfer and adopt technology, the research achievements in the valleys and farmers' plots have to be validated, through a network of demonstration parcels. The project is an umbrella for various specialized organizations with experience in agricultural research. They include:

TABLE 20
Applied Research Organitations

Head Office	Cotton	Cassava	Grapes	Bananas	Papaya	Pijguayo
Tarapoto	INIA	INIA	IIAP	INIA	UNSM	UNSM
Tingo Maria		UNAS		UNAS	UNAS	IIAP
Iquitos						CEPTENA

These intitutions carry out applied research and will prepare reports including technical, economic and social indicators.

Table 21 shows the resourses that will have to be made available to these organizations. The annual budget reaches US $ 448,024. Banana and grapes are the species that need more resources. Table 22 shows the applied research targets to be achieved for each crop and valley.

TABLE 21
Annual Budget for Applied Research (US$)

Valleys	Crops (US$)						
	Cotton	Cassava	Grape	Bananas	Pijuayo	Papaya	Total
Biabo	11,168		40,809	10,412			62,389
Ponaza	6,701	1,979	40,809	3,471			52,960
Sisa	11,168	990	61,213	3,471			76,842
Tocache		6,927		52,062	40,872	15,198	115,058
Tingo Maria		9,896		86,770		22,796	119,462
Aguaytia		3,968		17,354			21,312
TOTAL	29,037	23,750	142,831	173,540	40,872	37,994	448,024

TABLE 22
Applied Research Targets*

Valleys	Crops						
	Cotton	Cassava	Grapes	Bananas	Pijguayo	Papaya	Total
Biabo	3		12	3			18
Ponaza	2	1	12	1			15
Sisa	3		17	1			22
Tocache		2		15	12	4	33
Tingo Maria		3		25		7	34
Aguaytia		1		5			6
TOTAL	8	7	41	50	12	11	128

* *Figures indicate applied research results (technologies).*

4.1.5. Livestock Raising

a. Importance

In the Pichis-Pachitea area, livestock raising is important because farming products are mostly aimed at household consumption due to marketing difficulties caused by poor roads. This situation has forced farmers to transform their agricultural surpluses into meat, which commands better prices and is easier to market.

Cattle raising predominated. There were 15,000 to 20,000 heads of cattle at the peak point. Now there are from 2,000 to 4,000 heads. Lesser cattle raised are pigs, sheep, chicken, guinea pigs and ducks.

The causes for the decrease in animal stock are the following:

a) Lack of financial sources for the area producers.

b) Poor roads.

c) Terrorism (theft or fear of raisers violence).

d) The Ashaninkas uprising against terrorists and their out occcassional indiscriminated violence.

There is a low animal population now. However, farmers are optimistic about the future of livestock.

b. Problems

The principal problems of producers are:

a) Lack of capital to buy cattle (capitalization) and to work (operation).

b) Deficient marketing infrastructure: lack of efficient roads, no cold storage, no special trucks for meat transportation, no growth centers.

c) Deficient production process: abandoned pastures, low genetic quality of cattle, no raw materials for cattle feed, lack of medicines, deficient technical assistance.

c. Proposal

Cattle, pigs, sheep, ducks and chicken must be raised as a complement to farm plant activities.

Credit will be assigned for cattle raising and mostly for breeders and sheep and pig modules. A revolving fund will be set up for native communities that will give them animals with repayment, in kind in a years time for pigs and, in two years time, for sheeps.

Baby chicken, ducks and guinea pigs will be sold to families. The project will finance the first lot, but the money coming from sales will finance new consecutive lots.

The credit and schedules proposal is as follows:

a) The purchase of cattle should be financed by the Caja Rural. Credits should be aimed at capitalization. The estimated amount required for 1,800 good quality breeders is US $ 2'160,000.

b) PEPP should be in charge of the communities' revolving funds. Each module should consist of a male pig and three swines and of one ram and 10 sheep. A whole module will be given and a whole module should be returned.

c) Baby chicken, ducks and guinea pigs should be sold to communities and mothers'clubs. Each module consists of 50 vaccinated baby chicken at US $ 1,00 each. This will also be carried out by PEPP to a cost of US $ 340,000.

d. Costs

Proposal implementation requires financial resources in US.dollars for producer credits. Costs are as follows:

TABLE 22
Proposed Modules and Costs

	Units.	Amount
Bovines (Heads)	1800	2'160,000
Pigs and sheep (module)	500	500,000
Family Farms(Units)	680	340,000
TOTAL :		3'000,000

NOTE: The pig module is composed of a young male pig plus three female ones. The other contains 1 mutton and 10 sheep. For the family farms, the equivalent is 50 vaccinated hens of 21 days of age each at US $ 1.00

This is a partial proposal and it should be complemented with road maintenance. Other elements like growth centers and cold storage are left to private initiative and to the Pichis-Palcazu Special Project.

e. Justification

Lack of capital is the central problem in livestock raising. Since most farmers are devoted to both agriculture and livestock raising, any support given in this area will affect most of the population. Livestock raising will permit:

a) Labor demand among natives and migrants, which are now mostly hired to grow coca.

b) Recovery of pasture zones that are presently planted to coca.

c) Local cassava, maize and banana can be used to feed animals.

d) An improved diet through consumption of food of animal origin.

4.2. CREDIT

4.2.1. GENERAL OVERVIEW

A. TRADITIONAL METHODS OF FINANCING BEFORE 1990

The policies of the previous government caused a growing loss of financial intermediate transactions. This was aggravated by the nationalization of the private banking system as well as that of financial institutions, mutual associations and insurance companies. During this period, credit policies promoted negative real interest rates. Although the development promotion banks channeled important subsidies, the benefits reached only about 10 per cent of farmers.

For the period 1985-1990, the Banco Agrario del Peru was in charge of promoting agriculture by granting subsidized credits. As inflation skyrocketed from 1988 onward, the low nominal interest rates turned into real negative interest rates.

These subsidized credits contributed to the inorganic issuance of fiat money in such a way that when the drastic economic tightening of August 1990 came, there was already a consensus to abate inflation by, among other things, calling off these agricultural subsidies.

The traditional cluster of financial sources was composed of the following institutions: Banco Agrario, State-owned commercial banks, Banco de la Nacion, private and ommercial banks and credit and savings cooperative associations. In fact, the Banco Agrario was the main and almost sole source of financing for farmers (in 1988 its financial covering reached 1'200,000 hectares).

If we take the placements/deposits ratio as point of reference, almost all the financial institutions that operated in the agricultural realm, excluding the Banco Agrario, transferred resources from rural to urban zones. In global terms, only 28 cents out of each sol attracted was invested in the agricultural sector.

As a matter of fact, the Banco Agrario was behind 89 per cent of the total financing within the agricultural activity. Throughout the last decade it granted loans for about US$650 million annually. On the other hand, commercial banks have contributed marginally (11 per cent) to the financing of agriculture (See Table CR1).

B. THE PLAN 1990-1994

The new Fujimori administration adopted an initial financial strategy in the agricultural sector with a two-track approach:

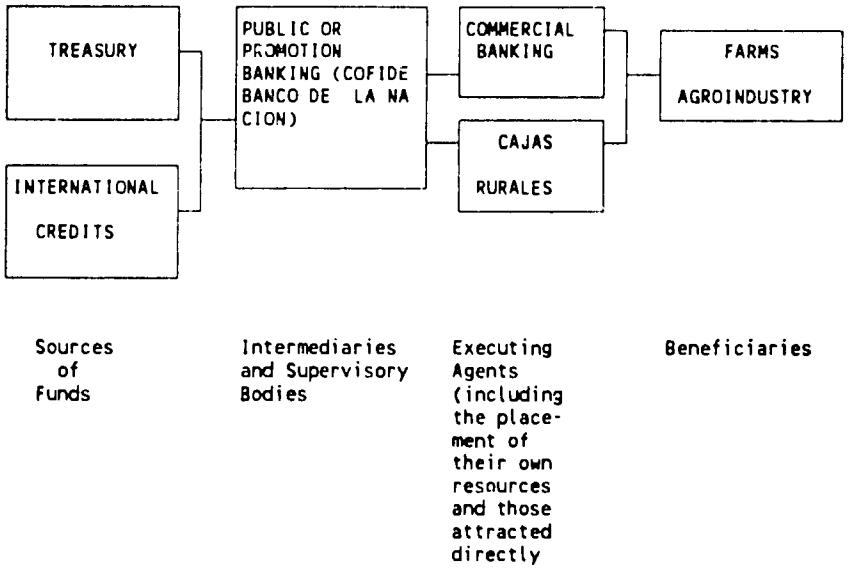
a) In modern agriculture, by way of resource channeling through the Banco de la Nacion or the Banco de Fomento (never implemented) to the Cajas Rurales (CRACs). (Scheme 1).

b) In peasant agriculture through the creation of the Agriculural Development Fund-agricultural Ministry FONDEAGROs, and the regulation of the revolving

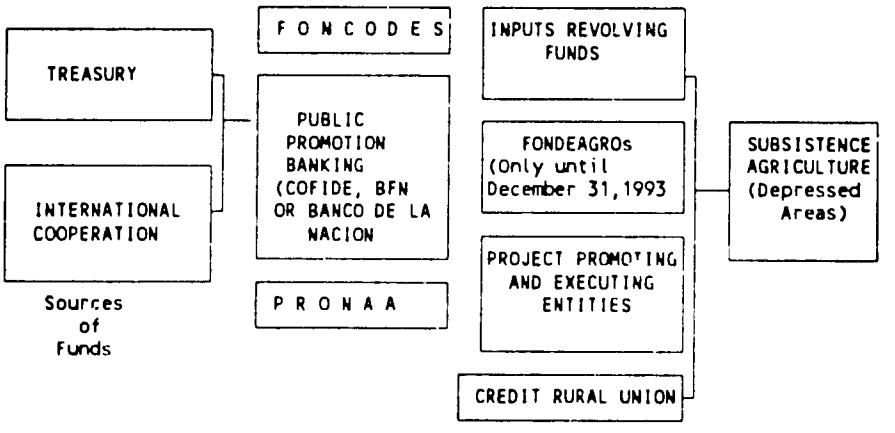
funds and communal unions. CRACs and other promoting and executing entities specialized in projects implementation would also be used. (Scheme 2).

SCHEME 1

NEW FINANCING SYSTEM FOR A MODERN AGRICULTURE



SCHEME 2
SUBSISTENCE AGRICULTURE



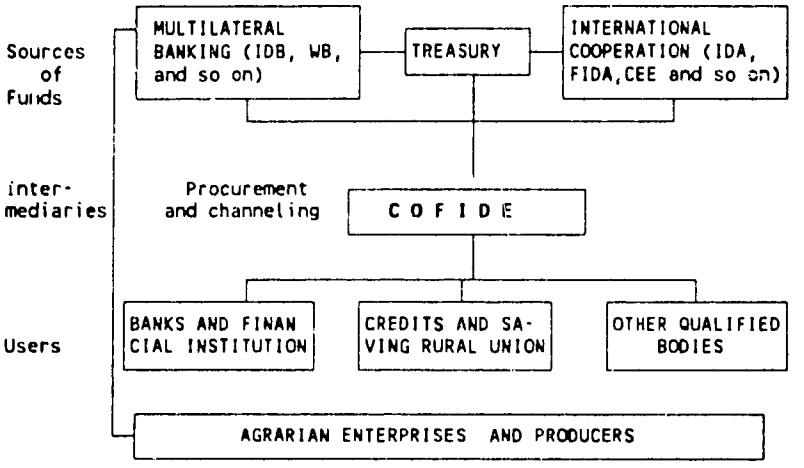
C. THE NEW 1994 SCHEME

The transformation of COFIDE into a second-floor bank marked the birth of the head institution of the new financial system. Financing Agriculture thus got a new institutional framework according to which credit operations (direct and indirect) will be carried out through bodies from the financial system.

COFIDE will be responsible for the attraction of resources from the treasury and from abroad. Likewise, it will act as a trustee to channel these resources to agriculture by way of first level mechanisms recognizing the Credit Rural Unions as intermediary agents (Scheme 3).

SCHEME 3

COFIDE'S MECHANISM OF OPERATION



D. COFIDE

The last regulation completed the definition of the new role for COFIDE as a State development financial institution in charge of supporting the investments from the productive sector through mid- and long-term financing. This is to be done under an arrangement called "second floor" banking, that is, only through financial intermediaries and duly qualified promotion bodies. Lastly, in accordance with the previous legal devices, the Supreme Resolution No. 158-93-EF of December 17, 1993 approved the new statute of COFIDE through which it has become a second-floor State bank.

Under this new arrangement, COFIDE is authorized to work with first-floor financial and promotion institutions such as: multiple banks, financial institutions, savings and credit cooperative associations, municipal credit unions, Cajas Rurales consumers companies.

COFIDE has the following production-support lines of action and programs:

a) PROPEMCAF to finance small and microenterprise projects,

b) Multisector program designed to support investments from mid-size enterprises,

c) Credit lines for working capital to be disposed by enterprises,

d) Financial Program for the Microenterprise (PROMICRO). This is executed through banks, municipal unions and Cajas Rurales.

e) Credit program for the support for the agroexporting sector,

f) Financing program for land and cattle, and

g) Land and cattle capitalization program.

The directors of COFIDE deem beneficial the operation of a Guarantee Fund. This mechanism is necessary to cover the deficit of collateral for farmers vis-à-vis the financial system. This problem comes from the lack of ownership titles and the little disposition on the part of the credit institutions to take the harvest and other agricultural assets as collateral.

This fund would be complement the guarantees required by those institutions until the farmers manage to capitalize their farms and thus put up the farm itself (mortgage) and the crops (agricultural pledge) as acceptable guarantees to get loans. Seed capital for the fund would come from the State or from international technical cooperation.

D. CAJAS RURALES (CRACs)

The CRACs were established by Decree Law 25612 of June 22, 1992 which established the framework for their development. The Cajas Rurales are private companies, owned by farmers, whose social objective is to carry out intermediary or middlemen financial activities in support of economic activities in the rural area where they operate. They work by setting in motion financial resources from national and international institutions and promoting a savings culture with a view at facilitating access to credits to those economic agents that reside in their area of influence thus helping to improve rural standars of living.

CRACs may carry out the following operations :

a) receive savings and fixed-term (time) deposits in national and foreign currencies,

b) channel resources from the Development Bank (once created),

c) carry out financial credit operations with national and international financial institutions and make deposits iboth,

d) grant credits to finance economic activities,

e) grant endorsements and bank guarantees,

f) grant credits and collateral in syndication with other financial institutions inside the country,

g) lend, collect, wire and, transfer money and

h) purchase and trade deposit certificates, warrants, bills of exchange and invoices proper of its commercial activities.

At present 31 requests to establish CRACs have been submitted to the Banking and insurance superintendency (SBS). However, approval is hampered by the difficulty of raising the nominal capital needed for each project (500,000 nuevos soles) as while there are no credit lines to finance additional loans.

Therefore, CRACs will have to rely on luring savings and time deposits which places an additional constraint on new institutions and hampers the growth of the six existing CRACs.

CRACs near urban centers of some financial development such as those in San Martin, Tumbay, Los Libertadores and Señor de Luren have attracted local money to an accetable rate between 7 and 20 per cent of their funds. In Camana on the other hand, over 50 per cent is needed to cover obligations. This goal is clearly difficult to reach for a growing institution.

Of the 31 files submitted to the SBS, 15 come from low development areas, thus leading to expectations that they will also have trouble to meet their minimum financial ratios.

The profitability of these CRACs depends crucially on a source of funds from an institution such as COFIDE, now it has become a second-floor bank.

The financing lines granted to CRACs are still limited. By June 1994, COFIDE had approved only 4.9 million dollars for 5 operating CRACs. The actual disbursement has been in the order of 1.7 million dollars (35 per cent).

Other barriers to credits are:

a) lack of ownership rights on the plots which cannot be used as collateral;

b) lack of a commercial credit culture (many farmers still demand subsidized credit);

c) low productivity because of inadequate technology;

d) restricted jurisdiction which prevents them from expanding into other rural zones in need of financing;

e) prohibition to invest in collateral businesses and carry out demand operations;

f) a ceiling of 5 per cent of their actual new patrimony to the granting of credits.

Recents actions by the Ministry of Agriculture could lead to the establishment of the Rural Bank of Peru (BANRUP) to be financed through nation wide, small share holding.

4.2.2. SUPPLY

In the last three years, the financial market in the zone of the project has undergone through important changes. For example, the Banco Agrario was closed, despite the fact that it was the sole source of funds for farmers in the area. Commercial banks and CRACs do not provide sufficient financial coverage.

A. Public Banking

In 1988 the Banco Agrario financed 18,880 hectares in the Upper Huallaga Special Project (PEAH) zone. This amount was financed by PEAH with USAID funds. Coverage gradually extinguished. From 1991 to 1992 PEAH coverage fell to 1,268 ha or just 7 per cent of previous coverage.

Substitute FONDEAGROs have given negative results in terms of repayment and sustainability. For example, Tarapoto's FONDEAGRO up to September 30, 1994 had placed 126 loans for a total of US $ 5'088,269 covering 15,827 hectares. The delinquency rate has been US $ 4'207,928 (83 per cent) of loans.

The total number of farmers served reached 10,249. From the total number of loans, 71 were for agricultural activities (rice, corn, cassava, coffee, tobacco, vegetables, grapes and cotton), 48 for cattle and other animal breeding (bovines, sheep, pigs, fish and poultry farming) and 7 for apiculture, agroindustry and other services (Table CR8 in the Appendix).

B. Commercial Banking

Its main features are:

a) Tingo Maria. The private banks operating in the area Credito are: Continental and Interbanc. However, their internal policies do not include making loans to farmers.

b) Aguaytia. No commercial banks here.

c) Tocache-Uchiza. All branches of commercial banks have closed for economic and security reasons.

d) Tarapoto (Biabo, Ponasa and Sisa). There are three commercial banks in Tarapoto (Credito, Continental and Interbanc) which do not cover the agricultural sector and are absent from the project's area of influence.

e) Valley of the Apurimac River. There are no branches from commercial banks here. Previously there was one from the Banco Popular (it closed in 1991), and from Bancoop (closed in 1992).

Only Banco Continental uses COFIDE's promotional credit to support microbusinesses. The other banks argue that COFIDE does not share the loans' risks. For this reason they ask for a mechanism that can offer higher security. The Tarapoto COFIDE office is just an information window.

C. Caja Rural de Crédito y Ahorro San Martin Region

The newly created (March 14, 1994) San Martin Region CRAC operates out of Tarapoto city (it was recently created). Its economic development plan for San Martin includes the three main economis agents: regional government, professional bodies and enterprises. Lack of funding remains a serious constraint.

It operates near cities (mainly Moyobamba, Bellavista and Rioja); its lending is directed to large farmers and other non farming sectors (trade, transportation, microenterprise, and so forth).

The Ponasa, Biabo and Sisa regions are not short-term priorities. Branches in Tocache, Moyobamba, Juanjui and Bellavista have been considered, and the feasibility studies sent to the SBS.

By August 31, 1994 the San Martin CRAC had placed a total of US $ 878,193 dollars of which 54 per cent for land and cattle, 13 per cent for industry, 12 per cent for services and 21 per cent for marketing services. Geographically speaking, 73 per cent of the lending arrangements fall within the provinces of San Martin, Bellavista and Moyobamba.

D. Caja Rural in the Apurimac and Ene Rivers Valley

This CRAC was created on November 18, 1993 and it was authorized to start working on April 20, 1994.

Its main office is located in San Francisco, capital of the Ayna district in the province of La Mar. Its geographical scope embraces the districts on both banks of the Apurimac river valley and the provinces of Huanta, La Mar, La Convencion and Satipo in the departments of Ayacucho, Cuzco and Junin.

This institution has been promoted by the Central of Cooperative Associations VRAQUS and its three associated cooperatives: Valle Rio Apurimac, El Quinacho and Union Selvatica. They transferred US $ 67,201 dollars from the coffee promotion fund to constitute the nominal capital of the union.

The nominal capital of the CRAC, subscribed and paid, amounts to US $ 275,230 being the three cooperative associations mentioned above among the shareholders, each with 15 per cent of the nominal capital which accounts for 45 per cent of the holding.

By June 1994 the CRAC obtained the approval of a COFIDE credit amounting to US $ 831,000. By June 30 its deposit balances (savings and time deposits) were in the order of 21,816 nuevos soles and US $ 18,405, with US $ 55,000 distributed in 10 credits and 10 additional approved applications.

By September the number of credits reached 84 which represents 891,954 nuevos soles. 60 per cent of this belongs to the trade sector, 15 per cent to land and cattle for the fattening of cattle and fruit-trees (they do not work with cocoa nor coffee yet), and the remaining 25 per cent to other sectors (small industry, services, and so on). Geographically speaking, the credits are mainly in Huanta where there is a larger economic capacity to back the loan's collateral.

Presently the CRAC is about to receive a line of credit from COFIDE for US $ 175,000. This money will be directed proportionably to agricultural borrowing and multisector loans. The level of local capital placements reaches 500,000 nuevos soles.

Most of the credits go to urban areas but even in this case, there are difficulties with the guarantee requirements. The CRAC has decided to set up a mechanism whereby the client uses a sales contract for a real-estate property as a guarantee. They also use the jointly-liable guarantor approach (with solvent clients). The current loan default rate is close to zero (0.3 per cent).

The United Nations will implement a development project in the zone (a total budget of US $ 2'200,000 is mentioned) including an agricultural support component that could eventually be channelled through the Rural Union.

There is neither telephone nor fax service in the zone. This hampers the work of the Cajas Rurales specially to coordinate with official entities from the financial sector (BCH, SBS), and weakens relations with the clients.

E. Other Forms of Financing

Other forms of financing within the scope of the project are:

a) The small PEAH revolving fund that operates within its geographic sphere (Aguaytia, Tocache and Uchiza).

b) In Tingo Maria, the CIHD NGO operates a revolving fund financed by the Peru/Canada General Counter-Value Fund.

c) In Tingo Maria, the "Naranjillo" cooperative association will implement revolving funds using a stock of fertilizers.

d) An office of the Caja Rural has been working in Tocache but only for the purpose of selling shares since this CRAC depends on the Tarapoto head office. The PEAH will also work with revolving funds.

e) In Uchiza there is a producers' association that is implementing a revolving fund mechanism with the support of the United Nations. Likewise, the PEAH will work with revolving funds.

f) In Sisa, the NGO ADECAM is conducting a project of support to the cultivation of vegetables using revolving funds.

In relation to private banking, it is not realistic to expect them, at least in the short-term, to cover the vacuum left by the Banco Agrario. They present several reasons to explain their present conservative attitude:

a) productive recession.

b) low profitability of the land and cattle sector vis-à-vis other productive sectors,

c) the high-risk element which has produced bad experiences in the past,

d) lack of real guarantees,

e) lack of interest in the line opened by COFIDE because the spread is considered too low and does not go hand in hand with the risk involved in the credit.

f) Lack of cadres to manage a rural protfolio.

4.2.3. DEMAND

A. Main Producers Zones

According to verified statistics, the area of the project embraces 124,188 hectares.

In the province of Bellavista the legal crops that have the most importance are rice and hard yellow corn maize. In Picota, the most important areas are sown with corn maize. In Tocache, banana and cassava have the highest importance. In El Dorado, rice and maize occupy the largest plots. In the province of Leoncio Prado, however, there is a wider variety of crops: bananas, cassava, coffee and cocoa.

In the Apurimac river's basin, traditionally there has been a cyclic boom of different crops that have a strategic importance for the agricultural sector. During the 1950's the emphasis was on the extraction and trade of cube or barbasco. For the period 1960-80, the boom was on coffee cultivation with the insertion of corn, and sesame, and during the 1980's the cultivation of cocoa. Finally from the mid-1980's on, coca is on top.

Presently, in addition to coca, the most important crops are coffee, cassava and cocoa in that order.

In Table CR10 in the appendix we can see the segregated data for the agricultural structure of the project's zone.

B. Working Experience with Financial Institutions

In the Upper Hualaga's zone most farmers that produce coffee and cocoa were Banco Agrario's clients deriving their knowledge on financial institutions from this experience. The majority is associated in committees to facilitate produce marketing. Also, from last year onwards, communal and multicommunal enterprises

are being constituted by the Ministry of Agriculture to be communal subjects of credit.

Unfortunately the native communities and the recent migrants that, in general, are holding lands in the Apurimac river valley do not have any kind of experience with financial institutions.

C. Guarantees and Payment Terms

The guarantees represent, in the zone, one of the main shortcomings for the development of the credit intermediation process. In general, the guarantee mechanisms used by commercial banking are fixed property and other kinds of assets other than the agricultural pledge. This hinders the access to credits for most producers.

The commercial banking also resorts to a method called financial triangulation. This means that loans are given to producers with the endorsement of the input suppliers or the traders in final products as in the case of the agroindustry.

Another shortcoming are the terms on the granted loans. The emphasis, in this zone, is laid on those crops with growing period that go from three to eight months. This time limit leaves out the fruit producers since they have ripeness periods that are definitely longer.

D. Profitability

The present juncture, as we will see in the section on agricultural development, shows goods prospects in terms of profitability for crops such as grapes, bananas, cotton, cassava and papaya specially as activities that can be subjects of credit.

E. Demand for Credit

Depending on the Project's avaibility of funds, there is the provision to channel US$ 19.2 million which represent 37 per cent of the total requirements per campaign -the total amount reaches US$ 51.2 million. The geographic and products distribution is found in Table CR11 in the appendix.

With this budget in mind, we expect to habilitate 21,940 ha of the following crops: rice, 3,670 ha; Cocoa, 1056 ha; Coffee, 518 ha; Yellow corn,4,460 ha; Bananas, 7,144 ha; Papaya, 141 ha; and Cassava, 4,462 ha.

TABLE 24
Demand for Credit for the Main Crops by District 1993 (in US$)

Province	Rice	Cocoa	Coffee	Maize	Bananas	Papaya	Cassava	Total
Huallaga	6,486,362	9,415,703	7,290,990	6,638,356	4,993,525	516,127	3,568,438	38,909,500
Aguaytia	559,639	30,655	88,494	253,339	328,031	8,628	140,740	1,409,524
Apurimac	338558.77	5882656	1524000	379320	43143	7920	1077356	9252953.77
P.Bermd-. C.Const	11,509	15,168	1,305,000	126,150	102,834	3,960	86,132	1,650,753
TOTAL	7,396,068	15,344,181	10,208,484	7,397,165	5,467,533	536,634	4,872,666	51,222,731

* *The sphere of the project includes the Sivia, Ayna and Quimbiri districts*

** *The sphere of the project includes Bermudez and Ciudad Constitución.*

TABLE 25
Amount of Credit to be Financed (US$)

Province	Rice	Cocoa	Coffee	Maize	Bananas	Papaya	Cassava	Total
Huallaga	3,086,683	1,699,910	1,109,214	3,482,503	3,856,292	178,457	2,306,873	15,719,931
Aguaytia	266,317	5,534	13,463	132,902	253,325	2,983	90,983	765,508
Apurimac	161,111	1,062,054	231,854	198,992	33,318	2,738	696,474	2'386,541
P.Bermd-C.Const.	5,477	2,738	198,536	66,179	79,414	1,369	55,681	409,395
TOTAL	3,519,587	2,770,237	1,553,067	3,880,577	4,222,349	185,547	3,150,011	19,281,375

TABLE 26
Area to be Financed (ha)

PROVINCE	Rice	Cocoa	Coffee	Maize	Bananas	Papaya	Cassava	Total
Huallaga	3,154	160	133	2,854	2,955	25	1,127	10,408
Aguaytia	342	514	241	1,302	3,999	112	2,270	8,870
Apurimac	168	420	77	229	56	2	987	1,939
P.Bermd-C.Const	6	2	67	75	134	2	78	364
TOTAL	3,670	1,096	518	4,460	7,144	141	4,462	21,490

4.2.4. PROPOSED FINANCIAL MECHANISMS

The proposed mechanisms should put more emphasis on the market forces and on optimum distribution of financial resources. To do this, it is necessary to:

a) formalize credit mechanisms directed to lower-income sectors,

b) intensify the mobilization of local savings,

c) take into account the multiactive nature of peasant,

d) preserve the autonomy of the financial institution.

In order to overcome the difficulties in the credit market, these mechanisms should endeavor to:

a) create a guarantee fund to induce financial institutions to lend to the target populations,

b) strengthen the equity standing of selected Rural Unions so that they can lend more (up to 10 times per unit of equity) using lending funds provided by COFIDE on a basis of at least 3 per each additional unit of equity,

c) specialized NGOs should help farmers or groups of farmers prepare financially-viable proposals and provide a proposal-screening service to financial institutions (Scheme 4).

In the present context, with COFIDE having turned into a "second floor" financial institution, there is a good disposition on the part of commercial banking and the Cajas Rurales to participate in a similar mechanism.

In the project's zone, the granting of credits should:

- Support highly profitable crops.
- Work, as much as possible, with organized producers (jointly liable credit) in order to ensure the return (generate self-control mechanisms).
- Solve the problem on guarantees.
- Lend more flexibility to the banking requirements mainly in relation with:

a) the collateral to debt ratio, currently at five to one;

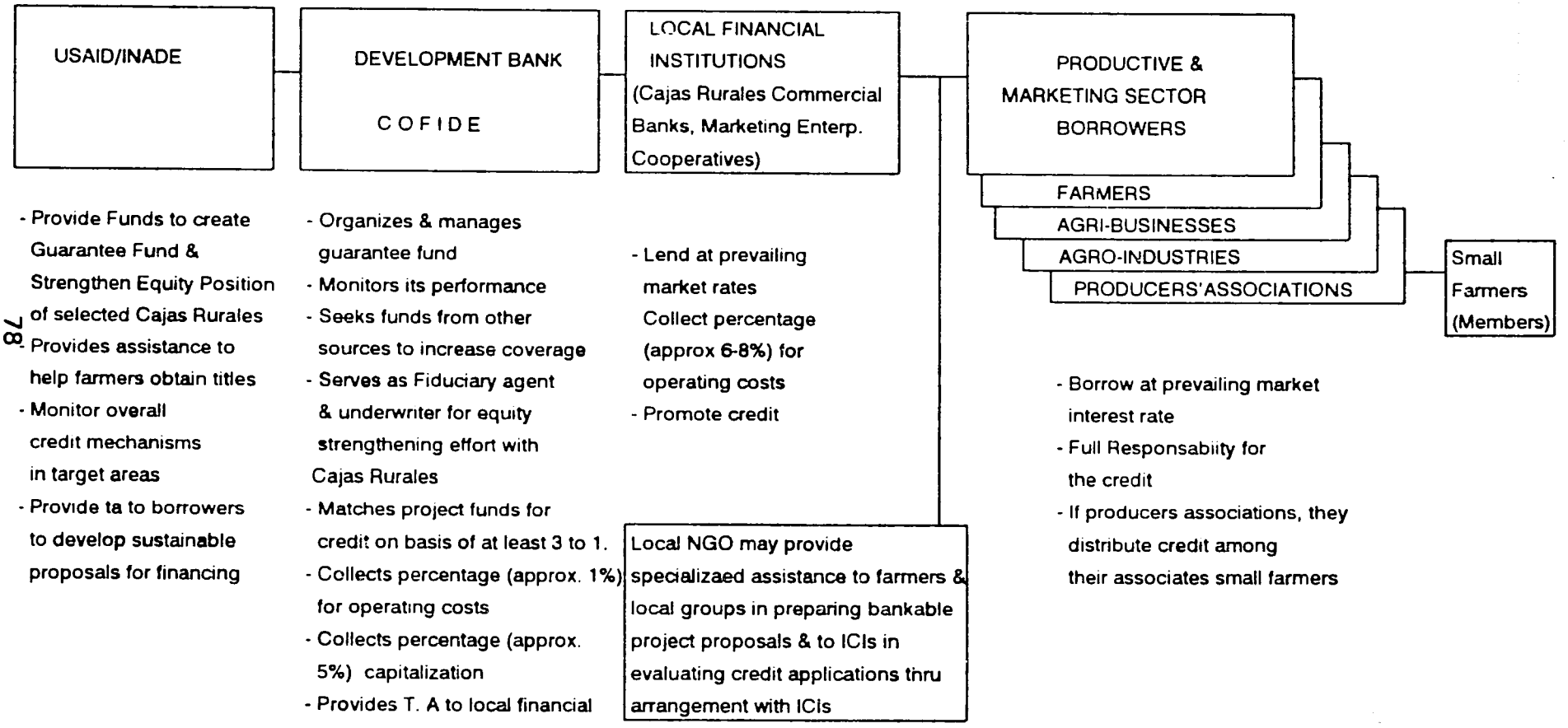
b) the credit applicant's current account record, which needs to be extremely long.

- Supply supervised credit together with technical assistance.

- The financing should be directed to cover the following sectors: agriculture (working capital), agroindustry (working capital and equipment) and trading (labor capital).

SCHEME 4

COUNTERNARCOTICS SUSTAINABLE DEVELOPMENT PROJECT CREDIT



Revolving Funds

Formal credit will hardly reach disadvantaged farmers unless the afore mentioned proposals are implemented. As a result of our analysis, we recommend to set up a structure of revolving funds focused on poor and less organized native communities, as well as women, young unemployed populations, and resource-poor peasant farmers.

- Apply location-specific mechanisms:

a) Tingo Maria: channel credit through the private banks (perhaps the Banco Continental since it is already operating a credit line for microbusiness).

b) Aguaytia: implement a financing mechanism through PEAH (under a new approach that can be detailed) while there are no other financial institutions in the zone.

c) Tocache-Uchiza: work with a Rural Union in San Martin to be created as soon as possible.

iv. Ponasa-Biabo-Sisa: establish a branch of the Rural Union in El Dorado province.

v. Apurimac River Valley: channel funds through the Apurimac and Ene Caja Rural.

4.3. AGRICULTURAL LAND TITLING

Access to credits is essential for the substitution of coca, for an effective integration of the producers to the market and for the consequent modernization of farm management. The windows created by COFIDE, the private banking and the CRACS are not open to farmers since these institutions require real pledges or land titling as guarantees for future loans.

The project's zone shows an average of 45 per cent of land title holders. Titling is difficult in zones plagued by terrorism and drug trafficking. For instance in the Apurimac valley approximately 40 per cent of farm owners and occupiers have migrated out or died. Only a small percentage of this group has returned. About 25 per cent of the present farmers are new holders, recent migrants or are related to former dead owners.

Finally, the repression to coca growing has forced farmers to move frequently, more deeply toward virgin forest and give up their plots which they often exchange or sell.

Land titling is being carried out by the Special Project for land titling from the Ministry of Agriculture PETT and MAG through an agreement with different institutions such as PEAH and the district municipalities. Within the sphere of PEAH, the number of title holders has grown quickly in the last two years to about 1000 plots.

The districts with the lowest number of formal titles are the provinces of Huanta and La Mar in Ayacucho; la Convención in Cusco; and Tocache and El Dorado in San Martín.

Goals for Titles Granting

Although title formalization embraces all social strata, it is necessary to emphasize the zones where the holder owns from 4 to 20 hectares. This stratum represents 25 per cent of the surface for land and livestock exploitation and at the same time 36 per cent of the area with crops. The plots - 4 to 20 hectares - belong to small farmers that direct their production to the market but they also produce coca. The farmers from a lower stratum (up to 4 hectares) are more disposed to migration.

The analysis recommends land titling to prioritize zones with the least development. However, the process may probably be slower in such places specially in view of their complexity and the controversy between the former and the present holders.

This is the case of the plots in the Apurimac and Ene basins and the districts of the province of Tocache. In order to facilitate the title formalization process in these areas, the analysis proposes as first priority, the combination of the efforts of the following bodies: PETT-MAG and the district Municipalities in those plots that belong to the Apurimac and Ene basins and PETT-MAG and INADE (PEAH) in the case of Tocache. In the other areas, it is necessary to encourage joint work among PETT-MAG, the CRACs, the Committees of Producers -that need group credits- and NGOs.

The estimated cost reaches US$ 80 per each legal record of ownership. A possible goal is 3,000 titles over five years (an annual average of 600 titles).

TABLE 27

Land Titling Situation in the Project Area

Province, District	Number of plots	With Title 1994	to be Titled	Priority
PROV. BELLAVISTA - DPTO. SAN MARTIN Districts: AlTo Biavo y Bajo Biavo	874	525	349	Second
PROV.EL DORADO -DPTO. SAN MARTIN Districts: San Jose de Sisa,Agua Blanca, Martin; Santa Rosa y Shatoja	2649	192	1457	First
PROV. PICOTA - DPTO. SAN MARTIN Districts: Shamboyacu,Tingo de Ponasa, Tres Unidos	1137	625	512	Second
PROV. TOCACHE - DPTO SAN MARTIN Districts: Nuevo Progreso, Uchiza	4972	1989	2983	First
PROV. LEONCIO PRADO - DPTO HUANUCO Districts: Rupa Rupa, Daniel A. Robles, Crespo y Castillo,Padre Luyendo, Damaso Beraun	11090	5544	5546	Second
PROV. PADRE ABAD - DPTO UCAYALI Districts: Padre Abad, Irazola	5738	2869	2869	Second
PROV.HUANTA - DPTO AYACUCHO District: Sivia	2434	730	1704	First
PROV. LA MAR - DPTO AYACUCHO District: Ayna	1097	219	878	First
PROV. LA CONVENCION - DPTO CUSCO District: Quimbiri	4405	1322	3083	First
PROV. OXAPAMPA - DPTO. PASCO Districts: Palcazu y Pto. Bermudez	2725	1635	1090	Second
TOTAL	37121	16650	20471	

(a) = The assumed number of estimated plots is equal to the economically active population
SOURCE: INEI - Information based on the Demographics and Housing Census 1994

4.4. ROAD INFRASTRUCTURE

4.4.1. Analysis

A. General Background

One of the main factors that severely affect a region social and economic development possibilities is the absence of a comprehensive and well-maintained road network. In order to meet development requirements, the transportation system should include both major roads -connecting the project's area to the region's product markets- and secondary and feeding roads to link production areas with those major roads.

Such roads would simultaneously allow the project area's towns and production zones to receive an efficient supply of goods and services, thereby improving the quality of life in those communities, and provide an adequate infrastructure to fight drug trafficking and terrorism. Additionally, road construction and rehabilitation would provide temporary employment for the region's labor force.

All the existing roads have been abandoned due to terrorist activities and the withdrawal of government services. Thus, they have conditions have deteriorated to the point that heavy vehicles are unable to use most of the network. Part of the Carretera Marginal -the most important in the region- has been closed to traffic.

Under these circumstances, the farmers' agricultural activities have turned to coca production as the only means to survive the country's general economic crisis. Unfortunately the coca problem does not stop here. Coca leaf is processed primarily into basic paste which is then illegally transported by air. Therefore, its production does not depend on the state of the transportation network. Consequently, coca production has increased in many areas of the CSD project.

B. Huallaga River Valley

The region's major transportation route is the "Carretera Marginal de la Selva". It is a road which, in the project's area, runs from north to south parallel to the Huallaga and Mayo rivers and the Federico Basadre road. The Carretera Marginal links the region with the main markets on Peru's northern and central coast - including Lima- and with the communities in the central highlands.

A number of secondary and feeding roads, of varying standards and mostly of recent construction, connect the rural and production areas to the Carretera Marginal. Even though extensive rehabilitation and maintenance work is being carried out by government agencies (PEAH) and the Peruvian army, this work focuses mainly on the Carretera Marginal -and partly on some adjacent feeding roads. As a result, many feeding roads are in critical condition and using them during the rainy season may be out of the question. Moreover the lack of appropiate drainage infrastructure allows for a significant erosion of the road's surface due to the high run-off. This situation becomes worse specially when some rivers flood the road due to the lack of bridges.

Undoubtedly, the rehabilitation of the Carretera Marginal is very costly and, therefore, it is beyond the scope of this project. However, that work should continue to be executed by national and regional institutions like the Ministry of Transportation or the army corps of engineers. In any case the analysis recommends to concentrate CSD project activities on secondary and feeding roads that link production areas with the main roads and with potential local industrial and consumer markets.

Following a general inspection of the region's existing road network, several additional rehabilitation requirements and complementary tasks have been identified. They are necessary to provide adequate transportation facilities in support of economic activities and the marketing of the region's legal crops. The following feeding roads were selected to be included in a first batch of roads to be rehabilitated :

a) Biabio river valley
Puente Picota-Cuzco, a 53 km feeding road.

b) Ponaza river valley
Puente Picota-Huanipo, a 31 km feeding road.
Huanipo-Shaboyacu, a 12 km feeding road (this is an extension of the Puente Picota-Huanipo road that will reach a coca production area intended to become the subject of development through the introduction of legal crops).

c) Sisa river valley
Santa Rosa-Rumisaya, a 68 km secondary road.
San Pablo-San Hilarion, an irrigation canal and maintenance road, approximately 24 km long.
Shatoja-San Martin, a 12 km feeding road presently under construction by the local authorities.

d) Tocache-Uchiza region
Tocache-Uchiza secondary road, 40 km in length on the left bank of the Huallaga river. This road crosses a major coca production area which is intended to become a subject of development through the introduction of legal crops.

Details of work proposed to be conducted on the selected secondary and feeding roads are as follows:

PUENTE PICOTA-CUZCO

- Road alignment adjustments: 2 km
- Drainage system installation: 55 (36" diameter culverts and 21 km of gutters and drainage channels).
- Regular maintenance: 53 km annually
- Periodic maintenance: 53 km every third year.

The total construction cost involves amounts up to US $ 463,500 and the maintenance works for the first nine years after construction is US $ 1'876,200.

PUENTE PICOTA-HUAÑIPO

- Drainage system installation: 33 (36" diameter) culverts and 12 km of gutters and drainage channels.
- Regular maintenance: 31 km annually.
- Periodic maintenance: 31 km every third year.

The total estimated construction cost amounts to US $ 201,500 and the first nine years' maintenance works will be US $ 1'097,400.00

HUAÑIPO-SHAMBOYACU

- Platform rehabilitation: 12 km
- Drainage system installation: 18 (36" diameter) culverts and 5 km of gutters and drainage channels.
- Bridges: 3 bridges, each 15 m. long
- Regular maintenance: 12 km annually
- Periodic maintenance: 12 km every third year.

The total construction cost of the works amounts to US $ 606,600 and the first nine years' maintenance will be US $ 424,800

SANTA ROSA-RUMISAPA

- Platform rehabilitation: 26 km
- Drainage system installation: 90 (36" diameter) culverts and 31 km of gutters and drainage channels
- Bridges: 1 bridge 50 m long, 2 bridges 30 m long each, and 1 bridge 20 m long
- Regular maintenance: 68 km annually
- Periodic maintenance: 68 km every third year.

The total construction cost of the works amounts to US $ 1'498,800 and the first nine years' maintenance will be US $ 920,400.

SAN PABLO-SAN HILARION

- Regular maintenance: 24 km annually
- Periodic maintenance: 24 km every third year.

Total estimated maintenance costs, for the first ten years, amount to US $ 849,600.

SHATOJA-SAN MARTIN

- Drainage system installation: 24 (36" diameter) culverts and 24 km of gutters and drainage channels.
- Regular maintenance: 12 km annually
- Periodic maintenance: 12 km every third year.

The total construction cost of the works is estimated to be at US $ 120,000 and the maintenance cost for the first nine years after construction at US $ 544,800.

TOCACHE-UCHIZA (Left Bank of the Huallaga River)

- Road alignment adjustments: 5 km
- Platform rehabilitation: 15 km
- Drainage system installation: 45 (36" diameter) culverts, 18 km of gutters and drainage channels and 1000 m of subdrains
- Regular maintenance: 40 km annually
- Periodic maintenance: 40 km every third year.

The total construction cost of the works amounts to US $ 2'063,000 and the first nine years' maintenance will be US $ 1'416,000.

UCHIZA-CARRETERA MARGINAL DE LA SELVA

- Platform rehabilitation: 1 km
- Drainage system installation: 36 (36" diameter) culverts and 6 km of gutters and drainage channels
- Routine maintenance: 24 km annually
- Periodic maintenance: 24 km every third year.

The total construction cost of the works is estimated to be at US $ 194,000 and the maintenance cost for the first nine years after construction will be US $ 849,000.

The types of work which should be conducted on selected roads according to specific requirements are as follows:

a) Road alignment adjustments: on limited sections of two roads. In these location there are very steep gradients for loaded trucks to negotiate leading to blockages during certain seasons. Without appropiate reduction of the longitudinal slope, the transportation of products to consumers' markets may be severely reduced. The work to be carried out includes the construction of new road sections, including cleaning, excavation of rock and soft materials, surface preparation and subgrade fill and compaction.

b) Platform rehabilitation: for severely damaged or destroyed road sections mainly due to surface water action. Repairs will allow traffic regularization along the road eliminating those constraints. The work involved will include excavation of surface material and replacement with appropiate fill as well as surface compaction. In some cases, short retaining walls will be required to withstand the reconstructed fill.

c) Drainage system installation: includes corrugated metal culverts, lined or unlined gutters, drainage channels and subdrains. These systems will provide protection against surface or deep water action preventing major deterioration of the road during rainy seasons and consequently reducing traffic constraints.

d) Bridges: for rivers and major creeks crossings so as to have all year round traffic use. Where crossing facilities are already provided, bridges are only considered as supplementary works and, consequently, have not been included within the proposed rehabilitation plan. River bed and bank protection work will be included in bridge construction as necessary.

e) Routine manintenance work: to keep the roads in appropiate condition for traffic at all times. It is proposed that such work be carried out annually. Regular maintenance will include skin patching, surface smoothing, general cleaning of gutters, channels and culverts, minor water course training and signals maintenance.

f) Periodic maintenance work will include minor rehabilitation work and repair of damaged road sections, reconstruction of gutters, channels and culverts, repair of retaining walls and ballast replacement. It is proposed that this work be carried out at least once every three years.

It would also be advisable that routine maintenance be carried out by local governments. All other construction, rehabilitation and maintenance tasks should be performed by experienced private contractors. Local labor and materials should be used as much as possible in order to minimize costs and provide employment for the available labor force.

C. Apurimac River Valley

A limited number of secondary and feeding roads -of different categories and most of them poorly maintenanced- link the rural productive areas to the main existing transportation infrastructure in the region: Carretera Ayacucho-San Francisco a west-east direction that links the region with the coast markets -including Lima- as well as with the central mountain range communities. It is important to note that the coast, specially Lima, is the main market for this region's products. In the absence of an adequate road system, produce and merchandise are transported by boat along the Apurimac and Ene rivers. This type of transportation is highly expensive and dangerous due to rivers' characteristics.

Presently some small scale rehabilitation and maintenance works are being carried out on secondary roads. These tasks are in charge or regional government agencies. Likewise, the Peruvian Army should be working on the Ayacucho-San Francisco road rehabilitation. Nevertheless, several feeding roads continue to be in a critical state and even out-of-service during the rainy seasons mainly because of surface deterioration arising from run-off scour as only limited drainage systems have been built for the roads. This situation has, in some cases, worsened by the lack of adequate bridges over several rivers and creeks along the roads' alignments.

Considering that the Ayacucho-San Francisco highway is the only means to transport production and/or goods from and to the Apurimac river valley region, our analysis is emphasizes the need on the part of the Peruvian government to improve this route, its platform, drainage systems and bridges and crossings in order to facilitate transportation. As already mentioned, the rehabilitation of the Ayacucho-San Francisco road is a costly operation (presently in charge of the Peruvian army

corps of engineers) and consequently out of the scope of the present project. However, these works should continue in charge of the national or regional Peruvian (preferably civil) authorities.

In regards to secondary-road rehabilitation and maintenance, these tasks may be managed or executed by local (municipal) authorities. The three municipal governments in the Apurimac river valley possess several recently manufactured construction equipment including bulldozers, front payloaders and trucks. All of this equipment may be used for the roads' construction and maintenance tasks.

Considering this context, our proposal limits the project's scope to secondary and feeding roads linking the production areas with the main roads or potential local and industrial consumer markets. Following a general survey of the existing road network, several road construction, rehabilitation and complementary works have been found to be required in order to provide adequate transportation facilities to support economic exploitation and trade of several of the legal produce. Thus, the following feeding roads were selected to be included in a first rehabilitation batch:

a) Rosario-Chuvivana, a 30 km long secondary road.

b) San Francisco-Pichari-Ccatun Rumi which is a portion of the region's Carretera Marginal, approximately 40 km long.

c) Pichari-Rio Ene, also part of the region's Carretera Marginal with a total length of about 40 km. A final study of this road (considering a total width of 3.30 m for the platform) has already been prepared and is available at the Transportation, Communications, Housing and Construction Ministry.

   Sivia district will be linked to the existing road, on the right margin of the Apurimac river, by means of boats or, if needed at a later stage, by barges. The proposed roads from Quimbiri to Quillabamba (185 or 132 km), from San Francisco to Carmen Pampa and San Agustin (40 km) and from San Jose (near Sivia) to Huanta (120 km) are out of the project's scope of work.

   The construction and maintenance of the Pichari-Rio Ene road should be considered as a top priority for the region since it will complete the main road axis along the right margin of the Ene river and would indistinctly serve production areas located on both margins of the rivers. It is important to note that any road construction on the right margin will be easier and cheaper because of the greater number of beneficiaries.

   As a second priority, the rehabilitation and subsequent maintenance of the Quimbiri-Pichari-Ccatun Rumi road should be programmed and executed in order to assure the permanent and appropiate transportation of the region's production to San Francisco and from that location to the consumers' markets. The Rosario-Chuvivana road, although of major importance for the region, represents the third priority within the proposed road's scheme. Detailed works to be executed for each of the proposed secondary or feeding roads are the following:

ROSARIO-CHUVIVANA

- Road alignment adjustments: 1 km
- Platform rehabilitation: 18 km
- Drainage systems implementation: 45 (36" diameter) culverts and 18 km of gutters and drainage channels.
- Bridges: 1 bridge 30 m long (replaces severly damaged Bayly bridge), 1 bridge 20 m long and 1 bridge 15 m long.
- Channels crossings: 7 crossings, 10 m long each
- Regular maintenance: 30 km yearly
- Periodic maintenance: 30 km every third year.

The total construction cost is estimated to be US $ 1'151,000 and the first nine years' maintenance will be US $ 1'062,000.

SAN FRANCISCO-PICHARI

- Road alignment adjustments: 1 k m
- Platform rehabilitation: 21 km
- Drainage systems implementation: 45 (36" diameter) culverts and 18 km of gutters and drainage channels
- Bridges: 1 bridge 15 m long
- Channel crossings: 5 crossings, 10 m long each
- Periodic maintenance: 30 km every third year.

The total construction cost for this road is estimated to be US $ 875,000 and the maintenance works for the first nine years will be US $ 1'062,000.

PICHARI-RIO ENE

- New road construction: 20 km
- Platform rehabilitation: 20 km
- Drainage systems implementation: 60 (36" diameter) culverts and 18 km of gutters and drainage channels
- Bridges: 1 bridge 30 m long and 5 bridges 15 m long each
- Channel crossings: 8 crossings, 10 m long each
- Regular maintenance: 40 km yearly
- Periodic maintenance: 40 km every third year.

The total construction cost is estimated to be US $ 2'174,000 and the first nine years' maintenance will be US $ 1'062,000.

The general justification of the works to be developed in either one of the selected roads, upon requirements, is as follows :

a) Road alignment adjustments: they cover only very limited portions of the proposed roads -those with very steep slopes and/or inadequate access to bridge sections which make difficult (specially in wet seasons) the traffic of loaded trucks. Unless the roads longitudinal slope is reduced to appropiate values, the transportation of products to the consumption markets may be severely restrained. The works to be carried out include the construction of

small new segments of roads, including cleaning, excavation in rock and soft materials, surface reparation and subgrade fill and compaction.

b) New roads construction: the construction of new roads has been limited only to a sector of the future Carretera Marginal located on the right margin of the Apurimac river. This road is critical in order to facilitate the transportation and marketing of production pertaining to production areas on either margin of the Apurimac river valley. Transportation costs will be dramatically reduced specifically when compared to present river transportatin facilities which are extremely expensive.

c) Platform rehabilitation: on roads severely damaged or destroyed due to surface water action. Repair works will allow a progressive regularization of traffic along the road, eliminating some sectors' constraints. The work involved will include excavation of surface materials and replacement with appropiate fill as well as compaction of the surface. In some cases, short retaining walls will be required to hold the reconstructed fill.

d) Drainage systems implementation: it includes corrugated metal culverts, lined or unlined gutters, drainage channels and subdrains. These systems will provide protection against surface or deep water action preventing a major deterioration of the road during rainy seasons and consequently reducing traffic constraints.

e) Bridges: intended for rivers and major creeks crossings in order to make sure that the roads are open to traffic all year round. Bridges will include protection works in the river bed and banks as required.

f) Regular maintenance works: to keep the roads in appropiate condition for traffic all year round. These tasks are intended to be carried out yearly. Regular maintenance works will include skin patching, surface smoothing, general cleaning, surface dampening, soil and rockfall clearing, gutters, channels and culverts cleaning, minor water courses training and signals maintenance.

g) Periodic maintenance works: they will include minor rehabilitation works and repairing of damaged segments of the roads, gutters, channels and culvert reconstruction, retaining walls repair works, and ballast replacing. These tasks are intended to be performed no less often than every third year.

Except for the regular maintenance which is intended to be executed by local governments, all the construction, rehabilitation and maintenance tasks should be carried out by experienced private contractors. Local labor and materials should be used as much as possible in order to minimize costs and provide working opportunities for the community's available manpower. Likewise available municipal construction equipment should be used by the contractors on a rental basis.

D. Pichis-Pachitea Rivers Valley

The region's major existing transportation route is the "Carretera Marginal de la Selva" a national road which, in the project's area, runs from Ciudad Constitucion through Puerto Bermudez to Villa Rica. The Carretera Marginal links the region with the Federico Basadre and the Central roads and, through them, to the main markets on Peru's central coast -including Lima. The existing rural and production areas have been established along the Carretera Marginal axis and almost no secondary nor feeding roads are available in the project's region.

Even though extensive rehabilitation and maintenance work is being carried out by government agencies, several sectors of the Carretera Marginal continue in critical condition and may be even out of service during the rainy season. The main reason for this is that these roads lack drainage causing the erosion of the road surface. This situation becomes more critical in some due to the lack of adequate bridges or other means to cross several rivers and creeks. Considering the cost of the rehabilitation of the Carretera Marginal the recommendation is to concentrate CSD project activities on the support to acting agencies and the construction of a few strategic bridges.

Following a general survey of the region's existing road network, several additional rehabilitation requirements and complementary tasks have been identified. These are necessary to provide adequate transportation facilities in support of economic activities and the marketing of the region's legal crops. The following activities were selected to be included in a first stage of the project:

a) Acquisition of basic road construction equipment in order to complement PEPP installed capacity.

b) Construction of critical bridges.

Details of work proposed to be conducted on selected segments of the Carretera Marginal are as follows :

Equipment Acquisition

- Bulldozers (165 HP): 02
- Payloader (bulldozer accesory): 02
- Motorgrader: 02
- Cistern (200 gal. capacity): 02
- Dump trucks (6 m3 capacity): 06

The total cost involved amounts to US $ 1'260,000.

Bridge Construction

- Two or three critical bridges: 60 m of total length.

The total estimated cost amounts to US $ 360,000.

The general justification of the works to be included is as follows:

a) Equipment Acquisition: taking into account that PEPP is carrying out an efficient job in spite of an inadequate construction equipment pool, the proposed aid to this agency will represent a low-cost contribution to the region's main road improvement and, consequently, a reduction in the regional production transportation costs.

b) Bridges: for rivers and major creeks critical crossings. They are intended to make sure the roads are open to traffic all year round. Bridges will include protection works in the river bed and banks as required. It is important to note that the project will carry out the roads' maintenance only for four years after their construction. Following this period, national or regional agencies are expected to continue with the roads' maintenance using their own resources.

Environmental impact is expected to be negligible due to the small proportion of new constructions required. This statement will hold true provided the contractors are well aware of their duties related to pollution controls and there is close supervision at the job site during construction. The following table shows the general cost for construction and yearly average maintenance of the proposed roads:

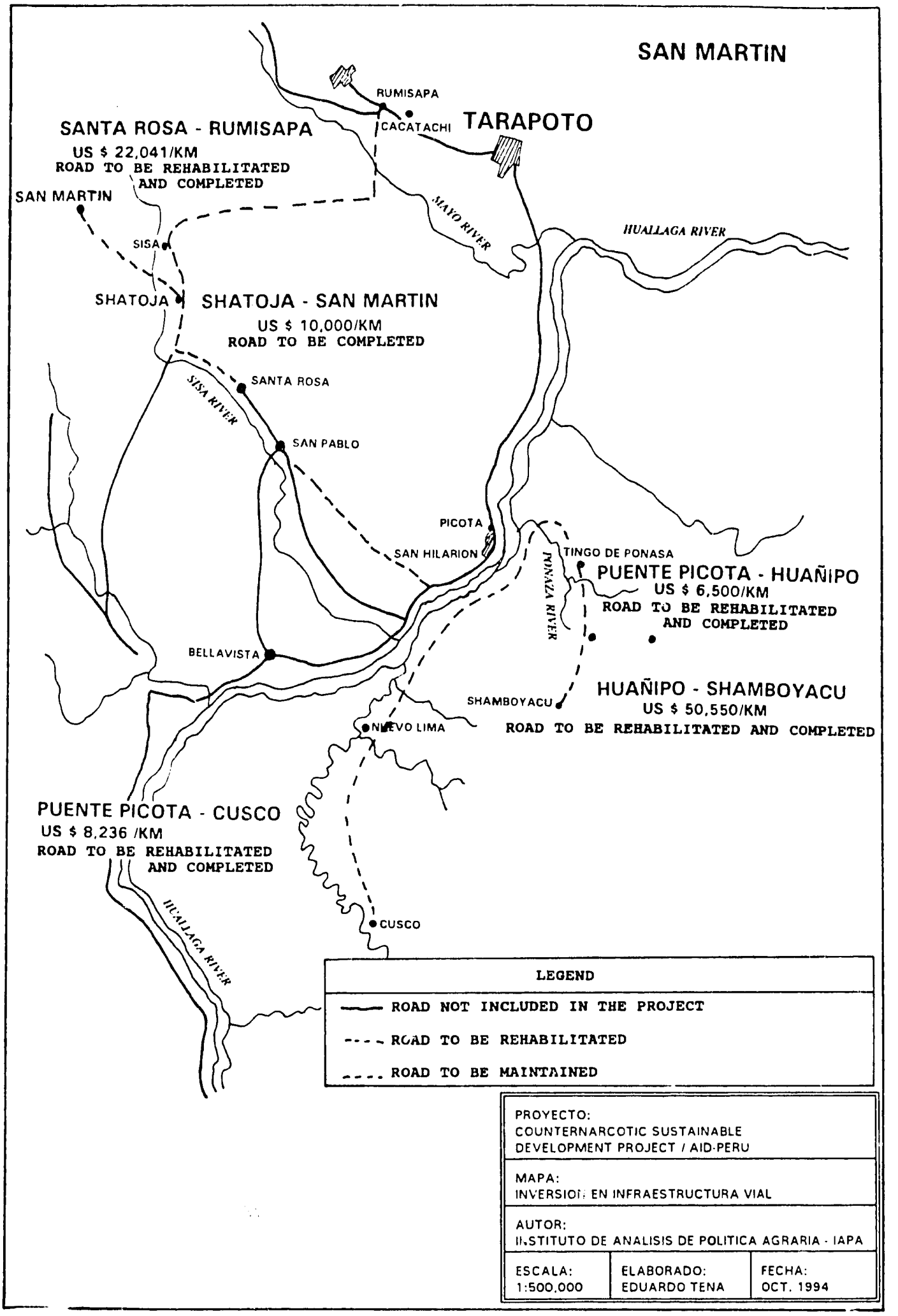
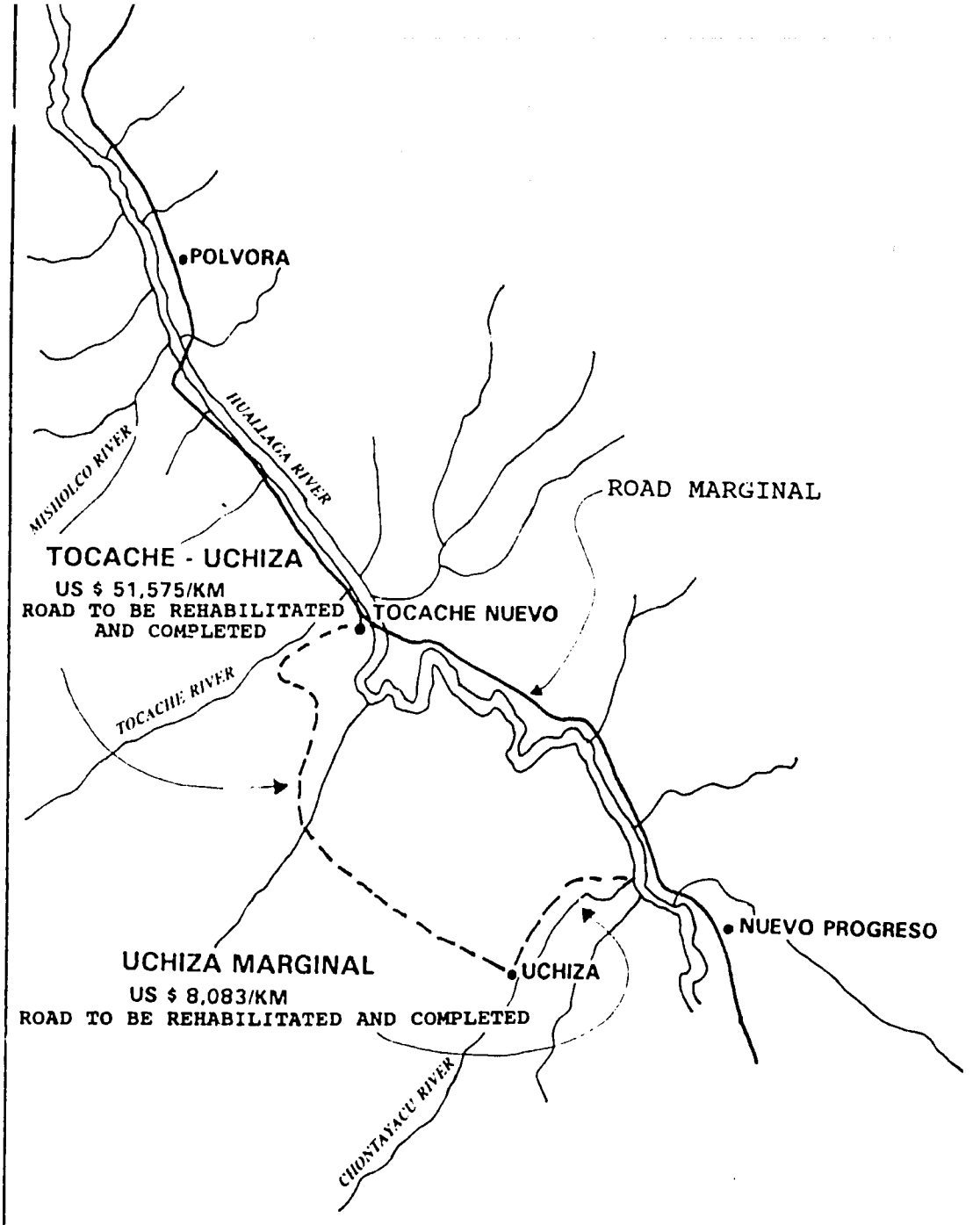

SAN MARTIN
RUMISAPA
CACATACHI
TARAPOTO
SANTA ROSA - RUMISAPA
US $ 22,041/KM
ROAD TO BE REHABILITATED AND COMPLETED
SAN MARTIN
SISA
MAYO RIVER
HUALLAGA RIVER
SHATOJA
SHATOJA - SAN MARTIN
US $ 10,000/KM
ROAD TO BE COMPLETED
SANTA ROSA
SISA RIVER
SAN PABLO
PICOTA
SAN HILARION
TINGO DE PONASA
PUENTE PICOTA - HUAÑIPO
US $ 6,500/KM
ROAD TO BE REHABILITATED AND COMPLETED
MONZA RIVER
BELLAVISTA
HUAÑIPO - SHAMBOYACU
US $ 50,550/KM
ROAD TO BE REHABILITATED AND COMPLETED
SHAMBOYACU
NUEVO LIMA
PUENTE PICOTA - CUSCO
US $ 8,236 /KM
ROAD TO BE REHABILITATED AND COMPLETED
HUALLAGA RIVER
CUSCO
LEGEND
ROAD NOT INCLUDED IN THE PROJECT
ROAD TO BE REHABILITATED
ROAD TO BE MAINTAINED
PROYECTO:
COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID-PERU
MAPA:
INVERSION EN INFRAESTRUCTURA VIAL
AUTOR:
INSTITUTO DE ANALISIS DE POLITICA AGRARIA - IAPA
ESCALA: 1:500,000
ELABORADO: EDUARDO TENA
FECHA: OCT. 1994

TABLE 28
SUMMARY OF COSTS PER ROAD

Road	Investment in Construction US$	Investment in Maintenance US$
Pte. Picota - Cuzco	463,500	1'876,200
Pte. Picota - Huanipo	201,500	1'097,200
Huanipo - Shamboyacu	606,000	424,800
Santa Rosà _ Rumisapa	1'498,000	920,400
San Pablo - San Hilarion		849 000
Shatoja - San Martin	120,000	544,000

Roads and structures construction as well as periodic maintenance should be carried out by experienced contractors, .

Routine maintenance could be executed by local authorities from the region, with intensive use of local labor force.



LEGEND
ROAD NOT INCLUDED IN THE PROJECT
- - - - - ROAD TO BE REHABILITATED

PROYECTO: COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID-PERU		
MAPA: INVERSION EN INFRAESTRUCTURA VIAL		
AUTOR: INSTITUTO DE ANALISIS DE POLITICA AGRARIA - IAPA		
ESCALA: 1:500,000	ELABORADO: EDUARDO TENA	FECHA: OCT. 1994

CUADRO 29
SUMMARY OF COSTS PER ROAD

Road	Investment in Construction U.S.$	Investment in Maintenance U.S.$
Tocache - Uchiza	2'063,000	1'416,000
Uchiza - Carr. Marginal	194,000	849 000

Roads and structures construction is proposed to be carried out by experienced contractors, as well as periodic maintenance.

Rutinary maintenance could be executed by local authorities from the region, with intensive use of local labor force.

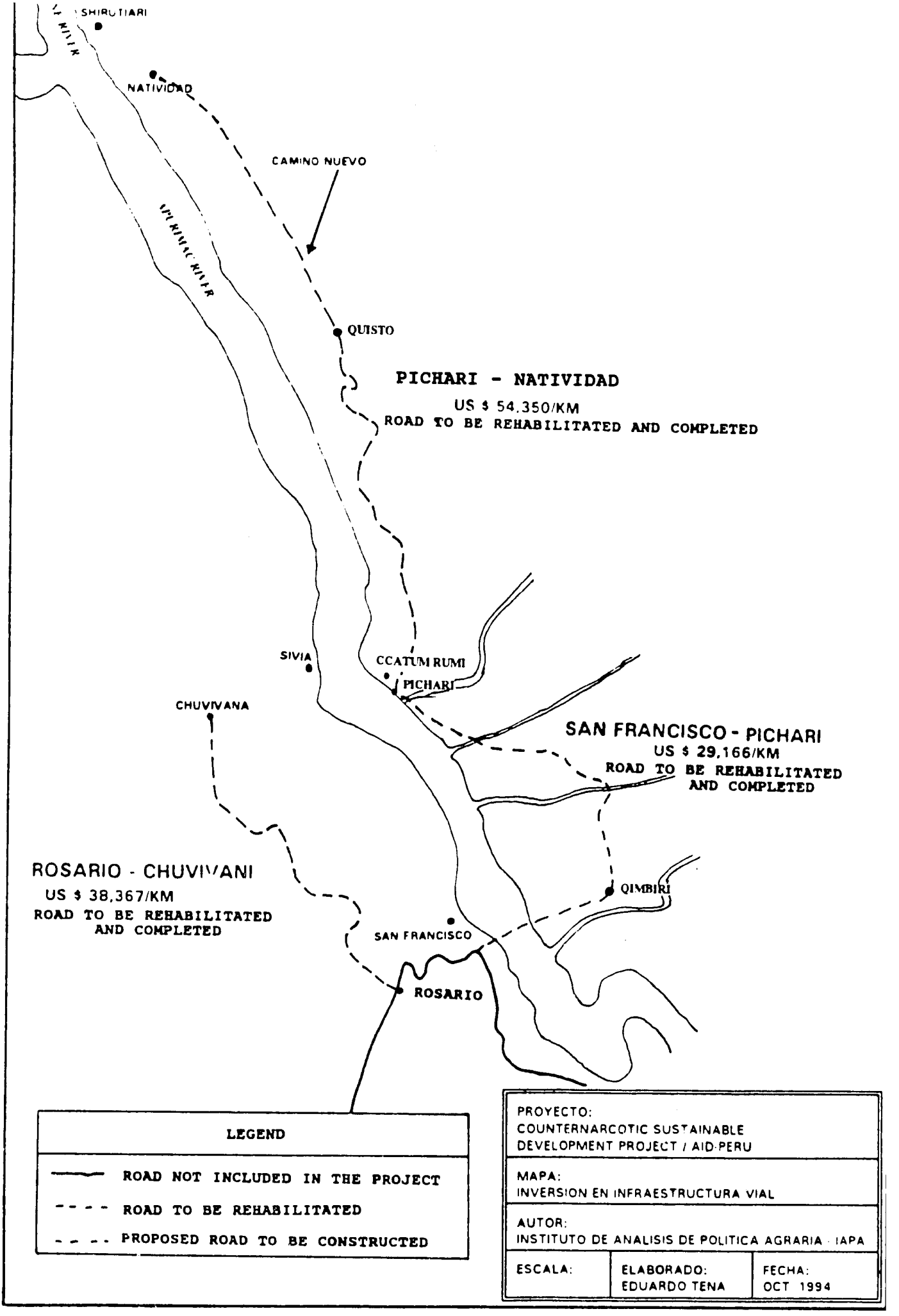

SHIRUTIARI
NATIVIDAD
CAMINO NUEVO
QUISTO
PICHARI - NATIVIDAD
US $ 54,350/KM
ROAD TO BE REHABILITATED AND COMPLETED
SIVIA
CCATUM RUMI
PICHARI
CHUVIVANA
SAN FRANCISCO - PICHARI
US $ 29,166/KM
ROAD TO BE REHABILITATED AND COMPLETED
ROSARIO - CHUVIVANI
US $ 38,367/KM
ROAD TO BE REHABILITATED AND COMPLETED
QIMBIRI
SAN FRANCISCO
ROSARIO
LEGEND
ROAD NOT INCLUDED IN THE PROJECT
ROAD TO BE REHABILITATED
PROPOSED ROAD TO BE CONSTRUCTED
PROYECTO:
COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID-PERU
MAPA:
INVERSION EN INFRAESTRUCTURA VIAL
AUTOR:
INSTITUTO DE ANALISIS DE POLITICA AGRARIA - IAPA
ESCALA:
ELABORADO:
EDUARDO TENA
FECHA:
OCT 1994

TABLE 30
SUMMARY OF COSTS PER ROAD

Road	Investment in Construction US$	Investment in Maintenance US$
Rosario - Chuvivana	1'151,000	1'062,000
San Francisco - Pichari	875,000	1'062,000
Pichari - Rio Ene	2'174,000	1'062,000

Roads and structures construction as well as periodic maintenance should be carried out by experienced contractors.

Routine maintenance could be executed by local authorities from the region, with intensive use of local labor force.

4.5. AGROINDUSTRY

4.5.1. Introduction

The development of agroindustrial activities will give an added value to certain agricultural products. This, in turn, will lend economic viability to crops other than coca.

In this sense the economic feasibility of agroindustrial projects is extremely important given the high costs of food transportation to reach high-demand markets. Undoubtedly, this disadvantage affects income levels and, therefore, increases the disposition toward growing coca.

4.5.2. Analysis of Existing Agroindustry

Within the project's area, there is a variety of underutilized agroindustrial plants. This is the case of the agroindustries devoted to the processing of rice, cotton, palm tree oil, cassava flour, bananas flour and the processing of coffee and cocoa. They are operating well below their installed capacity's full potential due, in many cases, to the high production and marketing cost, to the lack of raw material and also the lack of credits.

To promote agroindustrial development, it is necessary to confront the following convergent tasks:

a) improve agricultural productivity to reduce the high costs and prices of raw materials;

b) produce cheaper electric energy than that from oil;

c) improve transportation to consumers' markets;

d) produce manufactured goods with comparative advantages and of certified good quality;

e) provide technical and credit assistance to make these industries highly efficient and competitive in the national and international markets.

4.5.2.1. Huallaga Valley and Aguaytia

In the Huallaga Valley some crops stand out above others. For example some of the most important agricultural products are rice, cotton, bananas, cassava, citrics, beans, coffee, cocoa, pijuayo for palm tree heart production, different fruit-trees and natural palm-trees from the jungle.

On the other hand, the most important agricultural products in Aguaytia are bananas, cassava, coffee, cocoa, salt dried fish, and citrics.

a) Rice Agroindustry

Rice milling is one of the most developed activities in the zone under study. Rice milling by private companies grew tremendously between 1980 and 1990 to a processing capacity of 20 MT/hr. Presently there are 18 rice mills with an installed capacity well above the levels of grain production in the zone.

Although there is a great number of mills in the zone under study, almost all of them are either obsolete or in very bad condition. This is because many were acquired as second-hand equipment in Chiclayo and near by localities.

A typical case is ARROSAMSA a private company formed by farmers from San Martin. Its objective is marketing hulled and other types of milled rice.

ARROSAMSA has a deteriorate rice mill. Poor peeling quality is increased by the use of solar drying to reduce the humidity of rice put through the peeler. The machanical drier is not operational at the moment.

The obsolescence of the mills together with the rice's inefficient drying and the different varieties of rice employed result in a great quantity of split grains and, therefore, lower quality. This, in turn, results in lower prices that prevent this industry from reaching an adequate profitability to continue their operations. In addition it is known that the rice produced in this zone is of lower commercial quality than the rice from the coast.

The seeds factory which is located within ARROSAMSA plant is managed by the Regional Committee of Seeds (CORESE). This body has the capability to process rice, cotton, and corn seeds, fodder and others; its capacity is 2 MT of seeds per hour. Its main equipment is composed of a drier, a cleaner, a seed classifier and a packaging machine. This plant carries out the following operations: drying, selection, cleaning, classification, disinfection and packing. In general all of this machinery is underused due insufficient raw material.

This plant can help improve the quality and profits of rice and other grains' marketing. It can also provide certification. According to the information obtained from and the visit paid to ARROSAMSA, the seed processing plant is in good condition. For example the drying equipment systems to adjust the temperature allowing the processing of different types of seeds is in working condition.

The rice mills in Biabo, Moyobamba, Sisa valley, Ponaza, Tocache and other places have dissimilar characteristics and many of them are in bad condition.

We can conclude that there is an installed capacity that is above the production of cereal. Therefore, more than fixed-capital investment, working capital, improved machine maintenance and, above all, better coordination in the production of the raw material are needed.

b) Cotton ginning

Cotton production in the Huallaga valley has increased in the last two years, specially of the dun-colored (also called ecological cotton) type. This has allowed companies like Selvaindustria (located in Tarapoto) to increase its production of and exports ginned cotton.

Along with increased cotton ginning, there has also been the implementation, as a subproduct, of the production of the oil from the cotton's seed.

The cotton ginning plant at Selvaindustria possesses four ginning benches each with nine saws and an approximate capacity of 40 quintals at 46 kilos of ginned cotton per hour. The ginning process is executed with a continuous processing machine that separates the cotton seeds from their acorns through the use of special equipment to accumulate and press it and eventually bales are formed.

Taking as basis the information obtained and the visit paid to the plant, we can observe that the equipment and the machinery are in good state and the technology being employed responds to market demands. The plant's capacity is totally used during harvest-time being necessary two working shifts. On the contrary, the plant that produces the cotton seed oil is underutilized.

The raw material used to obtain the cotton seed oil is the seed extracted from the ginning process. This product is thermically treated and pressed using a screw press. At the pressing stage we obtain a coarse oil and a paste from the cotton's seed. The oil is stored to be transported to refining plants while the seed paste is used as animal's fodder.

At the same Selvaindustria factory, there is a coconut processing plant that produces flakes. The process to do this is as follows: selection, washing, separation from the skin, cutting in flakes, drying of the flakes in a tunnel drier, and packing in 20 kilo plastic bags to be eventually marketed in Lima.

Apparently the main problem with the cotton ginning plants has to do with the high cost of energy, lack of raw material due to the low profitability of dun-colored cotton, and the fact that its cultivation follows seasonal patterns.

The production of ecological cotton has, however, excellent prospects. For one thing, the market for this product is growing and, for this reason, it would be interesting to consider the construction of a new ginning plant near Biabo where the productive potential is greater.

c) Processing of Cassava and Banana Flour

Both cassava and bananas are typical crops in the project's zone. Since there are transportation problems that produce recurrent losses and hinder their production, the alternative has been to develop the processing of these staples in order to improve their prices. Cassava and banana flour production is domestic and industrial.

With regard to industrial production a factory to process cassava and banana flour has been installed in the town of Sarita Colonia (Tocache) with an investment of US $ 90,000. In addition two other plants have been set up: a banana flour processing factory in San Miguel (Tingo Maria) and one that processess a nutritive mixture using bananas - "Nutriplat"- in Tarapoto.

The factory located in Sarita Colonia (Tocache) has a flour production capacity of 1 MT/day. Such factory is not working on a regular basis because of the lack of raw material and the doubts over its trade name since it will probably be privatized.

The San Miguel factory is not working at the moment also because of a lack of raw material and its high operation costs; these two disadvantages result in a final product with a relatively high price. This product is used as a children's breakfast food, and could substitute the oat which is relatively expensive (the price of oat in the zone is S/. 1.00/kilo).

The Tarapoto factory, which makes the Nutriplat mixture, uses an intermediate technology. It can be described as follows: the banana is selected, washed and peeled, then it is cut up and dried in a silo-type drier. The grinding is carried out using hammer mills. The other inputs introduced to obtain a nourishing mixture are powder milk and sugar. The technology to obtain cassava flour is quite similar.

This factory is in the process of expanding its installed capacity; this can be explained by the fact that its whole production is bought by PRONAA to use it in its food assistance campaigns. Although its whole production is sold, they cannot reach out more demanding markets because of the presence of contaminating pathogenous microorganisms. This latter problem is closely related to the inadequate location of the processing plant.

The relative high prices of both cassava and banana flours can be covered by expanding the production lines of nourishing mixtures. In this case, there could be a prearrangemet with the food supplementing programs; for example, good targets could be the soup kitchen and glass of milk programs. This would lead to the expansion of the cultivated areas, the increase in the local production of raw material and, consequently, a fall in their prices. On the other hand, these nourishing mixtures would contribute to eliminate the high rates of malnutrition in both children, and pregnant women.

d) Cassava Starch Processing Plant

Cassava is one of the main products in the zone under study but presents marketing drawbacks during certain periods of the year. For this reason the Upper Huallaga Special Project (PEAH) granted a credit for the construction of a plant in Uchiza to make cassava starch.

This factory can process 4 MT/day of raw material; its technology is based on a multi-step approach: washing-peeling, grated, sifting, separation by sedimentation, centrifugal cleaning and drying using a flash drier.

The technology used for the starch extraction is adapted from the one used to make sweet potato and potato starch. This refitting has had some inconveniences, namely, the decrease in the profitability levels which has meant an increase in the final product price.

As a result of information obtained from different sources as well as direct observation, we have noted an oversized basic infrastructure and an inadequate location (near polluted areas), in addition to bad equipment layout within the factory.

Some very important drawbacks that this agroindustry faces are the lack of raw material, cassava high prices and the high costs of energy all of which translate into high prices or starch. This, in turn, prevents it from competing in the national and international markets.

It would be interesting to have a higher investment in this area but it will happen only if the cassava yields reach 50 to 80 MT/hectare which would lead to lower costs of raw material.

To justify the investment executed, it is essential to make the necessary adjustments including a technical and economic feasibility study to evaluate its viability before investing working capital if the selling prices do not justify doing so.

e) Corn Processing

In the area under study there is a corn processing plant in the town of Picota. This factory produces corn flour and semolina and has a processing capacity of 2.5 MT/hr and a storage capacity of 100 MT of raw material.

According to the information we obtained, this plant was closed for a long time although, at the moment, it is working at full capacity in three shifts to satisfy demand from PRONAA, its main client.

Under the management by the Empresa Nacional de Comercializacion de Insumos (ENCI) 15 warehouses were built in order to support corn processing. These warehouses are strategically located and can store a production of 17,750 MT (static capacity).

It is necessary to insure mid-term contracts with PRONAA while the plants gain a better positioning in the non-protected markets is obtained. Until then, another corn flour processing plant is not justified.

f) Cocoa Processing

Cocoa is a crop which is quite old in the zone. Because of factors such as terrorism, the fields were abandoned and planting as well as cocoa processing diminished.

In Tingo Maria, the Cooperativa Agroindustrial Naranjillo LTDA is adequately located for the processing of cocoa. This plant produces cocoa liquor, cocoa

paste and cocoa powder. Presently due to market problems, it has reduced production.

The equipment and machinery used to process cocoa are in good condition and well maintained. It can process 1000 MT of raw material per year.

One of the stages in cocoa processing is fermentation and drying which is carried out in a rudimentary form with small installations and in farm backyards. Obviously the technological level is very low and, thus, the quality of the fermented cocoa is not homogeneous.

It is necessary to improve cocoa fermentation and drying to push up prices for the benefit of the peasants and small producers. This will also provide higher quality inputs for the local and out of the region agroindustry. The training can be in charge of technicians from the Faculty of Food Industries at the Universidad Agraria in Tingo Maria.

g) Citrus Fruit

There exists a citrus fruit processing agroindustry in the town of Piscoyacu (it presently belongs to the Universidad Nacional de San Martin). This factory is in good condition and has a processing capacity of 0.25 MT/hour of orange juice. In addition there are two production lines of animal feed and extraction of citrus essential oil.

The Universidad Nacional de San Martin was transfered this plant and is drafting a project to start production. The university is an institution devoted to training and relies on qualified personnel. It would be very advisable to turn the factory into a training center for people interested in the processing of fruit syrup, canned citrus fruit, extraction of citrus essential oil, and production of marmalades, sweetened fruit and other products using local fruits.

h) Pijuayo Processing

Palm hearts (palmito) are highly appreciated in developed world markets. Moreover, there is a supply deficit that may increase in the future.

Under this assumption a factory to process canned palmito (in cans and in glass containers) is under construction in Santa Lucia in the district of Uchiza, province of Tocache. This plant is being financed by a United Nations' project and should begin working in 1995.

The plant is currently being equipped. Almost all the machinery is in place and the roof is being built. The factory will have a processing capacity of about 500,000 palmito cans per year. Additionally there will be a processing line for caju walnut.

This factory has a sterilizing system using an exhauster and a steam horizontal sterilizer. In addition there are other pieces of equipment and machinery such as a cauldron, tables, a power unit, transportation belts for the cans, can sealers, and so forth. The technology employed is suitable for this type of product.

The technology to be employed will be as follows: the 65 cm long harvested stems are received in the plant where one or two of their external layers are taken off so as to obtain the usable palmito. Once obtained the so-called "vela de palmito" (palmito stick), is cut up in pieces 10 cm long each and immediately put into a solution to prevent color changes. Next come the filling stages with palmito pieces put in cans according to calibre until the can reaches a weight of 230 g including the salt and citric acid solution. The next step is the void formation with the exhauster. Finally there is the air-tight sealing and a thermic treatment at 115° C for 15 minutes so as to get the ideal texture and a completely sterilized product.

Considering that the international demand for this product is likely to increase and natural conditions for the expansion of the pijuayo's cultivation exist, it is recommended the construction of a new palmito processing plant in Tocache or Uchiza. This plant will absorb the production of this and other surrounding zones ensuring a market for palmito growers.

i) Palm oil processing (ENDEPALMA company)

Peru imports more than 30 per cent of its food oil consumption. Food oil production should be one of the most important and best alternatives to imports. Given the breadth of the investment needed and in order to avoid monopolies, it would be advisable to promote national and foreign private investment.

Agricultural production of the palm-tree oil was developed in the zones of Tingo Maria-Tocache-Campanilla. A palm-tree oil extraction factory was built in Villa Palma in the province of Tocache by the Peruvian government with international financial aid.

The plant was built in the mid-1970's using the most suitable technology to process this oil at that time. Extraction of oil is done by "kneading" of the fruits, passing them through a screw press and centrifugating the oil thus obtained in order to obtain a coarse oil (with an orange tinge). The fibre (subproduct) was used as fuel for the cauldrons which, in turn, produced electrical energy through turbines.

Presently, ENDEPALMA's plant is not working due to managing and financial difficulties, and terrorist activities. The machinery is practically irrecoverable, and the plant will be privatized soon.

Furthermore, there is an international campaign against the palm-tree oil based on its cholesterol content which makes marketing more difficult than is the case of cholesterol-free oils like soybean, olive and others.

It is interesting to mention that there is another palm-tree oil processing plant in Uchiza (Palma del Espino) which is working on a regular basis.

j) Other agroindustries

Other agroindustries that can be found in the zone are: coffee, tobacco and anatto-tree "achiote" processing, extraction of lemon verbena's essential oil, elaboration of jams, marmalades and drinks from tropical fruits (passion fruit, araza, aguaje, cocona and camu-camu) and salt-dry river fish.

Proteins deficit may be covered by developing dry red meat and salt-dry fish processing. Fish farming in the natural and artificial lagoons in the area provides a good oportunnity.

Tobacco has a great potencial thanks to already existing plantations and past experience.

4.5.2.2. Pichis-Palcazu Valley

Agroindustry is not well developed in this area, as evidenced by the absence of established industries. Processed foods found in the local market come from Lima and other places.

The agroindustry here lags behind for several reasons:

a) High cost of energy.

b) Distance to markets.

c) Poor production of inputs and scattered cultivation area.

d) High degree of insecurity due to terrorist activities which scare farmers away from their fields.

Banana and cassava and the gathering of medicinal plants such as "uña de gato" (uncaria tometosa) whose bark has healing properties and strengthens the immunological system.

The uña de gato agroindustry is based on the gathering, a very rudimentary selection and finally packing in bags. Products quality and consequently, prices are low.

However, due to its high potential, we recommend setting up a processing (packing) plant to improve quality that can be certified by a competent institution. It is important to note that the exploitation of this medicinal plant would have to be accompanied by a reforestation program.

4.5.2.3. Apurimac River Valley

Here the problem is very similar to that of the Pichis-Palcazu valley.

In the Apurimac river valley the coffee, cocoa, cube and other agroindustry has gone through cyclical development which was however hampered by terrorists violence which interrupted supplies and raw material production.

It is likely that the pacification of the zone will also bring back the primary agroindustries of coffee and cocoa. If so, it would be highly recommendable to set up of a coffee-cocoa processing plant, including collection, fermentation, drying and packing, and which can also controlled product quality. The plant could be run by an association of coffee and cocoa producers in the zone.

4.5.3. Proposal on Agroindustrial Activities

This proposal seeks to develop the agroindustrial sector thus contribute to improve the nutritious level of the population, specially in the case of children and pregnant women. It also seeks to improve household product quality and their access to regional markets and, eventually, to international markets.

Environmental concerns have also been taken into consideration including preservation and use of the rich biological diversity potential that is characteristic of the zone under study. The following agroindustries are proposed within the project's sphere of influence.

a) Seed Processing Plant in Tarapoto

The seed processing plant in ARROSAMSA's should go back to production under CORESE management to process rice, cotton and corn seed as well as other grains.

Justification:

- There is already a plant in Tarapoto to process rice, corn, cotton and other seeds. Such plant is in good working condition and ready to be used throughout the year.

- The above mentioned plant will allow to have certified standard-quality, seed. Here the emphasis will be on more production of a good milling quality rice and on the increase of the production and productivity of rice, cotton and corn fields in the Sisa, Ponaza and Biabo valleys.

- The use of this factory will also allow for the introduction of new and certified rice and cotton varieties since its operation will be authorized by the Regional Committee of Seeds (CORESE).

- A preliminary economic evaluation of this project shows a high profitability.

For an efficient operation of this factory, it is necessary that the project grant a credit in the form of working capital of US $ 100,000.

b) Plant for Cassava and Banana Flour Manufacturing in Tocache

The objective is the manufacturing of cassava and banana flour mixed with milk, sugar, iron and vitamins. This nourishing mixture will be used for school breakfasts and as a food complement for pregnant women to improve the nutrition level of this high-risk population segment.

Justification:

- In the Tocache-Uchiza area, the production of bananas and cassava stands out among others. During some periods of the year (rainy seasons) it is difficult to take this produce to the consumer markets with the resulting economic loss to producers.

- In Tocache there is a cassava and banana mill. It has been designed and built under the supervision of the Research Institute of the Peruvian Amazon (IIAP) with a production capacity of 1 MT/day for cassava and banana flour.

- The factory was financed with PEAH funds and it has only been used for some tests. Therefore, the machinery is new and ready to start working.

- Flour production will encourage banana and cassava cultivation in the Tocache-Uchiza zone and, consequently, raise farmers' profits. Moreover, the factory will generate at least 6 jobs.

- There is already a market for the mix since PRONAA is distributing a nutritive mixture using banana flour. This experience may be replicated elsewhere.

- To make it more efficient, the factory should be privatized and given the necessary credits to cover its working capital needs.

- A preliminary economic analysis of this type of enterprise shows they are not profitable enough. However, the social benefits improved nutritional levels and job generation must be take into consideration.

  A credit of US $ 50,000 from the project is needed for working capital during the first year of operation.

c) Banana Flour Manufacturing Plant (San Miguel-Tingo Maria)

Banana flour manufacturing will permit operate the factory located in San Miguel.

Justification:

- Bananas grow well in Tingo Maria, thus ensuring the supply of raw material.

Distribution of this product to consumers markets may prove difficult, specially during the rainy seasons; with the ensuing economic losses to producers.

- The San Miguel plant that belongs to a private company and needs credits for working capital, renewal and fixing of existing equipment.

- Banana flour can be used to make a nutritive mix for school breakfasts and pregnant women through Mothers' Clubs and help improve nutrition of high-risk population and living standars in the area.

- The product will be marketed in Tingo Maria, Aguaytia and eventually Huanuco or Lima.

- Past experience with this type of products shows that adequate profitability cannot be easily reached. Increased crop productivity and end product quality must be first achieved.

A US $ 50,000 credit from the project is needed for working capital during the first year of working.

d) Processing Plant of Coffee-Cocoa in San Francisco (Rio Apurimac Valley)

Establish a coffee and cocoa processing plant in San Francisco for the primary processing of these products with a daily capacity of 4 MT.

Justification:

- A factory of this type would add value to produce through manufacturing of good quality processed products.

- Additionally this agroindustry would bring economic benefits to producers and allow to gain technical expertise in manufacturing these products. Therefore, this activity has the potential to become economically attractive.

- The factory would generate at least five permanent jobs, and an additional 5 during periods of full production.

- In similar experiences, technical assistance permitted to improve the quality of the final product and promote the production of coffee and cocoa in the zone under study. One way or another, there will be a decrease in the area planted to illegal crops.

- This type of agroindustries will bring about better products for quality driven export markets. This in turn would ensure an acceptable profitability.

A US $ 150,000 credit from the project is required for plant construction, equipment and working capital for the first year.

e) Palm heart Canning Plant

Setting up a pijuayo's processing plant to obtain the canned palmito palm (in glass jars and cans) with a yearly capacity of 500,000, 15 ounce can.

Justification:

- A growing world demand for this product fully justifies the project.

- The Tocache-Uchiza area presents suitable conditions for the cultivation of pijuayo for palm heart production purposes. Moreover, there are ongoing extension programs to transfer the cultivation technology of the pijuayo to the producers.

- Proper palmito processing is labor intensive, specially in the selection, washing, peeling and cutting up stages. Hence:

- There are successful experiences, for example in Iquitos where a palmito palm processing plant was established.

- The economic feasibility studies carried out for this project report an investment of US $ 625,000 with the Internal Rate of Return (IRR) and the Net Present Value (NPV) being quite attractive for investors.

- Moreover this enterprise will create employment and improve the incomes of those people involved in the production.

The project will intervene giving credit for the construction and implementation of the production plant.

f) "Uña de Gato" Packing Plant in Puerto Bermudez

Establishment of a processing plant (packing) for "uña de gato" with a processing capacty of at least 0.3 MT/day.

Justification:

- The demand for this kind of medicinal plants has grown tremendously in urban centers specially in Lima.

- The farmers and natives are in charge of gathering the bark which is, then sold at very low prices. The creation of a packing company would add value to this activity.

- These enterprises will encourage the certification of the packaged product. In addition, they will promote the reforestation with this plant to prevent forest depredation.

- Processing (selection, cleaning, classification, packing and certification), will make it possible to reach more demanding and even foreign markets with the consequent improvement of prices.

- The investment needed is relatively low -about US $ 100,000- and the economic feasibility analyses show really atractive IRR and NPV.

This project will require credit for the construction and implementation of the production plant.

TABLE 31

Proposals of Agroindustrial Activities

AGROINDUSTRY	CAPACITY	LOCATION	COSTS US$	PROFITABILITY
SEED PROCESSING	2 MT/hr	Tarapoto	100,000	IRR = 1.2 NPV = 174594
CASSAVA AND BANANA FLOUR	1 MT/day	Sarita Colonia (Tocache)	50,000	IRR = 0.23 NPV = 40581
BANANA FLOUR	0.7 MT/day	San Miguel (Tingo Maria)	50,000	IRR = 0.41 NPV = 54396
PROCESSING OF COFFEE AND COCOA	4 MT/day	San Francisco		NPV = 56357
PACKING OF UÑA DE GATO	0.3 MT/day	Puerto Bermudez	100,000	IRR = 0.12 NPV = 1056
PALM HEART CANNING PROCESSING	500,000 Cans/year	Tocache	625,000	IRR = 0.75 NPV =1234856

4.6. MARKETING

4.6.1. INTRODUCTION

The Peruvian agricultural sector is one of the most vulnerable to the effects of the present governments's macroeconomical liberalization policies. Indeed, during field work the "marketing" issue was identified as the main problem for farmers and other economic agents involved in agriculture.

The adjustment measures taken by the GOP liberalized both product and resource markets. In the specific case of the tropical region the closure of Rice Commercialization Enterprise S.A. (ECASA) and ENCI (which dealt with corn) signified the loss of a marketing mechanism which farmers were accustomed to use. Presently, no adequate mechanisms exist with the result that the marketing process is a real bottleneck. This is true in relation to information management and because of the dreadful state of the highways which militates against the flow of products and inputs.

There is a diversity of institutions in the country which are collecting, processing, analyzing, and to a certain extent, diffusing information about different aspects of production and the commercialization of agricultural as well as food products. According to each institution's field of expertise, the information they offer refers crop calendars, advancements in harvesting, farmgate prices, wholesale prices, retail prices, agroclimatic conditions, and so on.

In the majority of cases this information is only available to a determined number of technicians of the agrarian sector, or at best, it is available in a way which does not permit an integral vision of what is happening with the production and commercialization of agricultural products.

For the agricultural sector to be competitive and to foster rural development, a main requirement is the functioning of an efficient marketing system. Competitive markets play an important role by gearing the food and agriculture sector towards opportune and adequate food distribution and by contributing to the well-being of farmers.

An important part of the marketing process is information management. In the project area, the Ministry of Agriculture's regional agricultural offices are unable to generate a continuous supply of up-to-date and uniform information because of staff and budgetary limitations. The agreement with PEAH which previously worked has concluded and there is no perspective of renewal.

A system of information is the fundamental element for the agricultural development of the country. The farmer who is dedicated to the cultivation of any agricultural product for household consumption, as well as solely for the market, needs to be able to manage efficient information of production as well as of markets and current prices.

Reinforcement of the area's information system is proposed. The system should generate information more frequently, be more flexible and seek the involvement of both public and private institutions. In general terms, this component should have

the principal objective of providing an adequate and timely information service for the economic agents operating in the area.

4.6.2. PROJECT ZONES

The reality of each of the project zones is presented in this section:

a) **Tingo Maria**: The Agrarian Agency of Tingo Maria (dependant on Huanuco) works here. It is said that previously there existed an agreement between the MA and PEAH (1985); during this time there was equipment which managed information (the Ministry put the staff, elaborated forms and bulletins, and the project did all the editing and reproduction work).

   There were also radio programs and the agreeement was in effect until 1993 (because of personnel reduction and the disappearance of the unit which worked within the Ministry). Presently, only PEAH manages information. The Ministry of Agriculture's office, because of budgetary problems, does not count with the personnel to go out in the field. The information is managed according to the programming of crops and harvests; one must indicate, also, that, in the present configuration, there is no one in charge of statistics, and no staff that is able to do this work.

b) **Aguaytia**: In this zone there is an agrarian agency. Staff are collecting and processing the information as well as they can, within their possibilities. They don't have equipment and they don't produce information on a regular basis. The financial limitations impede field work as well.

c) **Tocache-Uchiza**: The Statistics Office of the Ministry of Agriculture has not had much contact with PEAH (as agreed to in the Convention for information management). Its present activities deal with technical assistance, revolving funds, transfer of agricultural machinery, health, fomenting of committees (they are conceptualized as a regulatory entity). It collects periodic information and sends it to Tarapoto, where it is consolidated. As in the aforementioned cases, it does not count with the resources for an adequate follow-up of the information.

d) **Tarapoto**: The Agrarian Direction works here, from which the agrarian agencies depend. Presently, it is promoting the organization of enterprises (communal and multicommunal enterprise programs), which are connected to the distribution of machinery. The flux of information starts at the agency and the direction consolidates it. Recently, they have started to report to Lima on a daily basis (wholesale prices of local markets); a technician goes to the local market and collects the information. This is consolidated and sent to Lima via fax. This covers only the city of Tarapoto. Lima sends price information from other markets and this is divulgated through local radio stations and, eventually, through bulletins. This system does not work in the agencies; it is said that in the future they will be able to count with a radio and a computer.

e) **San Jose de Sisa**: There is an agrarian agency in this area. It is an office that has been created recently and they have been busy with land titling actions

and the organization of communal enterprises. Management of information is hampered by lack of the necessary financial resources and equipment.

f) **San Francisco:** Apurimac Valley Agrarian Agency (dependant on the Ayacucho Regional Agrarian Direction) operates in this area. They have only been occupying themselves with the creation of community and multicommunal enterprises. They do not have updated information about their area. Neither do they have the equipment to undertake this type of activity.

From the above-mentioned one may summarize that the departmental agrarian units do not have updated, uniform and continuous information due to limitations of personnel in this sector, lack of financing for equipment, and security problems which subsist in some of this Project's areas.

On the other hand, the activities of collection, management and diffusion of information are being left behind because the Ministry has other priorities (land titling, creating enterprises, distribution of machinery, and so on.). The III National Agricultural Census is being implemented. This will offer updated information for the sector's geographical regions (in all the agencies that were visited we saw the work is being done).

4.6.3. PROPOSAL

Using the aforementioned as reference, we would try to strengthen the management of existing information by giving it more periodicity and agility.

The objective in this case is to offer periodic information (in an adequate and timely way) about production and commercialization to the producers in the area, to the technical staff of the institutions involved in this type of activity, and to the policy makers of this sector. To be able to do this, the current mechanisms must be used and strengthened.

The following have been recommended to improve the channeling of information:

4.6.3.1. Agricultural Marketing Service

Being the "marketing" issue one of major importance for farmers and other agribusiness agents in the Huallaga area, it is a fact that in most cases, even though the markets exist, the problem is how to reach them with the best profit conditions for farmers and other sellers.

Four offices will be responsible for supporting of the agricultural marketing in the project area. The main tasks of these offices are: training activities, dissemination, and services to help commercialization activities for organized farmers and other agribusiness agents.

A two-year period financial plan is proposed. After the second year these offices are expected to be self-supporting. Farmers and other agribusiness agents must pay

for marketing services rendered by these offices. An interesting operation plan includes the hiring of marketing services from the Chamber of Commerce.

These four offices will be located in Tingo Maria, Tarapoto, San Francisco and Lima. The Tingo Maria office will cover marketing services requested in the "Alto Huallaga" valley. The Tarapoto office will cover marketing services demands for the "Central Huallaga" valley, whereas the Lima office will serve as a linking office between the two abovementioned offices and the market system in Lima, as well as the international markets.

4.6.3.2. Market Information

One important requirement for efficient and competitive markets is information availability (prices, planted and harvested areas, planting and harvest dates, supply volumes, and so on). In fact, lack of information about market variables will aid in bearing confusion, disorder and wrong signs to farmers and other agents participating in the commercialization process. In order to help improve the market information system in the project area, the following suggestions must be considered:

In Peru there currently exists a national system of agricultural marketing information directed by the Agricultural Information Office (AIO) of the Ministry of Agriculture[1]. Taking advantage of this structure the project will basically support those activities of the AIO in the areas of interest, and those concerning the divulgation of information.

Since marketing tasks are of such great value for farmers and other agents of agribusiness, the Chamber of Commerce must take charge of complementary tasks which concern the dissemination of information of international markets. This information can then be processed and circulated in the provinces in which the Ministry of Agriculture has offices. These are: Tocache, Mariscal Caceres, Bellavista, Huallaga, San Martin, Picota, El Dorado (San Martin), Leoncio Prado (Huanuco), Padre Abad (Ucayali) y Pachitea (Pasco), and San Francisco (Ayacucho).

The AIO will be in charge of circulating official information concerning the domestic market and the Chamber of Commerce will be responsible for information related to international markets.

4.6.3.3. Farmers' organization

From the standpoint of developing commercial activities, the organization of farmers with specific objectives of product marketing and other such services, is an important task. The main objective of farmers' organization in the project's area is the procurement of a marketing system which offers the best conditions of negotiation for and positioning of the farmers' products.

This information basically includes prices and volumes of products entering the wholesale market of Lima and other eight major cities. It also includes information about planting and harvesting dates by department, as well as basic statistics of international trade.

The organization of farmers will have clear advantages in obtaining scale economies which make possible better negotiating conditions, improved upstream interrogation, improved conditions for training and more financial resources provided by the government and other non-governmental organizations.

Within the Ministry of Agriculture there is a team in charge of developing a national program which supports the organization of farmers in "searching-for-profit" enterprises (Support Program for Community and Multicommunity Enterprises). This program is based on legal facilities for farmers' organizations, the use of credit for revolving funds, and the distribution of agroindustrial machinery.

Given the weaknesses in this government's program in terms of quantity and quality of human resources, the present project (Counternarcotics Sustainable Development Project) is proposed to support the activities of the Ministry of Agriculture in the projected region.

The offices of the Ministry of Agriculture operate at a provincial level. Therefore, the activities of these offices must be supported in the eleven provinces of the Project's region (Tocache, Mariscal Caceres, Ballavista, Huallaga, San Martin, Picota, El Dorado, Leoncio Prado, Padre Abad, San Francisco, and Pachitea). Their main tasks will basically be of promotion and diffusion of the importance of the organization, aimed at marketing and training in the management of those enterprises which have been organized.

The channeling of the information should serve as a basis for better decision-making of the region's, due to the fact that market information is indispensable for an efficient operation of commercial mechanisms. The benefits of a competent information service at agricultural level are incalculable. Fundamentally, this will contribute to a redistribution of the margins of commercialization.

Those who most need the service and who will most benefit when information is widespread and effective are the rural producers because of their traditional isolation and the minimum access to specialized means of information.

4.7. ENVIRONMENTAL PROTECTION AWARENESS

4.7.1. Analysis of the Problem

The four zones of the project show similar features in regards to the environmental components such as soil, woods and water mainly. All of them are affected in their natural composition because of inadequate agricultural practices, specially coca growing. The consequences are magnified when we consider the loss of the soils' productive potential, the deforestation, erosion and the eventual abandonment of the intervened areas.

In all cases we can find three types of actual use of the natural resources by farmers:

- Farmers established on agricultural soils (the fringes of the rivers). They sow annual crops on mid -to large size land extensions with acceptable production and productivity results.

- Farmers established on pasture-ground soils (mountain slopes). They breed cattle and carry out some agricultural activity with evident production and productivity limitations. The opposite is true when they resort to coca growing. Here we can find the plots of farmers established in the valley.

- Farmers established on forests soils (upper ends of the slopes known as "candil", "shapumbal", and "pajonal"). The main characteristic is the small size of the plots. They sow subsistence crops, poor pastures and coca.

It is already understood that ecological problems have the priority and, in this sense, the most urgent problem is that of deforestation specially on the slopes and slopes' upper ends. In second place, comes the burning practices and the inadequate use of the soils.

4.7.2. Proposal

It is necessary and unavoidable to incorporate trees and permanent crops to the three current types of soil use. This is what we call now ecological agroforestry.

In the first case -farmers established in the valley or on the fringes of the rivers- they will have to reforest using species that protect the riverside ("bobinsana", "albizia", "pino chuncho" and "capirona"). They will also have to enclose and protect their plots with fences and wind-breaker curtains with multi-purpose forest species such as leña forraje (firewood fodder), and soil-nutritive species such as "oropel", "gliricidia", "pacae", "leucaena", "cassia", "cedrella", "ceiba", "pashullo", "ubos", "mataraton" and "mora".

In the second case -farmers on the slopes- agroforestry work has to be combined with the preservation of the soils, contour furrows, live barriers, slow-formation terraces, crops rotation and specially diversification of permanent crops ("uña de gato", "cacao", "anona", "guanabana", "citrics", "pan de arbol", "aguaje", "pijuayo", "ungurahui" and "guaba") in addition to forest species with lumbering potential ("cedrela", "copaiba", "moena", "cumala", "chontaquiro", "caucho", "palo

balsa", walnut-tree, "diablo fuerte", "pino chuncho" mahogany-tree, "oropel", "bolaina" and "huamanzamana").

In the third case -farmers on the slopes' upper ends- the slopes must be reforested with native plants and forest species that offer a good protection in the form of vegetation covering ("guava", "mucuna cenizo", "kudzu", "crotalaria", "centrosema", "frijol invasor", "amoroso" and "machete vaina") and combine them with permanent crops and soil preservation. A forest species of specific characteristics -old enough and environmentally fit- will be chosen for each slope's upper end. In some cases the forest-cattle feed originated element with fodder and nutritive characteristics will be used extensively ("inga", "leucaena", "phithecelobium", "pashaco", "bolaina negra", "pashullo", "plato", "tatauva", "pan de arbol" and "pijuayo").

Justification

Considering the fact that rainfall in this zone varies from 3000 to 7000 mm, soil exposure will determine erosion of the organic layer and, consequently, the potential productive loss of the soil, the erosion and the eventual abandonment of plot. By incorporating the vegetation cover, specially the trees, there will be the possibility to cushion the rainfall's effects percolating and keeping the organic layer of the slopes to be used for permanent or temporary crops according to each particular case.

Sustainable use of these soils requires genetic diversity on the plot by mixing permanent, forest and fruit crops with temporary crops. The symbiosis of species with different patterns of growth and different plant architectures demands an affinity among these associated species so that they can be mutually beneficial and also demands, on the part of the farmer, capacity and efficiency to handle the nursing of his plot. This also allows the farmer to have the means to defend himself from the market variations and ensure permanent income through one or another product at different periods of the year.

The withered leaves, weeds and the temporary crop stubbles can be used to cover the soil protecting it from the direct impact of the rain. The organic decomposition of this covering will also provide the soil with nutriments. To all of this, we must add the breeding of lesser animals to complement the farmer's food budget and income.

This proposal is directed to the complementation of the farmers' incomes keeping in mind forest activity and preservation of the ecosystems. This will improve environmental quality for animals, plants and human beings.

4.7.3. Implementation Mechanisms

The analysis recomends that execution be in charge of peasants with the help of a local NGO plus another NGO specialized on sustainable development of the Amazon for the categories having to do with ecological agroforestry. In the areas needing reforestation of the slopes' upper ends, the work would be with the Reforestation Committees and local NGOs. The coordination will be made with the part of the project that promotes crops so that sustainable models will be implemented.

Farmers will be trained in soil preservation practices through their organizations and with the help of their natural leaders. They will decide by themselves the kind of approach for the production of plants in the vivarium (forest, fruit or permanent crops), and communal, associated or individual vivariums near their places. However, a program will be designed for the supplying of plants that will be incorporated into their farming systems.

Likewise, native extension experts and peasant promoters will be trained (leader farmers with their plots), some material will be elaborated to train people through radio and television, and brochures will also be printed and distributed.

TABLE 32

COST OF THE PROGRAM
(US$)

ACTIVITY	GOAL	COST PER UNIT	TOTAL COST
1. Farmers trained in practices on crops diversification with Farmers trees and preservation of soils (only forest sections)	2000	10	200,000
2. Campaigns of Environmental Education, self-awareness campaigns Dissemination and implementation	50	5,000	250,000
3. Forest Scions (Reforestation Committee, NGO, PRONAMACHS and peasants)	1 million	0.15/scion	150,000
4. Silviculture Systems: multi purpose trees and special hectare pastures for the recuperation of soils and their covering	500/	1,200	600,000
5. Hectares of reforestation for the production of fire hectare wood with active participation of women	500	200/	100,000
TOTAL :			1'300,000

5. ECONOMIC ANALYSIS

5.1. MACROECONOMIC SITUATION

From 1958 to 1975, Peru experienced a period of sustained economic growth at rates of about 5 per cent per year and population growth of about 3 per cent.

During the 50s and 60s, exports and direct foreign investment were the most dynamic components of the Peruvian economy. In the 70s, growth was financed with imports and foreign debt that went hand in hand with excessive State intervention in the economy. This last situation led to an economic crisis in 1975-1985, characterized by a private investment restraint and a poor GNP growth rate per year (1.7 per cent; clearly below a 2.9 per cent of annual population growth rate during the same period).

Between 1986 and 1989, the Peruvian economy collapsed due basically to (i) a self declared moratorium on the payment of the foreign debt which led to the country's international isolation; and (ii) a huge fiscal deficit reaching 9.8 per cent of the GNP between 1986 and 1990. Hyperinflation and diminishing purchasing power were two other important economic phenomena of those years.

The Fujimori administration undertook a severe stabilization program to control hyperinflation through a severe reduction of the fiscal deficit. Inflation fell from an annual 7,650 per cent in 1990, to 139.2 per cent in 1991, 62 per cent in 1992, 39.5 per cent in 1993, and an annual estimated 21.6 per cent in 1994.

A consequence of these policies has been the economic recession (the GNP diminished 2 per cent during 1990 and 1992). In spite of a slight recent GNP recovery, recession and unemployment continue to challenge the economy. Perspectives of sustainable economic growth will basically depend on investment levels and balance of payments equilibrium over the next 2 to 3 years.

Food imports and the economic crisis of the agricultural sector are another serious problem . Indeed, during 1991 and 1993 the food dependency (food imports as a percentage of total food consumption) has increased for sugar (34 per cent), vegetable oil (48 per cent), rice (30 per cent), corn (36 per cent) and wheat (82 per cent). The critical situation of the agricultural sector is basically related to natural factors and the suspension of the Agrarian Bank which furnished subsidized credit for farmers.

The agricultural crisis in Peru has had an effect not only on food dependency and, therefore, on the commercial balance, but also on malnutrition and rural underemployment. This last problem, in turn, has fed the migration process to Metropolitan Lima and specifically to the Upper Jungle. Indeed, according to intercensal figures of 1981-1993, the highest in-migration figures have been reported in the Upper Jungle, specifically to those areas being influenced by the coca economy.

In addition to problems related to deforestation and a moral crisis, the coca economy has a negative impact on the national economy. In fact, foreign currency from drug trafficking tends to push down the dollar exchange rate and discourages exports.

5.2. REGIONAL ECONOMY IN THE CSD PROJECT AREA

The economy in the CSD project area (San Martin, Ucayali, Huanuco, Junin, Ayacucho y Cusco departments) clearly shows two different aspects. The last four departments specially are considered the poorest with most of the labor force in agriculture, and a high concentration on non-commercial agriculture. It is worthwhile mentioning that of the four, Ayacucho has continued to lose income. In fact, in 1972, the per capita income in Ayacucho was US$ 242, while in 1981 it was US$ 206 and in 1990 it reached only US$ 186.

Cusco shows a higher and more fluctuating level of per capita GNP. It increased from US$ 352 in 1972 to US$ 396 in the 80s to decrease to US$ 329 in 1990. In general, it may be said that in both departments (Ayacucho and Cusco) the per capita income of coca growers was four to five times the average value of per capita GNP. This fact clearly shows the attractiveness of a profitable illegal crop's cultivation.

In the case of the other two regions -San Martin and Ucayali- the first is classified as poor and the second one in an intermediate category by the Poverty Map for Peru (FONCODES, 1994). San Martin showed a slight improvement of its per capita product between 1972 and 1981 (from US$ 455 to US$ 578), and then a significant decrease to US$ 388 in 1990. In Ucayali, product per capita fell from US$ 574 to US$ 527 between 1981 and 1990. In both regions the average amount of available tillable land per farmer is greater than those from Ayacucho, Huanuco, Junin and Cusco.

Even though San Martin and Ucayali have a more developed legal commercial agriculture, coca production has spread in these departments, so that they have become economically "coca" regions. By contrast, in the other aforementioned departments, coca production is smaller, and it is site-specific.

Finally besides drug trafficking, the whole area of the CSD project has been also affected by terrorist violence, which has created a war economy and led to the loss of population. the whole process was reversed with the out migrants coming back to their native towns.

5.3. ECONOMIC EVALUATION

This proposal basically considers financial support for different production and service activities in each one of the subzones of interest for the CSD project. These subzones are the valleys of Apurimac, Biabo, Ponaza, Sisa, Tocache-Uchiza and Pichis-Palcazu. Those components considered for financial support are road infrastructure, agroindustry, agriculture, community development, and agroecological activities (basically forestry).

5.3.1. Economic Evaluation of Infraestructure

Investment in road infrastructure basically considers maintenance (periodic and regular) and rehabilitation of platforms, bridges and drainage systems. Eventually, new road construction activities will be considered. This type of financial investment (road infrastructure) will be considered as "investment without return" rather than "returnable credit". However, the whole cost of this component will be considered as a social

investment in the future, provided that the proposed works permit to have access to bette roads, which in turn will permit connection to bigger markets for regional products.

Prices used for this analysis are current market prices. Evaluation has been planned for period of 10 years (see technical analysis for details). The benefits are considered i function of the impact of improvements of road infrastructure on total costs reduction du to cheaper freight, diminished production losses, and diminished transportation costs.

The indicators used for economic evaluation: the net present value (NPV) and the interna rate of return (IRR). The NPV was calculated at a 12 per cent discount rate.

Infrastructure road Investement is profitable with an IRR between 20 per cent (for th Apurimac region) and 482 per cent (for the Biabo valley). Likewise, except for Sisa, th NPV is positive in each evaluated case. The road projects designed for the Sisa valley i justified in terms of their social impact. (Table 33).

TABLE 33
Economic Analysis: Road Infrastructure Component

VALLEY	E-IRR %	E-NPV US$	Total Investment US$
APURIMAC	20	+ 1,178,303	7,386,000
BIABO	482	+ 9,265,628	2,312,700
PONAZA	97	+ 2,859,287	2,330,300
SISA	05	- 340,684	3,813,600
TOCACHE-UCHIZA	100	+ 8,520,185	4,947,400
PICHIS-PALCAZU	123	+ 8,031,029	1,620,000
TOTAL PROJECT	58	+20,036,918	22,410,000

The economic analysis of the total road infrastructure component shows it to be profitable. An IRR of 58 per cent is greater to a 12 per cent interest rate for credit. Furthermore, the project's net present value (in relation to road infrastructure) is greater than US$ 20 million. The total investment in this component is about US$ 22 million.

5.3.2. Economic Evaluation of Agroindustry

The economic evaluation of agroindustrial activities comprises economic indicators (in terms of the intrinsic value of the project, without financial costs) and a financial evaluation (taking a 12 per cent discount rate for all the agroindustrial projects).

Table 34 shows results of the above mentioned evaluation, including economic and financial indicators (IRR and NPV), as well as the total investment and financial amount devoted to agroindustry.

In general the proposed agroindustrial activities are profitable. The IRR ranges between 12 per cent (break point in "uña de gato" processing) and 123 per cent (seed processing in Tarapoto). Likewise, the net present value varies.

As a whole, agroindustrial activities are profitable. In fact, an IRR of over 100 per cent, and a NPV of about US$1,5 million were obtained. The greatest total investment is for palm-tree processing (because of the expensive installation and operation activities). On the other hand, "una de gato" is the activity with the lowest investment requirement in the amount of US$ 140,192.

It is important to mention that even when agroindustrial activities in cassava and banana processing (in Tocache and Tingo Maria) were not profitable at current market prices due to their production and operative conditions, their economic potential could improve in the future provided there are improvements in the product/input price ratios. The cases of cassava/banana and banana processing Tocache and Tingo Maria are justified in social basis.

TABLE 34
Economic and Financial indicators of Agroindustrial Activities of the CSD Project, 1995-1999

	Location	E-IRR %	E-NPV (US$)	F-IRR %	F-NPV (US$)	Total Cost (US$)	Proposed Loan (US$)
1. "Una de gato" Proccesing	Puerto Bermudez	12	1057	13	17597	140192	60000
2. Seed Processing	Tarapoto	123	201,060	195	192079	907369	100000
3. Coffee and Cocoa Processing	San Francisco (Apurimac)	38	56,356	125	114433	1427949	80000
4. Palm heart Processing	Tocache	75	1,234,856	136	1488698	26067622	400000
5. Cassava/Bananas Processing	Tocache	-24	-40,581	-56	-41059	728487	33625
6. Bananas Process.	Tingo Maria	-21	-54,396	-41	-56278	886400	45000
Total Area		62	1'153,411	115	1179431	30158019	718625

Note: E-IRR and E-NPV means indicators for economic evaluation, not including the financial conditions of the activity. F-IRR and F-NPV means indicators for financial evaluation, including the financial conditions of the activity.

Some specific characteristics of profitable activities are the following:

- Seed processing activities in Tarapoto (basically for rice, corn and cotton). Financial support in this case will be given for working capital. This activity will have a broad geographical impact due to the lack of such service over the whole Huallaga area.

- Coffee and Cocoa processing in San Franciso (Apurimac valley). The financial support in this specific case will be for both implementation investment and working capital.

- "Una de gato" processing in Puerto Bermudez (basically gathering, classification, certification and packing activities). This activity would receive financial support for both implementation investment and working capital.

- Palm heart processing in Tocache. Investment support would be oriented basically to implementation activities or financing a new plant.

5.3.3. Economic Evaluation of Agricultural activities

As explained in the technical analysis section, the proposed crops for financial support of the CSD project are the following:

- Cotton production (Upland variety). It has been sugested that 1,300 ha of cotton be planted in the Biabo, Ponaza and Sisa valleys.

- Cassava production. Except for the Biabo valley, this crop has been identified as an important production activity in the whole project. Total suggested area of cassava is 1,200 ha, of which 42 per cent would be located in Tingo Maria.

- Grape production in Biabo, Ponaza and Sisa. Total area in each zone ranges between 200 and 300 ha. It has been recommended a total of 700 ha in the whole project region.

- Banana production. Banana is a staple in the area, and also an important food in urban coastal centers. Therefore, it has been suggested 5,000 has (the greatest production area) of this crop, distributed in all the project's valleys.

- Pijuayo production may become important due to likely agroindustrial development in Santa Lucia. Tocache, Uchiza and Nuevo Progreso (Upper Huallaga) would seem appropriate sites for this crop.

- Papaya production (500 ha) will be concentrated in the Tocache and Tingo Maria valleys.

Other production activities which will be supported by the project are seeds (cotton, maize and rice) and scions (grape, papaya, banana, pijuayo and cassava).

Other lateral activities which will be financed by the CSD project are technical assistance (US$ 306,796 per year) and technology validation (US$ 448,024 per year).

It is also important to mention that the first way of supporting the aforementioned production activities is through financial aid, which will be basically provided through the "cajas rurales " system (70 per cent of total investment would be provided by the project).

The main agricultural activities are economically profitable. The IRR varies from 0.22 (papaya) to 0.72 (pijuayo), whereas the NPV ranges between US$ 54.2 to US$ 3098. According to the same table, grapes is the activity with the greatest total

investment (for the whole period of the project). The smallest investment is for to bananas. (Table 35).

TABLE 35
Economic Evaluation of Main Agricultural Activities
(per Ha)

Crop	E-IRR	E-NPV	F-IRR	F-NPV	Total Investment
Papaya	22	54.2	25	55.4	3308
Grapes	42	3098.0	68	4,999.6	11213
Pijguayo	72	1754.3	91	2,343.2	3285
Bananas	37	222.2	42	235.1	2144
Total Activities	31	4,134,555	38	5,108.2	

5.3.4. Economic Analysis of Community Development Actions

Even though total costs coming from community development activities have been considered for the general economic evaluation of the whole project (see next section), they have not been evaluated in this section, in terms of their economic or financial impact, but only in terms of their social benefits.

In general, it has been estimated that the whole project will benefit 54,713 people during the 5 years of the project. Training activities will directly benefit 5,713 people in the project area whereas the other productive and social infraestructure activities will benefit about 49,000 people. Additionally, it has been estimated that employment would increase by more than 230 thousand workdays. Total investment in community development would be US$ 5,960,156.

In infrastructure activities, the beneficiary population will receive a general contribution of about 40 per cent of the total costs of the works, under a system of labor-investment. A greater effectiveness of the social investment work will be reached through those tasks carried out by the Ministries of Health and Education, as well as local municipalities. The CSD project emphasizes both training-diffusion of community development and sanitation work. Improvement in education quality will benefit 14,000 students, with a per capita investment (per student) of US$ 14 per year.

Productive activities in the communities (such as fishfarming, lesser animals breeding, craftsmanship, bee keeping, and so on), will generate almost US$ 4 million of total income . These productive activities will benefit 21,240 people, about 60 per cent (12,744) of which women and unemployed young people. Similarly, the CSD project productive activities will employ a total of 10,000 persons.

Finally productive activities will improve the well-being of 1,382 households through increased income and food availability. Furthermore, the role of women will be enhanced. These activities will be implemented through revolving funds. Farmers who benefit from project activities will sign an agreement for not planting more coca in their fields. Under these conditions it has been estimated that, on average, coca area could be reduced in one ha per farm. (Table 36).

5.4. IMPACT ASSESSMENT

5.4.1. Coca

One of the main objectives of this proposal is to reduce the area devoted to coca production[1]. Tables 37 and 38 show estimates of total coca production areas along with the estimated coca area reduction due to those proposed activities in the CSD project. It should be noted that there are about 82,000 ha of coca fields in the CSD project's area; of this, approximately 22,000 (27 per cent) could be reduced as a consequence of this project's activities. The production activities which are proposed as alternative actions will be supported by credits, technical assistance and direct productive activities within the organized communities (see technical analysis for details).

The region with the largest coca area is the Huallaga valley, where coca area will bi reduced by 29 per cent. In Pichis Palcazu the coca area will be 39 per cent of it's coca area. Agricultural activities will permit the greatest percent redution in coca area.

TABLE 37
CSD Project Area: Estimation of Coca Cultivated Area
(has)

	VALLEYS				
	Huallaga[1]	Aguaytía	Apurímac	Pichis Palcazu[2].	Total
Leoncio Prado	12609				
Bellavista	4603				
Picota	1,000				
Tocache	21716				
Dorado	5604				
TOTAL	45,532	13,500	16,900	6,000	81,932

Note: (1) Only Tingo Maria, Tocache, Uchiza, Biabo, Ponaza y Siza have been considered as part of the CSD project area in the Huallaga valley (45,532 has of coca). It has been estimated a total coca area of about 70,050 has in this valley.
(2) Basically Puerto Bermudez y Ciudad Constitución.

TABLE 36

[1] Data on coca fields extension has been estimated from secondary data and information obtain during field visits.

CSD Project: Net Income of Productive Activities

Community Development Component

(US$)

	Net income per Module	1995 Number of Modules	1995 Total Net Income	1996 Number of Modules	1996 Total Net Income	1997 Number of Modules	1997 Total Net Income	1998 Number of Modules	1998 Total Net Income	1999 Number of Modules	1999 Total Net income	1995-1999 Number of Total Activities	1995-1999 Total Net Income
Fish farms	85	50	4,250	65	5,525	75	6,375	60	5,100	33	2,805	283	24,055
Duck production	485	30	14,550	50	24,250	70	33,950	70	33,950	30	14,550	250	121,250
Guinea pigs	199	70	13,930	90	17,910	90	910	90	17,910	64	12,736	404	80,396
Pigs production	1022	20	20,440	30	30,660	30	30,660	30	30,660	10	10,220	120	122,640
Poultry	351	20	7,020	30	10,530	30	10,530	20	7,020	20	7,020	120	42,120
Craftmanship	1279	30	38,370	40	51,160	40	51,160	40	51,160	25	31,975	175	223,825
Bee keeping	1416	5	7,080	8	11,328	7	9,912	5	7,080	5	7,080	30	42,480
Total		225	105,640	313	51,363	342	60,497	315	152,880	187	86386	1,382	646,768

1 Number is refered to quantity of modules to implement.

TABLE 38
CSD Project Area: Estimation of Coca Cultivated Area Reduction (has) resulting from to Alternative Activities

ACTIVITY	VALLEYS				
	Huallaga	Aguaytia	Apurimac	Pichis Palcazu	Total
Agriculture	8,691	1,697	2,900	1,500	14,788
Agroindustry	150	35	70	105	360
Comm Development	3,000	500	1,000	500	5,000
Road Activities	176		124	46	346
Ecological Activ.	1,180	222	400	200	2,002
TOTAL	13,197	2,454	4,494	2,351	22,496
PERCENTAGE[1]	29	18	27	39	27

1 In relation to total coca cultivated area

5.4.2. Employment Generation

Two million people will be employed by activities directly supported by the CSD project. From all these activities, it should be noted that agriculture alone will generate about 58 per cent of the total employment considered (1,314,976 people). On the other hand, ecological activities (basically forestry activities) will generate the least employ' ent (65,000 people, or to 3 per cent) (Table 39).

TABLE 39
CSD Project: Employment Generation

ACTIVITY	VALLEYS				
	Huallaga (*)	Aguaytia	Apurimac Pachitea	Pichis(**)	Total
Agriculture	775,835	144,647	262,995	131,499	1,314,976
Agroindustry	180,000	42,000	84,100	126,000	432,100
Comm. Developm.	139,969	23,328	46,657	23,328	233,282
Road Maintenance	105,300		74,100	27,600	207,000
Ecological Activ.	38,350	7,150	13,000	6,500	65,000
TOTAL	1,239,4854	217,125	480,852	314,927	2,252,358

(*) Tingo Maria, Tocache, Uchiza, Biabo, Ponaza, Sisa
(**) Puerto Bermúdez and Ciudad Constitución

5.4.3. Generated Total Net Income[2]

The total net income considered comes from agriculture, agroindustry, community development, road infrastructure and agroecological activities that will be supported by the CSD project (Table 40).

Table 40 shows the importance of each of the CSD project components in terms of additional net income. As with other variables (coca reduction and income generation), agriculture will be the most important activity with more than US$ 32 million of generated income.

Finally it is important to mention that there are some activities (in different components of the project) whose benefits it is not possible to measure economically because of their intangible value. This is the case of community development and agroecological activities basically. Of course, the strength of these components lies in their social impact.

TABLE 40
CSD Project: Total net Income by Components, 1995-1999
(US$)

COMPONENTS	TOTAL
Agriculture	32,632,000
Agroindustry	1,565,073
Comm. Development	656,766
Road Infraestruct.	3,691,091
Ecological Activ.	263,254
TOTAL	38,808,184

5.5. PROJECT PROFITABILITY

The project is economically profitable rendering an IRR of 35 per cent and an NPV of more than US$ 10 million. The profitability of the whole project is presented for a total period of 5 years. The project includes community development, agroindustry activities, agriculture and road infrastructure. Agroecological activities have not been included in this economic analysis because they do not generate tangible net incomes during the five years of the project (see Tables 41 and 42).

[2] *The total net income was estimated based on the net income generated in each productive activity multiplied by the number of specific activities supported by the CSD project.*

TABLE 41
Economic Evaluation of the Project
(US$)

Year	Total Cost	Net Income	Net Flow
1995	25,271,113	5,716,186	- 19,554,927
1996	11,644,906	18,122,967	+ 6,478,061
1997	13,530,321	23,924,867	+ 10,394,546
1998	16,972,494	28,373,993	+ 11,401,499
1999	14,141,100	28,768,389	+ 14,627,289

IRR = 0.35
NPV = 10,643,922

TABLE 42
Summary of Internal Rate of Return
(US$)

	E-IRR
Road infrastruture	58
Agroindustry	62
Agricultural	31
Overall	35

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TABLE A1

LAND AREA OF THE DISTRICTS WITHIN THE SCOPE OF THE PROJECT (km2.)

Districts	Name	Land area (sq.km)
HUALLAGA VALLEY		
BELLAVISTA		
A. Biabo	Cuzco	6,117.1
B. Biabo	Nueva Lima	975.4
PICOTA		
Shamboyacu	Shamboyacu	415.6
T. Ponasa	T. Ponasa	340.0
Tres Unidos	Tres Unidos	246.5
TOCACHE		
Tocache	Tocache	1,142.0
N.Progreso	N.Progreso	861.0
Uchiza	Uchiza	723.7
EL DORADO		
San Jose de Sisa	Sisa	299.9
Agua Blanca	Agua Blanca	168.2
San Martín	San Martín	562.6
Sta. Rosa	Sta. Rosa	243.4
Shatoja	Shatoja	24.1
LEONCIO PRADO		
Rupa Rupa	Tingo María	428.6
D.A. Robles	D.A. Robles	710.9
H.Valdizan	H.Valdizan	117.2
Luyando	Luyando	2,829.7
M.D.Beraun	Las Palmas	100.3
J.C y Castillo	Aucayacu	766.3
PADRE ABAD		
P. Abad	Aguaytia	4,663.7
Irizola	San Alejandro	4,158.8

Cont....

.....Cont. Table A1

Districts	Name	Land area (sq.km)
APURIMAC VALLEY		
HUANTA		
Sivia	Sivia	535.1
LA MAR		
Ayna	San Francisco	453.2
LA CONVENCION		
Quimbiri	Quimbiri	
PUERTO BERMUDEZ AND CIUDAD CONSTITUCION ZONES		
OXAPAMPA		
Puerto Bermudez	Puerto Bermudez	10,988.1
Palcazu	Ciudad Constitución	2,886.1
TOTAL AREA		40,757.5

Source: PERU: Caracteristicas Geograficas a Nivel Distrital.
Instituto Nacional de Estadistica e Informatica. 1987.

TABLE A2

POPULATION NOMINALLY ACCOUNTED FOR BY THE CENSUS PER URBAN AND RURAL AREAS BY DISTRICTS WITHIN THE SCOPE OF THE PROJECT (1993 CENSUS)

	TOTAL			URBAN			RURAL		
DISTRICTS	TOTAL	Men	Women	TOTAL	Men	Women	TOTAL	Men	Women
HUALLAGA VALLEY									
BELLAVISTA	7,357	3,994	3,363	1,912	1,018	894	5,445	2,976	2,866
ALTO BIAVO	3,645	1,970	1,675	1,153	614	539	2,492	1,356	1,730
BAJO BIAVO	3,712	2,024	1,688	759	404	355	2,953	1,620	1,136
PICOTA	7,179	3,875	3,304	3,426	1,850	1,576	3,753	2,025	1,728
SHAMBOYACU	2,257	1,227	1,030	1,111	632	479	1,146	595	551
T. PONASA	2,553	1,397	1,156	339	187	152	2,214	1,210	1,004
TRES UNIDOS	2,369	1,251	1,118	1,976	1,031	945	393	220	173
TOCACHE	62,625	35,212	27,413	34,510	19,063	15,427	28,115	16,129	11,986
TOCACHE	28,957	16,020	12,937	18,774	10,141	8,633	10,183	5,879	4,304
N.PROGRESO	8,744	4,841	3,903	3,166	1,689	1,477	5,578	3,152	2,426
UCHIZA	24,924	14,351	10,573	12,570	7,253	5,317	12,354	7,098	5,256
EL DORADO	22,498	11,599	10,899	9,668	4,924	4,744	12,830	6,675	6,155
S J SISA	12,506	6,461	6,045	5,695	2,884	2,811	6,811	3,577	3,234
A BLANCA	2,517	1,303	1,214	1,396	713	683	1,121	590	531
S.MARTIN	4,085	2,084	2,001	1,324	667	657	2,761	1,417	1,344
S ROSA	1,764	897	867	467	230	237	1,297	667	630
SHANTOJA	1,626	854	772	786	430	356	840	424	416
LEONCIO PRADO	100,816	53,009	47,807	60,235	30,348	29,887	40,581	22,661	17,920
RUPA RUPA	47,084	23 641	23,443	42,627	21,329	21,298	4,457	2,312	2,145
D.A.ROBLES	7,189	3,927	3,262	304	172	132	6,885	3,755	3,130
H. VALDIZAN	5,085	2,820	2,265	244	133	111	4,841	2,687	2,154
J C.CASTILLO	24,901	13,323	11,578	14,069	7,154	6,915	10,832	6,169	4,663
P LUYANDO	7,055	3,703	3,352	937	485	452	6,118	3,218	2,900
M D BERAUN	9,502	5,595	3,907	2,054	1,075	979	7,448	4,520	2,928
P. ABAD	34,898	20,363	14,535	15,820	9,119	6,501	19,278	11,244	8,034
P.ABAD	21,950	12,960	8,990	13,572	7,917	5,655	8,378	5,043	3,335
IRAZOLA	12,948	7,403	5,545	2,048	1,202	846	10,900	6,201	4,699

Cont.

...Cont. Table A2

DISTRICTS	TOTAL			URBAN			RURAL		
	TOTAL	Men	Women	TOTAL	Men	Women	TOTAL	Men	Women
APURIMAC RIVER ZONE									
HUANTA	17,717	9,446	8,271	3,912	2,039	1,873	13,805	7,407	6,398
Sivia	17,717	9,446	8,271	3,912	2,039	1,873	13,805	7,407	6,398
LA MAR	8,404	4,407	3,997	6,030	3,141	2,889	2,374	1,266	1,108
Ayna	8,404	4,407	3,997	6,030	3,141	2,889	2,374	1,266	1,108
LA CONVENCION	26,594	14,662	11,932	6,405	3,403	3,002	20,189	11,259	8,930
Quimbiri	26,594	14,662	11,932	6,405	3,403	3,002	20,189	11,259	8,930
PUERTO BERMUDEZ - CIUDAD CONSTITUCION ZONES									
OXAPAMPA	20,508	11,287	9,221	2,631	1,401	1,230	17,877	9,886	7,991
Puerto Bermudez	14,443	7,950	6,493	2,146	1,126	1,020	12,297	6,824	5,473
Palcazu	6,065	3,337	2,728	485	275	210	5,580	3,062	2,518
TOTAL AREA	308,596	167,854	140,742	144,349	76,326	68,023	164,247	91,528	73,116

Source: Based on the preliminar results of the Population's Nineth. National Census from 1993.

Instituto Nacional de Estadistica e Informatica - Dirección Nacional de Censos y Encuestas

TABLE A3

POPULATION NOMINALLY ACCOUNTED FOR BY THE CENSUS PER URBAN AND RURAL AREAS BY DISTRICTS

(1993 CENSUS)

(IN PERCENTAGE TERMS)

	TOTAL			URBAN			RURAL		
DISTRICT	% TOTAL	% MEN	% WOMEN	% TOTAL	% MEN	% WOMEN	% TOTAL	% MEN	% WOMEN
HUALLAGA VALLEY									
BELLAVISTA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALTO BIAVO	10.84	10.93	10.74	6.97	7.08	6.85	14.60	14.51	22.39
BAJO BIAVO	11.04	11.23	10.82	4.59	4.66	4.51	17.30	17.34	14.70
PICOTA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
SHAMBOYACU	8.21	8.33	8.08	8.34	8.95	7.64	8.10	7.76	8.50
T. PONASA	9.29	9.49	9.07	2.54	2.65	2.43	15.65	15.78	15.49
TRES UNIDOS	8.62	8.50	8.77	14.83	14.61	15.08	2.78	2.87	2.67
TOCACHE	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
TOCACHE	41.12	40.39	42.06	50.54	49.52	51.79	30.60	30.64	30.55
N.PROGRESO	12.42	12.20	12.69	8.52	8.25	8.86	16.76	16.43	17.22
UCHIZA	35.39	36.18	34.37	33.84	35.42	31.90	37.12	36.99	37.30
EL DORADO	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
S.J.SISA	55.59	55.70	55.46	58.91	58.57	59.25	53.09	53.59	52.54
A.BLANCA	11.19	11.23	11.14	14.44	14.48	14.40	8.74	8.84	8.63
S.MARTIN	18.16	17.97	18.36	13.69	13.55	13.85	21.52	21.23	21.84
S.ROSA	8.04	7.73	7.95	4.83	4.67	5.00	10.11	9.99	10.24
SHANTOJA	7.23	7.36	7.08	8.13	8.73	7.50	6.55	6.35	6.76
LEONCIO PRADO	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
RUPA RUPA	46.70	44.60	49.04	70.77	70.28	71.26	10.98	10.20	11.97
D.A.ROBLES	7.13	7.41	6.82	0.50	0.57	0.44	16.97	16.57	17.47
H. VALDIZAN	5.04	5.32	4.74	0.41	0.44	0.37	11.93	11.86	12.02
J.C CASTILLO	24.70	25.13	24.22	23.36	23.57	23.14	26.69	27.22	26.02
P.LUYANDO	7.00	6.99	7.01	1.56	1.60	1.51	15.08	14.20	16.18
M.D.BERAUN	9.43	10.55	8.17	3.41	3.54	3.28	18.35	19.95	16.34
P. ABAD	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
P.ABAD	62.90	63.64	61.65	86.89	86.82	86.99	43.46	44.85	41.51
IRAZOLA	37.10	36.36	38.15	13.11	13.18	13.01	56.54	55.15	58.49

Cont.....

Cont Table A3

DISTRICT	TOTAL % TOTAL	TOTAL % MEN	TOTAL % WOMEN	urban % TOTAL	urban % MEN	urban % WOMEN	RURAL % TOTAL	RURAL % MEN	RURAL % WOMEN
APURIMAC RIVER VALLEY									
HUANTA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
SILVIA	29.13	32.22	26.25	16.50	18.06	15.09	37.20	41.10	33.51
LA MAR	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
AYNA	12.55	13.12	11.97	28.16	28.87	27.44	5.21	5.57	4.85
LA CONVENCION	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
QUIMBIRI	17.43	18.18	16.59	18.31	19.23	17.37	17.47	17.88	16.97
PUERTO BERMUDEZ-CIUDAD CONSTITUCION ZONES									
OXAPAMPA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Puerto Bermudez	23.08	23.65	22.41	11.69	11.62	11.78	27.80	28.53	26.95
Palcazu	9.69	9.93	9.42	2.64	2.84	2.42	12.62	12.80	12.40

Source: Based on the preliminar results of the Population's Nineth. National Census from 1993.

Instituto Nacional de Estadistica e Informatica - Dirección Nacional de Censos y Encuestas

TABLE A4

ECONOMICALLY ACTIVE POPULATION (EAP) BY SEX WITHIN THE SCOPE OF THE PROJECT
(1993 CENSUS)

VALLEYS	EAP TOTAL	EAP MEN	EAP WOMEN	EAP URBANA	EAP RURAL
BELLAVISTA	13,170	10,122	3,048	6,594	6,576
PICOTA	10,372	7,716	2,656	5,306	5,066
TOCACHE	28,623	21,679	6,944	13,544	15,079
EL DORADO	7,244	5,952	1,292	3,128	4,116
LEONCIO PRADO					
PADRE ABAD	16,038	12,919	3,119	7,174	8,864
VALLE APURIMAC*	96,259	70,100	26,159	25,606	70,653
P.BERMUDEZ-C.CONSTIT.**	21,338	16,107	5,231	6,557	14,781
TOTAL	193,044	144,595	48,449	67,909	125,135

* The scope of the Project includes the districts of Sivia, Ayna and Quimbiri

** The scope of the project includes P. Bermudez and C. Constitucion

Source: Based on the Censo Nacional de Poblacion y Vivienda 1993. Final results.
Instituto de Analisis de Politica Agraria

TABLE 5

EMPLOYED POPULATION OF 15 YEARS OF AGE AND OLDER PER PROVINCE, SEX AND ECONOMIC ACTIVITY WITHIN THE SCOPE OF THE PROJECT

(1993 Census)

PROVINCE SEX AND BRANCH OF ECONOMIC ACTIVITY	CATEGORIES							
	TOTAL	BLUE COLLAR	WHITE COLLAR	INDEPENDENT WORKER	EMPLOYER (PATRONO)	NON-PAID FAMILY WORKER	DOMESTIC WORKER	UNSPECIF
BELLAVISTA PROVINCE	12,264	3,382	986	4,673	146	1,953	443	681
MEN	9,475	3,035	584	4,151	115	1,101	178	311
WOMEN	2,789	347	402	522	31	852	265	370
PICOTA PROVINCE	9,721	2,339	719	3,591	107	1,881	311	773
MEN	7,257	2,113	413	3,194	81	1,044	110	302
WOMEN	2,464	226	306	397	26	837	201	471
TOCACHE PROVINCE	27,032	4,869	2,926	11,013	833	4,311	1,163	1,897
MEN	20,669	4,569	2,098	9,208	652	2,397	737	1,008
WOMEN	6,363	300	828	1,805	161	1,914	446	889
EL DORADO PROVINCE	6,762	1,554	431	2,774	26	1,367	116	494
MEN	5,607	1,501	264	2,628	20	958	38	198
WOMEN	1,155	53	167	146	6	409	78	296
PADRE ABAD PROVINCE	15,005	3,106	1,231	7,179	342	2,152	628	367
MEN	12,137	2,957	913	6,111	299	1,251	431	175
WOMEN	2,868	149	318	1,068	43	901	197	192
HUANTA PROVINCE	16,509	1,658	1,519	8,756	342	2,929	516	789
MEN	11,687	1,460	885	7,120	272	1,268	278	404
WOMEN	4,822	198	634	1,636	70	1,661	238	385
LA MAR PROVINCE	19,513	3,576	1,065	9,713	428	3,361	665	705
MEN	14,855	3,195	745	8,138	398	1,654	391	334
WOMEN	4,658	381	320	1,575	30	1,707	274	371
OXAPAMPA PROVINCE	20,020	4,271	2,192	8,227	479	2,870	586	1,395
MEN	15,243	3,901	1,279	7,137	401	1,525	243	757
WOMEN	4,777	370	913	1,090	78	1,345	343	638
TOTAL	126,826	24,755	11,069	55,926	2,703	20,824	4,448	7,101

Source: Based on the Censo Nacional de Poblacion y Vivienda 1993. Final Results

TABLE A6

LEVEL OF INSTRUCTION BY DISTRICTS WITHIN THE SCOPE OF THE PROJECT

(1993 CENSUS)

PROVINCE, DISTRICTS AND LEVEL OF INSTRUCTION REACHED	Number of PERSONS	PERCENT DISTRIBUT.
PROVINCE: BELLAVISTA		
DISTRICT OF ALTO BIAVO		
NO LEVEL OF INSTRUCTION	598	19.4
PRIMARY	2,018	65.3
SECONDARY	338	10.9
COLLEGE	47	1.5
UNSPECIFIED	88	2.8
DISTRICT OF BAJO BIAVO		
NO LEVEL OF INSTRUCTION	439	14.1
PRIMARY	2,064	66.2
SECONDARY	458	14.7
COLLEGE	89	2.9
UNSPECIFIED	69	2.2
PROVINCE: EL DORADO		
DISTRICT OF SAN JOSE DE SISA		
NO LEVEL OF INSTRUCTION	2,117	19.3
PRIMARY	6,955	63.6
SECONDARY	1,204	11.0
COLLEGE	298	2.7
UNSPECIFIED	370	3.4
DISTRICT OF AGUA BLANCA		
NO LEVEL OF INSTRUCTION	262	11.9
PRIMARY	1,578	71.8
SECONDARY	272	12.4
COLLEGE	28	1.3
UNSPECIFIED	57	2.6
DISTRICT OF SAN MARTIN		
NO LEVEL OF INSTRUCTION	709	20.5
PRIMARY	2,168	62.7
SECONDARY	295	8.5
COLLEGE	43	1.2
UNSPECIFIED	242	7.0
DISTRICT OF SANTA ROSA		
NO LEVEL OF INSTRUCTION	246	16.8
PRIMARY	1,045	71.2
SECONDARY	141	9.6
COLLEGE	35	2.4
UNSPECIFIED	16	1.1
DISTRICT OF SHATOJA		
NO LEVEL OF INSTRUCTION	242	17.7
PRIMARY	791	58.0
SECONDARY	213	15.6
COLLEGE	118	8.7
UNSPECIFIED	86	6.3

Cont.....

...Cont. Table A6

PROVINCE, DISTRICTS AND EDUCATIONAL LEVEL REACHED	Number of PERSONS	PERCENT DISTRIBUT.
PROVINCE: PICOTA		
DISTRICT OF SHAMBOYACU		
NO LEVEL OF INSTRUCTION	309	16.2
PRIMARY	1,227	64.4
SECONDARY	259	13.6
COLLEGE	35	1.8
UNSPECIFIED	76	4.0
DISTRIct OF TINGO DE PONASA		
NO LEVEL OF INSTRUCTION	127	5.8
PRIMARY	1,510	68.5
SECONDARY	457	20.7
COLLEGE	67	3.0
UNSPECIFIED	43	2.0
DISTRICT OF TRES UNIDOS		
NO LEVEL OF INSTRUCTION	136	6.7
PRIMARY	1,313	64.2
SECONDARY	503	24.6
COLLEGE	49	2.4
UNSPECIFIED	44	2.2
PROVINCE: TOCACHE		
DISTRICT OF TOCACHE		
NO LEVEL OF INSTRUCTION	2,619	10.8
PRIMARY	13,254	54.7
SECONDARY	6,170	25.4
COLLEGE	1,457	6.0
UNSPECIFIED	752	3.1
DISTRICT OF NUEVO PROGRESO		
NO LEVEL OF INSTRUCTION	933	12.1
PRIMARY	4,410	57.1
SECONDARY	1,776	23.0
COLLEGE	343	4.4
UNSPECIFIED	256	3.3
DISTRICT OF UCHIZA		
NO LEVEL OF INSTRUCTION	2,085	9.7
PRIMARY	10,508	48.7
SECONDARY	6,766	31.4
COLLEGE	1,619	7.5
UNSPECIFIED	579	2.7

Cont.....

...Cont. TABLE A6

PROVINCE, DISTRICTS AND EDUCATIONAL LEVEL REACHED	Number of PERSONS	PERCENT DISTRIBUT.
PROVINCE: PADRE ABAD		
DISTRICT OF PADRE ABAD		
NO LEVEL OF INSTRUCTION	2,116	11.0
PRIMARY	9,638	49.9
SECONDARY	6,136	31.8
COLLEGE	1,153	6.0
UNSPECIFIED	271	1.4
DISTRICT OF IRAZOLA		
NO LEVEL OF INSTRUCTION	1,278	11.5
PRIMARY	6,856	61.7
SECONDARY	2,331	21.0
COLLEGE	345	3.1
UNSPECIFIED	303	2.7
PROVINCE: HUANTA		
DISTRICT OF SIVIA		
NO LEVEL OF INSTRUCTION	4,324	29.1
PRIMARY	8,010	53.9
SECONDARY	1,661	11.2
COLLEGE	278	1.9
UNSPECIFIED	585	3.9
PROVINCE: LA MAR		
DISTRICT OF AYNA		
NO LEVEL OF INSTRUCTION	1,627	22.4
PRIMARY	3,824	52.7
SECONDARY	1,376	19.0
COLLEGE	274	3.8
UNSPECIFIED	160	2.2
PROVINCE OXAPAMPA		
DISTRICT OF PALCAZU		
NO LEVEL OF INSTRUCTION	690	14.5
PRIMARY	2,905	61.2
SECONDARY	694	14.6
COLLEGE	169	3.6
UNSPECIFIED	288	6.1
DISTRICT OF PUERTO BERMUDEZ		
NO LEVEL OF INSTRUCTION	2,081	17.4
PRIMARY	6,066	50.8
SECONDARY	2,788	23.3
COLLEGE	482	4.0
UNSPECIFIED	526	4.4
TOTAL	154,554	

Source: Based on the Censo Nacional de Poblacion y Vivienda 1993. Final results.

TABLE A7

AVERAGE OF LIVING NEW-BORNS BY LEVEL OF INSTRUCTION
PER PROVINCES
(1993 Census)

PROVINCE, RURAL AND URBAN AREAS, LEVEL OF INSTRUCTION REACHED	Female population older than 12 years	Total Living new-borns	Average living new-borns
PROVINCE: BELLAVISTA	9893	33,457	3.4
No level of instruction	1506	9,352	6.2
Primary	5323	19,083	3.6
Secondary	2254	3,285	1.5
College	488	658	1.3
Unspecified	322	1,079	3.4
Urban	5290	15,736	3.0
Rural	4603	17,721	3.8
PROVINCE: EL DORADO	6633	25,749	3.9
No level of instruction	1856	12,840	6.9
Primary	3607	10,994	3.0
Secondary	815	1,094	1.3
College	164	276	1.7
Unspecified	191	545	2.9
Urban	3050	11,280	3.7
Rural	3583	14,469	4.0
PROVINCE: PICOTA	7901	28,919	3.7
No level of instruction	845	5,494	6.5
Primary	4676	19,344	4.1
Secondary	1846	2,733	1.5
College	353	631	1.8
Unspecified	181	717	4.0
Urban	4199	14,296	3.4
Rural	3702	14,623	4.0

Cont.....

...Cont. Table A7

PROVINCE, RURAL AND URBAN AREAS, LEVEL OF INSTRUCTION REACHED	Female population older than 12 years	Total Living new-borns	Average living new-borns
PROVINCE: TOCACHE	19802	52818	2.7
No level of instruction	3018	14119	4.7
Primary	9019	26271	2.9
Secondary	5962	9,307	1.6
College	1243	1,659	1.3
Unspecified	560	1,462	2.6
Urban	10916	28,497	2.6
Rural	8886	24,321	2.7
PROVINCE: PADRE ABAD	9500	25,949	2.7
No level of instruction	1387	6,492	4.7
Primary	4664	14,056	3.0
Secondary	2858	4,350	1.5
College	445	628	1.4
Unspecified	146	423	2.9
Urban	4501	10,710	2.4
Rural	4999	15,239	3.0
PROVINCE: OXAPAMPA	17999	52,859	2.9
No level of instruction	3634	20,078	5.5
Primary	8177	23,862	2.9
Secondary	4330	5,857	1.4
College	1427	1,836	1.3
Unspecified	431	1,226	2.8
Urban	5968	14,950	2.5
Rural	12031	37,909	3.2

Source: Based on the Censo Nacional de Poblacion y Vivienda 1993. Final results

CUADRO TABLE A8

EMPLOYED POPULATION OF 15 YEARS OF AGE AND OLDER AND TOTAL POPULATION PER PROVINCE BY BRANCH OF ECONOMIC ACTIVITY AND SEX (1993 CENSUS)

PROVINCES / BRANCHES OF ACTIVITY	EMPLOYED POPULATION			POPULATION
	TOTAL	MEN	WOMEN	TOTAL
PROVINCE: BELLAVISTA	12,264	9,475	2,789	34414
Agriculture, cattle raising, hunting and forestry	7,372	6,490	882	
Exploitation of mines and quarries	6	6		
Manufacturing industries	484	320	164	
Electricity, gas and water supplies	8	8		
Construction	101	96	5	
Trading; Repairing of vehicles, motorcycles, personal bel	1,071	801	270	
Selling, maintenc.& rep.vehicles & motorcycles	88	80	8	
Wholesale trading	54	44	10	
Retail trading	929	677	252	
Hotels and Restaurants	156	49	107	
Transport., storing & communications	222	196	26	
Financial intermediaries	16	14	2	
Real Estate activity, loans and rentals	78	46	32	
Public administration and defense, Social Sec. Affil.	175	116	59	
Teaching	368	189	179	
Social and Health services	78	37	41	
Other activities communal, social and personnel	87	53	34	
Private households,domestic services	443	178	265	
Unspecified	1,599	876	723	
PROVINCE: EL DORADO	6,762	5,607	1,155	23409
Agriculture, cattle raising, hunting and forestry	5,013	4,663	350	
Exploitation of mines and quarries	1	1		
Manufacturing industries	165	112	53	
Electricity, gas and water supplies	1	1		
Construction	27	27		
Trading; Repairing of vehicles, motorcycles, personal bel	217	171	46	
Selling, maintenc.& rep.vehicles & motorcycles	4	4		
Wholesale trading	15	13	2	
Retail trading	198	154	44	
Hotels and Restaurants	9		9	
Transport., storing & communications	24	24		
Financial intermediaries	1	1		
Real Estate activity, loans and rentals	6	6		
Public administration and defense, Social Sec. Affil.	145	94	51	
Teaching	242	137	105	
Social and Health services	15	10	5	
Other activities, communal, social and personnel	23	12	11	
Private households,domestic services	116	38	78	
Unspecified	757	310	447	

Cont.....

...Cont. Table A8

PROVINCES	EMPLOYED POPULATION			POPULATION
BRANCHES OF ACTIVITY	TOTAL	MEN	WOMEN	TOTAL
PROVINCE: PICOTA	9,721	7,257	2,464	26955
Agriculture, cattle raising, hunting and forestry	5,841	5,211	630	
Fishing	2	2		
Exploitation of mines and quarries	3	3		
Manufacturing industries	428	282	146	
Electricity, gas and water supplies	3	3		
Construction	142	136	6	
Trading; Repairing of vehicles, motorcycles, personal bel	364	237	127	
Selling, maintenc & rep.vehicles & motorcycles	12	10	2	
Wholesale trading	17	17		
Retail trading	335	210	125	
Hotels and Restaurants	109	18	91	
Transport., storing & communications	85	83	2	
Financial intermediaries	4	4		
Real Estate activity, loans and rentals	35	24	11	
Public administration and defense, Social Sec. Affil.	102	67	35	
Teaching	380	204	176	
Social and Health services	38	18	20	
Other activities, communal, social and personnel	40	26	14	
Private households,domestic services	311	110	201	
Unspecified	1,834	829	1,005	
PROVINCE: TOCACHE	27,032	20,669	6,363	70523
Agriculture, cattle raising, hunting and forestry	12,369	11,098	1,271	
Fishing	15	14	1	
Exploitation of mines and quarries	10	9	1	
Manufacturing industries	1,758	1,329	429	
Electricity, gas and water supplies	23	20	3	
Construction	306	297	9	
Trading; Repairing of vehicles, motorcycles, personal bel	3,631	2,386	1,245	
Selling, maintenc.& rep.vehicles & motorcycles	278	262	16	
Wholesale trading	146	107	39	
Retail trading	3,207	2,017	1,190	
Hotels and Restaurants	433	167	266	
Transport., storing & communications	665	611	54	
Financial intermediaries	41	30	11	
Real Estate activity, loans and rentals	241	206	35	
Public administration and defense, Social Sec. Affil.	858	809	49	
Teaching	731	390	341	
Social and Health services	184	79	105	
Other activities, communal, social and personnel	264	140	124	
Private households,domestic services	1,183	737	446	
Unspecified	4,320	2,347	1,973	

Cont.....

...Cont. Table A8

PROVINCES BRANCHES OF ACTIVITY	EMPLOYED POPULATION TOTAL	MEN	WOMEN	POPULATION TOTAL
PROVINCE: PADRE ABAD	15005	12137	2868	35539
Agriculture, cattle raising, hunting and forestry	8211	7595	616	
Fishing	6	6		
Exploitation of mines and quarries	10	9	1	
Manufacturing industries	513	337	176	
Electricity, gas and water supplies	6	6		
Construction	187	186	1	
Trading; Repairing of vehicles, motorcycles, personal bel	2332	1726	606	
Selling, maintenc.& rep.vehicles & motorcycles	184	173	11	
Wholesale trading	93	70	23	
Retail trading	2055	1483	572	
Hotels and Restaurants	381	145	236	
Transport., storing & communications	434	423	11	
Financial intermediaries	39	27	12	
Real Estate activity, loans and rentals	59	46	13	
Public administration and defense, Social Sec. Affil.	541	471	70	
Teaching	284	149	135	
Social and Health services	69	35	34	
Other activities, communal, social and personnel	86	42	44	
Private households,domestic services	628	431	197	
Unspecified	1219	503	716	
PROVINCE: HUANTA	16509	11687	4822	64503
Agriculture, cattle raising, hunting and forestry	10259	8255	2004	
Fishing	2	1	1	
Exploitation of mines and quarries	9	7	2	
Manufacturing industries	646	447	199	
Electricity, gas and water supplies	10	10		
Construction	181	179	2	
Trading; Repairing of vehicles, motorcycles, personal bel	1522	739	783	
Selling, maintenc.& rep.vehicles & motorcycles	57	53	4	
Wholesale trading	87	62	25	
Retail trading	1378	624	754	
Hotels and Restaurants	128	27	101	
Transport., storing & communications	221	197	24	
Financial intermediaries	10	6	4	
Real Estate activity, loans and rentals	96	68	28	
Public administration and defense, Social Sec. Affil.	380	258	122	
Teaching	677	328	349	
Social and Health services	79	41	38	
Other activities, communal, social and personnel	131	77	54	
Private households,domestic services	516	278	238	
Unspecified	1642	769	873	

Cont.....

...Cont. Table A8

PROVINCES BRANCHES OF ACTIVITY	EMPLOYED POPULATION			POPULATION
	TOTAL	MEN	WOMEN	TOTAL
PROVINCE: LA MAR	19513	14855	4658	70018
Agriculture, cattle raising, hunting and forestry	13008	11155	1853	
Fishing	2	2		
Exploitation of mines and quarries	2	2		
Manufacturing industries	414	287	127	
Electricity, gas and water supplies	3	2	1	
Construction	164	158	6	
Trading; Repairing of vehicles, motorcycles, personal bel	1887	1068	819	
Selling, maintenc.& rep.vehicles & motorcycles	61	56	5	
Wholesale trading	78	60	18	
Retail trading	1748	952	796	
Hotels and Restaurants	188	57	131	
Transport., storing & communications	282	263	19	
Financial intermediaries	5	4	1	
Real Estate activity, loans and rentals	42	37	5	
Public administration and defense, Social Sec. Affil.	237	206	31	
Teaching	554	342	212	
Social and Health services	75	41	34	
Other activities, communal, social and personnel	49	31	18	
Private households,domestic services	665	391	274	
Unspecified	1936	809	1127	
PROVINCE: OXAPAMPA	20020	15243	4777	60298
Agriculture, cattle raising, hunting and forestry	10924	9814	1110	
Fishing	3	3		
Exploitation of mines and quarries	10	10		
Manufacturing industries	927	770	157	
Electricity, gas and water supplies	1	1		
Construction	205	194	11	
Trading; Repairing of vehicles, motorcycles, personal bel	2047	1312	735	
Selling, maintenc.& rep.vehicles & motorcycles	164	150	14	
Wholesale trading	130	100	30	
Retail trading	1753	1062	691	
Hotels and Restaurants	277	85	192	
Transport., storing & communications	362	336	26	
Financial intermediaries	21	16	5	
Real Estate activity, loans and rentals	159	102	57	
Public administration and defense, Social Sec. Affil.	505	321	184	
Teaching	785	372	413	
Social and Health services	136	66	70	
Other activities, communal, social and personnel	132	66	66	
Private households,domestic services	586	243	343	
Unspecified	1	1		
Not epecified	2939	1531	1408	

Source: Based on the Censo Nacional de Poblacion y Vivienda 1993. Final results.

TABLE A9

EMPLOYED BY DISTRICTS WITHIN TO THE SCOPE OF THE PROJECT
(1993 CENSUS)

PROVINCE, DISTRICT	Number of Persons
PROV. BELLAVISTA - DPTO. SAN MARTIN	
DISTRICT ALTO BIAVO	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	1127
	1118
DISTRICT BAJO BIAVO	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	1259
	1231
PROV.EL DORADO -DPTO. SAN MARTIN	
DISTRICT SAN JOSE DE SISA	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	3937
	3854
DISTRICT AGUA BLANCA	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	800
	786
DISTRICT SAN MARTIN	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	1459
	1447
DISTRICT SANTA ROSA	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	500
	488
DISTRICT SHATOJA	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	548
	545

Cont.....

...Cont. Table A9

PROVINCE, DISTRICT	Number of Persons
PROV. PICOTA - DPTO. SAN MARTIN	
DISTRICT SHAMBOYACU	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	1014
	1006
DISTRICT TINGO DE PONASA	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	1184
	1164
DISTRICT TRES UNIDOS	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	937
	887
PROV. TOCACHE - DPTO SAN MARTIN	
DISTRICT NUEVO PROGRESO	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	2898
	2860
DISTRICT UCHIZA	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	10881
	10506
PROV. PADRE ABAD - DPTO UCAYALI	
DISTRICT PADRE ABAD	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	10355
	9930
DISTRICT IRAZOLA	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	5683
	5495

Cont....

...Cont. Table A9

PROVINCE, DISTRICT	Number of Persons
PROV.HUANTA - DPTO AYACUCHO	
DISTRICT SIVIA	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	6629
	6543
PROVINCE LA MAR - DPTO AYACUCHO	
DISTRICT AYNA	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	3042
	2948
PROVINCE LA CONVENCION - DPTO CUSCO	
DISTRICT QUIMBIRI	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	12049
	11841
PROV.OXAPAMPA - DPTO. PASCO	
DISTRICT PALCAZU	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	1,505
	1,463
DISTRICT PUERTO BERMUDEZ	
EMPLOYED ECONOMICALLY ACTIVE POPULATION	6,004
	5,862

Source: Based on the Censo Nacional de Poblacion y Vivienda 1993. Final Results

TABLE A10

ESTIMATE OF THE NUMBER OF FARMS PER DISTRICTS
WITHIN THE SCOPE OF THE PROJECT (*)
(1993 Census)

PROVINCE, DISTRICTS	Number of Farms
PROV. BELLAVISTA - DPTO. SAN MARTIN	
DISTRICT OF ALTO BIAVO	416
DISTRICT OF BAJO BIAVO	458
PROV.EL DORADO -DPTO. SAN MARTIN	
DISTRICT OF SAN JOSE DE SISA	1434
DISTRICT OF AGUA BLANCA	292
DISTRICT OF SAN MARTIN	538
DISTRICT OF SANTA ROSA	182
DISTRICT OF SHATOJA	203
PROV. PICOTA - DPTO SAN MARTIN	
DISTRICT OF SHAMBOYACU	374
DISTRICT OF TINGO DE PONASA	433
DISTRICT OF TRES UNIDOS	330
PROV. TOCACHE - DPTO SAN MARTIN	
DISTRICT OF NUEVO PROGRESO	1064
DISTRICT OF UCHIZA	3908

Cont...

...Cont. TABLE A10

PROVINCE, DISTRICTS	NUMBER OF FARMS
PROV. LEONCIO PRADO - DPTO HUANUCO	
DISTRICT OF RUPA RUPA	5179
DISTRICT OF DANIEL A. ROBLES	791
DISTRICT OF HERMINIO VALDIZAN	559
DISTRICT OF CRESPO Y CASTILLO	2739
DISTRICT OF PADRE LUYANDO	776
DISTRICT OF DAMASO BERAUN	1045
PROV. PADRE ABAD - DPTO UCAYALI	
DISTRICT OF PADRE ABAD	3694
DISTRICT OF IRAZOLA	2014
PROV.HUANTA - DPTO AYACUCHO	
DISTRICT OF SIVIA	2434
PROV. LA MAR - DPTO AYACUCHO	
DISTRICT OF AYNA	1097
PROV. LA CONVENCION - DPTO CUSCO	
DISTRICT OF QUIMBIRI	4405
PROV.OXAPAMPA - DPTO. PASCO	
DISTRICT OF PALCAZU	544
DISTRICT OF PUERTO BERMUDEZ	2181
TOTAL	37120

(*) = The number of estimated fams is equial to the agricultural employed in the "independiente y patrono" job categories.

SOURCE: Based on the Censo Nacional de Poblacion y Vivienda. Final results.

TABLE A11

MAIN SOCIAL INDEXES IN THE SCOPE OF THE PROJECT
(1994)

INDEXES	ZONES					AVERAGE SCOPES CSD
	TINGO-AGUAYTIA	TOCACHE UCHIZA	PONASA BIABO/SISA	APURIMAC	PICHIS/ PACHITEA	
INSTRUCTION						
School dropout (%)	16	20	9	35	33	22.6
Illiteracy(%)	13.2	19	20	28	25.5	21.1
Rate of school attendance	86	75	79	51	54.3	69.1
HEALTH						
Child mortality (per thousand)	48.4	75	85	102	96	81.3
Doctors per 10,000 inhabitants	3.4	1.7	0.9	0.1	1	1.4
Child malnutrition (%)	70	95	65	90	75	79
POPULATION						
Anual growth density (%)	2.1	3.5	3.0	-1.3(*)	3.3	2.1
Population density (%)	16.5	22.0	7.5	26.5	6.0	15.7
Deficit of educational services	14	25	21	49	46.7	31.1
HOUSING						
Houses lacking of potable water (%)	50	65	70	85	95	73

(*) = Negative growth due to social upheaals

Source: Compendios Estadisticos - Instituto Nacional de Estadistica e Informatica., Informes Regionales y entrevistas

TABLE A12

POPULATION NOMINALLY ACCOUNTED FOR BY THE CENSUS PER URBAN AND RURAL AREAS

BY VALLEYS WITHIN THE SCOPE OF THE PROJECT

(1993 CENSUS)

	TOTAL			URBAN			RURAL		
VALLEYS	TOTAL	MEN	MOMEN	TOTAL	MEN	WOMEN	TOTAL	MEN	WOMEN
BELLAVISTA	7,357	3,994	3,363	1,912	1,018	894	5,445	2,976	2,866
PICOTA	7,179	3,875	3,304	3,426	1,850	1,576	3,753	2,025	1,728
TOCACHE	62,625	35,212	27,413	34,510	19,083	15,427	28,115	16,129	11,986
EL DORADO	22,498	11,599	10,899	9,668	4,924	4,744	12,830	6,675	6,155
LEONCIA PRADO	100,816	53,009	47,807	60,235	30,348	29,887	40,581	22,861	17,920
P ABAD	34,898	20,363	14,535	15,620	9,119	6,501	19,278	11,244	8,034
APURIMAC (*)	52715	28515	24200	16347	8583	7764	36368	19932	16436
C.COSTITUCION									
PTO.BERMUDEZ	20,508	11,287	9,221	2,631	1,401	1,230	17,877	9,886	7,991
TOTAL SCOPE	308,596	167,854	140,742	144,349	76,326	68,023	164,247	91,528	73,116

(*) = Embraces the districts of Sivia, Ayna and Quimbiri

Source: Based on the Instituto Nacional de Estadistica e Informatica (Direccion Nacional de Censos y Encuestas) preliminary results o Nacional de Poblacion

TABLE A13

POPULATION NOMINALLY ACCOUNTED FOR BY THE CENSUS PER URBAN AND RURAL AREAS.

(IN PERCENTAGE TERMS)

BY VALEYS WITHIN THE SCOPE OF THE PROJECT

(1993 CENSUS)

	TOTAL			URBAN			RURAL		
VALLEYS	TOTAL	MEN	MOMEN	TOTAL	MEN	WOMEN	TOTAL	MEN	WOMEN
BELLAVISTA	2.4	2.4	2.4	1.3	1.3	1.3	3.3	3.3	3.9
PICOTA	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.2	2.4
TOCACHE	20.3	21.0	19.5	23.9	25.0	22.7	17.1	17.6	16.4
EL DORADO	7.3	6.9	7.7	6.7	6.5	7.0	7.8	7.3	8.4
LEONCIA PRADO	32.7	31.6	34.0	41.7	39.8	43.9	24.7	24.8	24.5
P ABAD	11.3	12.1	10.3	10.8	11.9	9.6	11.7	12.3	11.0
APURIMAC (*)	17.1	17.0	17.2	11.3	11.2	11.4	22.1	21.8	22.5
C COSTITUCION									
PTO.BERMUDEZ	6.6	6.7	6.6	1.8	1.8	1.8	10.9	10.8	10.9
TOTAL SCOPE	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(*) = Embraces the districts of Sivia, Ayna and Quimbiri

Source: Based on the Instituto Nacional de Estadistica e Informatica (Direccion Nacional de Censos y Encuestas) preliminary results o Nacional de Poblacion

Cuadro A14

GROSS DOMESTIC PRODUC BY ECONOMIC SECTORS 1992 BY REGIONS
AND DEPARTAMENTS WITHIN THE SCOPE OF THE PROJECT

(US$)

	TOTAL	AGRIC. HUNTING SILVI	FISHING	EXPLO MINES QUARRIES	MANU-FACTUR INDUS	CONS-TRUCTION	TRADING RESTAUR HOTELS	RENTALS OF HOUSING	GUBERN PRODUC SERV	OTHER SERVICES
REG. A.A.CACERES										
JUNIN	1,520 391 255	86 970,160	638,090	27 416 702	488 397 933	178,840,682	186 444 258	27,549,298	43,964 434	480 169,698
PASCO	261,210,011	32 148,302		63 202,082	24 670 701	14,205,622	40 148 673	1,866,155	11,420,197	73 548 279
HUANUCO	381 853 364	47 369 755		15 439 342	42 093 712	66 001,304	65 937 976	10,094,725	21 071,503	113 845,046
TOTAL REGION	2,163 454 630	166 488 218	638 090	106,058,126	555 162 346	259 047,608	292 530 907	39,510,178	76,456,134	667 583,023
REG. INKA										
APURIMAC	119,518 358	40,123,110		142,280	18 069,692	8,351,025	8 863 605	196,297	14 127,502	29 644,846
CUSCO	866,586,585	140,612,284		18 668,753	150,940,658	96,110,618	132 944 109	1,370,631	53,499,163	272 440,370
MADRE DE DIOS	132,642 186	25,352,331	762,730	13,548,802	10,370,583	10,604,139	42 123,151	65,103	5 675,540	24,139,806
TOTAL REGION	1,118,747,129	206,087,726	762,730	32 359,835	179,380,933	115,065,782	183 930 865	1,632,031	73 302 206	326,225 022
REG. LIB. WARI										
AYACUCHO	197,183,127	30,778,675		569 443	33,234 884	29,720,400	17 013 834	717,130	26,566,674	58 584 086
HUANCAVELICA	230,170 483	54,827,332		15,920,616	12,905 461	58,633,119	25 645 442	326,130	14 165 449	47 746 934
ICA	951,717,638	76,204,042	19,255,725	93,703,159	132,707,045	146,326,835	143 536,825	2,827,674	32,856,508	304,299 826
TOTAL REGION	1,379,071,249	161,808,050	19,255,725	110,193,218	178,847,390	234,680,354	186,196,101	3,870,934	73,588,631	410 630 846
REG. SAN MARTIN										
TOTAL REGION	462 316,149	80,585,484		134,445	70,091,605	74,392,227	112 088,238	920,644	20,127,454	103,976,051
REG. UCAYALI										
TOTAL REGION	359,913,303	59,970,426	484,122	2,179,934	135,733,451	42,090,432	39 804,853	1,059 929	9,526,372	69,063 784
TOTAL NACIONAL	41,961 473 398	2,494 666,191	218 229,853	932,470,418	11,014,569 194	3,897,411,444	7,972,648 122	71,256,980	1,122,371,521	14 237,849,674

Source Cuentas Regionales Producto Bruto Interno Regiones Andres Avelino Caceres, Inka. Los Libertadores Wari, San Martin y Ucayali
1970-1992 Instituto Nacional de Estadistica e Informatica
Exchange rate 1 25 nuevos soles per dollar

CUADRO 15

GROSS DOMESTIC PRODUCT PER CAPITA BY ECONOMIC SECTORS; 1992
BY REGIONS AND DEPARTAMENTS WITHIN THE SCOPE OF THE PROJECT
(US$)

	TOTAL	AGRIC TOTAL SILVI	FISHING	EXPLO. MINES QUARRIE	MANU-FACTUR INDUS	COMERC CONS-TRUCTION	TRADING RESTAUR. HOTELS	RENTALS OF HOUSING	GUBERN PRODUC SERV	OTHER SERVICES
REG. A.A.CACERES										
JUNIN	1480	85	1	27	476	174	182	27	43	468
PASCO	1132	139		274	107	62	174	8	49	319
HUANUCO	586	73		24	65	101	101	15	32	175
TOTAL REGION	1133	87	1	56	291	136	153	21	40	350
REG. INKA										
APURIMAC	331	111		0	50	23	25	1	39	82
CUSCO	883	143		19	154	98	135	1	55	278
MADRE DE DIOS	2132	408	12	218	167	170	677	1	91	388
TOTAL REGION	796	147	12	23	128	82	131	1	52	232
REG. LIB. WARI										
AYACUCHO	420	65		1	71	63	36	2	57	125
HUANCAVELICA	623	148		43	35	159	69	1	38	129
ICA	1747	140	35	172	244	269	264	5	60	559
TOTAL REGION	996	117	35	80	129	170	135	3	53	297
REG. SAN MARTIN										
TOTAL REGION	867	151		0	131	140	210	2	38	195
REG. UCAYALI										
TOTAL REGION	1185	197	2	7	447	139	131	3	31	227
TOTAL NACIONAL	1965	117	10	44	516	183	373	3	53	667

Source: Cuentas Regionales. Producto Bruto Interno Regiones: Andres Avelino Caceres, Inka, Los Libertadores Wari, San Martin y Ucayali
1970-1992 Instituto Nacional de Estadistica e Informatica
Exchange rate: 1.25 nuevos soles per dollar
Population growth rate = 2.5% (per year)

Cuadro A16

GROSS DOMESTIC PRODUCT PER CAPITA 1992 BY ECONOMIC SECTORS
AND DEPARTAMENTS WITHIN THE SCOPE OF THE PROJECT
CONSTANT PRICE OF 1979
(NUEVOS SOLES)

	1988		1989		1990		1991		1992	
	AGRIC. HUNTI AND SILV	OTHER	AGRIC. HUNTI AND SILV.	OTHER	AGRIC. HUNTI AND SILV.	OTHER	AGRIC. HUNTIN AND SILV.	OTHER	AGRIC. HUNTIN AND SILV.	OTHER
REG. A.A.CACERES										
JUNIN	31 217	128 361	31.281	134.867	37.361	135 829	40.824	141.657	40.896	137.531
PASCO	10 193	49 456	8 657	42.253	7.470	40 976	7.850	42.746	7.967	40.996
HUANUCO	23 531	45 744	16 420	38.538	15.611	38 652	18.745	40.645	14.529	39 825
TOTAL REGION	64 941	223 561	56 358	215.658	60.442	215.457	67.419	225.048	63 392	218.352
REG. INKA										
APURIMAC	7 291	9 982	6.700	8.845	5.757	8.283	6.576	8.193	6.732	8.007
CUSCO	26.399	79.663	23 429	67.200	23.008	85.305	24.321	67.339	22 804	68.233
MADRE DE DIOS	2.887	10.502	2.931	8.239	2.884	7 868	2.856	7.988	3.803	8.264
TOTAL REGION	36.577	100.147	33.060	84.374	31.649	81.456	33.753	83.520	33 339	84.504
REG. LIB. WARI										
AYACUCHO	7.992	21.761	7.102	20.009	4.614	18.559	6.670	18.258	4.080	17.253
HUANCAVELICA		25.513	7 512	22.991	5.325	21 880	7.977	18.590	6.765	17.366
ICA	16 235	73.191	14.788	69.990	14.931	64.445	13.214	72.722	14.516	71 566
TOTAL REGION	33.442	120.465	29.402	112.990	24 870	104.884	28.061	109.570	25.361	106.185
REG. SAN MARTIN										
TOTAL REGION	21 596	35.273	20.053	33.194	27.214	33.423	16.631	34.280	14.729	34 225
REG. UCAYALI										
TOTAL REGION	10 080	25 206	10.145	21.282	7.622	19.535	8.828	21.019	8.731	20.291
TOTAL NACIONAL	493 391	3387.893	465.761	2962 853	433.437	3243.760	442.722	2880.384	418 230	2808.071

Source: Cuentas Regionales. Producto Bruto Interno Regiones: Andres Avelino Caceres, Inka, Los Libertadores Wari, San Martin y Ucayali.
1970-1992. Instituto Nacional de Estadistica e Informatica

TABLE AG1

HARVESTED AREA OF MAIN CROPS BY DISTRICTS 1993

IN THE ZONE OF THE PROJECT (HA)

PROVINCE DISTRICTS	Rice	Cacao	Coffee	Coca	Corn ***	Banana	Papaya	Yucca	Total
BELLAVISTA	4,771	332	824	4,603	2,600	749	33	304	14,016
A. Biabo	4,115	287	536	4,143	2,242	646	28	262	12,262
B. Biabo	656	46	86	460	358	103	4	42	1,755
PICOTA	244	47	87	1,000	1,295	342	5	157	3,178
Shamboyacu	70	19	38	800	308	161	2	67	1,463
T. Ponaza	11	16	30	50	897	156	2	81	1,241
Tres Unidos	164	11	21	150	90	26	1	10	474
TOCACHE	739	449	41	21,716	1,070	2,598	30	1,223	27,866
Tocache	575	218	8	7,644	585	1,104	7	468	10,609
N.Progreso	72	152	10	5,364	391	745	18	274	7,026
Uchiza	92	79	23	8,708	94	749	5	481	10,231
EL DORADO	873	61	114	5,604	476	137	6	56	7,326
S.J. Sisa	202	14	26	260	110	32	1	13	658
Agua Blanca	113	8	15	250	62	18	1	7	473
San Martin	378	26	49	1,950	206	59	3	24	2,896
Sta.Rosa	164	11	21	2,054	89	26	1	10	2,377
Shatoja	16	1	2	1,090	9	3	0	1	1,122
LEONCIO PRADO	135	2,836	1,564	12,609	2,190	4,623	318	3,314	27,589
Rupa Rupa	25	622	246	1,135	295	525	125	431	3,404
D.A.Robles	11	479	305	303	234	486	22	265	2,107
H.Valdizan	5	73	409	908	82	396	19	65	1,957
J.C.Castillo	65	1,195	198	5,760	988	2,516	56	2.089	12,867
P.Luyando	17	209	102	580	262	392	55	211	1,828
M.D.Beraun	12	258	304	3,933	329	306	41	253	5,436
PADRE ABAD	534	12	29	13,500	291	555	7	199	15,177
P.Abad	308	6	16	5,873	154	293	3	105	6,760
Irazola	275	6	14	7,627	137	262	3	94	6,416
CUENCA DEL RIO APURIMAC.*									
HUANTA									
Sivia	134	883	193	5,700	166	28	2	580	7,686
LA MAR									
Ayna	23	152	33	2,700	28	5	1	100	3,042
LA CONVENCION									
Quimbiri	196	1,292	282	8,500	242	40	3	846	11,401
ZONA P.BERMUDEZ Y C CONSTITUCION**									
OXAPAMPA	12	8	435	6,000	145	174	3	122	6,897
Puerto Bermudez	8	4	300	1,200	100	120	2	84	1,818
Palcazu	4	2	135	4,800	45	54	1	38	5,079
TOTAL	7,711	6,070	3,403	81,932	8,502	9,251	407	6,902	124,177

* The scope of the project includes the districts of Sivia, Ayna and Quimbiri

** The scope of the project includes Puerto Bermudez and Ciudad Constitucion

*** It refers to Yellow Corn

Source. Instituto de Analisis de Politica Agraria

PRODUCTION OF MAIN CROPS BY DISTRICTS: 1993 IN THE ZONE OF THE PROJECT

(M.T.)

PROVINCE DISTRICTS	Rice	Cacao	Coffee	Coca	Corn ***	Banano	Papaya	Yucca	Total
BELLAVISTA	15272	103	463	11231	4038	5392	348	2565	39413
A. Biabo	13174	89	400	10109	3482	4650	300	2212	34416
B. Biabo	2101	14	64	1122	555	742	48	353	5000
PICOTA	440	15	31	1500	1942	2055	47	1315	7345
Shamboyacu	125	6	13	1200	463	964	20	555	3346
T. Ponasa	19	5	11	75	1345	936	16	672	3079
Tres Unidos	295	4	8	225	134	155	12	88	920
TOCACHE	2448	166	14	41695	1526	21662	337	11958	79806
Tocache	1905	81	3	14676	834	9205	79	4576	31359
N.Progreso	239	56	3	10299	558	6212	202	2679	20248
Uchiza	305	29	8	16719	134	6245	56	4703	28200
EL DORADO	2794	188	85	13674	739	1164	70	420	19132
S.J. Sisa	645	44	20	634	171	269	16	97	1895
Agua Blanca	362	24	11	610	96	151	9	54	1317
San Martin	1211	82	37	4758	320	505	30	182	7124
Sta.Rosa	524	35	16	5012	138	218	13	79	6035
Shatoja	52	3	2	2660	14	22	1	6	2761
LEONCIO PRADO	310	788	679	24209	3508	38510	4038	28583	100626
Rupa Rupa	57	173	107	2179	473	4373	1587	3717	12666
D.A.Robles	25	133	132	582	375	4065	279	2286	7877
H.Valdizan	11	20	178	1743	131	3299	241	561	6185
J.C.Castillo	149	332	86	11059	1583	20958	711	18018	52896
P Luyando	39	58	44	1114	420	3265	698	1820	7458
M.D Beraun	28	72	132	7551	527	2549	521	2182	13561
PADRE ABAD	1470	41	19	26865	575	4440	82	1585	35078
P.Abad	777	22	10	11687	304	2347	43	838	16029
Irazola	693	19	9	15178	271	2093	39	747	19049
CUENCA DEL RIO APURIMAC*									
HUANTA									
Sivia	161	442	39	9120	332	168	16	3480	13757
LA MAR									
Ayna	27	76	7	4320	56	30	8	600	5124
LA CONVENCION									
Quimbiri	235	646	56	13600	484	240	24	5076	20361
PUERTO B. Y									
C. CONSTITUCION**	15	2	309	9600	211	1392	27	976	12532
Puerto Bermudez	10	1	213	1920	146	960	18	672	3940
Palcazu	5	0.5	96	7660	65	432	9	304	8592
TOTAL	23172	2468	1702	155814	13410	75053	4996	56559	333174

* The scope of the project includes the districts of Sivia, Ayna and Quimbiri

** The scope of the project includes Puerto Bermudez and Ciudad Constitucion

*** It refers to Yellow Corn

Source. Instituto de Analisis de Politica Agraria

Table AG3

AVERAGE PRICE OF MAIN CROPS IN THE ZONE
OF THE PROJECT
OCTOBER 1994 PRICES (US$ AND SOLES)

CROPS	US$	Soles
Rice	0.11	0.25
Cacao	0.91	2.00
Coffee	2.73	6.00
Coca	0.68	1.50
Yellow Corn	0.13	0.29
Banana	0.09	0.19
Papaya	0.10	0.23
Yucca	0.06	0.14
Total	5.00	11.00

Rate of exchange: 2.2 soles per US$ dollar
Source: Instituto de Analisis de Politica Agraria

Table AG4

GROSS VALUE PRODUCTION OF MAIN CROPS BY DISTRICTS IN THE ZONE OF THE PROJECT

OCTOBER 1994 PRICES (US$)

PROVINCE DISTRICTS	Rice	Cacao	Coffee	Coca (^)	Corn ***	Banana	Papaya	Yucca	Total
BELLAVISTA	1735	94	1264	7658	532	466	36	163	11948
A. Biabo	1497	81	1090	6892	459	402	31	141	10593
B. Biabo	239	13	174	765	73	64	5	22	1356
PICOTA	50	14	85	1023	256	177	5	84	1693
Shamboyacu	14	6	35	818	61	83	2	35	1055
T. Ponasa	2	5	29	51	177	81	2	43	389
Tres Unidos	34	3	21	153	18	13	1	6	249
TOCACHE	278	151	38	28428	201	1871	35	761	31764
Tocache	216	73	7	10007	110	795	8	291	11508
N.Progreso-	27	51	9	7022	73	536	21	170	7911
Uchiza	35	27	21	11400	18	539	6	299	12344
EL DORADO	317	171	231	9323	97	101	7	27	10275
S.J. Sisa	73	40	53	433	22	23	2	6	652
Agua Blanca	41	22	30	416	13	13	1	3	539
San Martin	138	74	100	3244	42	44	3	12	3657
Sta.Rosa	60	32	43	3417	18	19	1	5	3596
Shatoja	6	3	4	1813	2	2	0	0	1831
LEONCIO PRADO	35	717	1851	16506	462	3328	422	1819	25139
Rupa Rupa	7	157	291	1488	62	378	166	237	2783
D.A.Robles	3	121	361	397	49	351	29	145	1457
H.Valdizan	1	18	484	1189	17	285	25	36	2056
J.C.Castillo	17	302	234	7540	209	1810	74	1147	11333
P.Luyando	4	53	121	759	55	282	73	116	1463
M.D Beraun	3	65	360	5149	69	220	54	139	6060
PADRE ABAD	167	37	53	18317	76	383	9	101	19143
P.Abad	88	20	28	7969	40	203	5	53	8405
Irazola	79	18	25	10348	36	161	4	48	10738
APURIMAC RIVER BASIN *									
HUANTA									
Sivia	18	401	105	6218	44	15	2	221	7025
LA MAR									
Ayna	3	69	19	2945	7	3	1	38	3086
LA CONVENCION									
Quimbiri	27	587	153	9273	64	21	3	323	10449
PUERTO B Y									
C. CONSTITUCION**	2	1	843	6545	28	120	3	62	7604
Puerto Bermudez	1	1	581	1309	19	63	2	43	2039
Palcazu	1	0	262	5236	9	37	1	19	5565
TOTAL	2633	2243	4642	106237	1768	6482	523	3599	128127

* The scope of the project includes the districts of Sivia, Ayna AND Quimbiri

** The scope of the project includes Puerto Bermudez and Ciudad Constitucion

*** It refers to Yellow Corn

(^) It ferers only to coca leaf

Rate of exchange: 2.2 soles per dollar

Source: Instituto de Analisis de Politica Agraria

TABLE AG5

YIELD OF MAIN CROPS BY VALLEYS: 1993 IN THE
IN THE ZONE OF THE PROJECT (MT/ha)

VALLEYS	Rice	Cacao	Coffee	Coca	Corn ***	Banana	Papaya	Yucca
BELLAVISTA	3.20	0.31	0.74	2.44	1.55	7.20	10.70	8.43
PICOTA	1.80	0.32	0.36	1.50	1.50	6.00	10.34	8.35
TOCACHE	3.13	0.37	0.34	1.92	1.43	8.34	11.23	9.78
EL DORADO	3.20	0.31	0.74	2.44	1.55	8.50	11.70	7.50
LEONCIO PRADO	2.30	0.28	0.43	1.92	1.60	8.33	12.70	8.63
PADRE ABAD	2.15	0.34	0.65	1.90	1.97	8.00	12.54	7.95
APURIMAC *	1.20	0.50	0.20	1.60	2.00	6.00	8.00	6.00
P. B. Y CIUDAD CONSTITUCION**	1.30	0.30	0.71	1.60	1.40	8.00	9.00	8.00

* The scope of the project includes the districts of Sivia, Ayna and Quimbiri

** The scope of the project includes Puerto Bermudez and Ciudad Constitucion

*** It refers to yellow corn

Source: Instituto de Analisis de Politica Agraria

TABLE AG6

HARVESTED AREA OF MAIN CROPS BY VALLEYS: 1993 IN THE ZONE OF THE PROJECT (ha/fam)

VALLEYS	Rice	Cacao	Coffee	Coca	Corn***	Banana	Papaya	Yucca	Total
BELLAVISTA	4.381	0.305	0.573	4.227	2.387	0.688	0.030	0.279	12.870
PICOTA	0.402	0.077	0.144	1.647	2.133	0.564	0.008	0.259	5.235
TOCACHE	0.131	0.080	0.007	3.862	0.190	0.462	0.005	0.217	4.956
EL DORADO	0.340	0.024	0.044	2.184	0.185	0.053	0.002	0.022	2.855
PADRE ABAD	0.151	0.003	0.008	3.501	0.076	0.144	0.002	0.052	3.936
LEONCIO PRADO	0.017	0.349	0.196	1.554	0.270	0.570	0.039	0.408	3.403
APURIMAC*	0.048	0.310	0.070	2.320	0.060	0.010	0.001	0.210	3.029
P. B. Y CIUDAD CONSTITUCION**	0.003	0.002	0.120	1.680	0.040	0.050	0.001	0.030	1.926

* The scope of the project includes the districts of Sivia, Ayna and Quimbiri

** The scope of the project includes Puerto Bermudez and Ciudad Constitucion

*** It refers t yellow corn

Souce: Instituto de Analisis de Politica Agraria

TABLE AG7

GROSS VALUE PRODUCTION OF MAIN CROPS BY VALLEYS: 1993 IN THE ZONE OF THE PROJECT (us$)

VALLEYS	Rice	Cacao	Coffee	Coca (^)	Corn ***	Banana	Papaya	Yucca	Total
BELLAVISTA	1735	94	1264	7658	532	466	36	163	11948
PICOTA	50	14	85	1023	256	177	5	84	1693
TOCACHE	278	151	38	28428	201	1871	35	761	31764
EL DORADO	317	171	231	9323	97	101	7	27	10275
LEONCIO PRADO	35	717	1851	16506	462	3326	422	1819	25139
PADRE ABAD	167	37	53	18317	76	383	9	101	19143
VALLE APURIMA	48	1058	277	18436	115	38	6	583	20561
P.BERMUDEZ - C.CONSTITUCIO	2	1	843	6545	28	120	3	62	7604
TOTAL	2633	2243	4642	106237	1768	6482	523	3599	128127

* Te scope of the project includes the districts of Sivia, Ayna and Quimbiri

** The scope of the project includes Puerto Bermudez and Ciudad Constitucion

*** It refers to yellow corn

(^) It refers to the coca leaves

Rate of exchange: 2.2 soles per dollar

Source: Instituto de Analisis de Politica Agraria

TABLE AG8

GROSS VALUE PRODUCTION WITHOUT COCA AND WITH COCA
OCTOBER 1994 PRICES (US$)

CROPS	GROSS VALUE PRODUCTION			
	$	%	$	%
Rice	2633	12.0	2633	2.1
Cacao	2243	10.2	2243	1.8
Coffee	4642	21.2	4642	3.6
Yellow corn	1768	8.1	1768	1.4
Banana	6482	29.6	6482	5.1
Papaya	523	2.4	523	0.4
Yucca	3599	16.4	3599	2.8
Total without coc	21890	100.0		
Coca			106237	82.9
TOTAL with coca			128127	100.0

Source: Instituto de Analisis de Politica Agraria

TABLE AG9

ESTIMATED AREA OF COCA IN PRODUCTION AND AREA
REDUCED BY CSD PROJECT BY VALLEYS
in ha.(Oct. 1994)

DISTRICTS	HUALLAGA	AGUAYTIA	APURIMAC	PICHIS P.	TOTAL
BELLAVISTA	4,603				4,603
PICOTA	1,000				1,000
TOCACHE	21,716				21,716
EL DORADO	5,604				5,604
LEONCIO PRADO	12,609				12,609
PADRE ABAD		13,500			13,500
SIVIA			5,700		5,700
AYNA			2,700		2,700
QUIMBIRI			8,500		8,500
P. BERMUDEZ				1,200	1,200
PALCAZU				4,800	4,800
ADDITION	45,532	13,500	16,900	6,000	81,932
AREA TO BE REDUCED	13,197	2,454	4,494	2,351	22,496

Source: Instituto de Analisis de Politica Agraria

TABLE AG10

MONTHLY PRICES OF COCA LEAF AND ITS MAIN BY-PRODUCTS
(US$ per kg)

1990	Coca leaf	Coca Paste	Cocaine base
January	0.83	215	475
February	0.86	115	280
March	0.72	90	280
April	0.52	100	300
May	0.56	100	295
June	0.74	119	438
July	0.49	90	399
August	0.77	114	343
September	1.56	249	595
October	1.53	237	687
November	0.94	150	478
December	0.86	150	469
1991			
January	1.13	215	475
February	1.54	248	280
March	1.63	200	280
April	1.73	204	300
May	1.56	233	295
June	1.73	250	438
July	1.62	200	399
August	1.67	223	343
September	1.82	300	595
October	1.90	275	687
November	1.47	208	478
December	1.16	155	469
1992			
January	1.52	183	463
February	1.76	215	525
March	1.93	233	605
April	1.76	234	548
May	1.68	254	638
June	2.07	278	682
July	2.52	302	686
August	2.57	322	740
September	3.60	420	870
October	3.23	360	860
November	2.87	294	790
December	2.54	290	690

Cont.....

...Cont. Table AG10

	Coca leaf	Coca Paste	Cocaine base
1993			
January	2.73	323	756
February	2.12	278	578
March	1.68	290	698
April	1.48	254	606
May	1.57	249	590
June	1.47	234	514
July	1.22	187	472
August	1.43	205	625
September	1.61	250	545
October	1.57	250	600
November	1.43	195	505
December	1.52	205	500
1994			
January	1.65	260	570
February	1.65	240	560
March	1.74	240	555
April	1.78	240	545
May	1.87	255	600

Source: Impact of Coca in the Peruvian Economy
Cuanto S.A. - September, 1993
Coca Price in the Huallaga Valley - Several sources - Setiembre 1994, USAID.

TABLE AG11

IMPROVED TECHNOLOGY OF COCA IN THE UPPER HUALLAGA
PRODUCTION COSTS PER HECTARE
October 1994 prices (US$)

FIRST YEAR

Output: (Kg./Ha.):	0
Selling Price (S/./Kg.):	1.5
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A		1				
1	Labor		155		1550.00	704.55
	Land preparation	day wage	48	10.00	480.00	218.18
	Line setting up	day wage	6	10.00	60.00	27.27
	Ponds	day wage	30	10.00	300.00	136.36
	Sowing	day wage	15	10.00	150.00	68.18
	Manual weeding	day wage	50	10.00	500.00	227.27
	Sanitary control	day wage	2	10.00	20.00	9.09
	Fertilizing	day wage	2	10.00	20.00	9.09
	Chemical weeding	day wage	1	10.00	10.00	4.55
	Haulage	day wage	1	10.00	10.00	4.55
2	Inputs					
	Seeds	Kg	40	5.00	200.00	90.91
	Insecticide	Kg	1	29.70	29.70	13.50
	Urea	Kg	100	0.59	59.00	26.82
	Bayfolan	l	2	10.00	20.00	9.09
	Nitrofoska	l	1	7.00	7.00	3.18
	Fungicide	Kg	2	9.90	19.80	9.00
	Herbicide	l	1	20.90	20.90	9.50
	Adherent	l	1	12.50	12.50	5.68
3	Transportation					
	Inputs freight	Kg	148	0.07	10.36	4.71
					1929.26	876.94
B	Financial Cost					
	Interest rate	%	15.80%			138.56
			TOTAL COSTS/HA			1015.49
			GROSS INCOME			0.00
			NET INCOME			-1015.49
			BENEFIT/COST			0.00
			FAMILY INCOME (as labor)			704.55

Source: Adapted from Novoa Ingenieros Selva Economic Revotalizacion

Cont...

...Cont. TABLE AG11

SECOND YEAR IMPROVED TECHNOLOGY

Output: (Kg./Ha.):	1950
Selling Price (S/./Kg.):	1.5
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A		1				
1	Labor		84		840.00	381.82
	Land preparation	day wage	0	10.00	0.00	0.00
	Line setting up	day wage	0	10.00	0.00	0.00
	Ponds	day wage	0	10.00	0.00	0.00
	Sowing	day wage	0	10.00	0.00	0.00
	Manual weeding	day wage	30	10.00	300.00	136.36
	Sanitary control	day wage	2	10.00	20.00	9.09
	Fertilizing	day wage	2	10.00	20.00	9.09
	Chemical weeding	day wage	1	10.00	10.00	4.55
	Harvesting	day wage	42	10.00	420.00	190.91
	Packing	day wage	5	10.00	50.00	22.73
	Haulage	day wage	2	10.00	20.00	9.09
2	Inputs					
	Seeds	Kg	0	5.00	0.00	0.00
	Insecticide	Kg	1	29.70	29.70	13.50
	Urea	Kg	100	0.59	59.00	26.82
	Bayfolan	l	2	10.00	20.00	9.09
	Nitrofoska	l	1	7.00	7.00	3.18
	Fungicide	Kg	2	9.90	19.80	9.00
	Herbicide	l	1	20.90	20.90	9.50
	Adherent	l	1	12.50	12.50	5.68
3	Transportation					
	Inputs freight	Kg	108	0.07	7.56	3.44
					1016.46	462.03
B	Financial Cost					
	Interest rate	%	15.80%			73.00
			TOTAL COSTS/HA			535.03
			GROSS INCOME			1329.55
			NET INCOME			794.52
			BENEFIT/COST			2.49
			FAMILY INCOME (as labor)			381.82

Cont.....

...Cont. TABLE AG11

THIRD YEAR IMPROVED TECHNOLOGY

Output: (Kg./Ha.):	2300
Selling Price (S/./Kg.):	1.5
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A		1				
1	Labor		91		910.00	413.64
	Land preparation	day wage	0	10.00	0.00	0.00
	Line setting up	day wage	0	10.00	0.00	0.00
	Ponds	day wage	0	10.00	0.00	0.00
	Sowing	day wage	0	10.00	0.00	0.00
	Manual weeding	day wage	30	10.00	300.00	136.36
	Sanitary control	day wage	2	10.00	20.00	9.09
	Fertilizing	day wage	2	10.00	20.00	9.09
	Chemical weeding	day wage	1	10.00	10.00	4.55
	Harvesting	day wage	48	10.00	480.00	218.18
	Packing	day wage	6	10.00	60.00	27.27
	Haulage	day wage	2	10.00	20.00	9.09
2	Inputs					
	Seeds	Kg	0	5.00	0.00	0.00
	Insecticide	Kg	1	29.70	29.70	13.50
	Urea	Kg	100	0.59	59.00	26.82
	Bayfolan	l	2	10.00	20.00	9.09
	Nitrofoska	l	1	7.00	7.00	3.18
	Fungicide	Kg	2	9.90	19.80	9.00
	Herbicide	l	1	20.90	20.90	9.50
	Adherent	l	1	12.50	12.50	5.68
3	Transportation					
	Inputs freight	Kg	108	0.07	7.56	3.44
					1086.46	493.85
B	Financial Cost					
	Interest rate	%	15.80%			78.03
			TOTAL COSTS/HA			571.87
			GROSS INCOME			1568.18
			NET INCOME			996.31
			BENEFIT/COST			2.74
			FAMILY INCOME (as labor)			413.64

TABLE AG12

TRADITIONAL TECHNOLOGY OF COCA IN THE UPPER HUALLAGA
PRODUCTION COSTS PER HECTARE
October 1994 prices (US$)

FIRST YEAR

Output: (Kg./Ha.):	0
Selling Price (S/./Kg.):	1.5
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		86		860.00	390.91
	Land preparation	day wage	35	10.00	350.00	159.09
	Line setting up	day wage	5	10.00	50.00	22.73
	Ponds	day wage	25	10.00	250.00	113.64
	Sowing	day wage	10	10.00	100.00	45.45
	Manual weeding	day wage	10	10.00	100.00	45.45
	Sanitary control	day wage	0	10.00	0.00	0.00
	Harvest	day wage	0	10.00	0.00	0.00
	Haulage	day wage	1	10.00	10.00	4.55
2	Inputs					
	Seeds	Kg	40	5.00	200.00	90.91
	Pesticides	Kg	0	0.00	0.00	0.00
3	Transportation					
	Inputs freight	Kg	40	0.07	2.80	1.27
					1062.80	483.09
B	Finacial cost					
	interest rate	%	15.80%			76.33
			TOTAL COSTS/HA			559.42
			GROSS INCOME			0.00
			NET INCOME			-559.42
			BENEFIT/COST			0.00
			FAMILY INCOME (as labor)			390.91

Source: Adapted from: Novoa Ingenieros Selva Economic Revitalitation Project Design USAID/PERU 1993.

Cont.....

...Cont. TABLE AG12

SECOND YEAR TRADITIONAL TECHNOLOGY

Output: (Kg./Ha.):	1100
Selling Price (S/./Kg.):	1.5
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		61		610.00	277.27
	Land preparation	day wage	0	10.00	0.00	0.00
	Line setting up	day wage	0	10.00	0.00	0.00
	Ponds	day wage	0	10.00	0.00	0.00
	Sowing	day wage	0	10.00	0.00	0.00
	Manual weeding	day wage	32	10.00	320.00	145.45
	Sanitary control	day wage	0	10.00	0.00	0.00
	Harvest	day wage	25	10.00	250.00	113.64
	Haulage	day wage	1	10.00	10.00	4.55
	Packing	day wage	3	10.00	30.00	13.64
2	Inputs					
	Seeds	Kg	0	5.00	0.00	0.00
	Fungicida	Kg	1	9.90	9.90	4.50
	Urea	Kg	50	0.59	29.50	13.41
3	Transportation					
	Inputs freight	Kg	51	0.07	3.57	1.62
					652.97	296.80
B	Finacial cost					
	interest rate	%	15.80%			46.90
			TOTAL COSTS/HA			343.70
			GROSS INCOME			750.00
			NET INCOME			406.30
			BENEFIT/COST			2.18
			FAMILY INCOME (as labor)			277.27

Cont.....

...Cont. TABLE AG12

THIRD YEAR TRADITIONAL TECHNOLOGY

Output: (Kg./Ha.):	1500
Selling Price (S/./Kg.):	1.5
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		71		710.00	322.73
	Land preparation	day wage	0	10.00	0.00	0.00
	Line setting up	day wage	0	10.00	0.00	0.00
	Ponds	day wage	0	10.00	0.00	0.00
	Sowing	day wage	0	10.00	0.00	0.00
	Manual weeding	day wage	32	10.00	320.00	145.45
	Sanitary control	day wage	0	10.00	0.00	0.00
	Harvest	day wage	34	10.00	340.00	154.55
	Haulage	day wage	1	10.00	10.00	4.55
	Packing	day wage	4	10.00	40.00	18.18
2	Inputs					
	Seeds	Kg	0	5.00	0.00	0.00
	FungicidE	Kg	1	9.90	9.90	4.50
	Urea	Kg	50	0.59	29.50	13.41
3	Transportation					
	Inputs freight	Kg	51	0.07	3.57	1.62
					752.97	342.26
B	Finacial cost					
	interest rate	%	15.80%			54.08
			TOTAL COSTS/HA			396.34
			GROSS INCOME			1022.73
			NET INCOME			626.39
			BENEFIT/COST			2.58
			FAMILY INCOME (as labor)			322.73

TABLE AG13

COCA PASTE PRODUCTION COSTS PER BATCH

OCTOBER 1994 PRICES (US$)

Coca Paste Batch Size	Kg		4		
Item	Unit	Quantity per kg.	Quantity per Batch	Unit Price	Total Cost
Coca leaf	kg	109.00	436.00	1.9	**828**
Precursor chemicals and other inputs					**109**
Sulphuric Acid	kg	1.00	4.00	8.6	34
Lime	kg	6.00	24.00	0.5	12
Kerosene	gal	4.00	16.00	2.7	**43**
Sodium/Calcium Bicarb	kg	0.60	2.40	7.8	19
Fabric for Sieve	m	0.25	1.00	1.0	1
Labor			10.00		**180**
Leaf Stompers	M/D	2.00	8.00	1.0	80
Chemist	M/D	0.50	2.00	50.0	100
Rentals					**20**
Lab/Equipment Lease	day		2.00	10.0	20
Cost per Batch	kg		**4.00**		**1180**
Resulting Cost per kg of Coca Paste					295
Coca Leaf					207
Precursor Chemicals and Fabric					27
Labor					45
Rental equipment					5
Skilled vs. Non-skilled Labor					
Non-skilled labor					80%
Skilled labor					20%

Source: Peru's Cocaine Economy - USAID/PERU - October 1993. Prices correspond to Lima and Actualized to October 1994.

TABLE AG14

COCAINE BASE PRODUCTION COSTS PER BATCH - From Coca Paste

OCTOBER 1994 PRICES (US$)

Coca Base Batch Size	Kg		20		
Item	Unit	Quantity per kg.	Quantity per Batch	Unit Price	Total Cost
Coca Paste	kg	2.10	42.00	255.0	**10710**
Precursor chemicals and other inputs					**425**
Potasium Permanganate	kg	0.40	8.00	35.0	280
Ammonia	Lt	0.50	10.00	5.0	50
Sulphuric Acid.	kg	0.30	6.00	8.6	52
Gasoline	Gal		10.00	4.0	40
Wrapping	m	0.25	5.00	0.5	3
Labor			16.00		**575**
Operators	M/D		2.00	15.0	30
Chemist	M/D		1.00	100.0	100
"Traquetero"	M/D		10.00	40.0	400
Security	M/D		3.00	15.0	45
Rentals					**30**
Lab Rental	day		1.00	30.0	30
Cost per Batch	kg		20.00		**11740**
Resulting Cost per kg of Coca Paste					587
Coca Paste					536
Precursor Chemicals and Wrapping					21
Labor					29
Rental equipment					2
Other Services					0
Skilled vs. Non-skilled Labor					
Non-skilled labor					94%
Skilled labor					6%

Source: Peru's Cocaine Economy - USAID/PERU - October 1993, prices correspond to Lima and actualized ti october 1994.

CUADRO AG15

COCAINE HYDROCHLORIDE (HCL) PRODUCTION COSTS
OCTOBER 1994 PRICES (US$)

Coca HCL Batch Size	Kg		50		
Item	Unit	Quantity per kg.	Quantity per Batch	Unit Price	Total Cost
Cocaine Base	kg	1.10	55.00	600.0	**33000**
Precursor chemicals and other inputs					**2800**
Ether/Acetone	Lt	1.00	50.00	50.0	2500
Hydrochoride Acid	Lt	0.25	12.50	10.0	125
Ethanol	Lt	0.10	5.00	10.0	50
Filter Paper	Sheets	1.00	50.00	2.5	125
Labor		$/Kg	6.00		**4600**
Operators	M/D	15.00	2.00	750.0	1500
Chemist	M/D	50.00	1.00	2500.0	2500
Security	M/D	4.00	3.00	200.0	600
Rentals					**500**
Lab Rental	day		1.00	500.0	500
Other Services					**2000**
Fees				2000.0	2000
Cost per Batch	kg		50.00		**42900**
RESULTIG COST PER KG OF HCL					858
Cocaine Base					660
Precursor Chemicals					56
Labor					92
Rental Lab					10
Other Services					40

Source: Peru's Cocaine Economy - USAID/PERU - October 1993. Prices correspond to Lima actualized to October 1994.

TABLE AG16

CATTLE POPULATION: SYSTEM OF EXTENDED EXPLOITATION BY DISTRICTS

YEAR 1993 (NUMBER OF HEADS)

DISTRICTS	FOWL	GOAT	ECHINO	SHEEP	SWINE	BOVINE	TOTAL
BELLAVISTA	5,900	77	583	224	1,322	5,920	14,026
Alto Biavo	2,600	41	282	104	682	120	3,829
Bajo Biavo	3,300	36	301	120	640	5,800	10,197
PICOTA	4,800	74	412	400	1,060	700	
Shamboyacu	600	4	30	20	200	28	882
Tingo de Ponasa	3,500	50	300	300	580	372	5,102
Tres Unidos	700	20	82	80	280	300	1,462
TOCACHE	58,720	317	1,293	775	4,623	3,840	
Tocache	20,690	217	933	540	3,100	1,400	26,880
Nuevo Progreso	14,551	39	41	79	581	1,283	16,574
Uchiza	23,479	61	319	156	942	1,157	26,114
EL DORADO							
S.J Sisa							0
Agua Blanca							
San Martin							
Sta. Rosa							
Shatoja							
LEONCIO PRADO	163,878	1,507	745	6,793	8,954	8,189	188,066
Rupa Rupa	41,122	529	129	1,299	2,572	621	46,472
D.A.Robles	25,001	210	96	409	1,231	533	27,480
H.valdizan	9,338	195	59	620	930	313	11,455
J.C.Castillo	40,293	183	143	1,333	1,391	2,997	46,340
P. Luyando	27,310	191	39	920	1,298	710	30,468
M.D Beraun	20,814	199	279	2,212	1,532	815	25,851
PADRE ABAD							0
P.Abad							0
Irazola							0
APURIMAC RIVER BASIN							
HUANTA							
Sivia							0
LA MAR							
Ayna							0
LA CONVENCION							
Quimbiri							0
PUERTO BERMUDEZ Y							
C. CONSTITUCION							0
Puerto Bermudez							0
Palcazu							0
TOTAL	233,298	1,975	3,033	8,192	15,959	16,649	

Source: Dignostico Socio Economico de las Provincias de San Martin, Picota Compendio Estadistico Agropecuario- 1993 PEAH/MAG.

TABLE AG17

BOVINE CATTLE SLAUGHTER BY EACH DISTRICT'S SLAUGHTERHOUSE

YEAR: 1993

SLAUGHTERHOUSE	SLAUGHTERED CATTLE	TOTAL ANNUAL	AVERAGE PER TRIMESTER
	Total of heads(N)°	235	59
	Female	126	32
	Male	109	27
BELLAVISTA	Total Weight (Kg)	31,050	7,763
	Females	16,880	4,220
	Males	14,170	3,543
	Offal	6,831	1,708
	Total of heads(N)°	54	14
	Female	23	6
	Male	31	8
ALTO BIAVO	Total Weight (Kg)	7,020	1,755
	Females	2,990	748
	Males	4,030	1,008
	Offal	1,544	386
	Total of heads(N)°	50	13
	Female	20	5
	Male	30	8
BAJO BIAVO	Total Weight (Kg)	6,500	1,625
	Females	2,600	650
	Males	3,900	975
	Offal	1,430	358
	Total of heads(N)°	39	10
	Female	12	3
	Male	27	7
SHAMBOYACU	Total Weight (Kg)	4,420	1,105
	Females	1,560	390
	Males	2,860	715
	Offal	1,017	254
	Total of heads(N)°	50	13
	Female	20	5
	Male	30	8
TINGO DE PONASA	Total Weight (Kg)	6,500	1,625
	Females	2,600	650
	Males	390	975
	Offal	1,495	374
	Total of heads(N)°	43	11
	Female	14	4
	Male	29	7
TRES UNIDOS	Total Weight (Kg)	5,590	1,398
	Females	1,820	455
	Males	3,770	943
	Offal	1,286	321

Source: Dignostico Socio Economico de las Provincias de San Martin, Picota. Compendio Estadistico Agropecuario- 1993 PEAH/MAG.

Cont.....

BOVINE CATTLE SLAUGHTER BY EACH DISTRICT'S SLAUGHTERHOUSE

YEAR: 1993

SLAUGHTERHOUSE	SLAUGHTERED CATTLE	TOTAL ANNUAL	AVERAGE PER TRIMESTER
	Total of heads(N)°	171	43
	Female	90	23
	Male	81	20
NUEVO PROGRESO	Total Weight (Kg)	20,888	5,222
	Females	10,628	2,657
	Males	10,260	2,565
	Offal	4,875	1,219
	Total of heads(N)°	740	185
	Female	301	75
	Male	439	110
TOCÀCHE	Total Weight (Kg)	101,667	25,417
	Females	37,329	9,332
	Males	64,338	16,085
	Offal	27,397	6,849
	Total of heads(N)°	971	243
	Female	332	83
	Male	639	160
UCHIZA	Total Weight (Kg)	128,707	32,177
	Females	41,668	10,417
	Males	87,039	21,760
	Offal	25,890	6,473
	Total of heads(N)°	811	203
	Female	249	62
	Male	562	141
LAMAS	Total Weight (Kg)	78,060	19,515
	Females	27,920	6,980
	Males	50,140	12,535
	Offal	17,662	4,416
	Total of heads(N)°	2,878	720
	Female	1,177	294
	Male	1,701	425
TINGO MARIA	Total Weight (Kg)	423,424	105,856
	Females	151,957	37,989
	Males	271,467	67,867
	Offal	89,216	22,304
	Total of heads(N)°	6,042	
	Female	2,364	
	Male	3,678	
TOTAL	Total Weight (Kg)	813,826	
	Females	297,952	
	Males	512,364	
	Offal	178,643	

Source: Dignostico Socio Economico de las Provincias de San Martin, Picota. Compendio Estadistico Agropecuario- 1993 PEAH/MAG.

TABLE AG18

IMPROVED TECHNOLOGY OF YUCCA IN THE UPPER HUALLAGA

PRODUCTION COSTS PER HECTARE

OCTOBER 1994 PRICES (US$)

Output: (Kg./Ha.):	15000
Selling Price (S/./Kg.):	0.14
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		90		900.00	409.09
	Land preparation	day wage	20	10.00	200.00	90.91
	Sowing	day wage	12	10.00	120.00	54.55
	Weeding	day wage	24	10.00	240.00	109.09
	Fertilizing	day wage	4	10.00	40.00	18.18
	Sanitary control	day wage	3	10.00	30 00	13.64
	Harvest	day wage	18	10.00	180.00	81.82
	Haulage	day wage	9	10.00	90.00	40.91
2	Inputs					
	Seeds	stakes	7000	0.03	205.33	93.33
	Pesticides	l	2	36.67	73.33	33.33
	Urea	Kg	100	0.59	58.67	26.67
	Superphosphate	Kg	150	0.73	110.00	50.00
	Potasium	Kg	100	0.59	58.67	26.67
3	Transportation					
	Inputs freight	Kg	800	0.044	35.20	16.00
					1441.20	655.09
B	Finacial cost					
	Interest rate	%	7.90%			51.75
			TOTAL COSTS/HA			706.84
			GROSS INCOME			954.55
			NET INCOME			247.70
			BENEFIT/COST			1.35
			FAMILY INCOME (as labor)			409.09

Source: Adapted from: Novoa Ingenieros and PEAH.

TABLE AG19

TRADITIONAL TECHNOLOGY OF YUCCA IN THE UPPER HUALLAGA
PRODUCTION COSTS PER HECTARE
OCTOBER 1994 PRICES (US$)

Output: (Kg./Ha.):	9000
Selling Price (S/./Kg.):	0.14
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		74		740.00	336.36
	Land preparation	day wage	20	10.00	200.00	90.91
	Sowing	day wage	12	10.00	120.00	54.55
	Weeding	day wage	24	10.00	240.00	109.09
	Harvest	day wage	12	10.00	120.00	54.55
	Haulage	day wage	6	10.00	60.00	27.27
2	Inputs					
	Seeds	stakes	4500	0.03	132.00	60.00
3	Transportation					
	Inputs freight	Kg	300	0.044	13.20	6.00
B	Indirect costs				885.20	402.36
	General	%	7.90%			31.79
			TOTAL COSTS/HA			434.15
			GROSS INCOME			572.73
			NET INCOME			138.58
			BENEFIT/COST			1.32
			FAMILY INCOME (as labor)			336.36

Source: Adapted from: Novoa Ingenieros and PEAH.

TABLE AG20

TRADITIONAL TECHNOLOGY OF BANANAS IN THE UPPER HUALLAGA

PRODUCTION COSTS PER HECTARE

OCTOBER 1994 PRICES (US$)

FIRST YEAR

Output: (Kg./Ha.):	0
Selling Price (S/./Kg.):	0
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		70		700.00	318.18
	Land preparation	day wage	20	10.00	200.00	90.91
	Lines setting up	day wage	2	10.00	20.00	9.09
	Seedlings selection	day wage	2	10.00	20.00	9.09
	Weeding	day wage	24	10.00	240.00	109.09
	Resowing	day wage	2	10.00	20.00	9.09
	Sanitary control	day wage	4	10.00	40.00	18.18
	Ponds	day wage	6	10.00	60.00	27.27
	Sowing	day wage	10	10.00	100.00	45.45
2	Inputs					
	Seedlings	Units	950	0.40	380.00	172.73
3	Transportation					
	Inputs freight	Kg	1000	0.044	44.00	20.00
					1124.00	510.91
B	Financial cost					
	interest rate	%	15.80%			80.72
			TOTAL COSTS/HA			591.63
			GROSS INCOME			0.00
			NET INCOME			-591.63
			BENEFIT/COST			0.00
			FAMILY INCOME (as labor)			318.18

Source: Adapted from Novoa Ingenieros and PEAH.

Cont.....

...Cont. TABLE AG20

SECOND YEAR

Output: (Kg /Ha):		10000				
Selling Price (S/ /Kg):		0.19				
Exchange Rate (S/ /US$)		2.2				
	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		55		550.00	250.00
	Weeding tasks	day wage	24	10.00	240 00	109.09
	Land preparation	day wage	3	10.00	30.00	13.64
	Sanitary control	day wage	3	10.00	30.00	13.64
	Harvest	day wage	25	10.00	250.00	113.64
2	Inputs					
	Pesticide	Kg	20	4.00	80.00	36.36
3	Transportation					
	Inputs freight	Kg	20	0.04	0.88	0.40
					630.88	286.76
B	Financial cost					
	interest rate	%	15.80%			45.31
			TOTAL COSTS/HA			332.07
			GROSS INCOME			863.64
			NET INCOME			531.56
			BENEFIT/COST			2.60
			FAMILY INCOME (as labor)			250.00

Cont.....

...Cont. TABLE AG20

THIRD YEAR

Output: (Kg./Ha):		8000				
Selling Price (S/./Kg.):		0.19				
Exchange Rate (S/./US$):		2.2				
	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		50		500.00	227.27
	Weeding tasks	day wage	24	10.00	240.00	109.09
	Land preparation	day wage	3	10.00	30.00	13.64
	Sanitary control	day wage	3	10.00	30.00	13.64
	Harvest	day wage	20	10.00	200.00	90.91
2	Inputs					
	Pesticide	Kg	20	4.00	80.00	36.36
3	Transportation					
	Inputs freight	Kg	20	0.04	0.88	0.40
					580.88	264.04
B	Financial cost					
	interest rate	%	15.80%			41.72
			TOTAL COSTS/HA			305.75
			GROSS INCOME			690.91
			NET INCOME			385.15
			BENEFIT/COST			2.26
			FAMILY INCOME (as labor)			227.27

Cont.....

...Cont. TABLE AG20

FOURTH YEAR

Output: (Kg./Ha.):		5000				
Selling Price (S/./Kg.):		0.19				
Exchange Rate (S/ /US$):		2.2				
	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		33		330.00	150.00
	Weeding tasks	day wage	16	10.00	160.00	72.73
	Harvest	day wage	17	10.00	170.00	77.27
2	Inputs					
	Pesticide	Kg	20	4.00	80.00	36.36
3	Transportation					
	Inputs freight	Kg	20	0.04	0.88	0.40
					410.88	186.76
B	Financial cost					
	interest rate	%	15.80%			29.51
			TOTAL COSTS/HA			216.27
			GROSS INCOME			431.82
			NET INCOME			215.55
			BENEFIT/COST			2.00
			FAMILY INCOME (as labor)			150.00

TABLE AG21

IMPROVED TECHNOLOGY OF BANANAS IN THE UPPER HUALLAGA

PRODUCTION COSTS PER HECTARE

OCTOBER 1994 PRICES (US$)

FIRST YEAR

Output: (Kg./Ha.):	0
Selling Price (S/./Kg.):	0
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		64		640.00	290.91
	Land preparation	day wage	20	10.00	200.00	90.91
	Lines setting up	day wage	2	10.00	20.00	9.09
	Seedlings selection	day wage	2	10.00	20.00	9.09
	Weeding	day wage	8	10.00	80.00	36.36
	Resowing	day wage	2	10.00	20.00	9.09
	Fertilization	day wage	6	10.00	60.00	27.27
	Chemical weed control;	day wage	4	10.00	40.00	18.18
	Sanitary control	day wage	4	10.00	40.00	18.18
	Ponds	day wage	6	10.00	60.00	27.27
	Sowing	day wage	10	10.00	100.00	45.45
2	Inputs					
	Seedlings	Units	920	0.40	368.00	167.27
	Urea	Kg	120	0.59	70.80	32.18
	Superphosphate	Kg	60	0.73	43.80	19.91
	Potasium Chloride	Kg	100	0.59	59.00	26.82
	Furadan 4F	l	0.5	30.00	15.00	6.82
	Herbicide	l	2	12.40	24.80	11.27
	Tools		1	40.00	40.00	18.18
3	Transportation					
	Inputs freight	Kg	1662	0.044	73.13	33.24
					1334.53	606.60
B	Financial cost					
	interest rate	%	15.80%			95.84
			TOTAL COSTS/HA			702.45
			GROSS INCOME			0.00
			NET INCOME			-702.45
			BENEFIT/COST			0.00
			FAMILY INCOME (as labor)			290.91

Source: Adapted from Novoa Ingenieros and PEAH.

Cont.....

...Cont. TABLE AG21

IMPROVED TECHNOLOGY SECOND YEAR

Output: (Kg./Ha.):		12000				
Selling Price (S/./Kg.):		0.19				
Exchange Rate (S/./US$):		2.20				
	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		48		480.00	218.18
	Weeding tasks	day wage	10	10.00	100.00	45.45
	Plants selection	day wage	6	10.00	60.00	27.27
	Land preparation	day wage	2	10.00	20.00	9.09
	Fertilizing	day wage	6	10.00	60.00	27.27
	Sanitary control	day wage	4	10.00	40.00	18.18
	Harvest	day wage	20	10.00	200.00	90.91
2	Inputs					
	Urea	Kg	180	0.59	106.20	48.27
	Superphosphate	Kg	100	0.73	73.00	33.18
	Potasium Chloride	Kg	120	0.59	70.80	32.18
	Furadan 5G	Kg	32	4.90	156.80	71.27
	Herbicide	l	6	12.40	74.40	33.82
	Tools		1	40.00	40.00	18.18
3	Transportation					
	Inputs freight	Kg	438	0.04	19.27	8.76
					1020.47	463.85
B	Financial cost					
	interest rate	%	15.80%			73.29
			TOTAL COSTS/HA			537.14
			GROSS INCOME			1036.36
			NET INCOME			499.22
			BENEFIT/COST			1.93
			FAMILY INCOME (as labor)			218.18

Cont.....

...Cont TABLE AG21

IMPROVED TECHNOLGY THIRD YEAR

Output: (Kg./Ha.):		12000				
Selling Price (S/./Kg.).		0.19				
Exchange Rate (S/./US$):		2.2				
	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		46		460.00	209.09
	Weeding tasks	day wage	8	10.00	80.00	36.36
	Plants selection	day wage	4	10.00	40.00	18.18
	Land preparation	day wage	4	10.00	40.00	18.18
	Fertilizing	day wage	6	10.00	60.00	27.27
	Sanitary control	day wage	4	10.00	40.00	18.18
	Harvest	day wage	20	10.00	200.00	90.91
2	Inputs					
	Urea	Kg	180	0.59	106.20	48.27
	Superphosphate	Kg	100	0.73	73.00	33.18
	Potasium Chloride	Kg	120	0.59	70.80	32.18
	Furadan 5G	Kg	32	4.90	156.80	71.27
	Herbicide	l	6	12.40	74.40	33.82
	Tools		1	40.00	40.00	18.18
3	Transportation					
	Inputs freight	Kg	438	0.04	19.27	8.76
					1000.47	454.76
B	Financial cost					
	interest rate	%	15.80%			71.85
			TOTAL COSTS/HA			526.61
			GROSS INCOME			1036.36
			NET INCOME			509.75
			BENEFIT/COST			1.97
			FAMILY INCOME (as labor)			209.09

Cont.....

...Cont. TABLE AG21

IMPROVED TECHNOLGY FOURTH YEAR

Output: (Kg./Ha.):		10000				
Selling Price (S/./Kg.)		0.19				
Exchange Rate (S/./US$):		2.2				
	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		44		440.00	200.00
	Weeding	day wage	6	10.00	60.00	27.27
	Plants selection	day wage	4	10.00	40.00	18.18
	Fixed upLand preparation	day wage	4	10.00	40.00	18.18
	Fertilizing	day wage	6	10.00	60.00	27.27
	Sanitary control	day wage	4	10.00	40.00	18.18
	Harvest	day wage	20	10.00	200.00	90.91
2	Inputs					
	Urea	Kg	100	0.59	59.00	26.82
	Superphosphate	Kg	50	0.73	36.50	16.59
	Potasium Chloride	Kg	60	0.59	35.40	16.09
	Furadan 5G	Kg	10	4.90	49.00	22.27
	Herbicide	l	4	12.40	49.60	22.55
	Tools		1	40.00	40.00	18.18
3	Transportation					
	Inputs freight	Kg	224	0.04	9.86	4.48
					719.36	326.98
B	Financial cost					
	interest rate	%	15.80%			51.66
			TOTAL COSTS/HA			378.64
			GROSS INCOME			863.64
			NET INCOME			484.99
			BENEFIT/COST			2.28
			FAMILY INCOME (as labor)			200.00

TABLE AG22

TRADITIONAL TECHNOLOGY OF BANANAS IN THE CENTRAL HUALLAGA
PRODUCTION COSTS PER HECTARE
OCTOBER 1994 PRICES (US$)

FIRST YEAR

Output: (Kg./Ha.):	0
Selling Price (S/./Kg.):	0
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		70		700.00	318.18
	Land preparation	day wage	20	10.00	200.00	90.91
	Lines setting up	day wage	2	10.00	20.00	9.09
	Seedlings selection	day wage	2	10.00	20.00	9.09
	Weeding	day wage	24	10.00	240.00	109.09
	Resowing	day wage	2	10.00	20.00	9.09
	Sanitary control	day wage	4	10.00	40.00	18.18
	Ponds	day wage	6	10.00	60.00	27.27
	Sowing	day wage	10	10.00	100.00	45.45
2	Inputs					
	Seedlings	Units	950	0.40	380.00	172.73
3	Transportation					
	Inputs freight	Kg	1000	0.044	44.00	20.00
					1124.00	510.91
B	Finacial cost					
	interest rate	%	15.80%			80.72
			TOTAL COSTS/HA			591.63
			GROSS INCOME			0.00
			NET INCOME			-591.63
			BENEFIT/COST			0.00
			FAMILY INCOME (as labor)			318.18

Source: Adapted from Novoa ingenieros and PEAH.

Cont.....

...Cont. TABLE AG22

TRADITIONAL TECHNOLGY SECOND YEAR

Output (Kg /Ha.):	9000
Selling Price (S/./Kg):	0.19
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		55		550.00	250.00
	Weeding tasks	day wage	24	10.00	240.00	109.09
	Land preparation	day wage	3	10.00	30.00	13.64
	Sanitary control	day wage	3	10.00	30.00	13.64
	Harvest	day wage	25	10.00	250.00	113.64
2	Inputs					
	Pesticide	Kg	20	4.00	80.00	36.36
3	Transportation					
	Inputs freight	Kg	20	0.04	0.88	0.40
					630.88	286.76
B	Finacial cost					
	interest rate	%	15.80%			45.31
			TOTAL COSTS/HA			332.07
			GROSS INCOME			777.27
			NET INCOME			445.20
			BENEFIT/COST			2.34
			FAMILY INCOME (as labor)			250.00

Cont.....

...Cont. TABLE AG22

TRADITIONAL TECHNOLGY THIRD YEAR

Output: (Kg./Ha):	7000
Selling Price (S/./Kg.):	0.19
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		50		500.00	227.27
	Weeding tasks	day wage	24	10.00	240.00	109.09
	Land preparation	day wage	3	10.00	30.00	13.64
	Sanitary control	day wage	3	10.00	30.00	13.64
	Harvest	day wage	20	10.00	200.00	90.91
2	Inputs					
	Pesticide	Kg	20	4.00	80.00	36.36
3	Transportation					
	Inputs freight	Kg	20	0.04	0.88	0.40
					580.88	264.04
B	Finacial cost					
	interest rate	%	15.80%			41.72
			TOTAL COSTS/HA			305.75
			GROSS INCOME			604.55
			NET INCOME			298.79
			BENEFIT/COST			1.98
			FAMILY INCOME (as labor)			227.27

Cont.....

...Cont. TABLE AG22

TRADITIONAL TECHNOLGY FOURTH YEAR

Output: (Kg./Ha.):	5000
Selling Price (S/./Kg.):	0.19
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		33		330.00	150.00
	Weeding	day wage	16	10.00	160.00	72.73
	Harvest	day wage	17	10.00	170.00	77.27
2	Inputs					
	Pesticide	Kg	20	4.00	80.00	36.36
3	Transportation					
	Inputs freight	Kg	20	0.04	0.88	0.40
					410.88	186.76
B	Finacial cost					
	interest rate	%	15.80%			29.51
			TOTAL COSTS/HA			216.27
			GROSS INCOME			431.82
			NET INCOME			215.55
			BENEFIT/COST			2.00
			FAMILY INCOME (as labor)			150.00

TABLE AG23

IMPROVED TECHNOLOGY OF BANANAS IN THE CENTRAL HUALLAGA
PRODUCTION COSTS PER HECTARE
OCTOBER 1994 PRICES (US$)

FIRST YEAR

Output: (Kg./Ha.):	0
Selling Price (S/./Kg.):	0
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		64		640.00	290.91
	Land preparation	day wage	20	10.00	200.00	90.91
	Lines setting up	day wage	2	10.00	20.00	9.09
	Seedlings selection	day wage	2	10.00	20.00	9.09
	Weeding	day wage	8	10.00	80.00	36.36
	Resowing	day wage	2	10.00	20.00	9.09
	Fertilization	day wage	6	10.00	60.00	27.27
	Chemical weed control;	day wage	4	10.00	40.00	18.18
	Sanitary control	day wage	4	10.00	40.00	18.18
	Ponds	day wage	6	10.00	60.00	27.27
	Sowing	day wage	10	10.00	100.00	45.45
2	Inputs					
	Seedlings	Units	920	0.40	368.00	167.27
	Urea	Kg	120	0.59	70.80	32.18
	Superphosphate	Kg	60	0.73	43.80	19.91
	Potasium Chloride	Kg	100	0.59	59.00	26.82
	Furadan 4F	l	0.5	30.00	15.00	6.82
	Herbicide	l	2	12.40	24.80	11.27
	Tools		1	40.00	40.00	18.18
3	Transportation					
	Inputs freight	Kg	1662	0.044	73.13	33.24
					1334.53	606.60
B	Finacial cost					
	Interest rate	%	15.80%			95.84
			TOTAL COSTS/HA			702.45
			GROSS INCOME			0.00
			NET INCOME			-702.45
			BENEFIT/COST			0.00
			FAMILY INCOME (as labor)			290.91

Source: Adapted from Novoa Igenieros and PEAH.

...Cont. TABLE AG23

IMPROVED TECHNOLoGY SECOND YEAR

Output: (Kg./Ha.):	12000
Selling Price (S/./Kg.):	0.19
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		48		480.00	218.18
	Weeding	day wage	10	10.00	100.00	45.45
	Plants selection	day wage	6	10.00	60.00	27.27
	Land preparation	day wage	2	10.00	20.00	9.09
	Fertilizing	day wage	6	10.00	60.00	27.27
	Sanitary control	day wage	4	10.00	40.00	18.18
	Harvest	day wage	20	10.00	200.00	90.91
2	Inputs					
	Urea	Kg	180	0.59	106.20	48.27
	Superphosphate	Kg	100	0.73	73.00	33.18
	Potasium Chloride	Kg	120	0.59	70.80	32.18
	Furadan 5G	Kg	32	4.90	156.80	71.27
	Herbicide	l	6	12.40	74.40	33.82
	Tools		1	40.00	40.00	18.18
3	Transportation					
	Inputs freight	Kg	438	0.04	19.27	8.76
					1020.47	463.85
B	Finacial cost					
	Interest rate	%	15.80%			73.29
			TOTAL COSTS/HA			537.14
			GROSS INCOME			1036.36
			NET INCOME			499.22
			BENEFIT/COST			1.93
			FAMILY INCOME (as labor)			218.18

Cont.....

...Cont. TABLE AG23

IMPROVED TECHNOLOGY THIRD YEAR

Output: (Kg./Ha.):	12000
Selling Price (S/./Kg.):	0.19
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		46		460.00	209.09
	Weeding	day wage	8	10.00	80.00	36.36
	Plants selection	day wage	4	10.00	40.00	18.18
	Land preparation	day wage	4	10.00	40.00	18.18
	Fertilizing	day wage	6	10.00	60.00	27.27
	Sanitary control	day wage	4	10.00	40.00	18.18
	Harvest	day wage	20	10.00	200.00	90.91
2	Inputs					
	Urea	Kg	180	0.59	106.20	48.27
	Superphosphate	Kg	100	0.73	73.00	33.18
	Potasium Chloride	Kg	120	0.59	70.80	32.18
	Furadan 5G	Kg	32	4.90	156.80	71.27
	Herbicide	l	6	12.40	74.40	33.82
	Tools		1	40.00	40.00	18.18
3	Transportation					
	Inputs freight	Kg	438	0.04	19.27	8.76
					1000.47	454.76
B	Finacial cost					
	Interest rate	%	15.80%			71.85
			TOTAL COSTS/HA			526.61
			GROSS INCOME			1036.36
			NET INCOME			509.75
			BENEFIT/COST			1.97
			FAMILY INCOME (as labor)			209.09

Cont.....

...Cont. TABLE AG23

IMPROVED TECHNOLOGY FOURTH YEAR

Output: (Kg./Ha.):	10000
Selling Price (S/./Kg.):	0.19
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		44		440.00	200.00
	Weeding	day wage	6	10.00	60.00	27.27
	Plants selection	day wage	4	10.00	40.00	18.18
	land preparation	day wage	4	10.00	40.00	18.18
	Fertilizing	day wage	6	10 00	60 00	27.27
	Sanitary control	day wage	4	10.00	40.00	18.18
	Harvest	day wage	20	10 00	200.00	90.91
2	Inputs					
	Urea	Kg	100	0.59	59.00	26.82
	Superphosphate	Kg	50	0.73	36.50	16.59
	Potasium Chloride	Kg	60	0.59	35.40	16.09
	Furadan 5G	Kg	10	4.90	49.00	22.27
	Herbicide	l	4	12.40	49.60	22.55
	Tools		1	40.00	40.00	18.18
3	Transportation					
	Inputs freight	Kg	224	0.04	9.86	4.48
					719.36	326.98
B	Finacial cost					
	Interest rate	%	15.80%			51.66
			TOTAL COSTS/HA			378.64
			GROSS INCOME			863.64
			NET INCOME			484.99
			BENEFIT/COST			2.28
			FAMILY INCOME (as labor)			200.00

TABLE AG24

TRADITIONAL TECHNOLOGY OF ROUGH COTTON IN THE BIABO PONAZA SISA VALLEY

PRODUCTION COSTS PER HECTARE

OCTOBER 1994 PRICES (US$)

Output: (Kg./Ha.):	850
Selling Price (S/./Kg.):	1.2
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		74		740.00	336.36
	Land preparation	day wage	15	10.00	150.00	68.18
	Sowing	day wage	10	10.00	100.00	45.45
	Weeding	day wage	20	10.00	200.00	90.91
	Sanitary control	day wage	2	10.00	20.00	9.09
	Harvest	day wage	25	10.00	250.00	113.64
	Haulage	day wage	2	10.00	20.00	9.09
2	Inputs					
	Seeds	Kg	8	2.00	16.00	7.27
	Pesticides	Kg	2	35.00	70.00	31.82
3	Transportation					
	Inputs freight	Kg	850	0.044	37.40	17.00
					863.40	392.45
B	Financial cost					
	interest rate	%	7.90%			31.00
			TOTAL COSTS/HA			423.46
			GROSS INCOME			463.64
			NET INCOME			40.18
			BENEFIT/COST			1.09
			FAMILY INCOME (as labor)			336.36

TABLE AG25

TRADITIONAL TECHNOLOGY OF BROWN COTTON IN THE BIABO PONAZA SISA VALLEY

PRODUCTION COSTS PER HECTARE

OCTOBER 1994 PRICES (US$)

Output: (Kg./Ha.):	850
Selling Price (S/./Kg.):	1.6
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		74		740.00	336.36
	Land preparation	day wage	15	10.00	150.00	68.18
	Sowing	day wage	10	10.00	100.00	45.45
	Weeding	day wage	20	10.00	200.00	90.91
	Sanitary control	day wage	2	10.00	20.00	9.09
	Harvest	day wage	25	10.00	250.00	113.64
	Haulage	day wage	2	10.00	20.00	9.09
2	Inputs					
	Seeds	Kg	8	2.00	16.00	7.27
	Pesticides	Kg	2	35.00	70.00	31.82
3	Transportation					
	Inputs freight	Kg	850	0.044	37.40	17.00
					863.40	392.45
B	Financial cost					
	interest rate	%	7.90%			31.00
			TOTAL COSTS/HA			423.46
			GROSS INCOME			618.18
			NET INCOME			194.72
			BENEFIT/COST			1.46
			FAMILY INCOME (as labor)			336.36

TABLE AG26

TRADITIONAL TECHNOLOGY OF COTTON IN THE UPPER LAND OF BIABO PONAZA
SISA VALLEY PRODUCTION COSTS PER HECTARE
OCTOBER 1994 PRICES (US$)

Output: (Kg./Ha.):	1800
Selling Price (S/ /Kg.):	1.35
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		123		1230.00	559.09
	Land preparation	day wage	15	10.00	150.00	68.18
	Sowing	day wage	14	10.00	140.00	63.64
	Weeding	day wage	40	10.00	400.00	181.82
	Fertilizing	day wage	4	10.00	40.00	18.18
	Sanitary control	day wage	4	10.00	40.00	18.18
	Harvest	day wage	43	10.00	430.00	195.45
	Haulage	day wage	3	10.00	30.00	13.64
2	Inputs					
	Seeds	Kg	10	2.00	20.00	9.09
	Pesticides	Kg	2	35.00	70.00	31.82
	Urea	Kg	100	0.59	58.67	26.67
	Superphosphate	Kg	150	0.73	110.00	50.00
	Potasium	Kg	100	0.59	58.67	26.67
3	Transportation					
	Inputs freight	Kg	1800	0.044	79.20	36.00
					1626.53	739.33
B	Financial Cost					
	Interest Rate	%	7.90%			58.41
			TOTAL COSTS/HA			797.74
			GROSS INCOME			1104.55
			NET INCOME			306.80
			BENEFIT/COST			1.38
			FAMILY INCOME (as labor)			559.09

Source: Adapted from Ministerio de Agricultura, Región San Martín

TABLE AG27

IMPROVED TECHNOLOGY OF GRAPES IN THE CENTRAL HUALLAGA

PRODUCTION COSTS PER HECTARE

OCTOBER 1994 PRICES (US$)

FIRST YEAR

Output: (Kg./Ha.):	0
Selling Price (S/./Kg.):	0.00
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		295		2950.00	1340.91
	Land preparation	day wage	25	10.00	250.00	113.64
	Lines setting up/Ponds	day wage	5	10.00	50.00	22.73
	Ponds		10	10.00	100.00	45.45
	Transplant	day wage	28	10.00	280.00	127.27
	Manual weedings	day wage	20	10.00	200.00	90.91
	Resowing	day wage	5	10.00	50.00	22.73
	Sanitary control	day wage	8	10.00	80.00	36.36
	Fertilizing	day wage	10	10.00	100.00	45.45
	Chemical weeding	day wage	4	10.00	40.00	18.18
	Harvest	day wage	0	10.00	0.00	0.00
	Haulage	day wage	30	10.00	300.00	136.36
	Packing	day wage	0	10.00	0.00	0.00
	Vine arbor setting	day wage	150	10.00	1500.00	681.82
2	Inputs					
	Seedlings	Units	656	1.50	984.00	447.27
	Urea	Kg	300	0.59	177.00	80.45
	Superphosphate	Kg	200	0.73	146.00	66.36
	Potasium Chloride	Kg	200	0.59	118.00	53.64
	Fungicide	Kg	2	9.90	19.80	9.00
	Herbicide	l	2	20.90	41.80	19.00
	Insecticide	l	2	31.90	63.80	29.00
	Adherent	l	1	12.50	12.50	5.68
	Bayfolan	l	2	10.60	21.20	9.64
	Woods	set	625	5.37	3356.25	1525.57
	Wire	set	625	4.75	2968.75	1349.43
3	Transportation					
	Inputs freight	Kg	2739	0.07	191.73	87.15
					11050.83	5023.10
B	Financial Cost					
	Interest Rate	%	15.80%			793.65
			TOTAL COSTS/HA			5816.76
			GROSS INCOME			0.00
			NET INCOME			-5816.76
			BENEFIT/COST			0.00
			FAMILY INCOME (as labor)			1340.91

Source: Instituto de Analisis de Politica Agraria

Cont.....

...Cont TABLE AG27

IMPROVED TECHNOLOGY SECOND YEAR

Output: (Kg./Ha.):	2500
Selling Price (S/./Kg.):	2.50
Exchange Rate (S/./US$)	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		102		1020.00	463.64
	Land preparation	day wage	0	10.00	0.00	0.00
	Lines setting up	day wage	0	10.00	0.00	0.00
	Ponds	day wage	0	10.00	0.00	0.00
	Cuttings	day wage	30	10.00	300.00	136.36
	Manual weedings	day wage	20	10.00	200.00	90.91
	Resowing	day wage	0	10.00	0.00	0.00
	Sanitary control	day wage	8	10.00	80.00	36.36
	Fertilizing	day wage	10	10.00	100.00	45.45
	Chemical weeding	day wage	4	10.00	40.00	18.18
	Harvest	day wage	20	10.00	200.00	90.91
	Haulage	day wage	5	10.00	50.00	22.73
	Packing	day wage	5	10.00	50.00	22.73
2	Inputs					
	Giberelic Acid	g	180	4.27	768.60	349.36
	Urea	Kg	300	0.59	177.00	80.45
	Superphosphate	Kg	200	0.73	146.00	66.36
	Potasium Chloride	Kg	200	0.59	118.00	53.64
	Fungicide	Kg	2	9.90	19.80	9.00
	Herbicide	l	2	20.90	41.80	19.00
	Insecticide	l	2	31.90	63.80	29.00
	Adherent	l	1	12.50	12.50	5.68
	Bayfolan	l	2	10.60	21.20	9.64
	Wooden containers	Units	305	0.70	213.50	97.05
3	Transportation					
	Inputs freight	Kg	2739	0.07	191.73	87.15
					2793.93	1269.97
B	Financial Cost					
	Interest Rate	%	15.80%			200.65
			TOTAL COSTS/HA			1470.62
			GROSS INCOME			2840.91
			NET INCOME			1370.29
			BENEFIT/COST			1.93
			FAMILY INCOME (as labor)			463.64

Cont.....

...Cont. TABLE AG27

IMPROVED TECHNOLOGY THIRD YEAR

Output: (Kg./Ha.):	6000
Selling Price (S/./Kg.):	2.50
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
	Labor		147		1470.00	668.18
	Land preparation	day wage	0	10.00	0.00	0.00
	Lines setting up	day wage	0	10.00	0.00	0.00
	Ponds	day wage	0	10.00	0.00	0.00
	Cuttings	day wage	40	10.00	400.00	181.82
	Manual weedings	day wage	20	10.00	200.00	90.91
	Resowing	day wage	0	10.00	0.00	0.00
	Sanitary control	day wage	8	10.00	80.00	36.36
	Fertilizing	day wage	10	10.00	100.00	45.45
	Chemical weeding	day wage	4	10.00	40.00	18.18
	Harvest	day wage	48	10.00	480.00	218.18
	Haulage	day wage	5	10.00	50.00	22.73
	Packing	day wage	12	10.00	120.00	54.55
2	Inputs					
	Giberelic Acid	g	180	4.27	768.60	349.36
	Urea	Kg	300	0.59	177.00	80.45
	Superphosphate	Kg	200	0.73	146.00	66.36
	Potasium Chloride	Kg	200	0.59	118.00	53.64
	Fungicide	Kg	2	9.90	19.80	9.00
	Herbicide	l	2	20.90	41.80	19.00
	Insecticide	l	2	31.90	63.80	29.00
	Adherent	l	1	12.50	12.50	5.68
	Bayfolan	l	2	10.60	21.20	9.64
	Wooden containers	Units	732	0.70	512.40	232.91
3	Transportation					
	Inputs freight	Kg	2739	0.07	191.73	87.15
					3542.83	1610.38
B	Financial Cost					
	Interest Rate	%	15.80%			254.44
			TOTAL COSTS/HA			1864 82
			GROSS INCOME			6818.18
			NET INCOME			4953.36
			BENEFIT/COST			3.66
			FAMILY INCOME (as labor)			668.18

Cont.....

..Cont. TABLE AG27

IMPROVED TECHNOLOGY FOURTH YEAR

Output: (Kg./Ha.):	8000
Selling Price (S/./Kg.):	2.50
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		167		1670.00	759.09
	Land preparation	day wage	0	10.00	0.00	0.00
	Lines setting up	day wage	0	10.00	0.00	0.00
	Ponds	day wage	0	10.00	0.00	0.00
	Cuttings	day wage	40	10.00	400.00	181.82
	Manual weedings	day wage	20	10.00	200.00	90.91
	Resowing	day wage	0	10.00	0.00	0.00
	Sanitary control	day wage	8	10.00	80.00	36.36
	Fertilizing	day wage	10	10.00	100.00	45.45
	Chemical weeding	day wage	4	10.00	40.00	18.18
	Harvest	day wage	64	10.00	640.00	290.91
	Haulage	day wage	5	10.00	50.00	22.73
	Packing	day wage	16	10.00	160.00	72.73
2	Inputs					
	Giberelic Acid	g	180	4.27	768.60	349.36
	Urea	Kg	300	0.59	177.00	80.45
	Superphosphate	Kg	200	0.73	146.00	66.36
	Potasium Chloride	Kg	200	0.59	118.00	53.64
	Fungicide	Kg	2	9.90	19.80	9.00
	Herbicide	l	2	20.90	41.80	19.00
	Insecticide	l	2	31.90	63.80	29.00
	Adherent	l	1	12.50	12.50	5.68
	Bayfolan	l	2	10.60	21.20	9.64
	Woden containers	Units	976	0.70	683.20	310.55
3	Transportation					
	Inputs freight	Kg	2739	0.07	191.73	87.15
					3913.63	1778.92
B	Financial Cost					
	Interest Rate	%	15.80%			281.07
			TOTAL COSTS/HA			2059.99
			GROSS INCOME			9090.91
			NET INCOME			7030.92
			BENEFIT/COST			4.41
			FAMILY INCOME (as labor)			759.09

TABLE AG28

IMPROVED TECHNOLOGY OF PAPAYA IN THE UPPER HUALLAGA
PRODUCTION COSTS PER HECTARE
OCTOBER 1993 PRICES (US$)

FIRST YEAR

Output: (Kg./Ha.):	7000
Selling Price (S/./Kg.):	0.23
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		108		1080.00	490.91
	Land preparation	day wage	25	10.00	250.00	113.64
	Lines setting up/Ponds	day wage	10	10.00	100.00	45.45
	Transplant	day wage	8	10.00	80.00	36.36
	Manual weedings	day wage	16	10.00	160.00	72.73
	Resowing	day wage	3	10.00	30.00	13.64
	Sanitary control	day wage	8	10.00	80.00	36.36
	Fertilizing	day wage	10	10.00	100.00	45.45
	Chemical weeding	day wage	4	10.00	40.00	18.18
	Harvest	day wage	15	10.00	150.00	68.18
	Haulage	day wage	6	10.00	60.00	27.27
	Packing	day wage	3	10.00	30.00	13.64
2	Inputs					
	Seedlings	Units	2200	0.40	380.00	400.00
	Urea	Kg	300	0.59	177.00	80.45
	Superphosphate	Kg	200	0.73	146.00	66.36
	Potasium Chloride	Kg	200	0.59	118.00	53.64
	Cupravit	Kg	2	0.95	1.89	0.86
	Herbicide	l	2	20.90	41.80	19.00
	Tamaron	l	2	31.90	63.80	29.00
	Adherent	l	1	12.50	12.50	5.68
	Bayfolan	l	2	10.60	21.20	9.64
	Wooden containers	Units	522	0.30	156.60	71.18
3	Transportation					
	Inputs freight	Kg	700	0.07	49.00	22.27
					2747.79	1249.00
B	Financial Cost					
	Interest Rate	%	15.80%			197.34
			TOTAL COSTS/HA			1446.34
			GROSS INCOME			731.82
			NET INCOME			-714.52
			BENEFIT/COST			0.51
			FAMILY INCOME (as labor)			490.91

Source: Adapted from PEAH, Informe Zonal Tocache - April 1994

Cont....

...Cont. TABLE AG28

IMPROVED TECHNOLOGY SECOND YEAR

Output: (Kg./Ha.):	15000
Selling Price (S/./Kg.):	0.23
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		132		1320.00	600.00
	Manual weedings	day wage	16	10.00	160.00	72.73
	Sanitary control	day wage	6	10.00	60.00	27.27
	Fertilizing	day wage	6	10.00	60.00	27.27
	Chemical weeding	day wage	8	10.00	80.00	36.36
	Harvest	day wage	60	10.00	600.00	272.73
	Haulage	day wage	24	10.00	240.00	109.09
	Packing	day wage	12	10.00	120.00	54.55
2	Inputs					
	Urea	Kg	300	0.59	177.00	80.45
	Superphosphate	Kg	200	0.73	146.00	66.36
	Potasium Chloride	Kg	100	0.59	59.00	26.82
	Cupravit	Kg	4	0.95	3.78	1.72
	Herbicide	l	4	20.90	83.60	38.00
	Tamaron	l	3	31.90	95.70	43.50
	Adherent	l	2	12.50	25.00	11.36
	Wooden containers	Units	1566	0.30	469.80	213.55
3	Transportation					
	Inputs freight	Kg	800	0.07	56.00	25.45
					3111.00	138.53
B	Financial Cost					
	Interest Rate	%	15.80%			21.89
			TOTAL COSTS/HA			1267.63
			GROSS INCOME			1568.18
			NET INCOME			300.55
			BENEFIT/COST			1.24
			FAMILY INCOME (as labor)			600.00

Cont.....

...Cont. TABLE AG28

IMPROVED TECHNOLOGY THIRD YEAR

Output: (Kg./Ha.):	12000
Selling Price (S/./Kg.):	0.23
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		72		720.00	327.27
	Chemical weeding	day wage	8	10.00	80.00	36.36
	Harvest	day wage	40	10.00	400.00	181.82
	Haulage	day wage	16	10.00	160.00	72.73
	Packing	day wage	8	10.00	80.00	36.36
2	Inputs					
	Herbicide		2	20.90	41.80	19.00
	Adherent		0.5	12.50	6.25	2.84
	Wooden containers	Units	1100	0.30	330.00	150.00
3	Transportation					
	Inputs freight	Kg	0	0.07	0.00	0.00
					1098.05	499.11
B	Financial Cost					
	Interest Rate	%	15.80%			78.86
			TOTAL COSTS/HA			577.97
			GROSS INCOME			1254.55
			NET INCOME			676.57
			BENEFIT/COST			2.17
			FAMILY INCOME (as labor)			327.27

TABLE AG29

IMPROVED TECHNOLOGY OF PIJUAYO IN THE UPPER HUALLAGA
PRODUCTION COSTS PER HECTARE
OCTOBER 1994 PRICES (US$)

FIRST YEAR

Output: (Kg./Heart.):	0
Selling Price (S/./Heart.):	1.00
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		125		1250.00	568.18
	Land preparation	day wage	30	10.00	300.00	136.36
	Lines setting up/Ponds	day wage	25	10.00	250.00	113.64
	Ponds	day wage	20	10.00	200.00	90.91
	Transplant	day wage	15	10.00	150.00	68.18
	Manual weedings	day wage	18	10.00	180.00	81.82
	Resowing	day wage	3	10.00	30.00	13.64
	Fertilizing	day wage	10	10.00	100.00	45.45
	Chemical weeding	day wage	4	10.00	40.00	18.18
2	Inputs					
	Seedlings	Units	5000	0.22	1100.00	500.00
	Urea	Kg	300	0.59	177.00	80.45
	Superphosphate	Kg	200	0.73	146.00	66.36
	Potasium Chloride	Kg	200	0.59	118.00	53.64
	Herbicide	l	2	20.90	41.80	19.00
3	Transportation					
	Inputs freight	Kg	700	0.07	49.00	22.27
					2881.80	1309.91
B	Financial Cost					
	Interest Rate	%	15.80%			206.97
			TOTAL COSTS/HA			1516.87
			GROSS INCOME			0.00
			NET INCOME			-1516.87
			BENEFIT/COST			0.00
			FAMILY INCOME (as labor)			568.18

Source: Instituto de Analisis de Politica Agraria

Cont.....

...Cont. TABLE AG29

IMPROVED TECHNOLOGY SECOND YEAR

Output: (Heart./Ha.):	3000
Selling Price (S/./Heart.):	1.00
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		59		590	268.18182
	Weeding	day wage	15	10.00	150.00	68.18
	Plants selection	day wage	15	10.00	150.00	68.18
	Fertilizing	day wage	6	10.00	60.00	27.27
	Manual weedings	day wage	10	10.00	100.00	45.45
	Resowing	day wage	3	10.00	30.00	13.64
	Harvest	day wage	10	10.00	100.00	45.45
2	Inputs					
	Urea	kg	300	0.59	177.00	80.45
	Superphosphate	kg	200	0.73	146.00	66.36
	Potasium chloride	kg	200	0.59	118.00	53.64
3	Transportation					
	Inputs freight	Kg	700	0.07	49.00	22.27
					1080.00	490.91
B	Financial Cost					
	Interest Rate	%	15.80%			77.56
			TOTAL COSTS/HA			568.47
			GROSS INCOME			1363.64
			NET INCOME			795.16
			BENEFIT/COST			2.40
			FAMILY INCOME (as labor)			268.18

Cont.....

...Cont. TABLE AG29

IMPROVED TECHNOLOGY THIRD YEAR

Output: (Kg./Heart.):	5000
Selling Price (S/./Heart.):	1.00
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
	Labor		64		640	290.90909
	Weeding	day wage	15	10.00	150.00	68.18
	Plants selection	day wage	15	10.00	150.00	68.18
	Fertilizing	day wage	6	10.00	60.00	27.27
	Manual weedings	day wage	10	10.00	100.00	45.45
	Resowing	day wage	3	10.00	30.00	13 64
	Harvest	day wage	15	10.00	150.00	68.18
2	Inputs					
	Urea	kg	300	0.59	177.00	80.45
	Superphosphate	kg	200	0.73	146.00	66.36
	Potasium chloride	kg	200	0.59	118.00	53.64
3	Transportation					
	Inputs freight	Kg	700	0.07	49.00	22.27
					1130.00	513.64
B	Financial Cost					
	Interest Rate	%	15.80%			81.15
			TOTAL COSTS/HA			594.79
			GROSS INCOME			2272.73
			NET INCOME			1677.94
			BENEFIT/COST			3.82
			FAMILY INCOME (as labor).			290.91

Cont.....

...Cont. TABLE AG29

IMPROVED TECHNOLOGY FOURTH YEAR

Output: (Kg./Heart.):	7000
Selling Price (S/./Heart):	1.00
Exchange Rate (S/./US$):	2.20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		66		660	300
	Weeding	day wage	15	10.00	150.00	68.18
	Plants selection	day wage	15	10.00	150.00	68.18
	Fertilizing	day wage	6	10.00	60.00	27.27
	Manual weedings	day wage	10	10.00	100.00	45.45
	Harvest	day wage	20	10.00	200.00	90.91
2	Inputs					
	Urea	kg	300	0.59	177.00	80.45
	Superphosphate	kg	200	0.73	146.00	66.36
	Potasium chloride	kg	200	0.59	118.00	53.64
3	Transportation					
	Inputs freight	Kg	700	0.07	49.00	22.27
					1150.00	522.73
B	Financial Cost					
	Interest Rate	%	15.80%			82.59
			TOTAL COSTS/HA			605.32
			GROSS INCOME			3181.82
			NET INCOME			2576.50
			BENEFIT/COST			5.26
			FAMILY INCOME (as labor)			300.00

TABLE AG30

HIGH TECHNOLOGY OF CORN SEED
PRODUCTION COSTS PER HECTARE
OCTOBER 1994 PRICES (US$)

Output: (Kg./Ha.):	4000
Selling Price (S/./Kg.):	0.57
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		40		400	181.82
	Sowing	day wage	10	10.00	100.00	45.45
	Weeding	day wage	2	10.00	20.00	9.09
	Fertilizing	day wage	2	10.00	20.00	9.09
	Sanitary control	day wage	2	10.00	20.00	9.09
	Irrigation	day wage	4	10.00	40.00	18.18
	Harvest	day wage	20	10.00	200.00	90.91
2	Inputs					
	Seeds	Kg	25	2.00	50.00	22.73
	Herbicides	l	2.5	30.00	75.00	34.09
	Pesticides	l	1	30.00	30.00	13.64
	Urea	Kg	150	0.59	88.00	40.00
	Bags	units	100	0.7	70.00	31.82
3	Transportation					
	Inputs freight	Kg	278.5	0.044	12.25	5.57
4	Machinery					
	Land preparation	Hour	4	37.4	149.60	68.00
	Cultivator	Hour	2	37.4	74.80	34.00
	Thresh	kg	4000	0.03	120.00	54.55
					1069.65	486.21
B	Financial Cost					
	Interest Rate	%	7.90%			384.10
			TOTAL COSTS/HA			870.31
			GROSS INCOME			1036.36
			NET INCOME			166.05
			BENEFIT/COST			1.19
			FAMILY INCOME (as labor)			181.82

TABLE AG31

HIGH TECHNOLOGY OF COTTON SEED
PRODUCTION COSTS PER HECTARE
OCTOBER 1994 PRICES (US$)

Output: (Kg./Ha.):	1800
Selling Price (S/./Kg.):	1.4
Exchange Rate (S/./US$):	2.2

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs					
1	Labor		123		1230.00	559.09
	Land preparation	day wage	15	10.00	150.00	68.18
	Sowing	day wage	14	10.00	140.00	63.64
	Weeding	day wage	40	10.00	400.00	181.82
	Fertilizing	day wage	4	10.00	40.00	18.18
	Sanitary control	day wage	4	10.00	40.00	18.18
	Harvest	day wage	43	10.00	430.00	195.45
	Haulage	day wage	3	10.00	30.00	13.64
2	Inputs					
	Seeds	Kg	10	2.00	20.00	9.09
	Pesticides	Kg	2	35.00	70.00	31.82
	Urea	Kg	150	0.59	88.00	40.00
	Superphosphate	Kg	150	0.73	110.00	50.00
	Potasium	Kg	100	0.59	58.67	26.67
	Bags	Unit	100	0.7	70.00	31.82
3	Transportation					
	Inputs freight	Kg	1800	0.044	79.20	36.00
					1725.87	784.48
B	Financial cost					
	Interest Rate	%	7.90%			61.97
			TOTAL COSTS/HA			846.46
			GROSS INCOME			1145.45
			NET INCOME			299.00
			BENEFIT/COST			1.35
			FAMILY INCOME (as labor)			559.09

Source: Instituto de Analisis de Politica Agraria

TABLE AG32

HIGH TECHNOLOGY OF RICE SEED PRODUCTION COSTS PER HECTARE

OCTOBER 1994 PRICES (US$)

Output (Kg /Ha)	6000
Selling Price (S/ /Kg)	0 44
Exchange Rate (S/ /US$)	2 20

	ITEM	Unit of Measure	Units	Unit Price	Cost Soles	Cost Dollars
A	Direct Costs		104		1040 00	472 73
0	Plant Nursery	day wage	4	10.00	40 00	18 18
	Sowing	day wage	0 5	10 00	5 00	2 27
	Irrigation	day wage	1	10 00	10 00	4 55
	Fertilizing	day wage	0 5	10 00	5 00	2 27
	Sanitary control	day wage	1	10.00	10 00	4 55
	Plant rogging	day wage	5	10 00	50 00	22 73
1	Labor					
	Bordering	day wage	3	10.00	30.00	13 64
	Channels clearance	day wage	3	10.00	30 00	13 64
	Levels setting	day wage	3	10 00	30 00	13.64
	Irrigation	day wage	8	10 00	80 00	36 36
	Transplant	day wage	20	10 00	200 00	90 91
	Second transplant	day wage	2	10 00	20 00	9 09
	Chemical weeding	day wage	3	10 00	30 00	13 54
	Fertilizing	day wage	2	10 00	20 00	9 09
	Weeding	day wage	3	10 00	30 00	13 64
	Sanitary control	day wage	2	10 00	20 00	9 09
	Rogging	day wage	2	10.00	20 00	9 09
	Cutting	day wage	20	10 00	200 00	90 91
	Haulage	day wage	10	10.00	100 00	45 45
	Thresh	day wage	8	10 00	80 00	36 36
	Packing	day wage	3	10 00	30 00	13 64
2	Inputs					
	Seeds	Kg	80	1 52	121.60	55 27
	Herbicides	l	0	30 00	0 00	0 00
	Pesticides	l	0	30 00	0 00	0 00
	Urea	Kg	300	0 59	177 00	80 45
	Superphosphate	Kg	150	0 73	109 50	49 77
	Potasium Chloride	Kg	100	0 59	59 00	26 82
	Insecticide	Kg	5	5.04	25.20	11 45
	Herbicide	Bag	1.5	6 47	9 71	4 41
	Fungicide	l	1	33 00	33 00	15 00
	Adherent	l	1	27 50	27 50	12 50
	Bags	unit	120	0.70	84.00	38 18
3	Transportation					
	Inputs freight	Kg	638 25	0 044	28 08	12 77
4	Machinery					
	Land preparation	Hour	5 5	37 4	205 70	93 50
	Cultivator	Hour	2	37 4	74 80	34 00
	Fangueo	Hour	4	37 4	149 60	68 00
					2144 69	974 86
B	Financial cost					
	Interest Rate	%	7 90%			77 01

TOTAL COSTS/HA	1051 87
GROSS INCOME	1200 00
NET INCOME	148 13
BENEFIT/COST	1.14
FAMILY INCOME (as labor)	0 00

Source Adapted from ARROSAMSA "Propuesta de producción de semilla de arroz" 1994

TABLE CD1

SUMMARY OF COMMUNITY DEVELOPMENT COMPONENT. ESSENTIAL SERVICES/COMMUNITY

(Proposed activities, 1995-1999)

Institution	Activity	Justification	Unit of Measurement	Unit Cost	Ammoun	Total of Investment
A. TRAINING						
- Ministerio de Transportes/ Municipalidad	WORKSHOPS on Road Maintenance	- Lend more durability -in quality and time- to local roads	Seminar	3,500	40	140,000
- USE (Unidad de Servicios Educactivos	For Primary school teachers	- Improve the quality of teaching through the training os primary school teachers		5,000	60	300,000
- UTES/ONG (Unidad Territorial de Salud)	For Midwives	- Diminish the indexes of child mortality due to the lack of hygiene at birth deliveries	Course	2,500	40	100,000
- UTES/ONG (CEDISA, FADY, CEPCO)	For Comm. Health. Prom.	- Improve the quality of health and diminish the disease and mortality indexes in rural areas	Program	3,000	50	150,000
- UTES/USE/ONG CEDRO	Gen. Pub. on drug awareness	- Prevent the youth about the negative effects of consuming drugs	Seminar	3,000	60	180,000
- NGOs (CEDISA, CEPCO CIDH)	Management of projects Community	- Give community leaders information about management follow-up and execution of community projects	Course	2,500	50	125,000

Source: Instituto de Analisis de Politica Agraria, December 1994.

Cont.....

... Cont. TABLE CD1

Institution	Activity	Justification	Unit of Measurement	Unit Cost	Ammoun	Total of Investment
B. COMMUNITY DEVELOPMENT						

... Cont. TABLE CD1

Institution	Activity	Justification	Unit of Measurement	Unit Cost	Ammoun	Total of Investment
B. COMMUNITY DEVELOPMENT FUND (CDF) ILLUSTRATIVE ACTIVITIES						
- Special project /NGO's/ UTES	Potable water ' /sts	- Diminish children's desease and mortality rates caused by intestinal deseases	System	25,000	48	1,200,000
- Special project /NGO's/ Municipality/UTES	Latrines	- Diminish the sources of infection as a consequence of the absence in the treatement of excreta	Latrines	200	350	70,000
- Special project/Municipal. NGO's	Water wells	- Provide of potable water services to scattered towns	Wells	600	120	72,000
- Special project /NGO's/ Municipality/Community	- Fish Farms	- Offer alternatives for the generation of incomes as well as contribute to the improvement of the poor 'amilies' diets	Modules	649	283	183,667
- Special project /NGO's/ Municipality/Community	Apiculture		Modules	1,631	175	285,425
- Special project /NGO's/ Municipality/Community	Farming small animals		Modules	620	894	554,044
- Proyecto Especial/ONG's/ Municipality/Community	Horticulture		Modules	120	900	108,000
- Proyecto Especial/ONG's/ Municipality/Community	Productive projects		Modules	3,000	40	120,000

Cont.....

...Cont. TABLE CD1

Institution	Activity	Justification	Unit of Measurement	Unit Cost	Ammoun	Total of Investment
- Special project/Craftsmanship Municipality/Community						
- USE/NGO's	Educational materials	- Improve the teaching quality through the use of educational material	Module	14,734	30	442,020
- UTES/NGO's	Family planning	- Enlarge and improve the attention cover to rural zones from the hospitals' planification programs	Module	100	400	40,000
- Municipality/USE/NGO's	Community identity	- Strenghten the organization of the communities through the recovering of their traditions	Program	5000	25	125,000
- UTES/Municipality	Health Posts	- Enlarge and improve the cover of health services and the provision of adequate infrastructure to rural towns to control the illness	Program	2000	100	200,000
- UTES/Municipality	Health posts equipment	- Providing of basic devices and medicines for the operation of health posts	Post	7,000	60	420,000
- Municipality/USE/Special Project	Comm. primary school	- Providing of classrooms to enlarge and improve the cover in the attention of educational needs	Equipment	800	90	72,000
- Municipality/USE	School desks	- A great deal of classrooms lacking of suitable furniture	Classrooms	5,500	100	550,000
- UTES/NGO's	Primary health services	- Prevent child illness and mortality especially of children younger than 5 years of age	Desks	41	3,000	123,000
			Program	16,000	25,000	400,000
						5,960,156

Source: Instituto de Analisis de Politica Agraria, December 1994.

TABLE CD2

QUANTITY AND COST OF TRAINING: COMMUNITY DEVELOPMENT COMPONENT
OCTOBER 1994 PRICES (US$)

Category	Unit Cost $	1995 Quant	1995 Total Cost	1996 Quant	1996 Total Cost	1997 Quant	1997 Total Cost	1998 Quant	1998 Total Cost	1999 Quant	1999 Total Cost	ALLYEAR Quant	ALLYEAR Total Cost $
TRAINING													
Local Seminars and workshops:													
- Workshops on Road Maint	3500	5	17,500	10	35,000	10	35,000	10	35,000	5	17,500	40	140,000
- For primary sch. teach.	5000	7	35,000	15	75,000	15	75,000	15	75,000	8	40,000	60	300,000
- For midwives	2500	8	20,000	8	20,000	8	20,000	8	20,000	8	20,000	40	100,000
- For Comm. Health Prom.	3000	10	30,000	10	30,000	10	30,000	10	30,000	10	30,000	50	150,000
- Gen. Pub. ond drug awareness	3000	10	30,000	15	45,000	15	45,000	15	30,000	10	30,000	60	180,000
- Management of community projects	2500	10	25,000	10	25,000	10	25,000	10	25,000	10	25,000	50	125,000
		50	157,500	68	230,000	68	230,000	68	215,000	51	162,500	300	995,000

Source: Instituto de Analisis de Politica Agraria, December 1994.

TABLE CD3

QUANTITY AND COSTS OF INFRASTRUCTURE AND SOCIAL ACTIVITIES: COMMUNITY DEVELOPMENT COMPONENT

OCTOBER 1994 PRICES (US$)

Category	Unit Cost $	1995 Quant	1995 Total Cost	1996 Quant	1996 Total Cost	1997 Quant	1997 Total Cost	1998 Quant	1998 Total Cost	1999 Quant	1999 Total Cost	ALLYEAR Quant.	ALLYEAR Total Cost $
- Potable water systs.	25,000	9	225,000	12	300,000	12	300,000	10	250,000	5	125,000	48	1,200,000
- Latrines	200	70	14,000	70	14,000	70	14,000	70	14,000	70	14,000	350	70,000
- Health posts	7,000	10	70,000	15	105,000	15	105,000	15	105,000	5	35,000	60	420,000
- Comm. primary schs.	5,500	15	82,500	30	165,000	30	165,000	15	82,500	10	55,000	100	550,000
- Water wells	600	20	12,000	30	18,000	30	18,000	30	18,000	10	6,000	120	72,000
- School desks	41	500	20,500	600	24,600	700	28,700	700	28,700	500	20,500	3,000	123,000
- Health post equipment	800	15	12,000	20	16,000	20	16,000	20	16,000	15	12,000	90	72,000
- Educational materials	100	80	8,000	80	8,000	80	8,000	80	8,000	80	8,000	400	40,000
- Family planning	5,000	5	25,000	5	25,000	5	25,000	5	25,000	5	25,000	25	125,000
- Community identity	2,000	20	40,000	20	40,000	20	40,000	20	40,000	20	40,000	100	200,000
- Primary health services	16,000	5	80,000	5	80,000	5	80,000	5	80,000	5	80,000	25	400,000
		749	589,000	887	795,600	987	799,700	970	667,200	725	420,500	4,318	3,272,000

Source: Instituto de Analisis de Politica Agraria, December 1994.

TABLE CD4

QUANTITY AND COST OF PRODUCTIVE ACTIVITIES: COMMUNITY DEVELOPMENT COMPONENT

OCTOBER 1994 PRICES (US$)

	Unit Cost $	1995 Quant	1995 Total Cost	1996 Quant	1996 Total Cost	1997 Quant	1997 Total Cost	1998 Quant.	1998 Total Cost	1999 Quant	1999 Total Cost	ALLYEAR Quant.	ALLYEAR Total Cost $
- Fish farms	649	50	32,450	65	42,185	75	48,675	60	38,940	33	21,417	283	183,667
- Farming small animal													
Ducks	396	30	11,880	50	19,800	70	27,720	70	27,720	30	11,880	250	99,000
Guinea pigs	401	70	28,070	90	36,090	90	36,090	90	36,090	64	25,664	404	162,004
Swine	1,743	20	34,860	30	52,290	30	52,290	30	52,290	10	17,430	120	209,160
Poultry	699	20	13,980	30	20,970	30	20,970	20	13,980	20	13,980	120	83,880
- Apicultura	1,631	30	48,930	40	65,240	40	65,240	40	65,240	25	40,775	175	285,425
- Micro projects (*)	3,000	5	15,000	10	30,000	10	30,000	10	30,000	5	15,000	40	120,000
- Horticulture (**)	120	200	24,000	200	24,000	200	24,000	200	24,000	100	12,000	900	108,000
- Craftsmanship	14,734	5	73,670	8	117,872	7	103,138	5	73,670	5	73,670	30	442,020
Total		430	282,840	523	408,447	552	408,123	525	361,930	292	231,816	2,322	1,693,156

(*) It considers the financing of family productive projects such as jam, yucca processing, banana, maybe sausages and so on.

(**) Production of vegetables to improve nutrition levels of rural families.

Source: Instituto de Analisis de Politica Agraria, December 1994.

TABLE CD5

FLOWS OF COSTS AND INCOMES
COMMUNITY DEVELOPMENT
OCTOBER 1994 PRICES (US$)

1. PRODUCTIVE ACTIVITIES

YEAR	TOTAL COST	TOTAL INCOME	NET INCOME
1995	282,840	349,080	66,240
1996	408,447	505,290	96,843
1997	408,123	514,020	105,897
1998	361,930	460,330	98,400
1999	231,816	379,726	147,910
TOTAL	1,693,156	2,208,446	515,290

2. TRAINING ACTIVITIES

YEAR	TOTAL COST	TOTAL INCOME	NET INCOME
1995	157,500	0	0
1996	230,000	0	0
1997	230,000	0	0
1998	215,000	0	0
1999	162,500	0	0
TOTAL	995,000	0	0

3. INFRASTRUCTURE AND SOCIAL ACTIVITIES

YEAR	TOTAL COST	TOTAL INCOME	NET INCOME
1995	589,000	0	0
1996	795,600	0	0
1997	799,700	0	0
1998	667,200	0	0
1999	420,500	0	0
TOTAL	3,272,000	0	0

GENERAL SUMMARY:

YEAR	TOTAL COST	TOTAL INCOME	NET INCOME
1995	1,029,340	349,080	-680260
1996	1,434,047	505,290	-928757
1997	1,437,823	514,020	-923803
1998	1,244,130	460,330	-783800
1999	814,816	379,726	-435090
TOTAL	5,960,156	2,208,446	-3751710

Source: Instituto de Analisis de Politica Agraria, December 1994.

TABLE CD6

FISH PRODUCTION COSTS
October 1994 prices (US$)

Tecnical-Economic Aspect	
Number of harvest	1
Duration of harvest	6 months
Water body	400 m2
Sowing density	4 fries/m2
Number of fries/harvest	800
Requirements	**$**
Food	
Fish flour	
100 kgs. and S/. 1.54 kg.	70
Rice powder	
400 kgs at S/. 0.25 kg.	48
Lime 4 bags	30
Buying of 30,000 fries	
at S/. 0.30 each	406
Labor	58
Other expenses (*)	37
Total cost	649
Incomes	
Gross value of the production	
(15% death rate)/403 kgs. x	
S/.4,000 kgs.	726
Net income	85

(*) Include administrative expenses, evaluations and unforese events

Source: PEAH Informe Zonal Tocache. April 1994.

TABLE CD7

DUCKS PRODUCTION COSTS
OCTOBER 1994 PRICES (US$)

Technical-Ecnomical Aspect	
Number of campaign	1
Duration of campaign	6 meses
Module	7 females & 1 male
Livestock	$
1 duck	12
7 female ducks	70
Equipment	
Feeding places	7
Feeding operative costs	
Total consumption 125 kg. 80.2	25
Period of production	175
Labor	88
Other expenses (*)	19
Total cost	396
Total income	
Production of 94 ducks x 2.5 kg each x 3.75(10% death rate)	881
Net income	485

(*) Includes administrative expenses, deavaluations and unforeseeable events

TABLE CD8

GUINEA PIGS PRODUCTION COSTS
OCTOBER 1994 PRICES (US$)

Technical-Economical Aspects	
Number of campaign	1
Duration of campaign	1 year
Module	20 female & 1 male
Livestock	$
20 reproductive female guinea pig	100
2 reproductive male guinea pigs	15
Infrastructure	
Cages and pits made up with local material and meshed fabric 5 sq.mt.	100
Feeding and Health Costs	
Protein supplement and expenses	100
Disinfectants, insecticides and other items	25
Labor	42
Other expenses (*)	19
Total Cost	401
Incomes	
It is expected the trading of 06 broods per female a year, 120 broods at S/. 8 each	600
Net income	199

(*) Includes administrative expenses, devaluations and unforeseeable events

Source: PEAH Informe Zonal Tocache. April 1994.

TABLE CD9

SWINE MODULE PRODUCTION COSTS
OCTOBER 1994 PRICES (US$)

Tecnical-Economical Aspects	
Number of campaign	1
Duration of campaign	6 months
Module	2 females for reproduct.purpos
Livestock	**$**
2 females for reproductionpurposes	300
Infrastructure	
Construction of a 24 sq.mt. surrounding	600
Production costs	
Feeding of 16 young hogs (6 months)	300
Feeding of 2 female swine (6 months)	150
Sanitary expenses, supplements and oth	87
Labor	223
Other expenses (*)	83
Total cost	1743
INCOME DUE TO SALES AND CAPITALIZATION	
16 young hogs of 80 kg. of weight at S/. 3.50	2240
02 female swine each of 150 kg. of weight	525
Total cost	2765
Summary Outgoings-Incomes	
Production costs (16 young hogs plus 2 female swine	1743
Ingresos por venta de carne	2765
Net income	1022

(*) Includes administrative expenses, devaluations and unforeseeable events

TABLE CD10

EGG-LAYING CHICKEN PRODUCTION COST
OCTOBER 1994 PRICES (US$)

Economic-Technical Aspects		
Number of campaign		1
Duration of campaign		1 year
Module		50 BB chicken
Infrastructure	Unit.	$
Shed construction 3x5 mt2.		100
Livestock		
Buying of 50 BB chicken x 25 Harco - black		50
EQUIPMENT		
01 feeding place BB, 01 drinking through		7
OPERATIVE COSTS		
Feeding		
Concen preparation + corn		163
Total consumption 1,200 kg.		210
Health		
Vaccination, antibiotic		35
Labor		101
Other expenses (*)		33
Total cost		699
INCOMES		
Eggs production		
Eggs total	10500	750
Hens	50	300
Total income		1050
Net income		351

(*) Includes administrative expenses, devaluations and unforeseeable events

Source: PEAH Informe Zonal Tocache. April 1994

TABLE CD11

WEAVING CRAFTMANSHIP PRODUCTION COST
(1 YEAR, 15 MOTHERS)
OCTOBER 1994 PRICES (US$)

REQUIREMENTS	$
- 3 looms	6,000
- Reels for threads 5x100	500
- Working material	2,300
- Tools and utensils	1,200
- Labor	4,032
- Other expenses(*)	702
Total cost	14,734
PRODUCTION	
Backpacks 400 x $12 each	4,800
Girdles 500 x $ 8 each	4,000
Vests 250 x $15 each	3,750
Bags 300 x $12 each	3,600
Total income	16,150
Net income	1,416

(*) Includes administrative expenses, devaluations and unforeseeable events

Source: Warmi Mayo Bulletin, October 1994.

TABLE CD12

BEE KEEPING PRODUCTION COST
October 1994 prices in (US$)

TECHNICAL SPECIFICATIONS		
Number of campaign		1
Duration of campaign		1 year
Module		10 beehives
COSTS		$
Livestock (nuclei of swarms)		314
Equipment		674
Tools		34
Inputs and food		178
Labor		353
Other expenses (*)		78
Total cost		1,631
INCOMES		
Production of honey 300 kg. x 5		1,500
Production of pollen 30 kg. x 12		360
Production of nuclei 30 units x 35		1,050
Net income 1st. year	1,279	
Net income 2nd. year	2,230	
Net income 3rd. year	2,230	
Net income 4th. year	1,593	
Net income 5th. year	1,593	

(*) Includes administrative expenses, devaluations and unforeseeable events

Source: CARITAS, La Merced. Technical Proposal for t Production of Honey and its by-products. A April 1994

TABLE CD13

TOTAL OF PEOPLE TO BE BENEFITTED BY THE COMMUNITY DEVELOPMENT COMPONENT

(Proposed period 1995 - 1999)

	#TOTAL	BENEFS. X UNIT	BENEFS. TOTAL	INVEST. TOTAL	INVEST. X PERSON ALL YEAR
2. Essential Services/Community Development Component					
B. Training					
Local Seminars and workshops:					
- Workshops on Road Maintenance	40	40	1,600	140,000	87.50
- For primary sch. teach.	60	150	9,000	30,000	3.33
- For midwives	40	20	800	100,000	125.00
- For Comm. Health Prom.	50	40	2,000	150,000	75.00
- Gen. Pub. on drug awareness	60	100	6,000	180,000	30.00
- Management of community project	50	30	1,500	125,000	83.33
D. Community Development Fund(CDF)-Illustrative Activities:					
- Potable water systs.	48	600	28,800	1,200,000	41.67
- Latrines	350	50	17,500	70,000	4.00
- Health posts	60	300	18,000	420,000	23.33
- Comm. primary schs.	100	35	3,500	550,000	157.14
- Water wells	120	100	12,000	72,000	6.00
- Fish farms	285	5	1,425	183,667	128.89
- School desks	3000	2	6,000	123,000	20.50
- Health post equipment	90	200	18,000	72,000	4.00
- Apiculture	175	5	875	285,425	326.20
- Farming small animals	620	5	3,100	554,044	178.72
- Horticulture	900	5	4,500	108,000	24.00
- Micro projects	40	30	1,200	120,000	100.00
- Craftsmanship	30	75	2,250	442,020	196.45
- Educational materials	400	35	14,000	40,000	2.86
- Family planning	25	200	5,000	125,000	25.00
- Community identity	100	300	30,000	200,000	6.67
- Primary health services	25	600	15,000	400,000	26.67
			202,050	5,690,156	28.16

Source: Instituto de Analisis de Politica Agraria, December 1994.

TABLE CD14

QUANTITY OF GOALS BY ZONES
COMMUNITY DEVELOPMENT COMPONENT
(Proposed period 1995-1999)

	ZONES				
	HUALLAGA (1)	AGUAYTIA (2)	P. PACHITEA (3)	APURIMAC (4)	TOTAL
2. Essential Services/Community Development Component					
B. Training					
Local Seminars and workshops:					
- Workshops on Road Maintenance	20	5	7	8	40
- For primary sch. teach.	30	10	10	10	60
- For midwives	10	10	10	10	40
- For Comm. Health Prom.	12	8	15	15	50
- Gen. Pub. on drug awareness	25	15	15	15	70
- Management of community projects	18	5	12	15	50
TOTAL	115	53	69	73	310
D. Community Development Fund(CDF)					
Illustrative Activities:					
- Potable water systs.	15	8	10	15	48
- Latrines	100	65	85	100	350
- Water wells	20	30	40	30	120
- Fish farms	120	20	93	50	283
- Apiculture	75	10	60	30	175
- Farming small animals	230	80	200	110	620
- Horticultore	400	150	200	150	900
- Productive projects	15	5	10	10	40
- Craftsmanship	12	3	10	5	30
- Educational materials	170	30	100	100	400
- Family planning	8	5	7	5	25
- Community identity	30	15	40	15	100
- Health post	20	5	12	23	60
- Health post equiped	30	10	25	25	90
- Comm. primary school	25	15	30	30	100
- School desks	850	450	850	850	3000
- Primary health services	10	4	6	5	25
TOTAL	2130	905	1778	1553	6366

(1) Tingo Maria, Aucayacu, Uchiza, Tocache, Biabo, Ponaza, Sisa
(2) Irizola, Aguaytia
(3) Puerto Bermudez y Ciudad Constitucion
(4) Quimbiri, Ayna y Sivia
Source: Instituto de Analisis de Politica Agraria, December 1994.

TABLE CR1

LAND AND CATTLE CREDITS GRANTED BY THE AGRARIAN BANK
AND THE COMMERCIAL BANK: 1950-1989

YEARS	<nominal (Millions of Intis) Total	Agrarian Bank	Comercial Bank	Real (Millions of Intis December 1979) Total	Agrarian Bank	Comercial Bank	Participation Percentage terms (%) Total	Agrarian Bank	Comercial Bank
1950	0.3	0.1	0.2	...	...	...	100	33.3	66.7
1955	1.0	0.3	0.7	...	...	...	100	30.0	70.0
1960	2.4	1.5	0.9	62.5	39.0	23.5	100	62.5	37.5
1961	2.0	1.5	0.5	62.2	35.9	26.3	100	57.7	42.3
1962	2.9	1.7	1.2	66.3	38.9	27.4	100	58.6	41.4
1963	3.2	1.9	1.3	67.2	39.9	27.3	100	59.4	40.6
1964	3.8	2.4	1.4	71.7	45.3	26.4	100	63.2	36.8
1965	3.9	2.4	1.5	64.1	39.4	24.7	100	61.5	38.5
1966	5.1	3.3	1.8	77.8	50.4	27.4	100	64.7	35 3
1967	6.0	4.3	1.7	77.0	55.2	21.8	100	71.7	28.3
1968	6.5	4.9	1.6	76.0	57.3	18.7	100	75.4	24.6
1969	8.0	6.4	1.6	88.5	79.6	8.9	100	80.0	20.0
1970	8.8	7.2	1.6	92.1	75.4	16.7	100	81.8	18.2
1971	9.5	7.9	1.6	92.4	76.8	15.6	100	83.2	16.8
1972	10.8	9.0	1.8	100.8	84.0	16.8	100	83.3	16.7
1973	12.6	10.7	1.9	103.3	87.7	15.6	100	84.9	15.1
1974	15.5	13.6	1.9	106.6	93.5	13.1	100	87.7	12.3
1975	18.5	16.6	1.9	102.6	92.1	10.5	100	89.7	10.3
1976	23.3	21.2	2.1	89.3	81.3	8.0	100	91.0	9.0
1977	28.6	26.3	2.3	82.8	76.1	6.7	100	92.0	8.0
1978	38.2	35.8	2.4	63.7	59.7	4.0	100	93.7	6.3
1979	62.1	58.5	3.6	62.1	58.5	3.6	100	94.2	5.8
1980	126.9	119.7	7.2	78.9	74.4	4.5	100	94.3	5.7
1981	217.3	196.8	20.5	78.2	70.9	7.3	100	90.6	9.4
1982	359.5	318.2	41.3	74.9	66.3	8.6	100	88.5	11.5
1983	686.5	604.4	82.1	63.5	55.9	7.6	100	88.0	12.0
1984	1915.8	1737.0	178.8	83.8	76.0	7.8	100	90.7	9.3
1985	4504.8	4024.5	480.3	76.3	68.2	8.1	100	89.3	10.7
1986	12022.9	11034.4	988.5	125.1	114.8	10.3	100	91.8	8.2
1987	25352.7	21910.2	3442.5	122.9	106.2	16.7	100	86.4	13.6
1988	99877.3	82765.5	17111.8	26.6	22.0	4.6	100	82.9	17.1
1989 P/	2484337.4	2114535.0	369802.4	23.0	19.6	3.4	100	85.1	14.9

P/ Preliminary

Source: Elaborado en base a la información de la Superintendencia de Banca y Seguros.

TABLE CR2

LEGAL DEVICES

Among the financial amendments we have the following:

- Modification of the agricultural pledge system (D.S. No. 039-91-EF of March 11, 1991). Before this device came into being, any bank of financial institution that constituted an agricultural pledge as a loan guarantee, had to surrender it to the Agrarian Bank sence this had the first priority. This new device eliminates the BAP privilege and facilitates the private banks's operation in the granting of land and cattle credits.

- The Ley General de Instituciones Bancarias, Financieras y de Seguros (General law of Banking, Financial and Insurance Institutions) (Legislative Decree No. 637 of April 25, 1991) which has the purpose of improving and make the financial system more dinamic. This, in turn, will allow the creation of association partmerships for credit and savings in specific areas. The Cajas Rurales and Artesanales de Credito are included (clause "d" of article 239 and fourth final disposition).

- Regulation of the Cajas Rurales; the Superintendencia de Banca y Seguros rules its workings through the Resolución SBS No. 629-91 (October 23, 1991) and the Resolución SBS 671-91 (November 9, 1991).

- The unification of the promotion sector banks in the form of a single Banco de Fomento Nacional (Decree Law No. 25480 of May 6, 1992) to diversify risks and reduce operation costs.

- Ley del Régimen de Cajas Rurales de Ahorro y Credito (Law of the Regime of Cajas Rurales de Ahorro y Credito) (Decree Law No. 25612 of August 1, 1992) which rules their working.

- Resolución Suprema No. 158-93-EF (December 18, 1993) which approves the new statute of the Corporación Financiera de Desarrollo (Financial Corporation of Development) (COFIDE) by virtue of which this became a second floor (public) bank.

  In the area of lands market and investment within the land and cattle sector, the following devices were included:

- The Ley de Promoción de Inversiones an el Sector Agrario (Law for the Promoting of Investments in the Agrarian Sector) (Legislative Decree No. 653 of August 11, 1991) and its regulation (D.S. No. 0048-91-AG of November 11, 1991) oriented to promote private investment through the broadening of the agriculture frontier and the manageability of the rigid property system that came into being after the Agrarian Reform.

- The Ley de Registro de Predios Rurales (Law on the Registry of Rural Plots) (Legislative Decree No. 667 of September 13, 1991). This law defines the registry of rural plots and the proceedings to register one.

Source: El Peruano Newspaper. Several dates and numbers

TABLE CR3

EXECUTIVE BODIES AND FINANCIAL ENTITIES

Excecutive bodies:

FONDEAGROS: Its objective is to attract international resources to orient them into agriculture in different regions, into infrastructure, for irrigation channels and fixing of roads in the rural sector. It also grants maintenance loans to the communities, association businesses and small producers. Finally, it supports by way of guarantee prices and refugee - the farmers from the highlands.

REVOLVING FUNDS: The Programa de Fondos Rotatorios (PROFOR) or inputs and services is oriented to backward, depressed and non-profitable areas that are mostly located in the highlands and the jungle.

CAJAS COMUNALES: Their purpose is to promote and permit the access to credits on the part of communal families; their resources must come from the promotion banks, international cooperation and their own deposits.

Financial entities:

FONCODES: A type of second floor bank that finances and supports social investment projects. Its funds come from the Treasury and from international cooperation and channels them toward the most neede sectors.

PRONAA: Program that supports the food security of the peasants. It is in charge of providing food as direct subsidies.

Source: COFIDE, Information Bulletin, 1993.

TABLE CR4

CAJAS RURALES WITH PROCEEDINGS PRESENTED TO THE BANKING AND INSURANCE SUPERINTENDENCE

(To obtain the organizations' authorization)

REGION	DEPARTMENT	NAME	PROVINCES AND DISTRICTS	HEADQUARTER	DATE OF ADMISSION	PRESENT SITUATION
Grau.....	Piura	Valle del Bajo Piura (*)..	Piura-Dist.La Union	La Union	23-4-92	Under evaluation
Grau.....	Piura	Cencaplane (*	Piura Dist. Tambo Grande y las lomas	Tambo Grande	21-4-92	Under evaluation
Grau.....	Piura	La Arena y Anexos (*).....	Piura Dist. La Arena	La Arena	8-10-92	Under evaluation
Grau.....	Piura	Cura Mori (*).....	Piura Dist. Cura Mori	Cura Mori	15-10-92	Under evaluation
Grau.....	Piura	Del Valle del Chira (*)...	Sullana y Paita	Sullana	30-10-92	Under evaluation
Nor Oriental..... Del Maranon	Cajamarca	Cajamarca.....	Cajamarca, Cajabamba, Celedin, San Marcos San Miguel y San Pablo	Banos del Inca	24-12-92	Under evaluation
Nor Oriental..... Del Maranon	Lambayeque	Mochica	Chiclayo, Monsefu	Monsefu	15-12-91	With organizat. certificate
Nor Oriental..... Del Maranon	Lambayeque	Cruz del Chalpon.....	Lambayeque-Dist. Salas Olmos, Chocope, Sayanca y Motupe	Motupe	5-10-92	Under evaluation
Nor Oriental..... Del Maranon	Lambayeque	Ferrenafe.....	Ferrenafe	Ferrenafe	28-9-92	Under evaluation
Nor Oriental..... Del Maranon	Amazonas	Uctubamba....	Uctubamba	Bagua Grande	22-12-92	Under evaluation
La Libertad.....	La Libertad	La Union Valle de Jequetepeque	Chepen y Pacasmayo	Pacasmayo	22-10-92	Under evaluation
	La Libertad	Nstra Sra de Guadalupe	Pacasmayo	Guadalupe	16-10-92	Under evaluation
	Lima	Canete.....	Canete	Imperial	11-9-92	Under evaluation
	Arequipa	Irrigacion Majes.....	Caylloma-Dist. Lluta Arequipa-Dist. San Juan de Siguas y Sta Isabel de Siguas Castilla-Dist. Huancari y Corre	Lluta	18-12-92	Under evaluation

Source: Superintendencia de Banca y Seguros, 1993.

Cont...

...Cont. Table CR4

REGION	DEPARTMENT	NAME	PROVINCES AND DISTRICTS	HEADQUARTER	DATE OF ADMISSION	PRESENT SITUATION
Arequipa.....	Arequipa	Camana.....	Camana-Dist. Camana Ocona y Quilca	Camana	28-8-92	Under evaluation
Andres A. Caceres.....	Huanuco	Andres Avelino Caceres....	Pachitea	Pachitea	30-10-92	Under evaluation
Andres A. Caceres.....	Huanuco	Tumbay.....	Huanuco	Huanuco	10-3-93	Under evaluation
Libertadores-Wari e Inka.....	Ayacucho y Cusco	Valle del rio Apurimac y el Ene	Huanta y la Mar La Convencion-Dist. Quimbiri	Ayna San Francisco	28-12-92	Under evaluation
Libertadores-Wari y Andres A. Caceres.....	Junin y Huancavelica	Mantaro.....	Huancayo y Concepcion Tayacaja	Huancayo	31-12-92	Under evaluation
Libertadores-Wari.....	Ayacucho	Libertadores de Ayacucho	Huamanga	Ayacucho	1-9-92	Under evaluation
Libertadores-Wari.....	Ica	Senor de Luren.....	Ica, Chincha, Pisco Nazca y Palpa	Ica	30-12-92	Under evaluation
Inka.....	Apurimac	Los Chancas-Andahuaylas	Andahuaylas	Andahuaylas	26-8-92	Under evaluation
Inka.....	Cusco	Quillabamba.....	La Convencion, Urubamba y Calca	Quillabamba	18-12-92	Under evaluation
J.C. Mariategui.....	Puno	Los Aymaras.....	Chicuito y el Collao	Juli	9-10-92	Under evaluation
J.C. Mariategui.....	Puno	Transoceanica.....	San Roman, Azangaro Huancane y Sandia	Juliaca	1-2-93	Under evaluation
San Martin.....	San Martin	San Martin.....	Lamas, San Martin, Moyobamba, Rioja, Huallaga, Mariscal	Tarapoto	3-2-93	Under evaluation
Nor Oriental	Cajamarca y		Caceres, Bellavista y Tocache			
Del Maranon.....	Amazonas	Maranon.....	San Ignacio y Jaen Bagua	Jaen	12-3-93	Under evaluation

(*) These Cajas Rurales have merged in the CRAC "Region Grau"

Source: Superintendencia de Banca y Seguros, 1993.

TABLE CR5

ASSUMPTIONS ON THE ANALYSIS OF THE CAJAS RURALES

The following assumptions are considered i) the six Cajas Rurales are considered under working operation until July 20, 1994; ii) the social capital is the one stated in each study. It is estimated an annual operation expense of US$ 83,000 dollars as a minimum per each caja (S/. 180,000). According to law a reserve of 35 percent on the social capital is compulsory. Other elements become the minimum obligation in the case of each caja rural; iii) the market place deposits falls within fixed-term deposits and savings within the scope of each caja rural's operations; iv) the difference of active rates versus passive rates (spread) is 14.5 per cent and is obtained from the average aplication in the savings distribution in rural settings (15 percent in national currency and 85 percent in foreign currency). For accounting purposes, the legal reserves are set on the record (9 percent).

Source: Instituto de Análisis de Política Agraria, December 1994.

TABLE CR6

EXPECTED RESULTS FROM A SAMPLE OF WORKING CAJAS RURALES

(Thousands of Soles 1994)

Caja Rural	Location	Social Capital	Available Social Capital (*)	Yield Social Capital	Deposit Place (**)	Minimum Obligations	Minimum Attraction	% Place
1) Camana	Camana	528	378	78	5,126	365	2,721	53.09%
2) San Martin	Tarapoto	700	550	114	15,992	425	3,148	19.68%
3) Tumbay	Huanuco	1,075	925	191	19,875	556	4,077	20.51%
4) Valle del Rio Apurimac y Ene	San Francisco	600	450	93	(***)	390	2,900	
5) Los Libertadores de Ayacucho	Ayacucho	600	450	93	14,942	390	2,900	19.41%
6) Senor de Luren	Ica	528	378	78	39,385	365	2,721	6.91%

(*) Paid-investment social capital

(**) December 1993. Only deposits at fixed terms and savings

(***) There is no financial market

- Passive rate in national currency: 9.30%
- Active rate innational currency: 50.90%
- Pasive rate in foreign currency: 4.86%

Note: Average interest rates at July 1994.

- Active rate in foreign currency: 15.34%
- Percentage in national currency: 15%
- Percentage in foreign currency: 85%
- Spread: 14.20%
- Reserves : 9.00%
- Operation expenses (S/.): 180,000
- Legal reserve: 35.00%
- Investment (S/.): 150,000

Source: Based on the 1993 information of the Superintendencia de Banca y Seguros.

TABLE CR7

PANORAMA OF CREDIT CROPS WITH CREDIT IN THE SCOPE OF PEAH (HA)

	1988			1989			1990			1991			1992	1993*	1994**
	Agrarian Bank	PEAH	Total	Agrarian Bank	PEAH	Total	Agrarian Bank	PEAH	Total	Agrarian Bank	PEAH	Total	PEAH	PEAH	PEAH
Chili			0.0			0.0			0.0			0.0			
Rice	1700.0		1700.0	5185.5		5185.5	9237.5		9237.5	537.0	112.0	649.0	124.8	21.0	
Cacao	560.5	4.0	564.5	535.0		535.0	694.0		694.0	257.0	17.0	274.0	47.0	9.0	
Coffee	828.0		828.0	1172.5		1172.5	924.0		924.0	141.0	19.0	160.0	25.5		
Citrics	75.0		75.0	139.5		139.5	158.5		158.5	10.0	16.0	26.0	37.0	11.0	1.0
Beans	1.0		1.0	8.0		8.0	8.0		8.0		4.0	4.0	16.5	1.0	
Yellow Corn	1763.0	6.0	1769.0	895.0		895.0	658.0		658.0	91.0	4.0	95.0	325.5	6.0	
Potatos	5.0		5.0			0.0	30.0		30.0			0.0			
Papaya			0.0			0.0			0.0			0.0	86.5	31.0	
Oil-Palm tree	210.0		210.0			0.0			0.0			0.0			
Pineapple	23.0		23.0	75.0		75.0	6.0		6.0	154.0		154.0	12.0	4.0	1.0
Bananas	2196.0	10.0	2206.0	3022.5	6.0	3028.5	4717.0		4717.0	267.0	68.0	335.0	526.4	49.0	
Tea	393.0		393.0	370.0		370.0			0.0			0.0			
Yucca	230.0		230.0	1129.5	2.0	1131.5	2447.0		2447.0	519.0	4.0	523.0	40.0	4.0	
Carambolas													6.8		
Lemon Verbena													1.0		
Corn-Rice													2.0		
Corn-yucca													2.0		
Avocado													1.0		
Pstures													6.0		
Soy													5.0		
Vegetables														14.0	
TOTAL	7984.5	20.0	8004.5	12532.5	8.0	12540.5	18880.0	0.0	18880.0	1976.0	244.0	2220.0	1264.9	150.0	2.0

* January-July

** January-March

TABLE CR8

CREDIT ACTIONS FONDEAGRO - SAN MARTIN
REPORT SUMMARY AT 30.09.94
(LOANS IN US$)

1) SOCIO-ECONOMIC IMPACT

Number of loans	126
Ammount of loans	5,088,269.65
Number of Ha covered	15,827.00
Number of farmers benefitted	10,249.00

2) PLACEMENTS-RECOVERINGS-BALANCE PER JURISDICTION

	Num.	Ammount Executed	Recoverings	BALANCE 30-09-94
Rioja	12	589,062.77	315,219.77	422,563.08
Moyobamba	24	612,218.99	277,223.38	471,759.33
Lamas	9	158,330.00	49,366.69	151,639.99
San Martin	25	975,726.98	639,898.87	506,332.28
Picota	17	721,574.73	308,005.96	570,075.58
Bellavista	5	182,100.00	75,010.43	154,883.03
El Dorado	3	61,500.00	15,202.80	61,226.27
Huallaga	7	108,440.00	22,772.97	102,642.38
Mcal Caceres	3	158,642.00	55,161.79	135,033.06
Tocache	10	273,810.94	38,193.30	324,426.09
Org. Region*	11	1,246,863.24	318,712.48	1,307,347 56
TOTAL	126	5,088,269.65	2,114,768.44	4,207,928.65

* Regional businesses (ARROSAMSA, MANSELVA, GASAMSA) committees and regional associations (producers yucca, coffee and horticulture products) are included

Source: FONDEAGRO - San Martín, 1994.

TABLE CR9

STRUCTURE OF CREDIT PLACEMENTS OF CAJA RURAL DE SAN MARTIN

(At 31/08/94) in US$

	ACTIVITY	AMMOUNT APPROVED	%
I.	LAND AND CATTLE		
	a) Rice	166,270.00	
	b) Cotton	19,370.00	
	c) Soy	7,155.00	
	d) Corn	5,000.00	
	e) Banana	1,025.00	
	f) Animals	55,928.00	
	g) Eggs-Laying Hen	24,300.00	
	h) Hefty chicken	47,230.00	
	i) Shrimp	35,772.00	
	j) Agricultural products	48,322.00	
	k) Timber	10,000.00	
	l) Balanced food	2,897.00	
	m) Machinery	52,000.00	
	SUB TOTAL:	475,269.00	54.20
III.	INDUSTRY		
	a) Communication	19,850.00	
	b) Education	54,336.00	
	c) Bread-making	19,373.00	
	d) Printing	14,400.00	
	e) Tailoring	6,300.00	
	SUB TOTAL:	114,259.00	13.01
IV.	SERVICES		
	a) Transportation	20,468.00	
	b) Servicentro	28,000.00	
	c) Restaurant	18,977.00	
	d) Security	8,550.00	
	e) Drugstore	8,756.00	
	f) Other items	16,840.00	
	SUB TOTAL:	101,591.00	11.56
V.	COMMERCE		
	a) Trade	186,353.00	
	SUB TOTAL:	186,353.00	21.23
	TOTAL	878,193.00	100.00

Source: Caja Rural de Ahorro y Crédito San Martín, 1994.

TABLE CR10

DEMAND OF CREDIT FOR FARMING MAIN CROPS BY DISTRICTS
1993 IN THE SCOPE OF THE PROJECT (US$)

PROVINCE DISTRICT	Rice	Cacao	Coffee	Y.Corn	Banana	Papaya	Yucca	Total
BELLAVISTA								
A. Biabo	3,947,094	724,351	1,613,975	1,950,773	381,685	37,003	185,279	8,840,159
B. Biabo	629,623	115,545	257,454	311,179	60,885	5,903	29,555	1,410,144
PICOTA								
Shamboyacu	66,657	48,814	108,765	268,334	94,944	2,494	46,949	636,956
T. Ponaza	10,310	39,938	88,990	780,173	92,196	2,040	56,833	1,070,480
Tres Unidos	157,291	28,946	64,498	77,957	15,253	1,479	7,404	352,827
TOCACHE								
Tocache	551,477	551,104	24,000	508,950	652,464	9,240	330,408	2,627,643
N.Progreso	69,054	384,256	30,000	340,170	440,295	23,760	193,444	1,480,979
Uchiza	88,236	199,712	69,000	81,780	442,659	6,600	339,586	1,227,573
E'_ DORADO								
S.J. Sisa	193,380	35,488	79,073	95,574	18,700	1,813	9,077	433,106
Agua Blanca	108,494	19,910	44,363	53,621	10,491	1,017	5,093	242,989
San Martin	362,817	66,582	148,357	179,315	35,084	3,401	17,031	812,588
Sta.Rosa	156,964	28,805	64,183	77,576	15,178	1,472	7,368	351,547
Shatoja	15,487	2,842	6,333	7,654	1,498	145	727	34,686
LEONCIO PRADO								
Rupa Rupa	23,977	1,572,416	738,000	256,650	310,275	165,000	304,286	3,370,604
D.A.Robles	10,550	1,210,912	915,000	203,580	288,408	29,040	187,090	2,844,580
H.Valdizan	4,795	184,544	1,227,000	71,340	234,036	25,080	45,890	1,792,685
J.C.Castillo	62,341	3,020,960	594,000	859,560	1,486,956	73,920	1,474,834	7,572,571
P.Luyando	16,305	528,352	306,000	227,940	231,672	72,600	148,966	1,531,835
M.D.Beraun	11,509	652,224	912,000	286,230	180,846	54,120	178,618	2,275,547
PADRE ABAD								
P.Abad	295,825	16,204	46,778	133,916	173,397	4,561	74,395	745,075
Irazola	263,814	14,451	41,716	119,423	154,634	4,067	66,345	664,449

Source: Instituto de Analisis de Politica Agraria

Cont.....

...Cont. CUADRO CR10

PROVINCE DISTRICT	Rice	Cacao	Coffee	Y.Corn	Banana	Papaya	Yucca	Total
APURIMAC RIVER BASIN: *								
HUANTA								
Sivia	128,518	2,232,224	579,000	144,420	16,548	2,640	409,480	3,512,830
LA MAR								
Ayna	22,059	384,256	99,000	24,360	2,955	1,320	70,600	604,550
LA CONVENCION								
Quimbiri	187,982	3,266,176	846,000	210,540	23,640	3,960	597,276	5,135,574
ZONA P.BERMUDEZ AND C. CONSTITUCION**								
OXAPAMPA								
Puerto Bermude	7,673	10,112	900,000	87,000	70,920	2,640	59,304	1,137,649
Palcazu	3,836	5,056	405,000	39,150	31,914	1,320	26,820	513,104
TOTAL	7,396,068	15,344,181	10,208,484	7,397,165	5,467,533	536,634	4,872,666	51,222,731

* The scope of the project includes the districts of Sivia, Ayna and Quimbiri

** The scope of the project includes Puerto Bermudez and Ciudad Constitucion

Source:

Based on the productive structure of 1993 and on the production costs at October prices.

The demand was computed for the total cultivated area (see Table AG1).

Instituto de Analisis de Produccion Agricola

TABLE CR11

AREA OF MAIN CROPS WITH CREDIT BY DISTRICTS IN THE ZONE OF THE PROJECT
(Has)

PROVINCE DISTRICTS	Rice	Cacao	Coffee	Y.Corn	Banana	Papaya	Yucca	Total
BELLAVISTA								
A. Biabo	1,958	52	82	1,176	499	10	170	3,946
B. Biabo	312	8	13	188	80	2	27	630
PICOTA								
Shamboyacu	33	3	6	162	124	1	43	372
T. Ponaza	5	3	5	470	120	1	52	656
Tres Unidos	78	2	3	47	20	0	7	157
TOCACHE								
Tocache	274	39	1	307	853	2	303	1,779
N.Progreso	34	27	2	205	575	6	177	1,027
Uchiza	44	14	3	49	578	2	311	1,002
EL DORADO								
S.J. Sisa	96	3	4	58	24	0	8	193
Agua Blanca	54	1	2	32	14	0	5	108
San Martin	180	5	8	108	46	1	16	363
Sta.Rosa	78	2	3	47	20	0	7	157
Shatoja	8	0	0	5	2	0	1	15
LEONCIO PRADO								
Rupa Rupa	12	112	37	155	405	43	279	1,044
D.A.Robles	5	86	46	123	377	8	171	817
H.Valdizan	2	13	62	43	306	7	42	475
J.C.Castillo	31	216	30	518	1,943	19	1,350	4,108
P.Luyando	8	38	16	137	303	19	136	657
M.D.Beraun	6	47	46	173	236	14	164	685
PADRE ABAD								
P.Abad	147	1	2	81	227	1	68	527
Irazola	131	1	2	72	202	1	61	470

Source: Instituto de Analisis de Politica agraria

Cont....

.....Cont. Table CR11

PROVINCE DISTRICTS	Rice	Cacao	Coffee	Y.Corn	Banana	Papaya	Yucca	Total
APURIMAC RIVER BASIN: *								
HUANTA								
Sivia	64	159	29	87	22	1	375	737
LA MAR								
Ayna	11	27	5	15	4	0	65	127
LA CONVENCION								
Quimbiri	93	233	43	127	31	1	547	1,075
ZONA P.BERMUDEZ Y C. CONSTITUCION**								
OXAPAMPA								
Puerto Bermudez	4	1	46	52	93	1	54	250
Palcazu	2	0	21	24	42	0	25	113
TOTAL	3,670	1,096	518	4,460	7,144	141	4,462	21,490

Source:

The area proposer to be readied refers to the agricultural harvesting wich covers 17 percent of the total land area cultivated in 1993.

Instituto de Analisis de Produccion Agricola

TABLE CR12

AMMOUNTS OF CREDIT FOR MAIN CROPS BY DISTRICTS IN THE ZONE OF THE PROJECT

October 1994 prices (US$)

PROVINCE DISTRICTS	Rice	Cacao	Coffee	Y.Corn	banana	Papaya	Yucca	Total
BELLAVISTA								
A. Biabo	1,878,314	130,774	245,542	1,023,382	294,759	12,794	119,777	3,705,342
B. Biabo	299,621	20,861	39,168	163,245	47,019	2,041	19,106	591,060
PICOTA								
Shamboyacu	31,720	8,813	16,547	140,769	73,321	862	30,351	302,383
T. Ponaza	4,906	7,210	13,538	409,281	71,199	705	36,741	543,581
Tres Unidos	74,850	5,226	9,812	40,896	11,779	511	4,786	147,862
TOCACHE								
Tocache	262,433	99,496	3,651	266,997	503,871	3,195	213,597	1,353,240
N.Progreso	32,861	69,374	4,564	178,454	340,022	8,215	125,055	758,545
Uchiza	41,989	36,056	10,497	42,902	341,847	2,282	219,531	695,105
EL DORADO								
S.J. Sisa	92,024	6,407	12,030	50,138	14,441	627	5,868	181,536
Agua Blanca	51,629	3,595	6,749	28,130	8,102	352	3,292	101,849
San Martin	172,655	12,021	22,570	94,069	27,094	1,176	11,010	340,595
Sta.Rosa	74,695	5,200	9,764	40,697	11,722	509	4,763	147,350
Shatoja	7,370	513	963	4,015	1,157	50	470	14,539
LEONCIO PRADO								
Rupa Rupa	11,410	283,884	112,276	134,639	239,613	57,051	196,710	1,035,582
D.A.Robles	5,020	218,618	139,203	106,799	222,726	10,041	120,947	823,354
H.Valdizan	2,282	33,318	186,670	37,425	180,736	8,672	29,666	478,769
J.C.Castillo	29,666	545,404	90,368	450,928	1,148,314	25,559	953,430	3,243,669
P.Luyando	7,759	95,389	46,553	119,578	178,911	25,102	96,301	569,593
M.D.Beraun	5,477	117,752	138,747	150,157	139,660	18,713	115,470	685,976
PADRE ABAD								
P.Abad	140,775	2,925	7,117	70,253	133,907	1,577	48,094	404,648
Irazola	125,542	2,609	6,346	62,650	119,417	1,406	42,890	360,860

Source: Instituto de Analisis de Politica Agraria

Cont.....

...Cont. Table CR12

PROVINCE DISTRICTS	Rice	Cacao	Coffee	Y.Corn	banana	Papaya	Yucca	Total
APURIMAC RIVER BASIN: *								
HUANTA								
Sivia	61,158	403,005	88,086	75,763	12,779	913	264,715	906,420
LA MAR								
Ayna	10,497	69,374	15,061	12,779	2,282	456	45,640	156,090
LA CONVENCION								
Quimbiri	89,455	589,675	128,706	110,450	18,256	1,369	386,118	1,324,030
ZONA P.BERMUDEZ AND C. CONSTITUCION**								
OXAPAMPA								
Puerto Bermudez	3,651	1,826	136,921	45,640	54,769	913	38,338	282,058
Palcazu	1,826	913	61,615	20,538	24,646	456	17,343	127,337
TOTAL	3,519,587	2,770,237	1,553,067	3,880,577	4,222,349	185,547	3,150,011	19,281,375

TABLE RI 1

UNIT COST ANALYSIS
October 1994 Prices (US$)

Item: SOUND ROCK EXCAVATION
Efficiency: 280.00 m3/day

Unit Direct Cost US$ 4.73

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Materials:					0.17	0.99
Detonator	Unit	1.000	0.02	0.09	0.02	0.09
Fuse	m	1.200	0.02	0.08	0.02	0.10
Dynamite	Kg.	0.250	0.40	1.90	0.10	0.48
Drill 7/8" x 5 pies	Unit	0.003	9.43	107.31	0.03	0.32
Equipment:					800.25	460.18
Air compressor 600-690cf/m	H.M.	9.200	41.34	7.42	380.33	68.26
Jackhammer 29 kg	H.M.	32.000	0.42	2.76	13.44	86.32
Caterpillar 190-240 HP	H.M.	8.000	50.81	37.95	406.48	303.60
Labor:					451.84	0.00
Foreman	H.H.	8.000	6.72	0.00	53.76	0.00
Skilled	H.H.	32.000	5.60	0.00	179.20	0.00
Common laborer	H.H.	48.000	4.56	0.00	218.88	0.00
Tools					22.59	0.00
Hand tools	%Labor.	5.000	451.84	0.00	22.59	0.00

Direct cost S/. 0.17+[(800.25+451.84+22.59)/280.000]=4.72
US$0.99+[(460.18)/280.000]=2.63

Note: 1 US$ = S/.2.25

TABLE RI 2

UNIT COST ANALYSIS: LOOSE ROCK EXCAVATION
October 1994 Prices (US$)

Item: LOOSE ROCK EXCAVATION
Efficiency: 400.00 m3/day — Unit Direct Cost — US$ 2.63

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Materials:					0.07	0.44
Detonator	Unit	50.000	0.02	0.09	0.10	0.05
Fuse	m	0.500	0.02	0.08	0.01	0.04
Dynamite	Kg.	0.100	0.40	1.90	0.04	0.19
Drill 7/8" x 5 pies	Unit	0.015	9.43	107.31	0.01	0.16
Equipment:					746.64	394.00
Air compressor 600-690cf/m	H.M.	8.000	41.34	7.42	330.72	59.36
Jackhammer 24 kg	H.M.	16.000	0.59	1.94	9.44	31.04
Caterpillar 190-240 HP	H.M.	8.000	50.81	37.95	406.48	303.60
Labor:					290.72	0.00
Foreman	H.H.	4.000	6.72	0.00	26.88	0.00
Semiskilled	H.H.	16.000	5.09	0.00	81.44	0.00
Common laborer	H.H.	40.000	4.56	0.00	182.40	0.00
Tools					14.54	0.00
Hand tools	%Labor.	5.000	290.72	0.00	14.54	0.00

Direct cost: S/. 0.07+[(746.64+290.72+14.54)/280.000]=2.70
US$0.44+[(394.00)/400.000]=1.43

Note: 1 US$ = S/.2.25

Source: Instituto de Analisis de Politica Agraria

TABLE RI 3
UNIT COST ANALYSIS: LOOSE MATERIALS EXCAVATIONS

October 1994 Prices (US$)

Item: LOOSE MATERIALS EXCAVATION
Efficiency: 480.00 m3/day — Unit Direct Cost — US$ 1.20

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Equipment					406.48	303.60
Caterpillar 190-240 HP	H.M.	8.000	50.81	37.95	406.48	303.60
Labor					199.68	0.00
Foreman	H.H.	8.000	6.72	0.00	53.76	0.00
Common laborer	H.H.	32.000	4.56	0.00	145.92	0.00
Tools					9.98	0.00
Hand tools	%Labor.	5.000	199.68	0.00	9.98	0.00

Direct cost: S/. [(406.78+199.68+9.98)/480.000]=1.28
US$[(303.6)/480.000]=0.63

Note: 1 US$ = 2.25

Source: Instituto de Analisis de Politica Agraria

TABLE RI 4
UNIT COST ANALYSIS: EMBANKMENT CONSTRUCTION

October 1994 Prices (US$)

Item: EMBANKMENT CONSTRUCTION
Efficiency: 820.00 m3/dy — Unit Direct Cost — US$ 0.87

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Equipment					411.52	205.68
Vibratory roller 7-9 Ton	H.M.	8.000	21.70	6.29	173.60	50.32
Motorgrader 125 HP	H.M.	8.000	29.74	19.42	237.92	155.36
Labor:					272.74	0.00
Foreman	H.H.	8.000	6.72	0.00	53.76	0.00
Common laborer	H.H.	48.000	4.56	0.00	218.88	0.00
Tools					13.63	0.00
Hand tools	%Labor	5.000	272.64	0.00	13.63	0.00
Sub-Analysis					0.43	0.05
Damping water	m3	0.120	3.60	0.45	0.43	0.05

Direct cost = S/. [(411.52+272.64+13.63)/820.000]+0.43=1.28
US$[(205.68/820.000]+0.05=0.30

Note: 1 US$ = S/.2.25

TABLE RI 5
UNIT COST ANALYSIS: GRANULAR SUB BASE

October 1994 Prices (US$)

Item: GRANULAR SUB BASE
Efficiency: 400.00 m3/day — Unit Direct Cost — US$ 4.74

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Equipment					411.52	205.68
Vibratory roller 7-9 Ton	H.M.	8.000	21.70	6.29	173.60	50.32
Motorgrader 125 HP	H.M.	8.000	29.74	19.42	237.92	155.36
Labor:					78.34	0.00
Foreman	H.H.	0.800	6.72	0.00	5.38	0.00
Common laborer	H.H.	16.000	4.56	0.00	72.96	0.00
Tools					3.92	0.00
Hand tools	%Labor	5.000	78.34	0.00	3.92	0.00
Sub-Analysis					4.71	1.59
Damping water	m3	0.120	3.60	0.45	0.43	0.05
Selected quarry material	m3	1.200	3.57	1.28	4.28	1.54

Direct cost: S/. [(411.52+78.34+3.92)/400.000]+4.71=5.94
US$[(205.68/400.000]+1.59=2.10

Note: 1 US$ = S/.2.25

Source: Instituto de Analisis de Politica Agraria

TABLE RI 6
UNIT COST ANALYSIS: TRANSPORT (UP TO 1 KM)

October 1994 Prices (US$)

Item: TRANSPORT (up to 1 km)
Efficiency: 345.00 m3-km/day — Unit Direct Cost — US$ 4.74

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Equipment					464.32	211.52
Dump truck 10m3	H.M.	8.000	58.04	26.44	464.32	211.52
Labor					20.36	0.00
Semiskilled	H.H.	4.000	5.09	0.00	20.36	0.00
Tools					1.02	0.00
Hand tools	%Labor	5.000	20.36	0.00	1.02	0.00

Direct Cost: S/. [(464.32+20.36+1.02)/345.000]=1.41
US$[(211.52/345.000]=0.61

Note: 1 US$ = S/.2.25

Source: Instituto de Analisis de Politica Agraria

TABLE RI 7

UNIT COST ANALYSIS: TRANSPORT (BEYOND 1 Km)
October 1994 Prices (US$)

Item: TRANSPORT (beyond 1 km)
Efficiency: 1050.00 m3-km/day — Unit Direct Cost — US$ 4.74

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Equipment					464.32	211.52
Dump truck 10m3	H.M.	8.000	58.04	26.44	464.32	211.52
Labor					20.36	0.00
Semiskilled	H.H.	4.000	5.09	0.00	20.36	0.00

Direct Cost — S/. [(464.32+20.36+)/1050.000]=0.46
US$[(211.52/1050.000]=0.20

Note: 1 US$ = S/.2.25
Source: Instituto de Analisis de Politica Agraria

TABLE RI 8

UNIT COST ANALYSIS: LOADING ON TRUCK
October 1994 Prices (US$)

Item: LOADING ON TRUCK
Efficiency: 690.00 m3/day — Unit Direct Cost — US$ 0.50

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Equipment					418.24	155.04
Payloader 160-195 HP. 3.5 Y3	H.M.	8.000	58.28	19.38	418.24	155.04
Labor					20.36	0.00
Semiskilled	H.H.	4.000	5.09	0.00	20.36	0.00

Direct Cost — S/. [(418.24+20.36+)/690.000]=0.64
US$[(155.04/690.000]=0.22

Note: 1 US$ = S/.2.25
Source: Instituto de Analisis de Politica Agraria

TABLE RI 9
UNIT COST ANALYSIS: DAMPING
October 1994 Prices (US$)

Item: Damping
Efficiency: 54.00 m3/day — Unit Direct Cost — US$ 2.05

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Equipment					186.16	24.32
Cistern 4x2 (water) 2,000 Gal.	H.M.	8.000	23.27	3.04	186.16	24.32
Labor					8.14	0.00
Semiskilled	H.H.	1.600	5.09	0.00	8.14	0.00

Direct Cost: S/. [(196.16+8.14)/54.000]=3.60
US$[(24.32)/54.000]=0.45

Note: 1 US$ = S/.2.25
Source: Instituto de Analisis de Politica Agraria

TABLE RI 10
UNIT COST ANALYSIS: CONCRET F.c = 210 Kg/cm 2
October 1994 Prices (US$)

Item: Concrete f'c = 210 kg/cm2
Efficiency: 18.00 m3/day — Unit Direct Cost — U.S.$87.61

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Materiales:					114.72	0.00
Oil, filters,grease	lt	0.060	7.49	0.00	0.45	0.00
Portland cement	bag	8.500	13.01	0.00	110.59	0.00
Diessel oil	gal.	1.000	3.68	0 00	3.68	0.00
Equipment					23.76	10.72
Concrete mixer 11 c.f	H.M.	8.000	2.73	0.97	21.84	7.76
Vibrator 4 HP = 1.25"	H.M.	8.000	0.24	0.37	1.92	2.96
Labor					536.32	0.00
Foreman	H.H.	8.000	6.72	0.00	53.76	0.00
Skilled	H.H.	8.000	5.60	0.00	44.80	0.00
Common laborer	H.H.	96.000	4.56	0.00	437.76	0.00
Tools					26.82	0.00
Hand tools	%Labor	5.000	536.32	0.00	26.82	0.00
Sub-Analysis					24.74	10.53
Water	m3	0.170	4.20	0.45	0.71	0.08
Sand	m3	0.600	17.29	7.65	10.37	4.59
Gravel	m3	0.800	17.07	7.32	13.66	5.86

Direct Cost: S/. 114.72+[(23.76+536.32+26.82)/180.000]+24.74=172.07
US$[(10.72)/18.000]+10.53=11.13

Note: 1 US$ = S/.2.25
Source: Instituto de Analisis de Politica Agraria

TABLE RI 11

UNIT COST ANALYSIS: CYCLOPEAN CONCRET F.c = Kg/cm2

October 1994 Prices (US$)

Item: Cyclopean Concrete f'c = 175 kg/cm2 (30% medium bolders)

Efficiency: 18.00 m3/day — Unit Direct Cost — U.S.$63.58

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Mano de Obra :					172.80	0.00
Foreman	H.H.	4.000	6.72	0.00	26.88	0.00
Common laborer	H.H.	32.000	4.56	0.00	145.92	0.00
Tools					8.64	0.00
Hand tools	%Labor	5.000	172.80	0.00	8.64	0.00
Sub-Analysis					111.57	9.51
Medium bolders	m3	0.300	25.59	7.51	7.68	2.25
Concrete f'c=175 kg/cm2	m3	0.700	148.42	10.37	103.89	7.26

Direct Cost S/. [(172.80+8.64)/18.000]+111.57=121.65 US$+9.51=9.51

Note: 1 US$ = S/.2.25

Source: Instituto de Analisis de Politica Agraria

TABLE RI 12

UNIT COST ANALYSIS: FORMS
October 1994 Prices (US$)

Item: Forms
Efficiency: 15.00 m2/day — Unit direct cost — US$ 6.96

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Materials:					4.79	0.00
Black weir	kg	0.200	1.25	0.00	0.25	0.00
Nails	kg	0.400	1.86	0.00	0.74	0.00
Timber (tornillo)	sq.ft.	5.000	0.76	0.00	3.80	0.00
Labor:					158.48	0.00
Skilled	H.H.	8.000	5.60	0.00	44.8	0.00
Semiskilled	H.H.	8.000	5.09	0.00	40.72	0.00
Common laborer	H.H.	16.000	4.56	0.00	72.46	0.00
Tools:					4.75	0.00
Hand tools	%Labo	3.000	158.48	0.00	4.75	0.00
Direct Cost	S/. 4.79+[(158.48+4.75)/15.000]=15.67			US$0.00		

Note: 1 US$ = S/.2.25

Source: Instituto de Analisis de Politica Agraria

TABLE RI 13

UNIT COST ANALYSIS: REINFORCING STEEL
October 1994 Prices (US$)

Item: Reinforcing steel
Efficiency: 250.00 kg/day — Unit direct cost — US$ 0.79

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Materials:					1.42	0.00
Black weir	kg	0.030	1.25	0.00	0.04	0.00
Corrugated steel bars	kg	1.100	1.25	0.00	1.38	0.00
Labor:					85.52	0.00
Skilled	H.H.	8.000	5.60	0.00	44.8	0.00
Semiskilled	H.H.	8.000	5.09	0.00	40.72	0.00
Tools:					2.57	0.00
Hand tools	%Labo	3.000	85.52	0.00	2.57	0.00
Direct Cost	S/. 1.42+[(85.52+2.57)/250.000]=1.77			US$0.00		

Note: 1 US$ = S/.2.25

Source: Instituto de Analisis de Politica Agraria

TABLE RI 14

UNIT COST ANALYSIS: CRUSHED QUARRY MATERIAL

October 1994 Prices (US$)

Item: Crushed quarry material
Efficiency: 230.00 m3/day — Unit direct cost — US$ 4.81

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Materials:					0.12	0.00
Diessel oil	gal	0.031	3.73	0.00	0.12	0.00
Equipment:						386.24
Crusher (primary/secondary)	H.M.	8.000	19.74	39.28	157.92	314.24
Vibratory screen 4" x 6" x 15	H.M.	8.000	8.80	4.28	70.40	34.24
Generator 75 KW	H.M.	8.000	2.08	4.72	16.64	37.76
Labor:					244.48	0.00
Foreman	H.H.	8.000	6.72	0.00	53.76	0.00
Skilled	H.H.	8.000	5.60	0.00	44.80	0.00
Common laborer	H.H.	32.000	4.56	0.00	145.92	0.00
Tools:					12.22	0.00
Hand tools	%Labo	5.000	244.48	0.00	12.22	0.00
Sub-Analysis					2.35	1.06
Material extraction	m3	1.200	0.78	0.48	0.94	0.58
Hauling on crusher	m3	1.200	0.64	0.22	0.77	0.26
Hauling on truck	m3	1.000	0.64	0.22	0.64	0.22

Direct Cost: S/. 0.12+[(244.96+244.48+12.22)/230.000]+2.35=4.65
US$[(386.24)/230.000]+1.06=2.74

Note: 1 US$ = S/.2.25

Source: Instituto de Analisis de Politica Agraria

TABLE RI 15

UNIT COST ANALYSIS: WATER

October 1994 Prices (US$)

Item: Water
Efficiency: 54.00 m3/day — Unit direct cost — US$ 2.32

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Equipment:					186.16	24.32
Cistern 4x2 (Water) 2,000 Gal.	H.M.	8.000	23.27	3.04	186.16	24.32
Labor:					40.72	0.00
Semiskilled	H.H.	8.000	5.09	0.00	40.72	0.00

Direct Cost: S/. [(186.16+40.72)/54.000]=4.20 US$[(24.32)/54.000]=2.74

Note: 1 US$ = S/.2.25

Source: Instituto de Analisis de Politica Agraria

TABLE RI 16

UNIT COST ANALYSIS: CONCRET LINED GUTTERS
October 1994 Prices (US$)

Item: Concrete linned gutters
Efficiency: 1.00 m/day — Unit direct cost — US$ 14.93

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Sub-Analysis					29.02	2.03
Concrete f'c=175 kg/cm2	m3	0.194	148.42	10.37	28.79	2.01
Asphalt mortar	m3	0.002	113.95	9.18	0.23	0.02
Direct Cost	S/. +29.02=29.02		US$2.03=2.03			

Note: 1 US$ = S/.2.25
Source: Instituto de Analisis de Politica Agraria

TABLE RI 17

UNIT COST ANALYSIS: DRAINAGE CHANNEL
October 1994 Prices (US$)

Item: Drainage channel
Efficiency: 200.00 m/day — Unit direct cost — US$ 3.29

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Equipment:					490.56	274.08
Dragshovel S/O 115-165 HP. 75-1.4Y3	H.M.	8.000	31.58	14.84	252.64	118.72
Motorgrader 125 HP	H.M.	8.000	29.74	19.42	237.92	155.36
Labor:					354.08	0.00
Foreman	H.H.	8.000	6.72	0.00	53.76	0.00
Semiskilled	H.H.	16.000	4.09	0.00	81.44	0.00
Common laborer	H.H.	48.000	4.56	0.00	218.88	0.00
Tools:					17.70	0.00
Hand tools	%Labo	5.000	354.08	0.00	17.70	0.00
Direct Cost	S/. [(490.56+354.08+17.70)/200.000]=4.31			US$[(274.08)/200.000]=1.37		

Note: 1 US$ = S/.2.25
Source: Instituto de Analisis de Politica Agraria

TABLE RI 18

UNIT COST ANALYSIS: CULVERET T.M.C.D = 36"
October 1994 Prices (US$)

2

Efficiency: 10.00 m/day — Unit direct cost — US$ 108.89

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Materials:					21.18	67.22
Steel plate culvert D=36" th.=2mm	m	1.000	21.18	67.22	21.18	67.22
Equipment:					7.24	1.42
Compacting vibratory plate	H.M.	1.040	6.96	1.37	7.24	1.42
Labor:					257.04	0.00
Foreman	H.H.	8.000	6.72	0.00	53.76	0.00
Skilled	H.H.	16.000	5.60	0.00	89.60	0.00
Semiskilled	H.H.	8.000	5.09	0.00	40.72	0.00
Common laborer	H.H.	16.000	4.56	0.00	72.96	0.00
Tools:					12.85	0.00
Hand tools	%Labo	5.000	257.04	0.00	12.85	0.00
Sub-Analysis :					22.34	9.87
Damping water	m3	0.010	3.60	0.45	0.04	0.00
Sand	m3	1.290	17.29	7.65	22.30	9.87

Direct Cost S/. 21.18+[(7.24+257.04+12.85)/10.000]+22.34=71.23
US$67.22+[(1.42)/10.000]+9.87=77.23

Note: 1 US$ = S/.2.25
Source: Instituto de Analisis de Politica Agraria

TABLE RI 19

UNIT COST ANALYSIS: CULVERET MAINTENANCE
October 1994 Prices (US$)

Item: Culvert maintenance
Efficiency: 1.00 unit/day — Unit direct cost — US$ 69.76

Resources description	Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Sub-Analysis :					156.96	0.00
Culvert cleaning	m3	2.800	19.71	0.00	55.19	0.00
Bed cleaning	m3	9.900	10.28	0.00	101.77	0.00

Direct Cost S/. +156.96=156.96 — US$ 0.00

Note: 1 US$ = S/.2.25
Source: Instituto de Analisis de Politica Agraria

TABLE RI 20

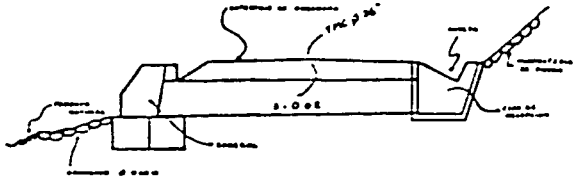
UNIT COST ANALYSIS: GABIONS
October 1994 Prices (US$)

Item: GaBions
Efficiency: 20.00 m3/day — Unit direct cost — US$ 79.14

Resources description		Unit	Quant.	Price S/.	Price U.S.$	Partial S/.	Partial U.S.$
Materials:						3.47	17.81
Gabion 3.4mm (Inc.conexions)		kg	8.687	0.40	2.05	3.47	17.81
Labor:						370.18	0.00
Foreman		H.H.	0.800	6.72	0.00	5.38	0.00
Common laborer		H.H.	80.000	4.56	0.00	364.80	0.00
Tools:						18.51	0.00
Hand tools	P	%Labo	5.000	370.18	0.00	18.51	0.00
Sub-Analysis :						92.25	10.15
Bolders		m3	1.050	17.07	7.32	17.92	7.69
Under water excavation		m3	2.080	23.63	0.26	49.14	0.54
Granular fill placement		m3	0.683	36.86	2.81	25.19	1.92

Direct Cost — S/. 3.47+[(370.18+18.51)/20.000]+92.25=115.15 — US$17.81+10.15=27.96

Note: 1 US$ = S/.2.25
Source: Instituto de Analisis de Politica Agraria



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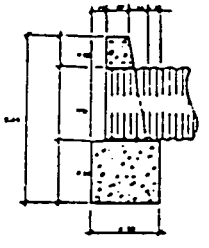
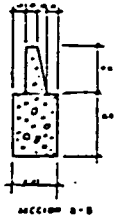
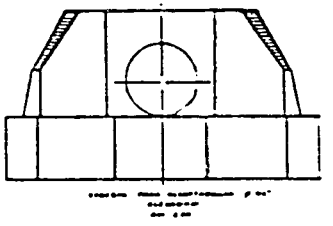
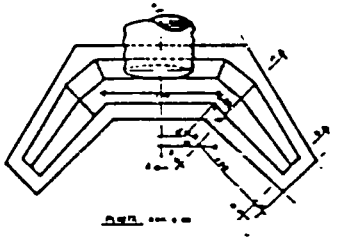
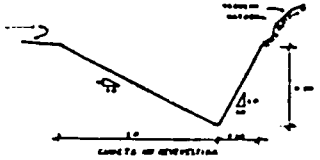
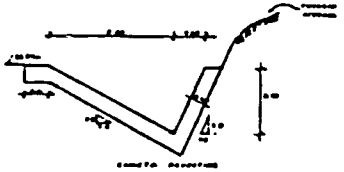


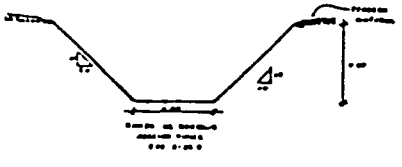


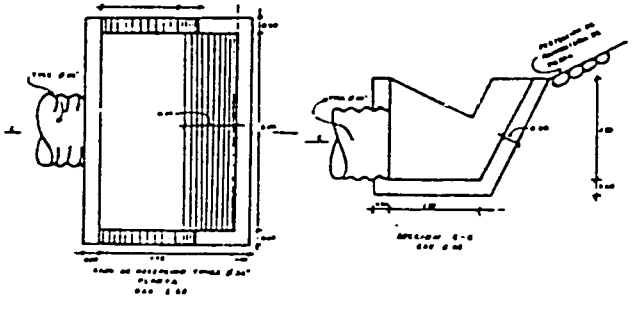










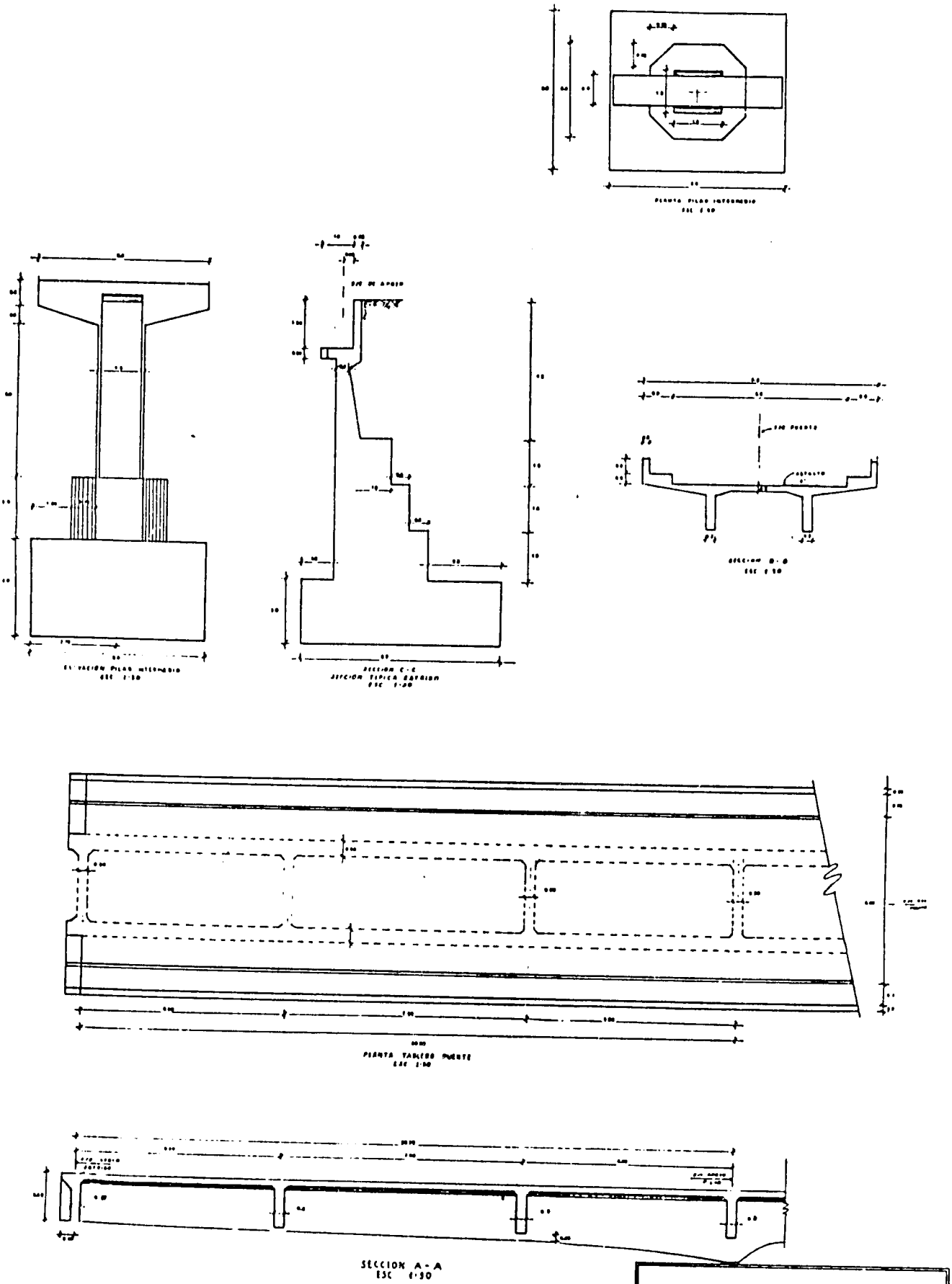


PROJECT.
COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT AID PERU

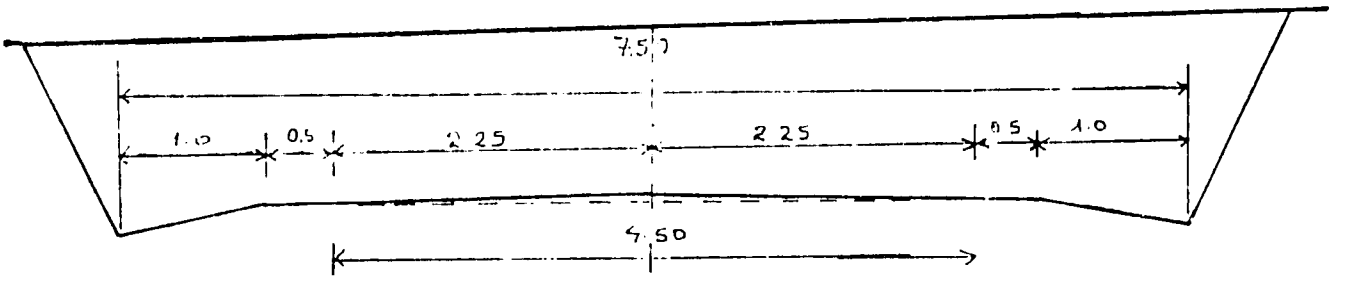
PLATE 1
CULVERTS DITCHES AND TYPICAL TRENCHES

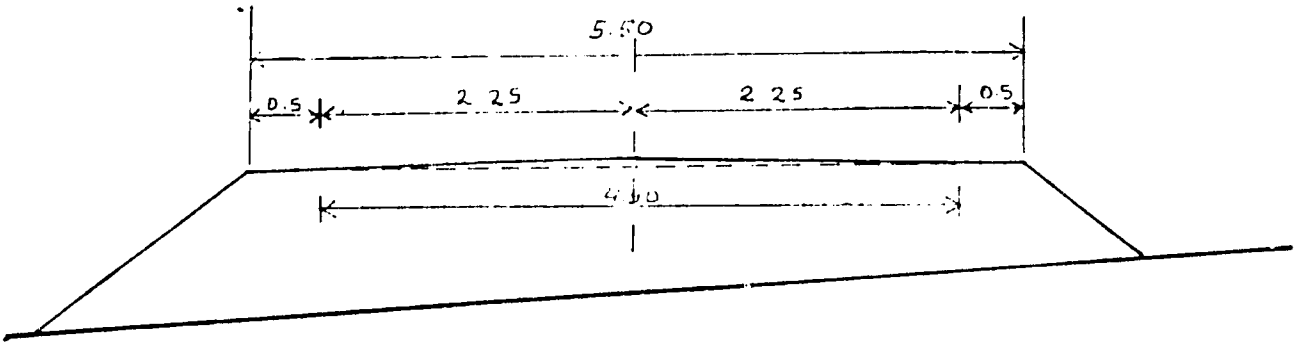
AUTHOR
INSTITUTO DE ANALISIS DE POLITICA AGRARIA IAPA

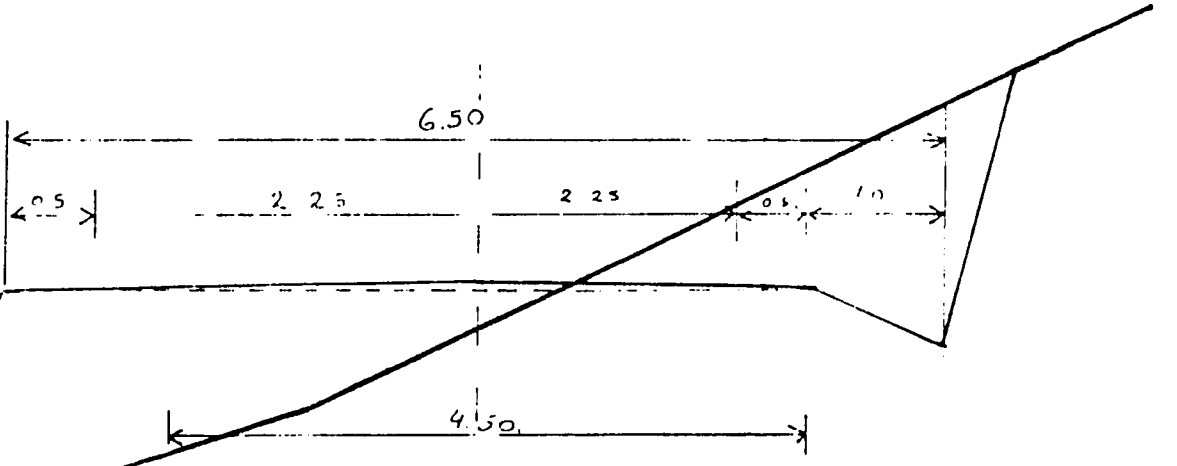
SCALE	MADE BY	DATE
1 50	EDUARDO TENA	OCT



PROJECT COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID PERU		
PLATE 2. TYPICAL BRIDGE		
AUTHOR INSTITUTO DE ANALISIS DE POLITICA AGRARIA - I.A.P.A		
SCALE: 1:50	MADE BY EDUARDO TENA	DATE OCT 1994







PROJECT: COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID-PERU		
DRAWING: SECONDARY AND LOCAL ROADS TYPICAL SECTIONS SCALE 1:50		
AUTHOR: INSTITUTO DE ANALISIS DE POLITICA AGRARIA - I.A.P.A		
SCALE: 1:50	MADE BY EDUARDO TENA	DATE: OCT 1994

TABLE E1

PROFITABILITY OF COCA LEAF. IMPROVED TECHNOLOGY
Upper Huallaga
October 1994 Prices (US$)

Year	Investment	Production Cost	Total Cost	Yield k/ha	Income	Funds Flow
1	1015		1015			-1015
2		535	535	1950	1326	791
3		572	572	2300	1564	992

Price = US$ 0.68/Kg.
TIRE = 0.45
VANE = 351.83 (Discount rate = 15.8%).

TABLE E2

PROFITABILITY OF COCA. TRADITIONAL TECHNOLOGY
UPPER HUALLAGA
October 1994 Prices (US$)

Year	Investment	Production Cost	Total Cost	Yield k/ha	Income	Funds Flow
1	559		559			-559
2		344	344	1100	748	404
3		396	396	1500	1020	624

Price = US$ 0.68/Kg.
TIRE = 0.4773365
VANE = 220.03 (Discount rate = 15.8%).

TABLE E3

PROFITABILITY OF PAPAYA
October 1994 Prices (US$)

Year	Investment	Production Cost	Total Cost	Yield k/ha	Income	Funds Flow
1	1446		1446	7000	735	-711
2		1268	1268	15000	1575	307
3		578	578	12000	1260	682
4			0		0	0

Price = US$ 0.105/Kg.
TIRE = 0.2188
VANE = 54.14848 (Discount rate = 15.8%).

TABLE E4

PROFITABILITY OF GRAPES
October 1994 Prices (US$)

Year	Investment	Production Cost	Total Cost	Yield k/ha	Income	Funds Flow
1	5817		5817	0		-5817
2		1471	1471	2500	2841	1370
3		1865	1865	6000	6818	4953
4		2060	2060	8000	9091	7031

Price= US$ 1.136/Kg.

TIRE = 0.4264526

VANE = 3098.0379 (Discount rate = 15.8%).

TABLE E5

PROFITABILITY OF PIJUAYO
October 1994 Prices (US$)

Year	Investment	Production Cost	Total Cost	Yield k/ha	Income	Funds Flow
1	1517		1517	0	0	-1517
2		568	568	3000	1350	782
3		595	595	5000	2250	1655
4		605	605	7000	3150	2545

Price= US$ 0.451/unit.

TIRE = 0.7184511

VANE = 1754.2534 (Discount rate = 15.8%).

TABLE E6

BANANAS PROFITABILITY. TRADITIONAL TECHNOLOGY IN THE UPPER HUALLAGA
October 1994 Prices (US$)

Year	Investment	Production Cost	Total Cost	Yield k/ha	Income	Funds Flow
1	592		592			-592
2		332	332	10000	800	468
3		306	306	8000	640	334
4		216	216	5000	400	184

Price= US$ 0.08/Kg.

TIRE = 0.369195

VANE = 155.47028 (Discount rate = 15.8%).

TABLE E7

PROFITABILITY OF BANANAS. IMPROVED TECHNOLOGY
IN THE UPPER HUALLAGA
October 1994 Prices (US$)

Year	Investment	Production Cost	Total Cost	Yield k/ha	Income	Funds Flow
1	702		702			-702
2		537	537	12000	960	423
3		527	527	12000	960	433
4		379	379	10000	800	421

Price= US$ 0.08/Kg.

TIRE = 0.3710665

VANE = 222.15507 (Discount rate = 15.8%).

TABLE E8

PROFITABILITY OF BANANAS. TRADITIONAL TECHNOLOGY
IN THE CENTRAL LOWER HUALLAGA
October 1994 Prices (US$)

Year	Investment	Production Cost	Total Cost	Yield k/ha	Income	Funds Flow
1	592		592			-592
2		332	332	9000	720	388
3		306	306	7000	560	254
4		216	216	5000	400	184

Price= US$ 0.08/Kg.

TIRE = 0.2179126

VANE = 44.293074 (Discount rate = 15.8%)

TABLE E9

PROFITABILITY OF BANANAS. IMPROVED TECHNOLOGY
IN THE CENTRAL HUALLAGA
October 1994 Prices (US$)

Year	Investment	Production Cost	Total Cost	Yield k/ha	Income	Funds Flow
1	702		702			-702
2		537	537	12000	960	423
3		527	527	12000	960	433
4		379	379	10000	800	421

Price= US$ 0.08/Kg.

TIRE = 0.3712898

VANE = 222.19672 (Discount rate = 15.8%).

TABLE E10
ECONOMIC ANALYSIS - TRANSPORT COMPONENT : BIABO RIVER VALLEY
OCTOBER 1994 PRICES (US$)

YEAR	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
TOTAL COST/YEAR	436500	106000	106000	413400	106000	106000	413400	106000	106000	413400	2312700
TOTAL BENEFITS/YEAR		2215420	2228920	2228920	2228920	2228920	2228920	2228920	2228920	2228920	20046780
NET CASH FLOW :	-436500	2109420	2122920	1815520	2122920	2122920	1815520	2122920	2122920	1815520	

FINANCIAL COEFFICIENTS ESTIMATE :

INTERNAL RATE OF RETURN :

E - I.R.R. = 4.82

NET PRESENT VALUE (discount rate = 12.0%) :

E - N.P.V. = 9265627.95

Source: Instituto de Analisis de Politica Agraria

TABLE E11
ECONOMIC ANALYSIS - TRANSPORT COMPONENT : PONAZA RIVER VALLEY
OCTOBER 1994 PRICES (US$)

YEAR	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
TOTAL COST/YEAR	808100	86000	86000	335400	86000	86000	335400	86000	86000	335400	2330300
TOTAL BENEFITS/YEAR		901358	914858	914858	914858	914858	914858	914858	914858	914858	8220222
NET CASH FLOW :	-808100	815358	828858	579458	828858	828858	579458	828858	828858	579458	

FINANCIAL COEFFICIENTS ESTIMATE :

INTERNAL RATE OF RETURN :

E - I.R.R. = 0.97

NET PRESENT VALUE (discount rate = 12.0%) :

E - N.P.V = 2859286.57

Source: Instituto de Analisis de Politica Agraria

TABLE E12

ECONOMIC ANALYSIS - TRANSPORT COMPONENT : SISA RIVER VALLEY

OCTOBER 1994 PRICES (US$)

YEAR	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
TOTAL COST/YEAR	1618800	124000	124000	483600	124000	124000	483600	124000	124000	483600	3813600
TOTAL BENEFITS/YEAR		451532	465032	465032	465032	465032	465032	465032	465032	465032	4171788
NET CASH FLOW :	-1618800	327532	341032	-18568	341032	341032	-18568	341032	341032	-18568	

FINANCIAL COEFFICIENTS ESTIMATE

INTERNAL RATE OF RETURN :

E - I.R.R. = 0.05

NET PRESENT VALUE (discount rate = 12.0%) :

E - N.P.V. = -340683.91

Source: Instituto de Analisis de Politica Agraria

TABLE E13

ECONOMIC ANALYSIS - TRANSPORT COMPONENT : TOCACHE-UCHIZA RIVERS VALLEYS

OCTOBER 1994 PRICES (US$)

YEAR	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
TOTAL COST/YEAR	2257000	152000	152000	592800	152000	152000	592800	152000	152000	592800	4947400
TOTAL BENEFITS/YEAR		2460541	2504541	2504541	2504541	2504541	2504541	2504541	2504541	2504541	22496869
NET CASH FLOW :	-2257000	2308541	2352541	1911741	2352541	2352541	1911741	2352541	2352541	1911741	

FINANCIAL COEFFICIENTS ESTIMATE :

INTERNAL RATE OF RETURN :

E - I.R.R. = 1.00

NET PRESENT VALUE (discount rate = 12.0%) :

E - N.P.V. = 8520185.49

Source: Instituto de Analisis de Politica Agraria

TABLE E14

ECONOMIC ANALYSIS - TRANSPORT COMPONENT : APURIMAC RIVER VALLEY
OCTOBER 1994 PRICES (US$)

YEAR	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
TOTAL COST/YEAR	4200000	180000	180000	702000	180000	180000	702000	180000	180000	702000	7386000
TOTAL BENEFITS/YEAR		1325674	1379674	1379674	1379674	1379674	1379674	1379674	1379674	1379674	12363066
NET CASH FLOW :	-4200000	1145674	1199674	677674	1199674	1199674	677674	1199674	1199674	677674	

FINANCIAL COEFFICIENTS ESTIMATE :

INTERNAL RATE OF RETURN :

E - I.R.R. = 0.20

NET PRESENT VALUE (discount rate = 12.0%) :

E - N.P.V. = 1178302.94

Source: Instituto de Analisis de Politica Agraria

TABLE E15

ECONOMIC ANALYSIS - TRANSPORT COMPONENT : PICHIS-PACHITEA RIVERS VALLEYS
OCTOBER 1994 PRICES (US$)

TOTAL COST/YEAR	1620000	0	0	0	0	0	0	0	0	0	1620000
TOTAL BENEFITS/YEAR		1992165	1992165	1992165	1992165	1992165	1992165	1992165	1992165	1992165	17929485
NET CASH FLOW :	-1620000	1992165	1992165	1992165	1992165	1992165	1992165	1992165	1992165	1992165	

FINANCIAL COEFFICIENTS ESTIMATE :

INTERNAL RATE OF RETURN :

E - I.R.R. = 1.23

NET PRESENT VALUE (discount rate = 12.0%) :

E - N.P.V. = 8031029.24

Source: Instituto de Analisis de Politica Agraria

TABLE E.3

ECONOMIC ANALYSIS - TRANSPORT COMPONENT : PICHIS-PACHITEA RIVERS VALLEYS
TOTAL PROJECT
OCTOBER 1994 PRICES (US$)

YEAR	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
TOTAL COST/YEAR	10940400	648000	648000	2527200	648000	648000	2527200	648000	648000	2527200	22410000
TOTAL BENEFITS/YEAR		7354657	7493157	7493157	7493157	7493157	7493157	7493157	7493157	7493157	67299913
NET CASH FLOW :	-10940400	6706657	6845157	4965957	6845157	6845157	4965957	6845157	6845157	4965957	

FINANCIAL COEFFICIENTS ESTIMATE :

INTERNAL RATE OF RETURN :

E - I.R.R. = 0.58

NET PRESENT VALUE (discount rate = 12.0%) :

E - N.P.V. = 20036918.43

Source: Instituto de Analisis de Politica Agraria

BASIC ASSUMPTIONS:

1.- Production volumes will be constant during the 10-year analysis period.

2.- An approximate of 80% of the production volume is assumed to be exported out of the zone.

3.- Unit prices and percentages of loses are due to deterioration of roads. For the region's products they are :

Product	Unit Cost (U.S.$/Ton)	% of Losses
Cotton	610	0
Rice	180	20
Cacao	530	30
Coffee	390	20
Corn	780	30
Papaya	110	80
Yucca	63	30
Grapewine	1130	40
Banana	80	30
Pijuayo	450	20

4.- Total benefits were estimated including the following items

a) Reduction in the products freight tariffs along the new or rehabilitated roads.

b) Reduction in the products losses derived from the road's state.

c) Reduction in personal tranportation tariffs.

5.- Reduction in product's freight tariffs have been estimated based in the following formula:

R = TT0 - TT1

TT0 = Cost of freight previous to road improvement

TT1 = Cost of freight after road improvement

TT (TT0 or TT1) = MT*CC*D*Q

MT = Tariff (U.S.$/Ton-km) = U.S.$ 0.09 for paved roads in the coast

CC = Tariff conversion coefficient

= 2.9 for unpaved roads in the jungle

= 2.1 for roads with subbase pavement

D = Average transport distance (km)

Q = Transported weight (Ton)

Source: Comision Reguladora de Tarifas de Transporte (PERU)

TABLE E17

Banana and Yucca Flour Processing Plant (Tocache)
Cash Flow
October 1994 prices (US$)

	0	1	2	3	4	5	Total
A. COSTS							
Investment							
Equipment	13,780.00						13,780.00
Land	2,670.00						2,670 00
Infrastructure	14,040.00						14,040.00
Operation cost							0.00
Labor		2,912.00	3,608.00	4,480.00	4,480.00	4,480.00	20,160.00
Raw material							0.00
Yucca		40,000 00	44,444.44	52,222.22	52,222.22	52,222.22	241,111.11
Bananas		53,333.33	53,333.33	53 333 33	53,333.33	53,333.33	53,333 33
Energy		19,249 07	20,317.16	22,007.11	22,007.11	22,007.11	105,587.56
Administrative expense	3,135.00	11,258 24	11,809 49	12,756 27	12,756 27	12,756.27	64,471 53
TOTAL COSTS	33,625.00	126,752 64	133,712 43	144,798.93	144,798.93	144,798.93	(515,153.53)
B. Total income	0.00	97,500 00	130,280.00	153,400.00	153,400.00	153,400.00	687,980.00
C. Net income	(33,625 00)	(29,252 64)	(3,432 43)	8,601 07	8,601.07	8,601.07	172,826.47
E-IRR	(0.24)						
Interest rate	0.12						
E-NPV	(40,581.45)						
D. FINANCIAL							
Loan	33,625.00	0.00	0.00	0.00	0.00	0.00	
Payment for debt	3,600.00	9,600 00	8,880.00	8,160 00	7,440.00	6,720 00	
E. INCOME W/FIN	33,625 00	97,500.00	130,280.00	153,400.00	153,400.00	153,400.00	
F. TOTAL COST W/FIN	37,225 00	136,352 64	142,592 43	152,958 93	152,238.93	151,518 93	
G. NET FINANCIAL FLOW	(3,600 00)	(38,852 64)	(12,312.43)	441 07	1,161.07	1,881 07	
F-IRR	(0 56)						
F-NPV	(41,058 98)	Discount rate = 0.12					

Source: Instituto de Analisis de Politica Agraria

TABLE E18

Banana Flour Processing Plant (Tingo Maria-San MIguel)
Cash Flow
October 1994 prices (US$)

YEARS	1	2	3	4	5
A. COSTS					
Investment	10000	10000	0	0	0
Labor	10000	54000	60000	60000	60000
Management	4500	17300	19600	19600	19600
Raw Material/ Other items	25000	108800	136000	136000	136000
Total cost	49500	190100	215600	215600	215600
B. Income for sales	9000	136000	210000	230000	250000
C. Net income	-40500	-54100	-5600	14400	34400
E-IRR	-0.210953				
E-NPV	-54396.22				
D. Financial					
Loan	45000	0	0	0	0
Payment for debt	5400	16650	15300	13950	12600
E. Income w/Fin	54000	136000	210000	230000	250000
F. Total Cost w/Fin	54900	206750	230900	229550	228200
G. Net Financial Flow	-900	-70750	-20900	450	21800
F-IRR	-0.40848				
F-NPV	-56277.54	Discount rate = 0.12			

Source: Instituto de Analisis de Politica Agraria

TABLE E19

Banana and Yuca Enrichment Flour (Tocache)
Cash Flow
October 1994 prices (US$)

Product	YEARS						
	0	1	2	3	4	5	Total
A. COSTS							
Investment							
Machinery and equipment	15780						15780.00
Terrain	2670						2670.00
Civil works	14040						14040.00
Operating costs							0.00
Labor		2912	3808	4480	4480	4480	20160.00
Raw material							0.00
Yuccca		40000	44444	52222	52222	52222	241111.11
Nanana		53333	53333	53333	53333	53333	53333.33
Input (energy)		24061	25396	27509	27509	27509	131984.44
Administrative costs	3135	15261	16013	17298	17298	17298	86304.09
TOTAL COST	-35625	-135568	-142995	-154843	-154843	-154843	-565382.98
Total income	0	117000	156336	184080	184080	184080	825576.00
E - Net income	-35625	-18568	13341	29237	29237	29237	260193.02222
E - IRR	0.2067						
Interest Rate	0.12						

Cost of a mixer US$ 2,000

The expenses for energy are increased in 5% of the total cost.

The administrative costs are increased in 3% of the total cost.

The increase considered is 20% in the price (incomes)

Source: Instituto de Analisis de Politica Agraria

TABLE E20

Coffee-Cacao Processing Plant (San Francisco)
Cash Flow
October 1994 prices (US$)

	Period (years)					
Period (years)	0	1	2	3	4	5
A. COSTS						
Investment	100000	0	0	0	0	0
Labor		6,300	9,000	10,500	10,500	10,500
Management		7,832	12,382	15,395	15,395	15,395
Raw Material/ and energy		137,500	220,250	275,000	275,000	275,000
Others		5,000	6,000	7,000	7,000	7,000
TOTAL COSTS	100000	156,632	247,632	307,895	307,895	307,895
b. INCOME FOR SALES	0	185,000	296,450	370,000	370,000	370,000
C. NET INCOME	(100,000)	28,368	48,818	62,105	62,105	62,105
D. FINANCE						
Loan	80000	0	0	0	0	0
Payment for debt	0	25,600	23,680	21,760	19,840	17,920
E-IRR		0.37676448187				
E-NPV		56356.7191066				
E. INCOME W/FIN	80000	192,500	308,475	385,000	385,000	385,000
F. TOTAL COST W/FIN	100000	182,232	271,312	329,655	327,735	325,815
G. NET FINACIAL FLOW	(20,000)	10,268	37,163	55,345	57,265	59,185
Discount rate = 0.12						
F-NPV*	114432.83					
F-IRR*	1.2511415					

* E-IRR .- Economical Internal Rate of Return (without financing)
E-NPV .- Economical Net Present Value (without financial consideration)
* F-IRR - Financial Internal Rate of Return (including finacial consideration)
F-NPV .- Economical Net Present Value (including financial considerations)

Source: Instituto de Analisis de Politica Agraria

TABLE E21

PALMITO PROCESSING PLANT (TOCACHE)

Cash Flow

October 1994 prices (US$)

Period (years)	0	1	2	3	4	5
COSTS						
Investment	400000					
Installation	75000					
Infrastructure	100000					
Repairs		4000	4000	4000	4000	4000
Labor		18459	23074	27146	30163	30163
Social tax		11076	13845	16288	18098	18098
Input palmito		1017446	1695744	2119680	2649600	2649600
Transport.		79626	132710	165888	207360	207360
Cans		1061683	1769472	2211840	2764800	2764800
Technical assist.	50000	80000	80000	80000	80000	80000
Other items		340844	557827	693726	863103	863103
TOTAL COST	625000	2613134	4276672	5318568	6617124	6617124
TOTAL INCOME	0	2893087	4821811	6027264	7534080	7534080
Net Income	-625000	279953	545139	708696	916956	916956
Rate	0.12					
IRR	0.7487283					
NPV	1234856.3					
FINANCIAL FUND	400000	0	0	0	0	0
DEBT PAYMENT	0	128000	118000	108800	99200	89600
NET INCOME	400000	2893087	4821811	6027264	7534080	7534080
TOTAL COST	625000	2741134	4394672	5427368	6716324	6706724
NET FLOW	-225000	151953	427139	599896	817756	827356
Discount Rate = 0.12						
IRR	1.3571774					
NPV	1488698					

Source: Instituto de Analisis de Politica Agraria

TABLE E22

Seed Processing (ARROSAMSA -TARAPOTO)
Cash Flow
October 1994 prices (US$)

	Period (years)				
	1	2	3	4	5
A. COSTS					
Investment	0	0	0	0	0
Labor	20,000	25,000	30,000	30,000	30,000
Administrative	7,632	8,211	9,842	9,842	9,842
Raw Material/ Energy	120,000	125,000	150,000	150,000	150,000
Other items	5,000	6,000	7,000	7,000	7,000
Total Costs	152,632	164,211	196,842	196,842	196,842
B. Income for sales	80,000	250,000	300,000	300,000	300,000
C. Net Income	(72,632)	85,789	103,158	103,158	103,158
E-IRR	1.231016				
E-NPV	201060.24				
D. FINANCIAL					
Loan	50,000	0	0	0	0
Payment for debt	16,000	15,300	14,700	14,100	13,600
E. Income w/Fin	130,000	250,000	300,000	300,000	300,000
F. Total cost w/Fin	168,632	179,511	211,542	210,942	210,442
G. Net Finacial Flow	(38,632)	70,489	88,458	89,058	89,558
F-IRR	1.953952				
F-NPV	192079.33				

Discount rate = 0.12

Source : Instituto de Analisis de Politica Agraria

TABLE E23

Uña de gato Packing Plant (Puerto Bermudez)
Cash Flow
October 1994 prices (US$)

		Period (years)					
		1	2	3	4	5	
A. COSTS							
Investment	80000		0	0	0	0	
Labor		5250	5250	6300	6300	6300	
Management costs		2500	478.9474	671.0526	671.0526	671.0526	
Raw Material/							
Energy		2500	3750	6250	6250	6250	
Other items		100	100	200	200	200	
TOTAL COSTS	80000	10350	9578.9474	13421.0526	13421.0526	13421.0526	
B INCOME FOR SALES	0	18000	27000	45000	45000	45000	0.72
C. NET INCOME	-80000	7650	17421.0526	31578.9474	31578.9474	31578.9474	
E-IRR	0.1249						
E-NPV	1056.5352						
D. FINANCIAL							
Loan	60000	0	0	0	0	0	
Payment for debt	0	19200	17760	16320	14880	13440	
E. Income w/Fin	-20000	18000	27000	45000	45000	45000	0.72
F. TOTAL COSTS W/FIN	0	29550	27338.9474	29741.0526	28301.0526	26861.0526	
G. NET FINANCIAL FLOW	-20000	-11550	-338.9474	15258.9474	16698.9474	18138.9474	
F-IRR		0.1318					
F-NPV		17597.2289					

Discount rate 0.12

Source: Instituto de Analisis de Politica Agraria

TABLE EC1

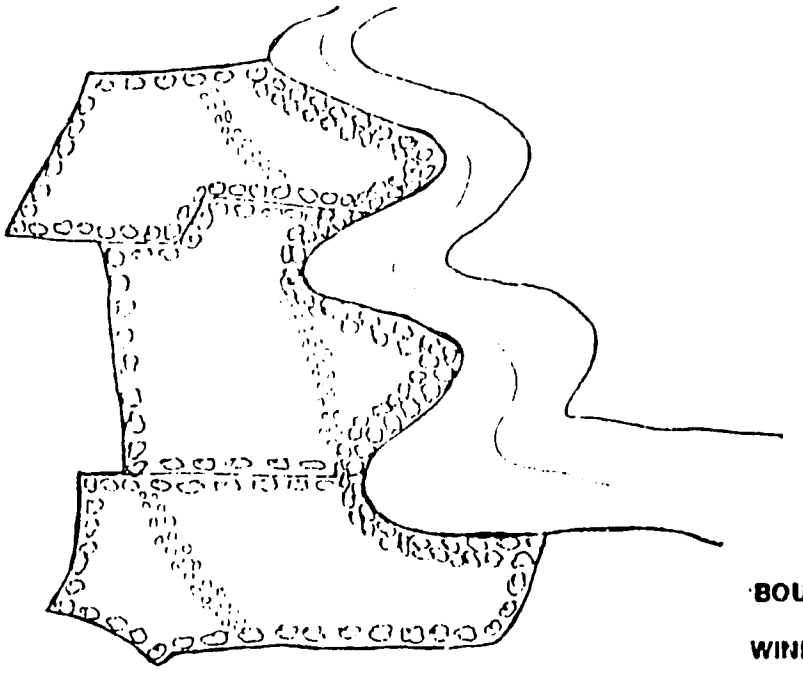
A MODULE OF PRODUCTION FOR FARMERS AND CATTLEMEN

Agroforestry system
Forest land and cattle system

Shore protection	(X)	300 trees/Ha
Boundary construction	(X)	200 trees/Ha
Windbreaker screen (X)	300 trees/Ha	
Total	(X)	800 trees/Ha

Only the forest component is considered because the agricultural component and soil conservation were already considered in the project's costs.

Forest cost per hectare, considering the production of scions and their plantation, 400 dollars/Ha.



BOUNDARY

WINDBREAKER SCREEN

SHORE PROTECTION

PLOTS

TABLE EC2

A MODULE OF PRODUCTION FOR FARMERS LOCATED AT SLOPES AND UPPER SLOPE'S

Protection small woods	1,100 trees/Ha
Living barriers	400 trees/Ha
Furrouws in contour	300 trees/Ha
Windbreak screens	300 trees/Ha
Boundary construction	200 trees/Ha

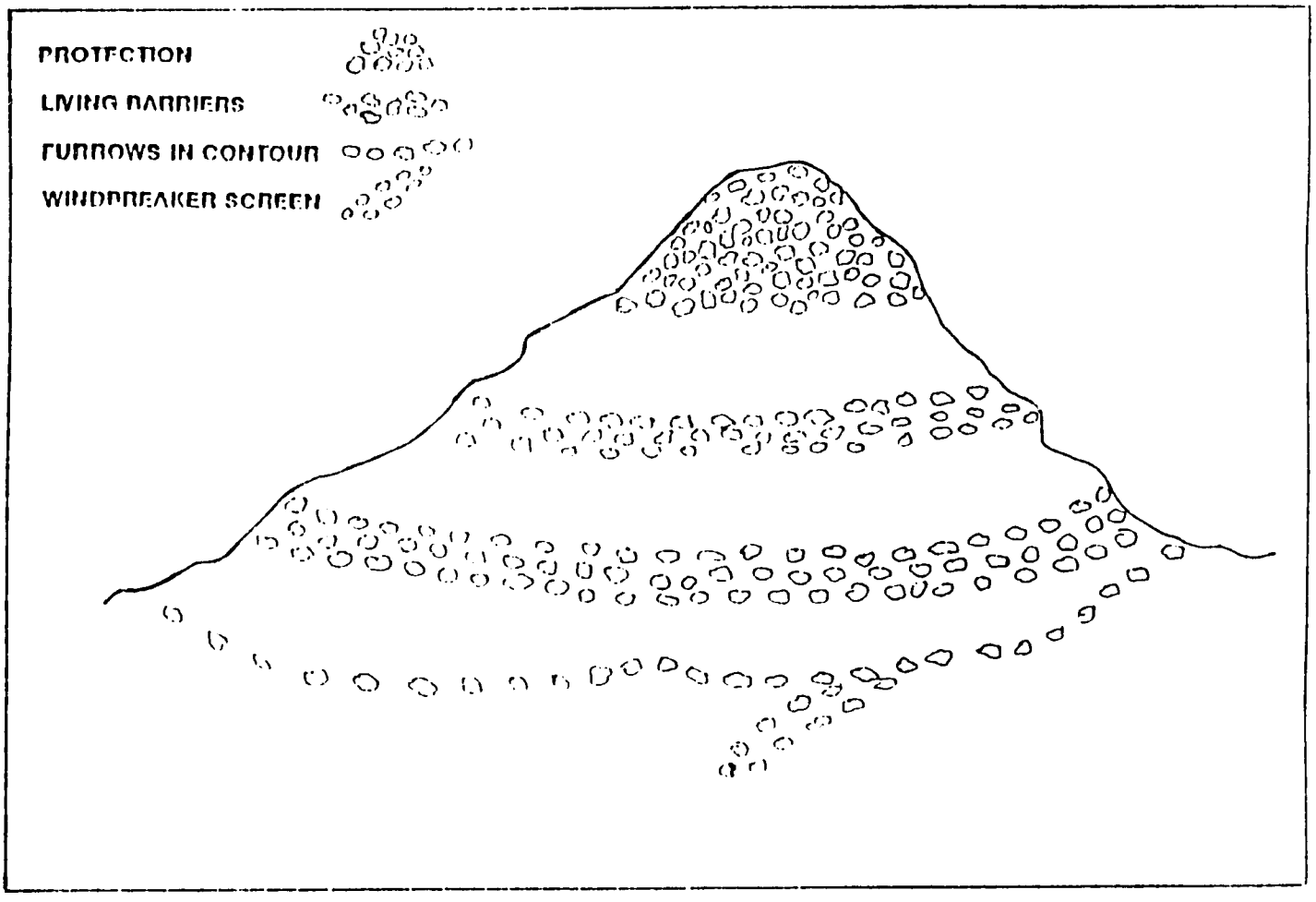


TABLE EC3

ENVIRONMENTAL EDUCATION CAMPAIGN

Elaboration of material (professionals specialists, tecnicians and communicators, advisors)	15,000
Meetings, seminars and trips	10,000
Administrative expenses	5,000

PRODUCTION OF SCIONS FOR REFORESTATION PURPOSES

Scions are to be produced from the species indicated in the modules for farmers and in the reforestation comitees nurseries, PRUNAMACH, NGOs and in community nurseries.

The production cost is US$ 0.5 (2 million scions times US$ 0.5 = 1'000,000).

TABLE EC4

A MODULE OF AGROFORESTRY PRODUCTION

1,000 Ha of forest land and cattle system are to be installed with the aid of cattlemen using multi-purpose forest species especially fodder and covering ones. Since the cost of the forest component is 400 dollars per Ha and births 400 dollars/Ha as well, making a total of 800 dollars/Ha: therefore:

1,000 Ha of forest land and cattle system US$ 800,000

REFORESTATION FOR FIREWOOD PURPOSES

Women will play an important role in a reforesation program for firewood that will take place near theis homes. This program will cover about 2 hectares per family fullfilling the needs of 250 families at a cost of US$ 200,000.

TABLE I1

MOST IMPORTANT INSTITUTIONS IN THE SCOPE OOF THE PROJECT

ZONE: TINGO MARIA/AGUAYTIA

LOCAL GOVERNMENTS

- Provincial municipalities of Leoncio Prado and Padre Abad
- District municipalities

DEVELOPMENT INSTITUTIONS

- Proyecto Especial Alto Huallaga
- Fundación para el Desarrollo de la Selva (FUNDEAS)
- Proyecto Nacional de Manejo de Cuencas Hidrográficas y Conservación de Suelos (PRONAMACHS)
- Universidad Agraria de la Selva (UNAS)
- United Nations Program

PEOPLE'S ORGANIZATION

- Cooperativa Agraria Naranjillo
- Comité de Productores de Plátano de Aguaytía
- Comité de Productores de Yerba Luisa Tingo María
- Asociación Ganadera Aycayacu
- Comité de Productores de Maíz de Aguaytía
- Mothers' clubs (113)
- Development comitees (in each rural town)
- Asociación de Comunidades Nativas-Aguaytía
- Cooperativa de Productores de la Asociación Israelita del Nuevo Pacto Universal
- Asociación de Pueblos Jóvenes
- Comité de Transportistas
- Chamber of Commerce

CENTRAL GOVERNMENT INSTITUTIONS

- Ministerio de Transportes
- Unidad Territorial de Salud / Hospital de Apoyo de Tingo María
- Centro de Salud de Aguaytía
- Unidad de Servicios Eduvativos / Supervisión Provincial
- Sub-Prefecturas Provinciales
- PRONAA-Leoncio Prado
- Ministerio de Agricultura / Oficinas Provinciales
- Jurado Nacional de Elecciones - Oficina Provincial

NON-GOVERNMENTAL ORGANIZATIONS

- Centro de Desarrollo Integral del Huallaga (CDIH) - Tingo María
- Organización SHIN MORI - Tingo María
- CARITAS
- Centro de Asistencia PROVIDA - Tingo María

ZONE: TOCAHE-UCHIZA

LOCAL GOVERNMENTS

- Municipalidad Provincial de Tocache
- Municipalidad Distrital de Tocache y Uchiza
- Municipal Deputies (5)

DEVELOPMENT INSTITUTIONS

- PEAH's Tocache's zone direction
- United Nations' zone office
- Cajas Rurales

PEOPLE'S ORGANIZATION

- Comité de Desarrollo (a nivel de cada centro poblado de la zona rural)
- Asociación de Ganaderos
- Cooperativa Agraria Alto Huallaga-Uchiza
- Comité de Productores de Tilapias - Tocache
- Comité de Productores de Plátano
- Comité de Productores de Arroz
- Comité de Agricultores de Uchiza
- Comité de Productores de Coca del Alto Huallaga - Uchiza
- Mother's Clubs (95)
- Comité de Transportistas - Tocache
- Comité de Pequeños Industriales y Artesanos
- Chamber of Commerce
- Frente de Defensa de los Intereses del Pueblo - Uchiza
- Frente de Desarrollo para la construcción de la Carretera Uchiza-Huacrachuco-Chimbote.

CENTRAL GOVERNMENT INSTITUTIONS

- USE-Supervisión Provincial de Tocache
- USE-Supervisión Distrital de Uchiza
- Ministerio de Agricultura
- UTES-Hospital de Apoyo de Tocache
- UTES-Centro de Salud / Uchiza
- Jurado Nacional de Elecciones - Oficina Povincial
- Subprefectura Provincial

NON-GOVERNMENTAL ORGANIZATIONS

- IRDEPA (Instituto Regional de Desarrollo y Protección Ambiental) - Tocache
- FADI (Fundación Amazónica para el Desarrollo Integral) - Uchiza
- IIAP (Instituto de Investigación de la Amazonía Peruana)

ZONE: PONAZA-BIABO-SISA

LOCAL GOVERNMENTS

- Provinicial municipalities

DEVELOPMENT INSTITUTIONS

- Proyecto Especial Alto Mayo y Huallaga Central
- FONDEAGRO
- PRONAMACHS
- Universidad Nacional de San Martín
- INIA
- Caja Rural de Ahorro y Crédito de San Martín

PEOPLE'S ORGANIZATION

- Comité de Productores de Maíz
- Asociación de Ganaderos
- Comité de Productores de Arroz
- Comité de Productores de Algodón
- Federación de Defensa Antisubversiva (Biabo/Ponaza)
- Mothers' clubs (68)
- Comité de Desarrollo (en cada pueblo)
- Chamber of Commerce - Tarapoto
- Comité de Madereros
- Comité Regioal de Semilla (CORESE)
- Maiceros de la Selva (MASELVA)
- Arroceros Sanmartinences S.A. (ARROSAMSA)

CENTRAL GOVERNMENT INSTITUTIONS

- Oficinas Agrarias Distritales del Ministerio de Agricultura
- Gobiernos Regionales
- Centros de Salud
- Unidad de Supervisión Educativa - Provincial
- Subprefectura

NON-GOVERNMENTAL ORGANIZATIONS

- CEPCO (Centro de Estudios y Promoción Comunal del Oriente)
- WARMIMAYO (Centro de apoyo a la mujer ribereña)
- CEDISA (Centro de Desarrollo e Investigación de la Selva Alta)
- EMI (Equipo Misional Itinerante
- CARITAS

ZONE: APURIMAC RIVER VALEY

LOCAL GOVERNMENTS

- Municipalidades Provinciales y Distritales
- Consejos Municipales Menores
- Asociación de Municipalidades del Valle del Apurímac y Ene

DEVELOPMENT INSTITUTIONS

- Micro Región-Sivia
- United Nations' Development Project
- Caja Rural de Ahorro y Crédito del Valle del Río Apurímac

PEOPLE'S ORGANIZATION

- Comité de Defensa Contrasubversivo-DECAS (in each rural district)
- Organización de Ashaninkas del Río Apurímac
- Mothers' clubs
- Empresa Multicomunal - San Francisco
- Central de Cooperativa del valle del Río Apurímac Quimbiri y Sivia (VRAQUS)
- Cooperación de Producción de Cocoa y Café (3)

CENTRAL GOVERNMENT INSTITUTIONS

- USE Provincial y Distrital
- Centros de Salud a nivel distrital
- Oficina Zonal de Agricultura - San Francisco
- ENACO

ZONE: PICHIS-PACHITEA

LOCAL GOVERNMENTS

- Districts municipalities

DEVELOPMENT INSTITUTIONS

- Programa de Desarrollo Rural Puerto Bermúdez -Proyecto Especial Pichis Palcazu
- Agencia de Desarrollo Rural - Ciudad Constitución - PEPP
- Caja Rural de Ahorro y Crédito - La Merced

PEOPLE'S ORGANIZATION

- Asociación de Nativos Ashaninkas de Pichis (ANAP)
- Comité de Productores de Maíz
- Asociación de Ganaderos
- Mothers' clubs (48)
- Cooperativa Agraria de Producción - San Lorenzo
- Empresa Multicomunal Puerto Bermúdez
- Empresa Multicomunal de Santa Rosa
- Cooperativa de Producción Asociación Israelita del Nuevo Pacto Universal

CENTRAL GOVERNMENT INSTITUTIONS

- UTES - Centro de Salud de Puerto Bermúdez
- UTES - Posta de Salud de Ciudad Constitución
- USE - Distrital
- Agencia Zonal del Ministerio de Agricultura

NON-GOVERNMENTAL ORGANIZATIONS

- Centro Amazónico para el Medio Ambiente (CAPMA-La Merced)

CUADRO 12
PEOPLE INTERVIEWED

PERSON INTERVIEWED	INSTITUTION	POSITION	PLACE
Gil, Jose	ADEX/AID		Lima
Sarria, Carlos	ADEX/AID		Lima
Carrillo, Pedro	AID	Proj. Manager	Lima
Diaz, Angel	AID	Consultant	Lima
Hidalgo, Esau	AID	Proj. Manager	Lima
Delgado, Wilser	ARROSAMSA	President	Tarapoto
Lench, German	ARROSAMSA	Manager	Tarapoto
Palma, Hernan	Ag. Agr Tingo Maria	Chargé	Tingo Maria
Poquiona, Edwin	Ag. Agr Tingo Maria	Director	Tingo Maria
Hermoza, Hermilio	Ag Agr Valle Apurimac	Chargé	San Francisco
Abanto, Nestor	gencia Agraria	Chargé	Juanjui
Arevalo, Pedro	gencia Agraria	Director	Tocache
Baldeon, Jose	gencia Agraria	Chargé	San Jose de Sisa
Baldeón, Jose	gencia Agraria-Sisa		Sisa
Tineo, Roberto	rea Des Educ Rio Apurimac	Director	Ayna-San Francisco
Brune, Mac	soc de Artesanos	President	Tocache
Gonzales, Miguel	Asoc de productores	President	Aguaytia
Salas, Roger	Asoc. de productores	President	Cayumba (Tingo Mar
Torres, Abel	Asoc. de productores	President	Cayumba (Tingo Mar
De Vivanco, Guillermo	Banco Continental	Administrator	Tingo Maria
Guimaraes, Luis	Banco Continental	Authorized agent	Tarapoto
Montalvan, Javier	Banco de Credito	Administrator	Tingo Maria
Padilla, Jimmy	Banco de Credito	Bank-business authorized age	Tarapoto
Rios, Alfonso	Banco de Credito		Tingo Maria
Rojas, Javier	Banco de Credito		Tingo Maria
Cardenas, Rolando	CEPTENA	Vivarium expert	Tocache
Arevalo, Enrique	CIDH	Director	Tingo Maria
Flores, Carolina	COFIDE	Admisnist. assist.	Tarapoto
Vela, Roberto	COFIDE	Chargé	Tarapoto
Velasquez, Carlos	COFIDE	Chargé	Tarapoto
Miranda, Carlos	CORA	Subdirector	
Alejandria, Miguel	CORESE-SM	Quality control	Tarapoto
Fernandez, Cesar	CRAC San Martin	Administrator	Tarapoto
Zarate, Edgar	CRAC Valle del Rio Ap. y Ene	Manager	San Francisco
Del Aguila, Darwin	CRAC-SAM	President	Tarapoto
Martinez, Jose	CRAC-SAM	Vice-president	Tarapoto
Caro, Edgar	CRAC-UNA	Civil servant	San Francisco
Reategui, Rolando	Camara de Comercio	President	Tarapoto

Cont...

Continues from TABLE 12

PERSON INTERVIEWED	INSTITUTION	POSITION	PLACE
Cumpen, Josefina	Club de Madres	President	Tingo de Ponaza
Flores, Luisa	Club de Madres	President	Naranjillo (Tingo Mari
Solano, Martha	Club de madres	President	Las Palmas (Tingo Ma
Tincapa, Asuncion	Club de madres	Secretary	Las Palmas (Ting Ma
Blume, Julio	Colono	Colonist	Tocache
Lopez, Lorenzo	Com. de Prod de Tilapia	Producer	Tocache
Burga, Luis	Comision de Productores	Manager	Santa Lucia
Garay, Indalesio	Comite de Desarrollo	President	Cayumba (Tingo Mari
Jara, Jose	Comite de Productores	President	Tocache
Robles, Odilon	Comunidad Boca Mantaro	President	Boca Mantaro
Yupanqui, Mario	Consejo Menor de Puerto Mayo	Municipal agent	Puerto Mayo Quimbiri
Taipe, Carlos	Conv de Alcaldes Rio Apu	T. A. Sivia y President	Sivia-Huanta
Torres	Coop. Agr. Alto Mayo	Agroforestry	Uchiza
Ubillus	Coop Agr. Alto Mayo	Agriculture	Uchiza
Equipo tecnico	Coop. Ganadera Alto Huallaga	Technican Departament	Uchiza
Vidal, Alberto	Coop Agr. Ind. Naranjillo Ltda	General manager	Tingo Maria
Barbosa, Ciprian	DECAS	Pres. Left margen	San Francisco
Barrantes, Francisco	DECAS	Pres. Right margin	Pto. Mayo
Cordero, Juan	DECAS	President	Natividad
Ore, Vicente	DECAS	President	Natividad
Gamarra, Cesar	Direccion Agraria	Statistics chargé	Tarapoto
Parra Garcia, Nestor	ENACO	Office's chief	San Francisco
López Calvo, Alfonsa	Educación		Uchiza
Reboredo, Victor	Empresa Molinera	Manager	Tocache
Ore, Puli	Empresa Multicomunal	Manager	San Francisco
Gallegos, William	FONDEAGRO	Gerente	Tarapoto
Maguina, Luis	FUNDEAS	Director	Tingo Maria
Loayza, Jose	Fund. Des Agrario de la Selva	Administrative Vice Rector	Tingo Maria
Jara, Cesar	Ganadero	Vice-president of Agricultural P	Tocache
Vallon, Luis	Gobierno Regional	Advisor	Tarapoto
Villar, Leoncio	Gobierno Regional	Advisor	Tarapoto
Castaneda, Carlos	IIAP	Director	Tarapoto
Rey, Fernando	INADE	Project Director	Lima
Arevalo, Gloria	INIA	Yucca cotton specialist	Tarapoto
Bardales, Manuel	INIA	Pastures specialist	Tarapoto
Cornejo Gomez, Anibal	INIA	Leguminous specialist	Tarapoto
De Paz, Benjamin	INIA	Director	El Porvenir
Hidalgo, Edinson	INIA	Corn specialist	Tarapoto
Palacios, Orlando	INIA	Rice specialist	Tarapoto
Surco, Benito	INIA	Cacao Coffe specialist	Tarapoto

Cont...

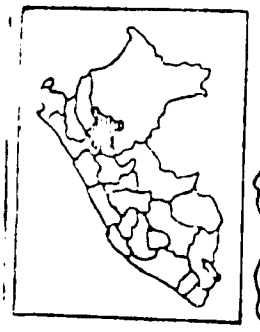
...Continues from TABLE 12

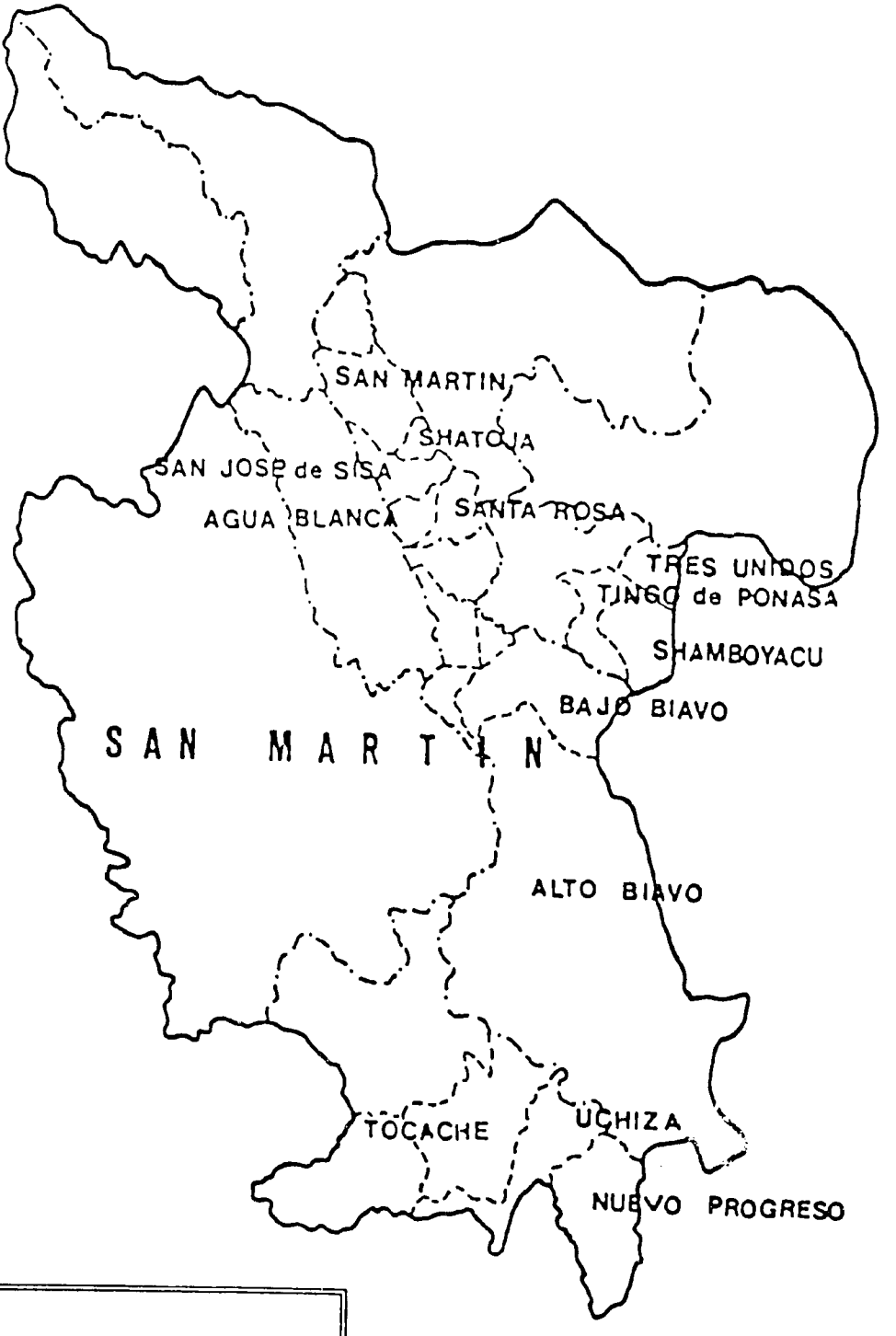
PERSON INTERVIEWED	INSTITUTION	POSITION	PLACE
Valdivieso, Isabel	INIA	Pastures specialist	Tarapoto
	Industria de Maiz Picota S A	Manager Director	Picota
Peso, Abner	Interbanc	Administrator	Tingo Maria
Rios del Aguila.	JNE	Provincial chief	Tocache
Odar, Juan	MASELVA	Manager	Tarapoto
Cordero, Guzman	Microreg Valle del Rio Apur	Director	Sivia-Huanta
Bazan, Fidel	Min. de Agricultura	Director	Tarapoto
	Municipalidad	Deputy mayor	Aguaytia
	Municipalidad	Mayor	C. Constitucion
	Municipalidad	Mayor	Cuzco (Biabo)
	Municipalidad	Mayor	Ponaza
	Municipalidad	Mayor	Puerto Bermudez
	Municipalidad	Mayor	Quimbiri
	Municipalidad	Mayor	San Francisco
	Municipalidad	Mayor	Uchiza
	Municipalidad	Mayor/gobernor	Uchiza
Alarcón, Abel	Municipalidad	Mayor	Bajo Biavo (Nuevo Li
Barrientos, Alfonso	Municipalidad	Mayor	San Francisco
Barrientos, Alfonso	Municipalidad	Mayor	Ayna-San Francisco
Palomino, Victor	Municipalidad	Mayor	Mantaro
Rengifo, Tadeo	Municipalidad	Mayor	Tocache
Rios Arevalo, Jose	Municipalidad	Deputy Mayor	Aguaytia
Saavedra, Wilfredo	Municipalidad	Mayor	San Jose de Sisa
Simbron, Esteban	Municipalidad	Mayor	Quimbiri
Taype, Carlos	Municipalidad	Deputy Mayor	Sivia
Tuesta, Rosendo	Municipalidad	Mayor	Picota
Varias Org.	Municipalidad	Mayor	Tingo de Ponaza
Vela del Aguila, Carmen	Municipalidad	Alderman	Aguaytia
Arevalo, Henry	NUTRISELVA		
Albites, Luis	Naciones Unidas	Coordinator	Santa Lucia
Arevalo, Enrique	ONG CDIH	Director	Tingo Maria
	ONG CEICO	Director	Tarapoto (Biabo)
Aquilina Palomino	ONG FADY	Director	Uchiza
Sifuentes, Juan	ONG INRENA	Director	Tocache
Angulo, Maria	ONG PRODEMU	Director	Tarapoto (Biabo)
Fernando, Kohata	ONG Shing Mori	President	Aguaytia
Huaman, Guido	Oficina de Emp.Multicomunales	Infraestruct. Area	San Francisco
	Org. de Ashaninkas (OARA)		San Francisco-Ayna
Ahumada	PEAH	Infraestruct. specialist	Tingo Maria
Chuman, Teodoro	PEAH	Afric supervisor	Tingo Maria

Cont..

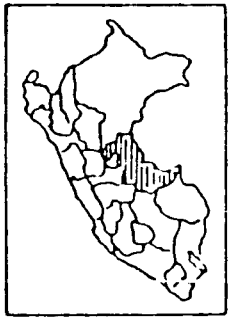
.Continues from TABLE 12

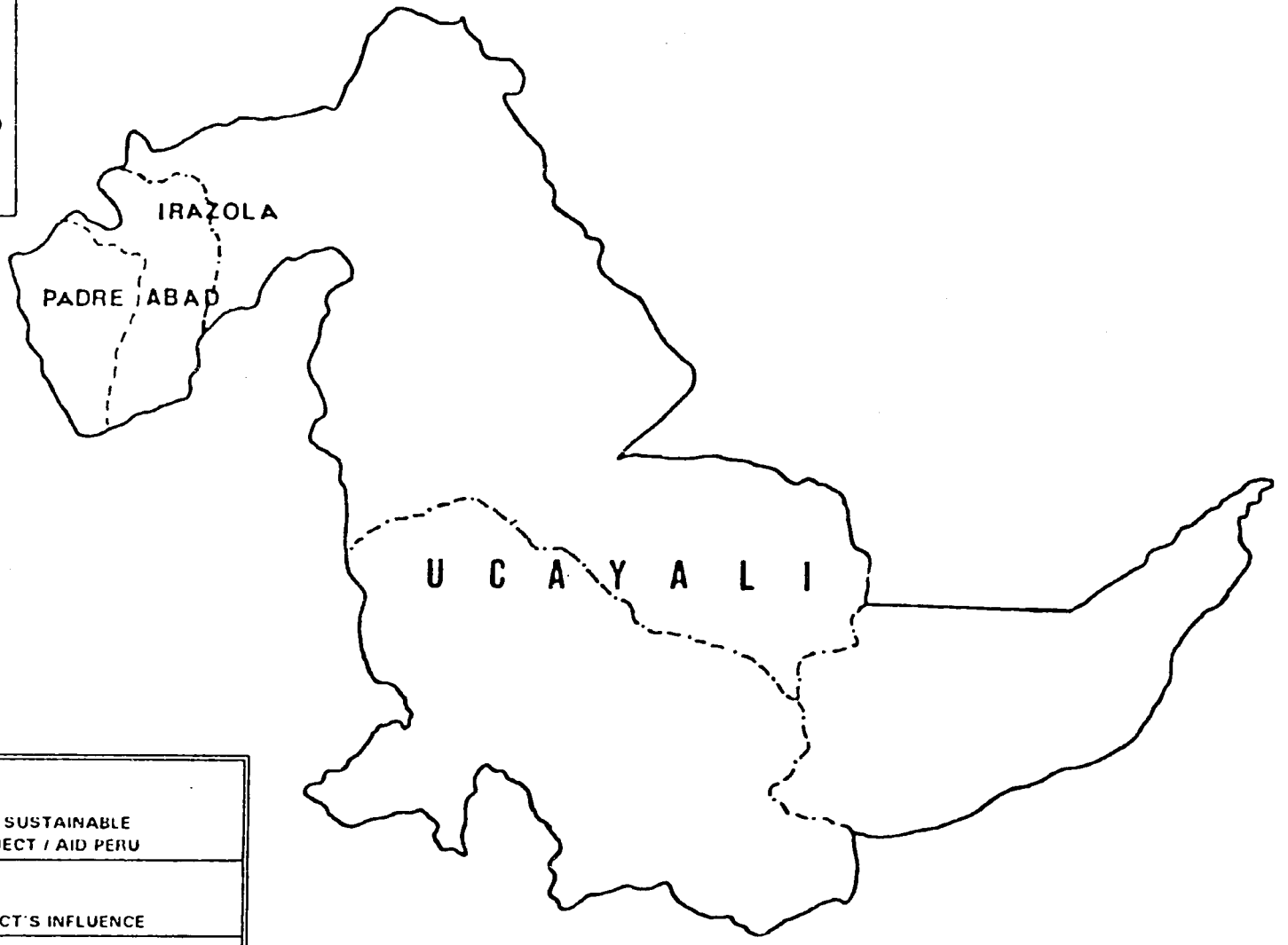
PERSON INTERVIEWED	INSTITUTION	POSITION	PLACE
Delgado,Maria	PEAH	PEAH 's representative	Uchiza
Falcon, Mario	PEAH	Credit Supervisor	Tingo Maria
Lozano Cesar	PEAH	Chief Tocache's Zonal Office	Tocache
Ordonez, Luis	PEAH	Enviroment	Tarapoto
Puelles, Adam	PEAH	Agric. ext	Tocache
Quispe	PEAH	Animal's supervisor	Tingo Maria
Ruiz, Jorge	PEAH	Planning Chief	Tingo Maria
Silva, Maximo	PEAH	Economist	Tingo Maria
Cuzcano Peroz	PECHBM	Director	Tarapoto
Calle, Jorge	PEHCBM	Agronomist	Tarapoto
Vasquez, Alejandro	PEHCBM	Sub-Director	Tarapoto
Zumaeta, Cesar	PEHCBM	Agroindustry	Tarapoto
Zapata , Raul	PEIS	Inf. Chief	Tarapoto (Biabo)
Diaz, Ramon	PEPP	PIR Chief	Puerto Bermudez
Guerrero, Leticia	PEPP	Social Services Chief	Villa Rica
Soraluz, Raul	PEPP	Technical Director	La Merced
Vivanco, Adelo	PEPP	Productc Specialist	Pichis-Palcazú
Ñaupari, Sara	PEPP	Executive Director PEPP	Pichis-Palcazú
Consuelo Rivera	PFIS	Chief	Tarapoto
Edison Calvo	Plant. Almidon Yuca	Manager	Uchiza
Villar, Leoncio	Region San Martin	Advisor	Tarapoto
Zevallos, Enrique	SELVA INDUSTRIA		
	Sub-prefectura	Sub-prefect	Aguaytia
Segundo Rodriguez	UNAS	Chief of the Prod. Office	Tingo Maria
Soto, Javier	UNAS	Professor	Tingo Maria
Urrelo Guerra	UNAS	UNA's Rector	Tingo Maria
Vásquez, Ramiro	UNAS	Lawyer	Tingo Maria
Maldonado, Carlos	UNSM	Dean of the Agroindustry	Tarapoto
Lopez, Alfonsina	USE	Director	Uchiza
Panduro, Julio	USE	Director	Tingo Maria
Mendoza, Rosa	UTES - Centro de Salud	Chargé	Aguaytia
Soto, Raul	UTES - Hospital	Stadistics Chief	Tingo Maria
Vila, Miguel	UTES - Hospital	Director	Tarapoto
Sotelo Jorge	UTES/Valle del Rio Apur.	Director	Ayna-San Francisco
Rodriguez, Segundo	Universidad Agraria de la Selva	Chief of product Centers	Tingo Maria
Garfias, Abel	VRAQUS	Trading Advisor	Lima
Huillca, Hugo	VRAQUS	President	Lima
Amasifue, Maria	Vaso de leche	President	Aguaytia



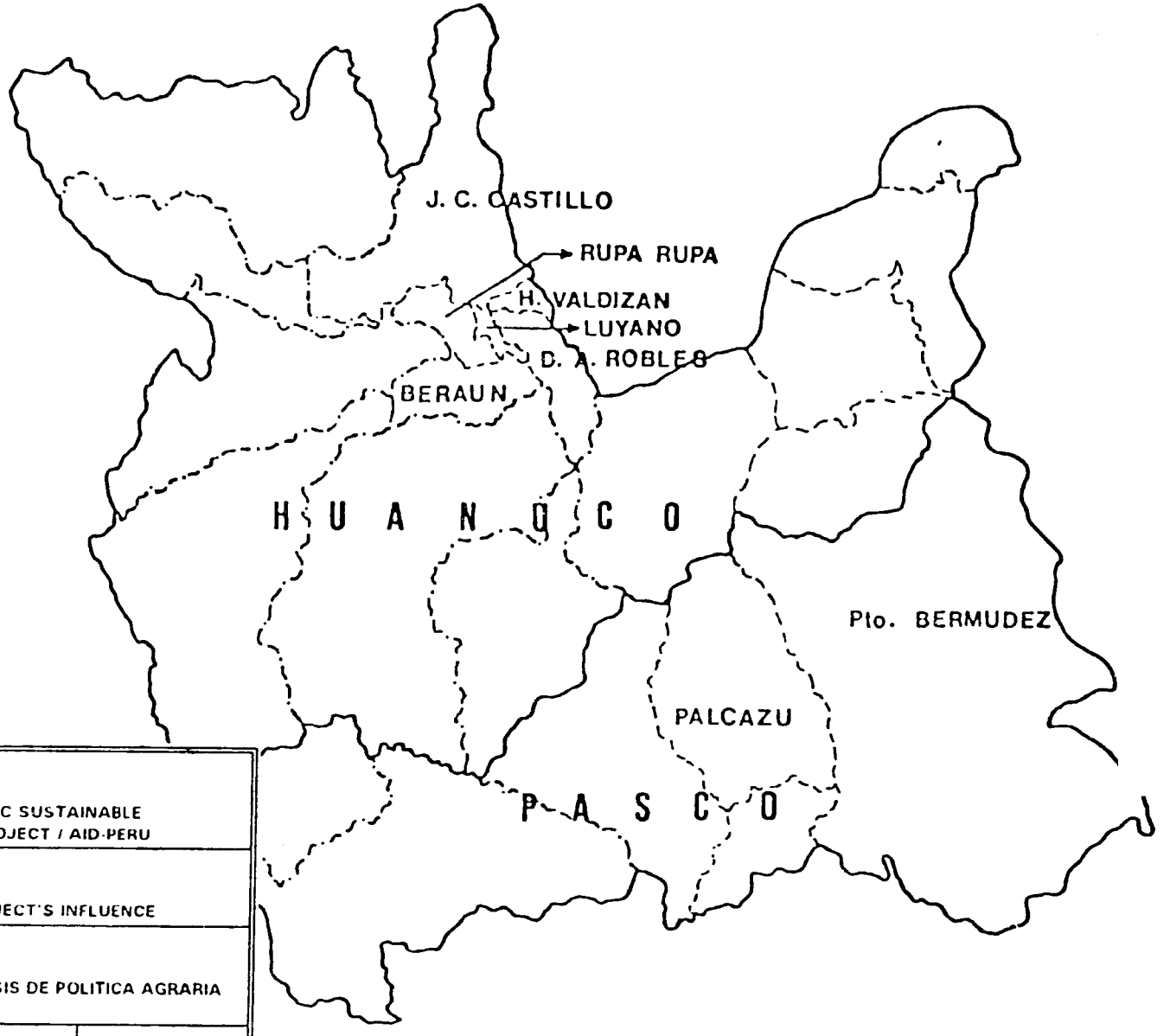


PROJECT: COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID-PERU		
MAP NO 1 ZONE OF THE PROJECT'S INFLUENCE		
AUTHOR: INSTITUTO DE ANALISIS DE POLITICA AGRARIA - I A P A		
SCALE: 1:2000000	MADE BY: EDUARDO TENA	DATE: OCT 1994





PROJECT: COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID PERU		
MAP MP 2 ZONE OF THE PROJECT'S INFLUENCE		
AUTHOR: INSTITUTO DE ANALISIS DE POLITICA AGRARIA - I.A.P.A.		
SCALE: 1:2000000	MADE BY: EDUARDO TENA	DATE: OCT 1994

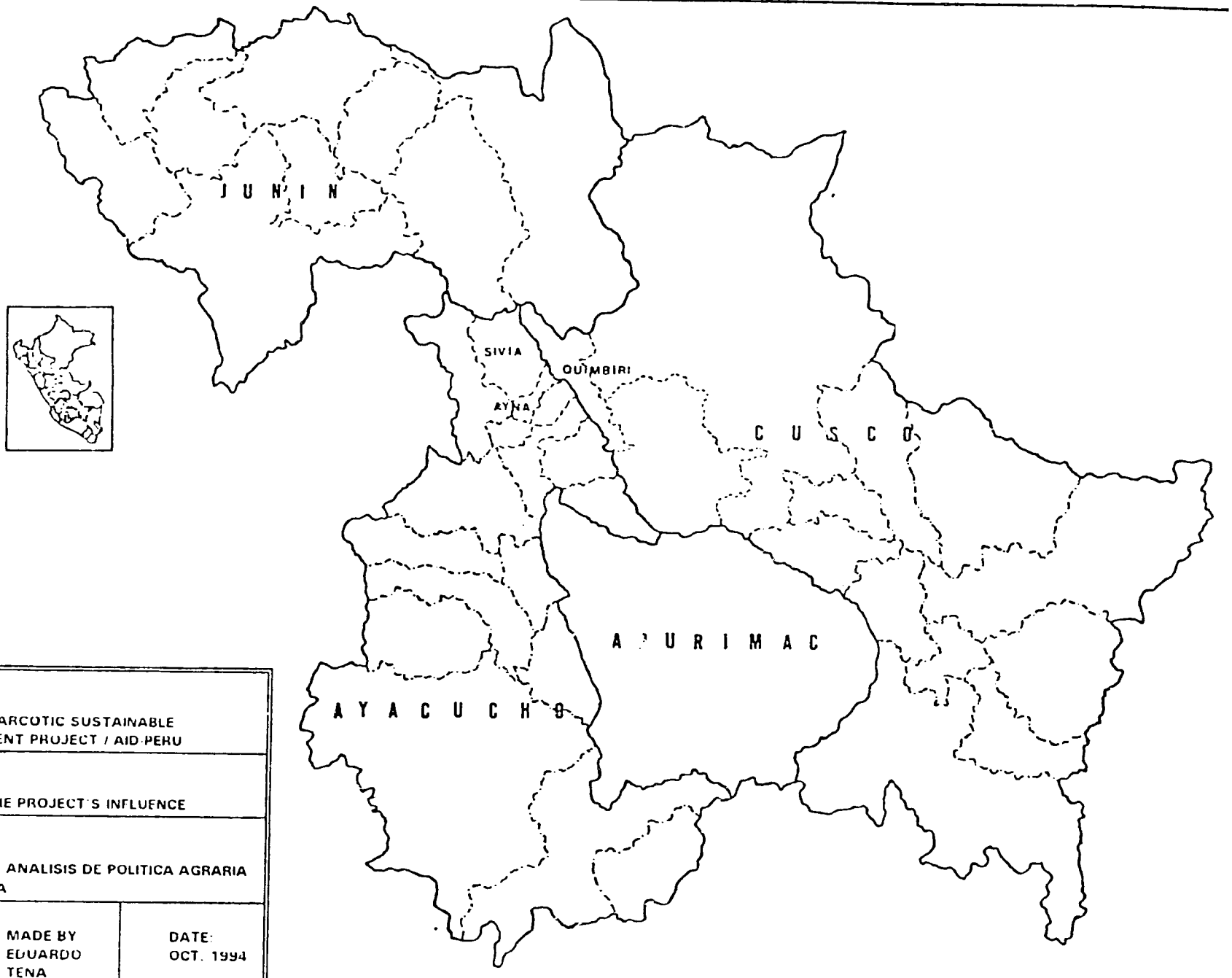


PROJECT:
COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID-PERU

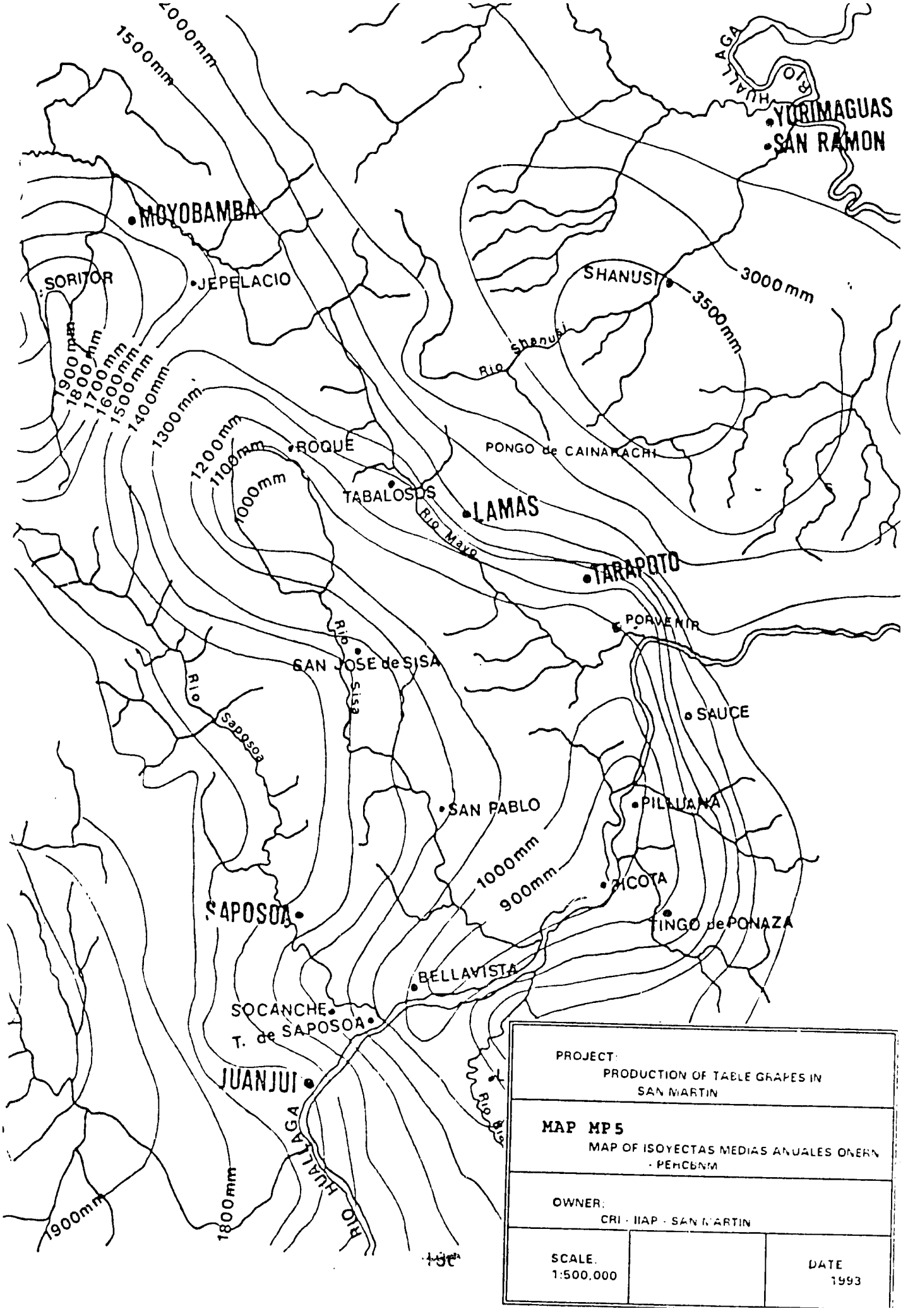
MAP MP 3
ZONE OF THE PROJECT'S INFLUENCE

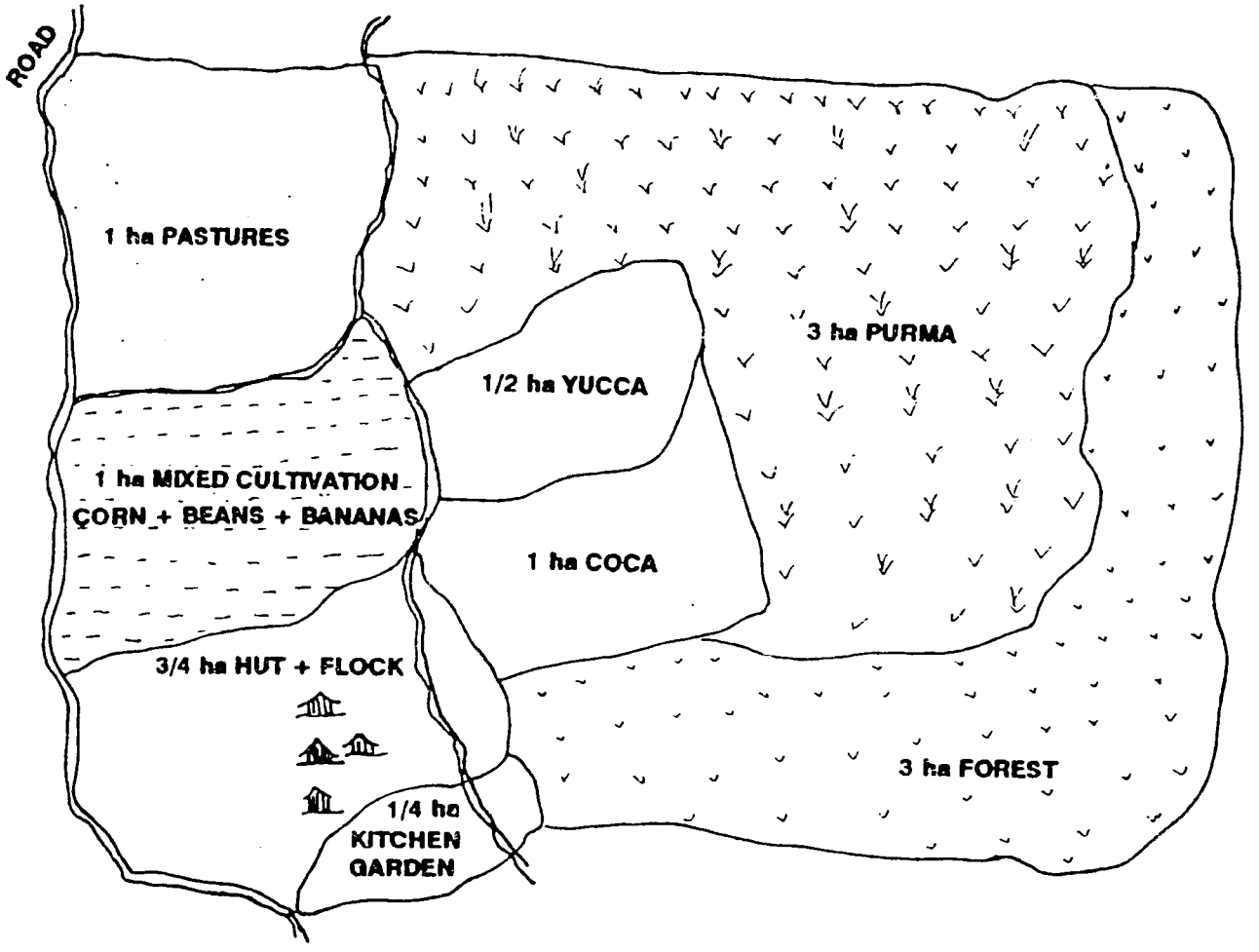
AUTHOR:
INSTITUTO DE ANALISIS DE POLITICA AGRARIA - I.A.P.A.

SCALE:	MADE BY	DATE:
1:2000000	EDUARDO TENA	OCT. 1994

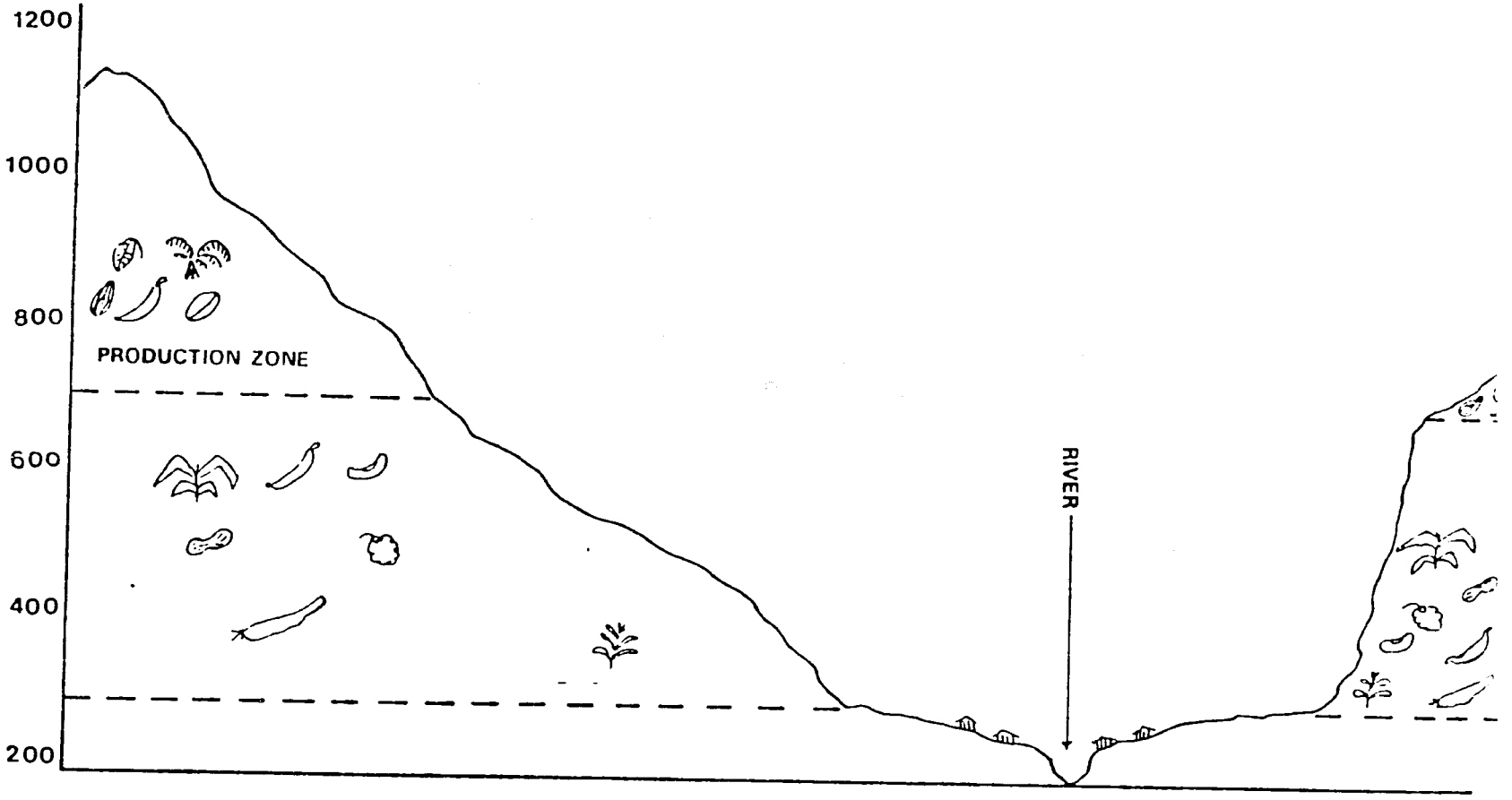


PROJECT: COUNTERNARCOTIC SUSTAINABLE DEVELOPMENT PROJECT / AID-PERU		
MAP MP 4 ZONE OF THE PROJECT'S INFLUENCE		
AUTHOR: INSTITUTO DE ANALISIS DE POLITICA AGRARIA - I A P.A		
SCALE: 1:2000000	MADE BY EDUARDO TENA	DATE: OCT. 1994


2000mm
1500mm
YURIMAGUAS
SAN RAMON
RIO HUALLAGA
MOYOBAMBA
SORITOR
JEPELACIO
SHANUSI
3000mm
3500mm
Rio Shanusi
1900mm
1800mm
1700mm
1600mm
1500mm
1400mm
1300mm
1200mm
1100mm
1000mm
ROQUE
PONGO de CAINARACHI
TABALOSOS
LAMAS
Rio Mayo
TARAPOTO
PORVENIR
Rio Sisa
SAN JOSE de SISA
Rio Saposoa
SAUCE
SAN PABLO
PILLUANA
1000mm
900mm
TICOTA
SAPOSOA
TINGO de PONAZA
BELLAVISTA
SOCANCHE
T. de SAPOSOA
JUANJUI
Rio Huallaga
1900mm
1800mm
PROJECT:
PRODUCTION OF TABLE GRAPES IN SAN MARTIN
MAP MP5
MAP OF ISOYECTAS MEDIAS ANUALES ONERN - PERCBNM
OWNER:
CRI - IIAP - SAN MARTIN
SCALE:
1:500,000
DATE
1993



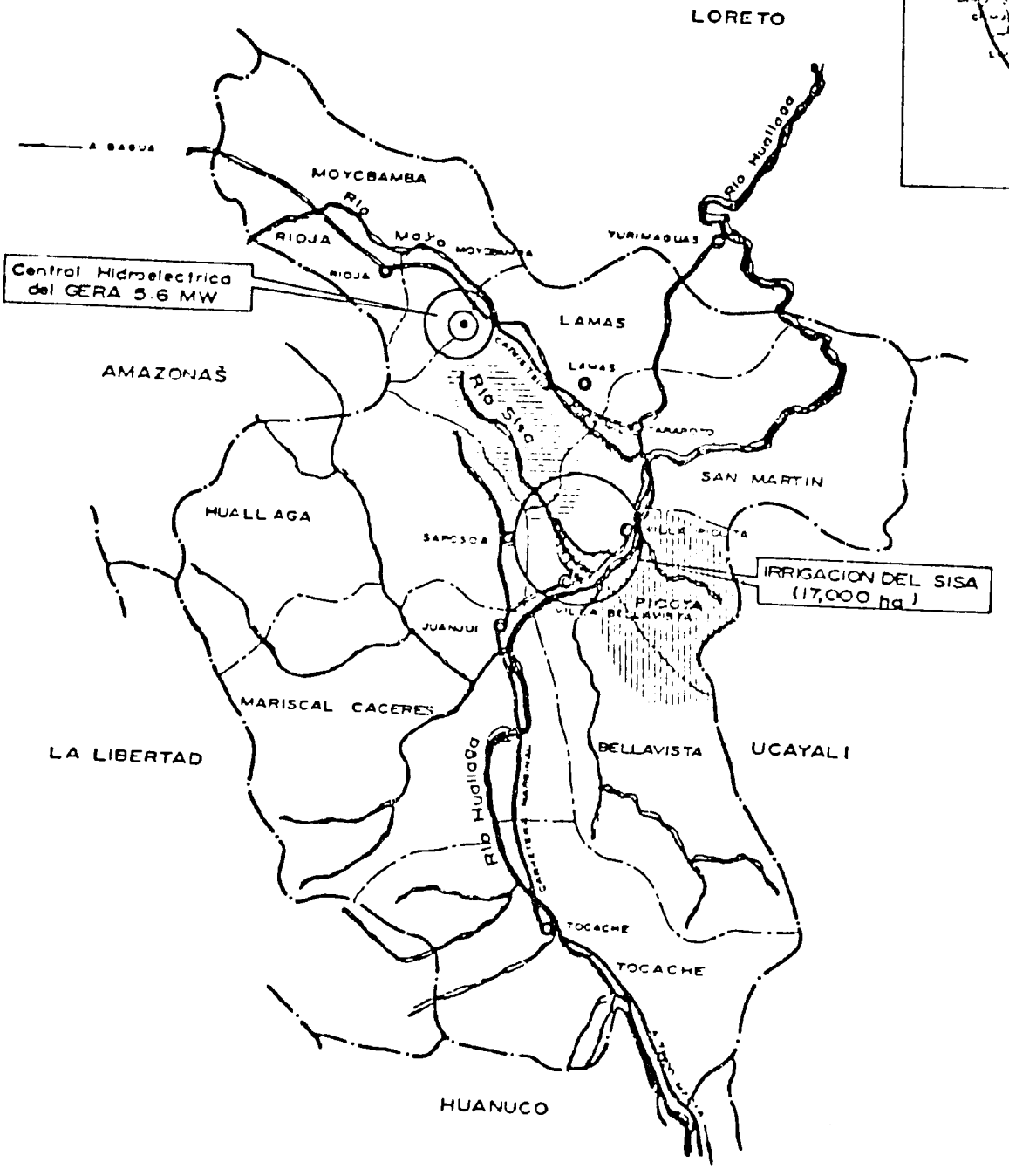
MAP MP 6 MODEL OF SOIL USE IN THE FAMILY PRODUCTIVE UNIT



COCA
CACAO
HARDWOOD PALM-TREE
BANANAS
COFFEE
CORN
PEANUTS
COTTON
RICE
YUCCA

MAP MP7

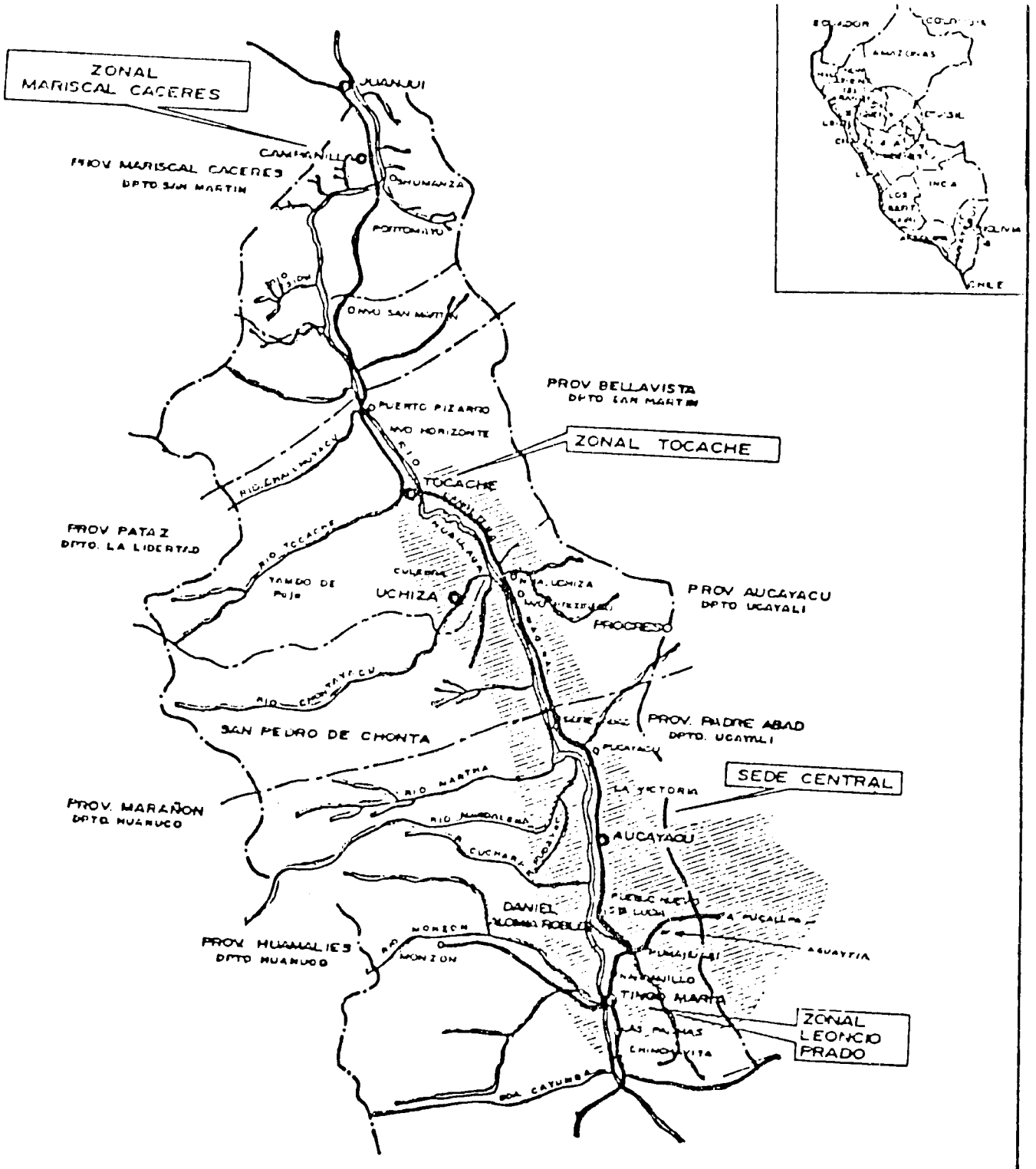
TRANSVERSAL CROSS-SECTION OF THE PRODUCTION ZONES



MAP MP8 CENTRAL HUALLAGA AND LOWER MAYO SPECIAL PROJECT AND SCOPE OF THE CSD PROJECT

LEYEND

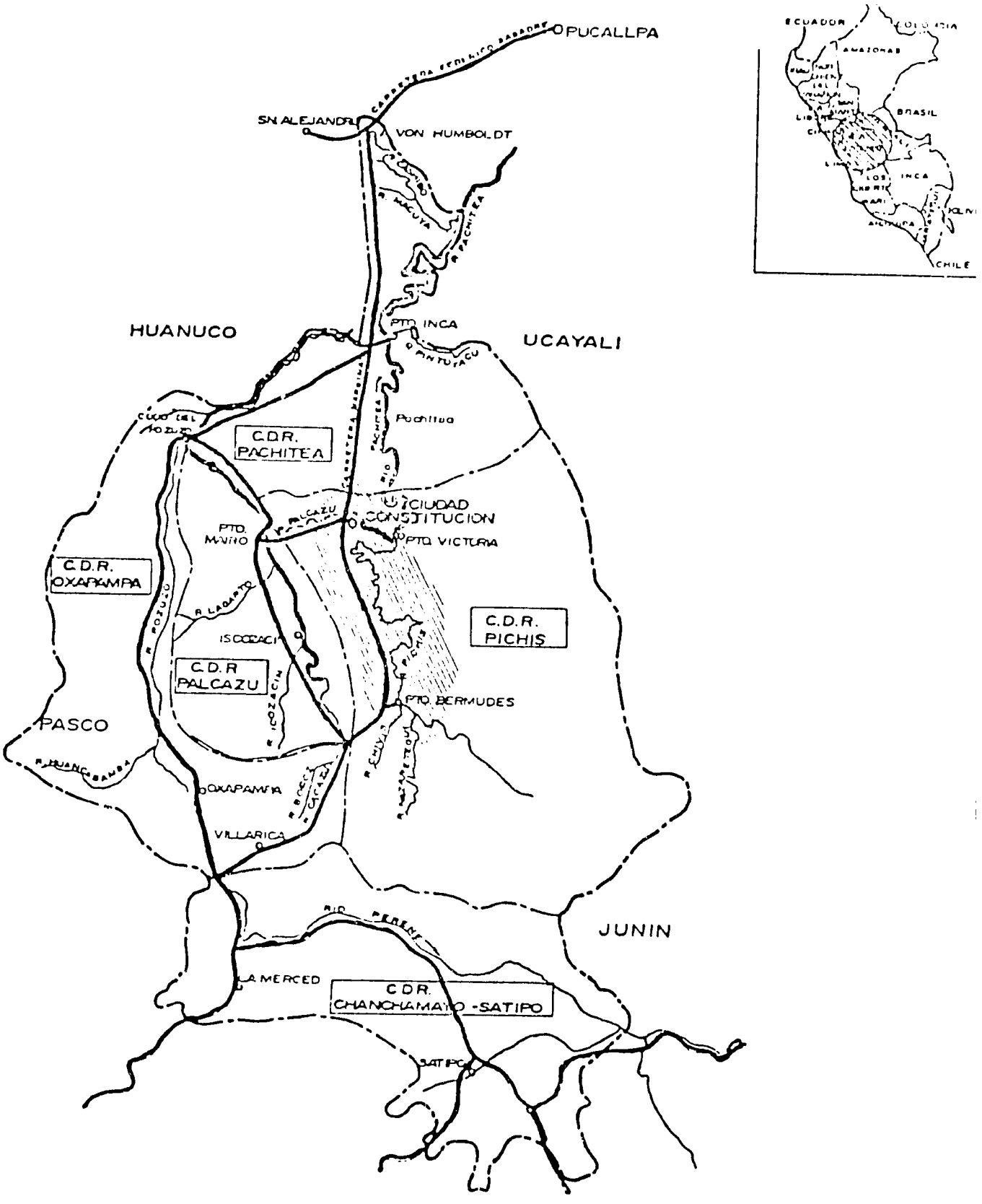
- BOUNDEY OF PROJECT
- BOUNDEY OF DISTRICTS
- CAPITAL OF PROVINCE
- MAIN ROAD
- SCOPE OF THE CSD PROJECT



MAP MP9 UPPER HUALLAGA SPECIAL PROJECT
AND SCOPE OF THE CSD PROJECT

LEYEND

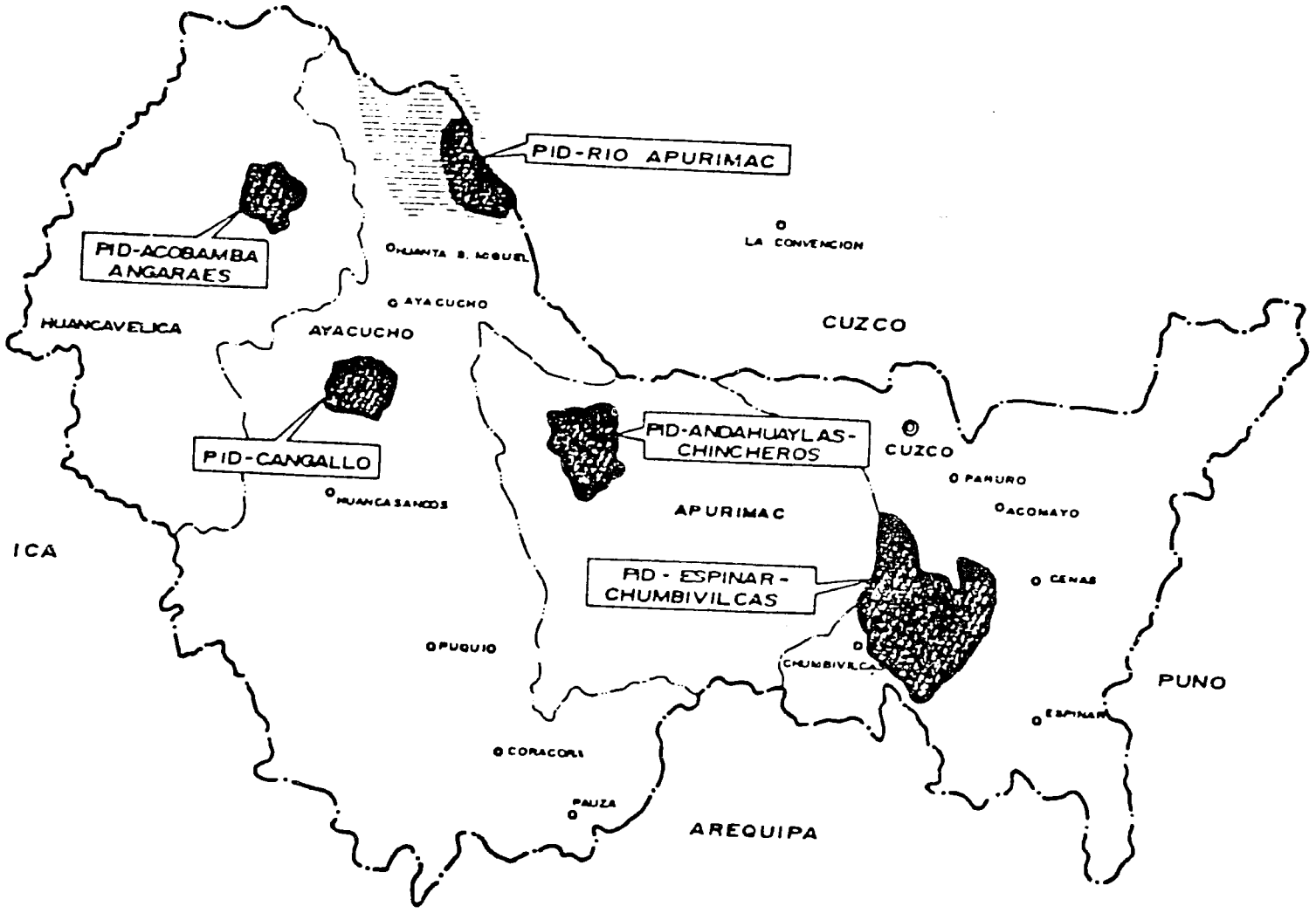
- BOUNDEY OF PROJECT
- BOUNDEY OF DISTRICTS
- CAPITAL OF PROVINCE
- MAIN ROAD
- SCOPE OF THE CSD PROJECT

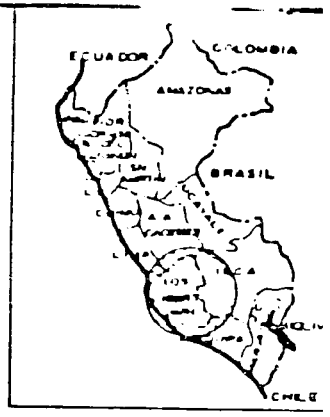


MAP MP10 PICHIS - PALCAZU SPECIAL PROJECT AND SCOPE OF THE CSD PROJECT

LEYEND

- BOUNDEY OF PROJECT
- BOUNDEY OF DISTRICTS
- CAPITAL OF PROVINCE
- MAIN ROAD
- SCOPE OF THE CSD PROJECT





MAP MP11 CENTRAL AND SOUTHERN HIGHLANDS SPECIAL PROJECT AND SCOPE OF THE CSD PROJECT

LEYEND

- BOUNDEY OF PROJECT
- BOUNDEY OF DISTRICTS
- CAPITAL OF PROVINCE
- MAIN ROAD
- SCOPE OF THE CSD PROJECT