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UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

PANAMA

PROJECT PAPER

INTEGRATED RURAL DEVELOPMENT - SONA

Loan Number:525-T-046

AID/LAC/P-2248/1

Project Number:525-0186

RETURN TO

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AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: C (A = Add, C = Change, D = Delete)

Amendment Number: 1

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: Panama

3. PROJECT NUMBER: 525-0186

4. BUREAU/OFFICE: LAC 05

5. PROJECT TITLE (maximum 40 characters): Integrated Rural Development - Sona

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 07 DD 31 YY 86

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4)

A. Initial FY 78 B. Quarter 1 C. Final FY 78

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 78 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	( )	( )	( )	( )	( )	( )
(Loan)	(2,500)	(7,800)	(9,700)	(2,500)	(7,800)	(9,700)
Other U.S. 1.						
Other U.S. 2.						
Host Country		9,996	9,996		9,996	9,996
Other Donor(s)						
TOTALS	2,500	17,176	19,696	2,500	17,176	19,696

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) FN	200		230		9,700				9,700
(2)									
(3)									
(4)									
TOTALS					9,700				9,700

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	BS	R/AG					
B. Amount	2,000	500					

13. PROJECT PURPOSE (maximum 480 characters)

To create an institutional capacity within the Government of Panama to plan and implement integrated rural development projects and establish the first integrated rural development project in the District of Sona.

14. SCHEDULED EVALUATIONS

Interim MM 03 YY 82 MM 08 YY 86 Final MM 08 YY 86

15. SOURCE/ORIGIN OF GOODS AND SERVICES

☐ 000 ☒ 941 ☒ Local ☐ Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a 48 page PP Amendment.)

Reprogramming of loan funds to coincide with moving project impact area from the District of Tonosi to the District of Sona. Some program components were changed.

17. APPROVED BY

Signature

Title: Mission Director

Date Signed: MM 06 DD 12 YY 81

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

AID 1330-4 (8-79)

INTEGRATED RURAL DEVELOPMENT PROJECT PAPER

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K. Technical Analysis: Rural Roads
L. Initial Environmental Examination

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON D.C. 20523

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS
(Amendment No. 1)

Name of Country: Panama

Name of Project: Integrated Rural Development

Number of Project: 525-0186

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, the Integrated Rural Development project for Panama was authorized in a Project Authorization and Request for Allotment of Funds ("PAF") dated September 28, 1977. The PAF is hereby amended as follows:

a. Section 2.c. of the PAF is hereby deleted in its entirety and the following new section 2.c. is hereby added to the PAF:

"c. Except as otherwise agreed in writing by A.I.D., prior to the issuance of any commitment documents or any disbursements under the Loan other than for technical assistance, the Cooperating Country shall furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(i) Evidence of the establishment of the National Coordination Office in the Ministry of Planning, and that key personnel have been assigned to the Office.

(ii) Evidence of the establishment of the National Executive Committee, composed of the Ministers of Planning and Political Economy, Agricultural Development, Education, Health and Public Works and Housing, which Committee shall function to provide overall integrated rural development strategy and policy.

(iii) Evidence of the establishment of a local coordination office in Sona under the Ministry of Planning, and that key personnel have been assigned to the office."

b. Section 2.d. of the PAF is hereby deleted in its entirety, and the following new Section 2.d. is hereby added to the PAF:

"d. Except as otherwise agreed in writing by A.I.D., prior to the issuance of any commitment documents or any disbursements under the Loan to finance agricultural or livestock credit, the Cooperating Country shall furnish to A.I.D., in form and substance satisfactory to A.I.D.:

(i) Evidence of the establishment of a rotating credit fund in the Agricultural Development Bank, operating regulations for such fund and evidence that sufficient capital is in the rotating credit fund to initiate credit operations.

BEST AVAILABLE DOCUMENT

BEST AVAILABLE DOCUMENT

(ii) An implementation plan for the Agricultural and Livestock Credit Component and for the Farm Services Component which details the time phased development of each Component, and explains the operational relationship between them.

(iii) Evidence of the establishment of criteria and procedures to insure that credit for cattle and fencing will be provided only to farmers who will undertake or have undertaken pasture improvement."

c. Section 2.e. of the PAF is hereby deleted in its entirety, and the following new Section 2.e. is hereby added to the PAF:

"e. Except as otherwise agreed in writing by A.I.D., prior to the issuance of any commitment documents or disbursements under the Loan to finance the Special Fund For Agribusiness Feasibility Studies and Credit, the Cooperating Country shall furnish to A.I.D., in form and substance satisfactory to A.I.D., a model scope of work for the agribusiness feasibility studies which shall include an examination of potential environmental impacts, a study of alternative ownership structures and a study of alternative sources of financing."

d. Section 2.f. of the PAF is hereby deleted in its entirety and the following new Section 2.f. is hereby added to the PAF:

"f. The Cooperating Country shall covenant that, unless otherwise agreed in writing by A.I.D., during the life of the Project all reflows of Project credit funds will be used in the Sona area for the same purposes for which the credit funds were originally made available."

e. Section 2.h. of the PAF is hereby deleted in its entirety.

f. Section 2.i. of the PAF is hereby re-lettered 2.h. and Section 2.j. is hereby re-lettered Section 2.i.

2. Except as expressly amended or modified hereby, the PAF remains in full force and effect.

Acting Assistant Administrator
Bureau for Latin America
and the Caribbean

7/21/81
Date

Clearances:
GC/LAC:BVeret: date
LAC/CEN:WmLuken: date
LAC/DR:MBrown: date

GC/LAC:DAAdams:jlo:7/16/81:x29183

I. Summary and Recommendations

A. Recommendations

The proposed project was designed by a joint GOP-AID design team with the assistance of private consulting firms and International Research Institutions (CATIE and IICA). Both the design team and the USAID review committee conclude that the project and its components are technically, economically, socially, administratively, and environmentally sound. USAID Panama recommends that the unearmarked balance of $9,520,000 of loan funds originally authorized for the Integrated Rural Development Project-Tonosi be amended and authorized for the financing of the Integrated Rural Development Project (IRD)-Sona.

B. Project Summary

This project constitutes a renewed major initiative on the part of the GOP. The integrated rural development strategy to be pursued is a fundamental change from past rural development efforts. It requires a combined effort on the part of the various sectors to provide needed inputs on a timely basis to improve the levels of living of the rural poor. This project will be the first test of that strategy in an area that has been identified by the GOP for priority development. The dual purpose of the project is to help the government (1) establish an overall capability for the planning and implementation of integrated rural development projects with regional impact, and (2) implement a program for the accelerated development of the first of the priority impact areas in the District of Sona.

The GOP decision to adopt the strategy of integrated development of impact areas is the result of a major shift in priorities toward the rural areas of Panama. Traditionally, the development focus has been along the transit corridor bordering the canal. The current Government of Panama has reversed this trend in an effort to redress the growing disparity between rural and urban incomes and quality of life. This new emphasis has been demonstrated in increasing attention and resources for rural education, health, sanitary facilities, roads, power and communications.

After much analysis, the conclusion was reached that the limitation on resources, both financial and human, prohibited the timely and efficient focus of all necessary inputs on a nationwide basis. The resulting strategy that has evolved is an impact area approach to integrated rural development. Sona is one of the first such areas to be selected for such an approach - an approach which will serve as a model for future Panamanian IRD projects.

The major components financed with AID Loan funds are Planning and Administration (institution building) and Agricultural Development. Activities in the Social Services such as Health, Education and Housing are totally funded from counterpart contributions.

1. Planning and Administration: Ministry of Planning (MIPPE)

One of the principal objectives of this project is institution-building: specifically, to create the capacity within MIPPE to design, plan, coordinate, and evaluate IRD projects. (Other ministries' institution-building efforts will be discussed under Detailed Project Description).

At the national level it is proposed that the present MIPPE design team, which collaborated with the Mission in redesigning this Loan, form the core of a new unit within MIPPE, the National Coordination Office, which will respond directly to the vice-minister, i.e., the present arrangement will be institutionalized. Two committees will provide support to this office. One will be responsible for establishing overall IRD policy and the other for identifying specific areas for IRD interventions.

The lines of authority for this project will run directly from the national office to the project level in Sona where MIPPE will establish a local Coordination Office with the following responsibilities.

-To coordinate project activities;

-To monitor and evaluate project activities;

-To produce the annual operational plan for integrated project activities in coordination with the national office;and

-To exercise budgetary control over participating agencies.

2. Agricultural Development: Ministry of Agriculture (MIDA)

a) Farm Services. The present nationwide production support system reaches few Panamanian farmers (less than 20 percent) and is focused towards providing farm management and technical services to the GOP asentamientos program. The proposed pilot farm services program in Sona will broaden the focus of MIDA's services to include the independent small farmers who compromise the largest number of farm units both nationally and in Sona.

In order to reach more small farmers, MIDA plans quantitative and qualitative improvements through:
(a) an increase in the number of rural and credit agents and retraining of existing agents; (b) linkage of the credit system of BDA with the production support system to establish coordinated supervised credit services; (c) development of production and farm management packages keyed to the natural resources of the area; and (d) demonstration and small farmer training programs to develop agronomic and manual skills and soil conservation practices.

Agricultural Development Bank (BDA)

b) Credit. Assessments carried out by MIPPE and MIDA of the Sona district identified the availability of agricultural credit as one of the principal constraints to increased small farmer agricultural production. Institutional credit delivered through the BDA was deemed to be in short supply. Currently available credit serves the credit needs of the GOP asentamiento program and the more affluent borrowers. The proposed credit component will more than triple the number of small and medium size farmers receiving credit and will develop a capacity in BDA to supervise loans to small farmers. BDA agents will work closely with MIDA rural agents to provide the supervision and technical assistance critical to the success of the majority of small farmers who will be entering institutional credit channels for the first time.

c) Agro-Industry. This activity will finance agro-industry studies and provide agroindustrial credits for exploitation of non-traditional crops which have been identified for possible processing. The five-year plan will incorporate interests of the small farmers, coops, church organizations, private business interests in agro-industry projects.

Two potential implementation institutions have been identified: Corporacion Financiera Nacional (COFINA) and Banco de Desarrillo Agropecuario (BDA). These financial development institutions will be utilized as ICIs in selecting agro-industrial projects for the Sona area with sub-loan selection criteria similar to those used under the URBE/AID loan 525-T-047.

d) Rural Feeder Roads. Under this component the Ministry of Public Works (MOP) will construct approximately 66 kms. of rural roads and approximately 40 kms. of road will be rehabilitated using the standards developed under MOP-AID road loan 525-T-048. The roads to be constructed will connect several corregimientos which were previously isolated from each other and from the district and provincial road network. New areas of production will be opened up and over 100 communities will be able to reach Sona district service centers within two hours and will be more easily reached by MIDA, BDA and other GOP institutions that provide credit and extension services as well as social services such as health and education.

A new rural road maintenance section will be created to plan and carry out the maintenance requirements of the rural road network in Sona based on the community participation schemes developed under the MOP-AID road loan.

3. Social Services

The rural population of Sona suffers from the same socio-economic characteristics of the rural poor throughout the Third World: low income low education levels, poor health conditions, and heavy outmigration. Social services in SONA are strikingly below the national levels. The proposed activities in health, education and housing are designed to improve the basic quality of life so that the presentand future populations of Sona will be encouraged to retain their roots in the District.

The original project in Tonosi counted on funds available from other AID Loans in Education, Health, and Housing to finance social services in Tonosi. These funds are now all earmarked and not available for use in Sona.

The financing of the proposed social activities is to be funded from counterpart contributions. These funds are available primarily because of a GOP decision not to include land redistribution in the reprogramming effort. Savings were also realized when a detailed population and agricultrual census was conducted this year from regular GOP budget funds.

C. Summary Financial Plan

It is recommended that the remaining GOP counterpart and AID Loan funds for the Project be allocated as follows:

PROPOSED PROJECT BUDGET
($000's)

COMPONENT	AID	GOP	TOTAL
I. Planning and Administration	766.0	2,334.8	3,100.8
II. Agricultural Development	8,754.0	4,268.5	13,022.5
Farm Services	1,698.5	1,361.9	3,060.4
Credit	4,157.5	1,700.1	5,857.6
Agro-Industry	898.0	302.0	1,200.0
Roads	2,000.0	904.5	2,904.5
III. Social Services	-0-	3,394.2	3,394.2
Health	-0-	919.6	919.6
Education	-0-	1,400.0	1,400.0
Housing	-0-	1,074.6[a]	1,074.6
TOTALS	9,520.0[b]	9,997.5	19,517.5
Percent (%)	48.8	52.2	100.0

[a]Includes $172,564 from Community contribution.

[b]This represents the unearmarked balance available as of May 31, 1981 of the originally approved loan amount of 9.7 million.

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II. Project Background

A. Lessons Learned from Tonosi

The proposed reprogramming of the Integrated Rural Development Loan is the result of a nine-month MIPPE-MIDA-AID design team effort with assistance from a six-man consultant design team. The reprogramming effort has received the attention of the private sector and GOP officials at the highest levels.

One attempt has already been made to implement an IRD project in Panama, that of Tonosi, which ended in failure. In the reprogramming exercise, great effort was taken to analyze the failure of Tonosi and to insure that the lessons learned from that failure were incorporated into the design of the IRD-SONA project.

1. The Design of Tonosi

In 1974, the GOP created a temporary task force called PRINDER within MIPPE - charged with identifying areas in Panama which could benefit from an integrated development approach. Ten areas (one of which was SONA) were selected on the basis of various socio-economic indicators - including health, literacy levels, income, and housing conditions. Tonosi was selected from this list for AID financing of the first IRD project. Within the Panamanian context IRD can be defined as a combined effort by various ministries to increase production within the target area and improve the levels of living of the local population.

Over the next two years both PRODIAR (the successor to PRINDER) and AID worked on the design of the Tonosi IRD project which was finally approved in Washington in the summer of 1977. Certain facts concerning this design effort are worth pointing out. First, the process of project identification to project approval took a long time - over two years. Second, an enormous number of people were involved in the design effort: the Tonosi PP lists a total of 92. Third, throughout this period there was a rather uneasy relationship between MIPPE and MIDA - between the planners and the implementers. Until late 1976 MIDA collaboration consisted of the secondment of a small team to PRINDER. Owing to a series of personal and institutional problems, the MIDA contribution was minimal. Following various personnel and policy changes, the focal point for agricultural planning of IRD projects was transferred to MIDA in Santiago.

However, the basis of this interinstitutional conflict was two-fold. By definition, a ministry is interested in expanding its power and authority. In the case of Tonosi, both MIPPE and MIDA wanted to be the key players. While it appears that MIDA did not make - or felt it was not permitted to make - a significant contribution to the design and planning of the project, it was finally given the overall responsibility for coordination and implementation at the project level. The other basis for this interinstitutional conflict was ideological: MIDA wanted to work primarily with asentamientos while MIPPE perferred to work with a broader cross-section of the local population.

A fourth point related to the design was the fact that there was little dialogue with the local population in Tonosi. The design that emerged was more "top-down" than "bottom-up" which was to have serious implications for the implementation of the project.

What happened in Tonosi is now history. MIDA was unable to effectively implement the project because of local opposition which eventually resulted in a violent confrontation in which a national guard was shot and killed. The project was abruptly terminated. The reasons for this failure are not hard to find:

- Lack of participation by local population in project design;
- A land redistribution component which was unacceptable; and
- Interinstitutional conflict between MIPPE and MIDA.

To what extent have these lessons been incorporated into the present design? The following sections will address these lessons.

2. Lack of Participation

This time round, the MIPPE/MIDA design team has spent a lot of time in Santiago and Sona talking with the various groups who will be included - directly or otherwise - in the project: the landless, small farmers, medium farmers, large farmers, local businessmen and politicians, the National Guard, the governor, and the other government agencies responsible for implementing specific components of the project. Sincere efforts have been made to include the suggestions and recommendations of these various groups into the project design. Hence, it is fair to say that such efforts have generated a lot of local support for this project.

In addition, the project has generated strong support from the highest levels. The fact that General Torrijos himself is from Veraguas has helped. The fact that the President of the Republic has visited the project area on more than one occasion has also given a significant boost to the project. Such support from the highest levels has raised expectations considerably. An interview with the governor and the head of the National Guard in Veraguas confirmed this. They have had enough of endless meetings with project designers. What they want now is action - and quickly.

3. Land Redistribution

When it was first announced that an IRD project would be implemented in Sona, rumors began circulating that it would include a land reform component and would be directed primarily towards the southern part of the district, where the heaviest concentration of asentamientos is found. The heaviest concentration of land in the lands of large landowners is also found there. Their fears, however, were proved groundless by a visit from the President to Sona in February 1981. He promised the people of Sona two things:

- There would be no land reform; and
- The project would be for all 10 corregimientos in Sona.

The larger landowners and more prominent members of the private sector have no disagreement with the project if it genuinely tries to meet its objectives of providing goods and services to the small and medium farmers. They fully realize that this project, if successful, will work directly in their interests. First, they realize that it can help alleviate some of the existing social pressure in the area, exacerbated by increasing land concentration and, in the case

of the precaristas, increasing landlessness. If this pressure is not alleviated, then the potential for social conflict will increase accordingly. Second, this group will derive several direct económic benefits from this project - including roads, soil conservation and reforestation techniques, and the sale of livestock to credit beneficiaries. Finally, they will have the opportunity to participate directly in the project if they so desire: by electing a member to the Comision Provincial de DRI (a promise made to them by the President) and by participating in the agro-business activities to be financed by the project.

4. Interinstitutional Conflict

Two important, powerful institutions like MIPPE and MIDA - both working on the same project (with the possibility of working together on several more IRD projects in the not too distant future) - are never going to co-exist in peaceful harmony. Given their shared interests, there is bound to be a permanent element of what can be termed "healthy tension." The only way such tension can be kept within tolerable limits is to clearly establish - before implementation begins - the lines of authority and areas of responsibility that are acceptable to both ministries. For these reasons the project has been designed to ensure that there is a strong MIPPE presence in Sona - responsible for coordinating the various participating agencies and complementing their activities wherever and whenever necessary.

B. Project Setting and Profile of Beneficiaries

This section provides an overview of the project area and a summary description of the intended beneficiaries of this IRD project. Specifically, information will be presented on the following:

- Natural resources of area
- Human resources of area
- Land tenure
- Farming Systems
- Infrastructure
- Profile of beneficiaries

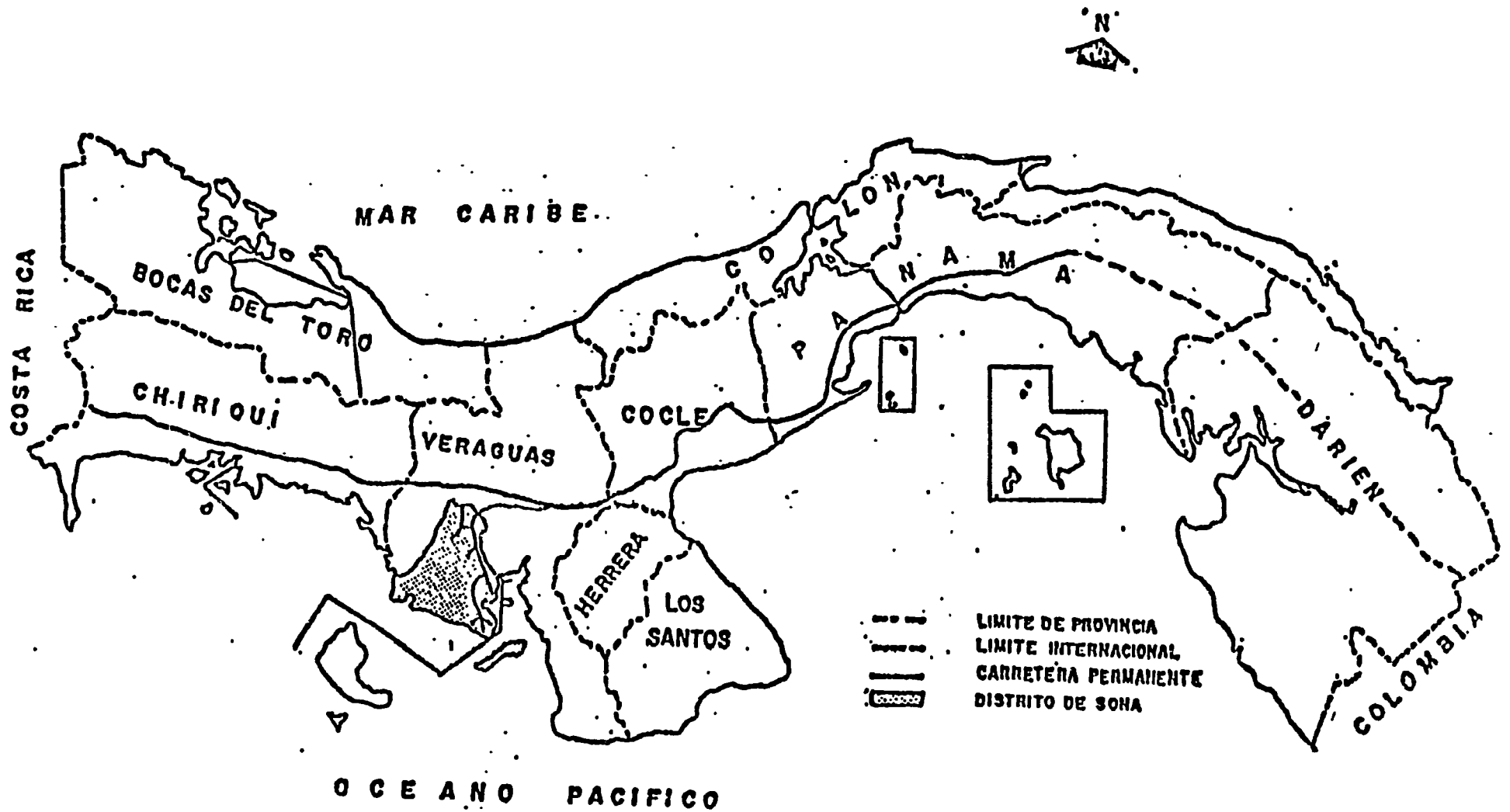
1. Natural Resources of Area

The district of Soná covers an area of 148,000 hectares - characterized by a very broken and uneven physiography. An area of humid tropical forests, it has been undergoing a steady process of colonization and deforestation over the past 40 years. This process of deforestation has been giving way to extensive cattle development. The colonizer is usually a slash and burn farmer who clears forest lands and plants food crops for one or two seasons. The fertility of the soil is quickly depleted by erosion and oxidation of organic matter so that he must plant food crops in a new clearing. Most often the colonizer lacks capital to buy cattle and therefore plants the cleared land with faragua grass. Before migrating again, he sells the usufruct rights to ranchers who then use the land for extensive cattle grazing.

The heaviest period of in-migration was during the period 1940 - 1960, when the population of Soná doubled - from 10,975 to 19,372. During this period land was still readily available. By the early seventies, however, this was no longer the case and in-migration virtually ceased.

MAP 1: GEOGRAPHICAL LOCATION OF SONA

DISTRITO DE SONA
LOCALIZACION NACIONAL



This closing of the frontier had serious repercussions on the small farmer. As the forest is turned into pasture, the land for the subsistence farmer shrinks - both in size and in productivity. Over the period 1950 - 1970, the amount of land in forest decreased by 77.4% - from 67,736 hectares to 15,292 hectares.

2. Human Resources of Area

According to the 1980 Census, Soná now has a population of 23,583 people, only a slight increase over its 1970 population of 22,568. Hence, the population stabilized at the end of the heaviest period of in-migration. Over the 20-year period, 1960 to 1980, the population increased by 21.7% - an annual growth rate of just over one percent. What these figures indicate is the existence of a steady stream of out-migration - to Soná itself, to Santiago, the provincial capital, to Panama City, and to the Darién.

According to the 1980 Census, 63.4% of the economically active population is engaged in agriculture - approximately 3,000 families. A large percentage of these families will be direct beneficiaries of this project. As a result of diminishing resources on one hand and lack of effective technical assistance on the other, income levels are extremely low. Off-farm employment opportunities are limited to working as day laborers for larger farmers and seasonal employment in a sugar mill.

Accurate income figures are not available. A 1978 AID study estimated that a rural family required an income of $304 per capita to barely provide for a family's basic needs. A per capita income of $160 was defined as extreme poverty, i.e. the level at which a family was in no way able to provide for food, clothing, or housing at adequate levels. The per capita income for the rural population of Veraguas, including Sona, was estimated at $151.26.[1]

Other socio-economic indicators substantiate the widespread poverty in the area. While literacy levels improved from 47.2% in 1970 to 59.7% in 1980, they remained low when compared with the national average of 79.3%. While significant advances have been made in education over the past decade, 31.3% of the population over seven years of age had no schooling whatsoever, according to the 1980 Census. In the area of public health, there are 1.7 doctors per 10,000 people - compared with the national average of 8.5 per 10,000. Results of a 1978 malnutrition survey at the provincial level indicated that a large proportion of the population (79% of 1-4 year olds and 70% of 5 - 17 year olds) were malnourished. Malnutrition was particularly severe among the 1-4 year old group: 29% were found to be in second degree malnutrition and 5% in third.[2] In terms of housing in Soná in 1980, 49.5% had no drinking water, 45.9% had no toilet, and 71.5% still had only an earth floor.

1/ Panama: Country Development Strategy Statement 1981-1985. USAID/Panama, 1979.
2/ Ibid. p. 15

In sum, the rural population of Soná demonstrates all the characteristics of the rural poor found throughout the Third World: low income, low educational level, low nutritional level, and heavy out-migration.

3. Land Tenure

The district of Soná is characterized by a highly skewed distribution of land - as demonstrated in Table I. In 1970, 45.1% of farms with an average extension of 2.9 has. occupied 4.6% of the land while 17.0%, with an average extension of 108.1 has., occupied 64.0% of the land. Unfortunately, the available census data do not include farms over 1,000 has. There are several families in the project area who own farms over 1,000 has. in extent, which are given over to intensive rice production and extensive cattle raising. With their inclusion, land distribution would be even more skewed.

Over the years there has been an increasing concentration of land as the small farmers have been forced to sell out and become landless laborers (precaristas), urban migrants, or colonists on Panama's Last Frontier on the Caribbean Coast and in the Darien. During the period 1950 1970, the number of farms with less than 10 has. dropped by 35.7% - from 1,815 to 1,291. In the same period, farms between 10 to 50 has. increased 261.2% (from 415 to 1,084) and those from 50 to 1,000 has. increased 675% (from 72 to 486). The indications are that this process of squeezing the small farmer out has continued throughout the seventies and will continue into the future unless something can be done to halt it.

TABLE I: LAND DISTRIBUTION BY FARM SIZE, 1950 - 1970

	1950		1960		1970	
Size (ha.)	No. Farms	Area (ha.)	No. Farms	Area (ha.)	No. Farms	Area (ha.)
1 - 9.99	1,815	6,351.9	1,618	6,011	1,291	3,732
	(78.8%)	(28.1%)	(58.4%)	(9.5%)	(45.1%)	(4.6%)
10.0 - 49.9	415	7,576.3	833	17,675	1,084	25,791
	(18.0%)	(33.5%)	(30.1%)	(27.8%)	(37.9%)	(31.4%)
50 - 999.9	72	8,667.4	318	39,821	486	52,544
	(3.1%)	(38.4%)	(11.5%)	(62.7%)	(17.0%)	(64.0%)
Total	2,302	22,595.6	2,769	63,507	2,861	82,067

Source: Agricultural Censuses of 1950, 1960 and 1970

A partial solution to this problem has been the creation of asentamientos or agrarian reform enterprises: collective farms created by the state on national lands to provide resources to the landless. In Sona, there are presently 28 asentamientos with a land base of 11,605 has. and a total population of 613 families. The asentamientos are heavily mechanized, capital intensive enterprises given over primarily to the cultivation of rice and the raising of livestock. To date, their performance has been mixed - particularly in terms of their managerial capability and, in some cases, their economic viability. However, they have served an extremely important function by providing goods and services for the landless. Much of MIDA's work in Soná has been with these asentamientos.

4. Farming Systems

Two distinct farming systems exist in the project area. The first involves shifting cultivation on small and medium size holdings of less than 50 has. in the corregimientos of Quebrada de Oro, Calidonia, and Cativé, where the topography is predominantly hilly. The second is found on the flat lands in La Soledad and Guarumal where mechanized, capital intensive agriculture is practiced either on large holdings or on asentamientos.

The shifting agriculturalist fells and burns the forest to
19 provide a site for his crops, frequently using a mixed cropping system for one or two seasons, followed by an indefinite fallow period of five to eight years. The length of this fallow period is dependent upon population pressures on the land. However, it has been observed that after the second or third cropping cycle (approximately 20 years), the small farmer has reached the point of diminishing returns. Since soil fertility has become so low, he frequently converts the land to pasture, sells it, and migrates to new lands in Darien to repeat the same process.

In the case of medium farmers, those with an average of 25 has., many practice a mixed subsistence crop - cattle production system. However, pastures established on soils which have already been exhausted by shifting agriculture will only support extensive grazing. Large landowners, then, have a comparative advantage in cattle production over medium farmers. Consequently, as the carrying capacity of pastures drops, few animals can be maintained, soil erosion becomes more apparent, and these farmers are forced to depend more and more on off-farm employment - or to sell out.

The underlying assumption of the asentamiento is that once land tenure is secured and collective holdings are commercialized via the introduction of technological packages developed for capital intensive production, family income and employment will be increased. Unfortunately, transferring technical and managerial skills to the members has not been as easy as anticipated. The result has been a heavy dependence on government technicians for management and operational decisions. Instead of developing self-reliance on the part of members to manage their own enterprise, the heavy indebtedness brought on by restructuring small farmer agriculture according to this model has led to basically state run farms.

As mentioned earlier, most of the technical assistance provided by MIDA in Soná has gone to the asentamientos. In addition, they have also received the lion's share of the amount of BDA credit disbursed in Sona: 68.3% in 1979 and 75.0% in 1980. During the period 1976 - 1981, only 6.7% of BDA loans went to farmers with less than 10 has., while 30.9% went to those with up to 50 has. However, it should also be pointed out that over this same period the BDA averaged only 150 loans a year.

5. Infrastructure

Most of the services presently available in the district are located in the district capital, with the exception of MIDA which also has a branch office in Guarumal in the southern part of Soná. One of the major constraints to extending services has been the lack of roads - of vital importance in serving the widely dispersed population of Soná. Population density is 15.9 inhabitants per Km^2. There are 429 settlements in the area - 77.0% of which contain less than 50 people.

As can be seen in the accompanying map (Map 2), the whole southwestern section of Soná, particularly the corregimiento of Bahía Honda, is inaccessible by road. The same holds true for much of Rodeo Viejo in the northernmost part of the district. If credit and technical assistance are to be made available to a large number of people, then the area has to be opened up with roads. Even where there are roads, transportation is presently expensive. A ride of 35 Kms. - the greater part of it along a blacktop highway - costs $3.35. A ride of similar length in the metroplitan area of Panama costs a third of this. By bringing the services out to the farmer, this project can help to reduce his costs.

6. Profile of Beneficiaries

It is important to make a clear distinction between direct and indirect beneficiaries. A direct beneficiary is someone who receives a specific service from the project - be it technical assistance, marketing, training, or the like. An indirect beneficiary is someone who can benefit from a service introduced for the common good, e.g. a road, a school, or a health post. In this broader sense, most of the rural population of Soná will be beneficiaries of this project.

However, who will the direct beneficiaries of the productive components of this project be? Specifically, they will tend to be those farmers with 50 has. or less who will receive assistance of various types with their cropping and livestock enterprises. According to MIDA estimations for 1980, there are approximately 3.240 families in this category - as follows:

0 - 2.9 has.	1031 families
3.0 - 9.9 has.	471 families
10.0 - 49.9 has.	1123 families
Asentamientos	613 families

The project envisages giving approximately 2,400 loans to finance various activities in agriculture, livestock, and beekeeping. This does not necessarily imply, however, that 2,400 different farmers will receive credit. The same farmer may receive both agriculture and livestock credits since his production system is often an integrated one. Hence, a conservative estimate of the number of small farmers receiving credit is approximately 2,000. This means that approximately 61% of the target population will benefit directly from the project with credit.

a. Precaristas and Minifundistas (less than 3 has.)

The precaristas are the landless or almost landless living in the project area who survive by working as day laborers on the larger farms. Where forest is still available, they may obtain the usufruct of some land on the understanding that they clear it and finally leave it planted in pasture. With few resources, apart from his family labor, it will be difficult for the project to do much for him in the short run - unless it can provide him with additional resources. This is precisely what the beekeeping project is designed to achieve. In practice, there is little difference between the minifundista and the precarista - more one of quantity than quality. He too must find wage labor on neighboring farms or find additional land to rent or sharecrop. However, there is some potential here since he does have some land. Minifundistas will benefit from both the swine loans and the beekeeping loans described later in this paper.

b. Small Farmers (3 - 10 has.)

With access to more land, these small farmers have more potential. Not only will this group benefit from the swine loans and, perhaps, the beekeeping loans, but they will also benefit from the agricultural component of the project. It should be remembered, however, that their involvement in a market economy has been limited to date. Most of their production is for home consumption. Hence, it will be incumbent upon the project to work slowly and carefully with these small farmers.

c. Medium Farmers (10.0 - 49.9 has.)

Amongst this group - the most important beneficiary group in the project - the desire to have cattle is very strong. As mentioned earlier, however, they also engage in swidden agriculture. The project hopes to assist them in both agriculture and livestock. Their main constraint has been lack of capital to expand their enterprises. Not only do they have land available, but they also have family labor available and in some cases, previous experience of institutional credit. However, care must be taken to ensure that the technical assistance provided does not encourage the medium farmers to turn more land into pasture. Rather, attention should be paid to ensuring that they make better use of the resources they already have.

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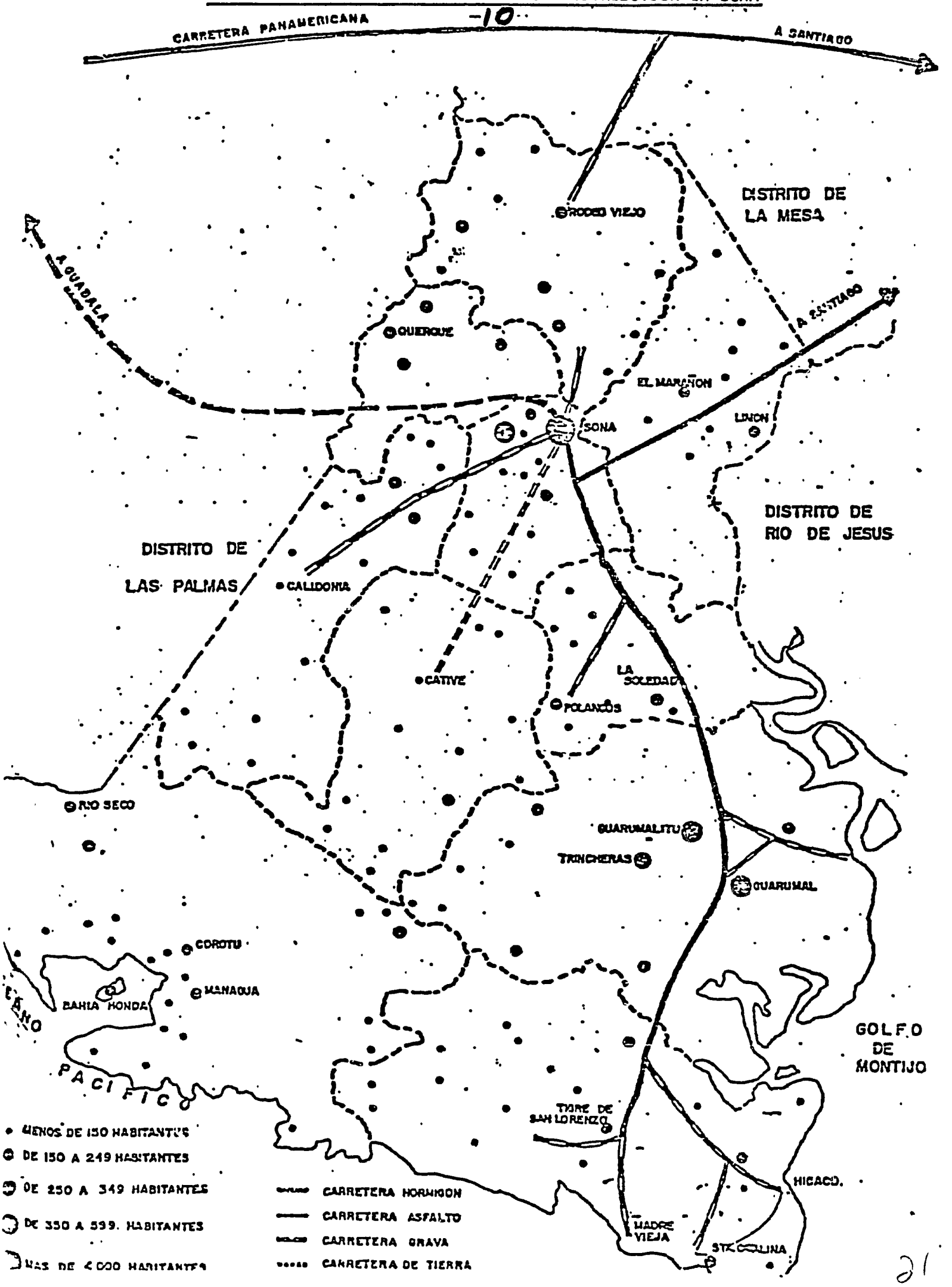
MAP 2: ROAD NETWORK AND POPULATION DISTRIBUTION IN SONA



PART III Project Description

A. Planning and Administration

The design of the administrative mechanisms for this project is based on a careful analysis of the problems encountered in the original Tonosi project (see Part II A). The proposed institutional structure and administration is based on the following three premises:

- The importance of a strong unit within MIPPE in Panama with overall responsibility for the project;
- The importance of a strong MIPPE presence at the project level; and
- The importance of creating mechanisms to encourage beneficiary participation.

1. Proposed Institutional Structure and Administration

At the national level it is proposed that the present MIPPE design team form the core of a new unit, the Oficinal National de Coordinacion, which will respond directly to the vice-minister, i.e. the present arrangement will be institutionalized. Not only will this office be responsible for coordinating and evaluating this IRD project, but it will also be responsible designing future IRD projects. Two committees will provide support to this office. The Comite Ejecutivo, composed of the ministers from the involved institutions, particularly MIDA, BDA, MOP, and MIPPE, will be responsible for establishing overall IRD policy, strategy, and objectives as well as selecting areas, for possible future IRD projects. The Comision de Apoyo, composed of the planning heads from participating agencies and chaired by the director of MIPPE's Direccion de Planificacion y Coordinacion Regional, will be responsible for identifying specific areas for IRD interventions, producing the baseline information, and developing strategies.

The proposed structure of the National Office includes the following six units:

- Project statistics;
- Economic evaluation;
- Social evaluation;
- Agricultural analysis;
- Training and promotion; and
- Finance and administration.

With the exception of the Training and Promotion Unit, all are directly involved in planning, monitoring and evaluating project activities. The predecessors to the present MIPPE/MIDA IRD design team, PRINDER and PRODIAR, were placed within the Direccion de Planificacion y Coordinacion Regional. This division has responsibility for regional planning, strengthening the process of provincial planning, and providing technical assistance to new government institutions established under the 1972 Constitution. Given that the design team presently enjoys a semi-autonomous status responding directly to the vice-minister, this status should be continued and institutionalized.

The line of authority will run directly from the National Office to the project level in Sona. MIPPE provincial office in Santiago will be involved only to the extent that it can assist with the following:

- To give support for the resolution of any problems at the provincial level; and
- To see that IRD plans conform with the overall provincial plan.

At the project level in Sona, MIPPE will establish an Oficina Local de Coordinacion with the following responsibilities:

- To coordinate project activities;
- To monitor and evaluate project activities;
- To produce the annual operational plan for integrated project activities in coordination with the National Office;
- To exercise budgetary control over participating agencies; and
- To promote the project within the district of Sona.

It is proposed that this Local Office be structured in the same way as the National Office. It would be headed by a project coordinator. One proposed modification is that the Project Statistics unit be given more importance and renamed the Planning, Monitoring, and Evaluation unit.

One of the goals of this project is to improve MIPPE's capacity to design, plan, monitor, and evaluate IRD activities. The training ground for improving this capacity will be this particular project.

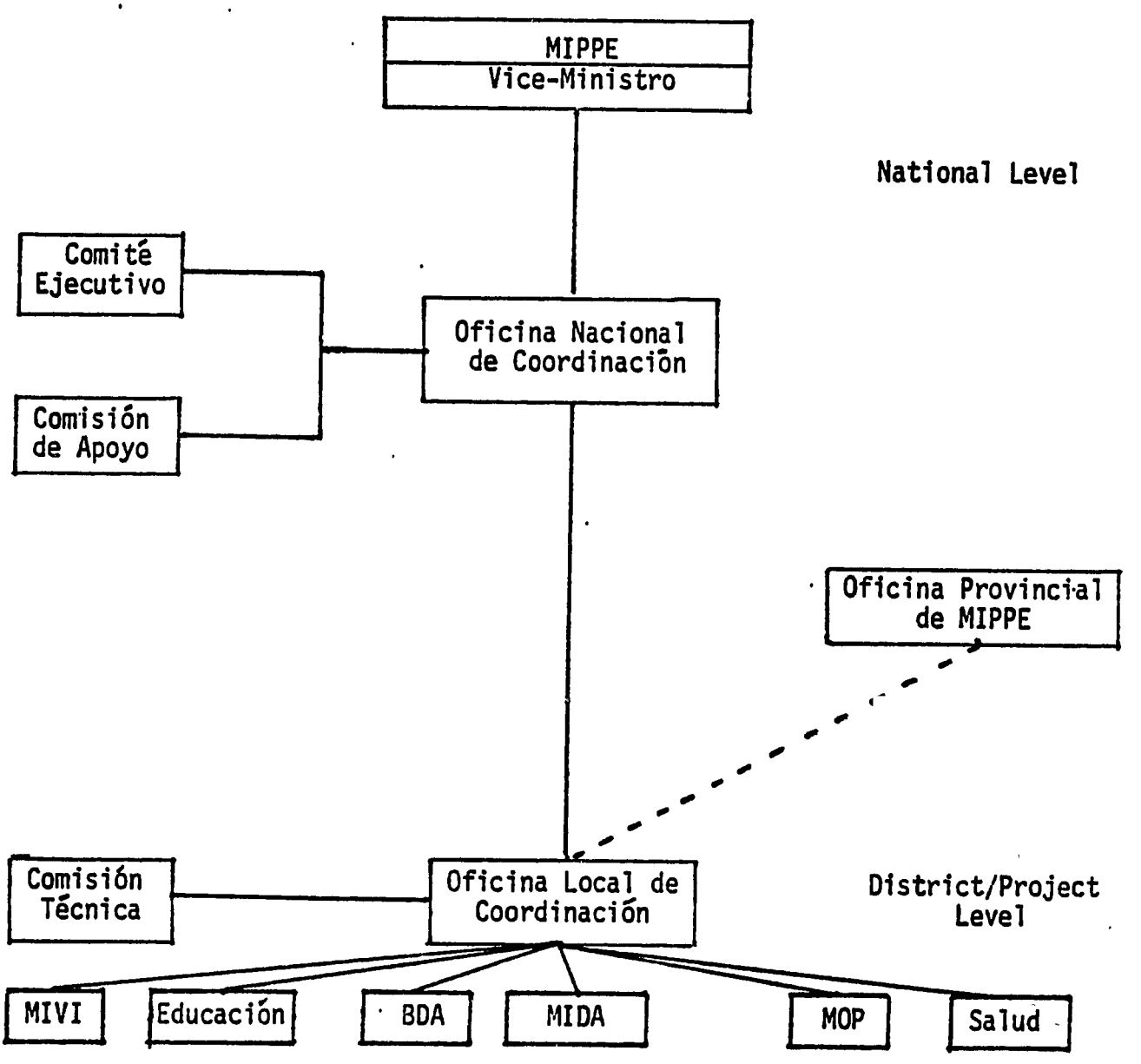
The primary responsibility of the planning, monitoring, and evaluation unit will be to help the participating agencies improve their data collection efforts and methods of analysis, help develop ways to monitor their activities, and assist in evaluation both of project activities and their impact. This unit will also assist in integrating the various project components into an annual district-level plan and work closely with the other units in the Local Office - particularly Economic Evaluation, Social Evaluation and Agricultural Analysis to make sure that the correct information is being collected.

Training will play an important role in this project - training for both technicians and beneficiaries - in various fields: from purely technical subjects such as livestock and agriculture, to more general topics such as group formation and local-level planning. It is recommended that such activities be coordinated through the training and promotion unit.

The financial management unit will be responsible for ascertaining that participating agencies spend project monies in a timely relevant manner. Should any irregularities occur, this unit should be capable of catching them quickly and finding out why. Where satisfactory explanations are not forthcoming, it should be empowered to recommend changes in budget allocations.

FIGURE 1

PROPOSED INSTITUTIONAL STRUCTURE FOR THE IRD PROJECT



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2. Proposed Structure for Beneficiary Participation

Much has been written about the need to implement a participatory approach to IRD in Panama, i.e., the importance of actively involving beneficiaries in planning, implementing, and evaluating project activities which, in turn, will help create some institutional capacity at the local level. For example, the design of this project has resulted partly from planificacion de doble via.

The productive components of this project envisage working with groups of ten farmers - with a "lead farmer" at their head.

Such groupings can play the following potentially positive roles in the process of rural development:

- As vehicles for two-day flows of information, which reinforce individuals who try new approaches and break down barriers between groups or individuals;
- As vehicles for minimizing risk and practicing economies of scale;
- As vehicles for adapting project activities to local conditions;
- As vehicles through which project activities can become self-sustaining;
- As vehicles for coordinating and spreading the benefits of outside assistance; and
- As vehicles for achieving greater political and economic clout for local people by exerting influence over local administrators and asserting claims on government.

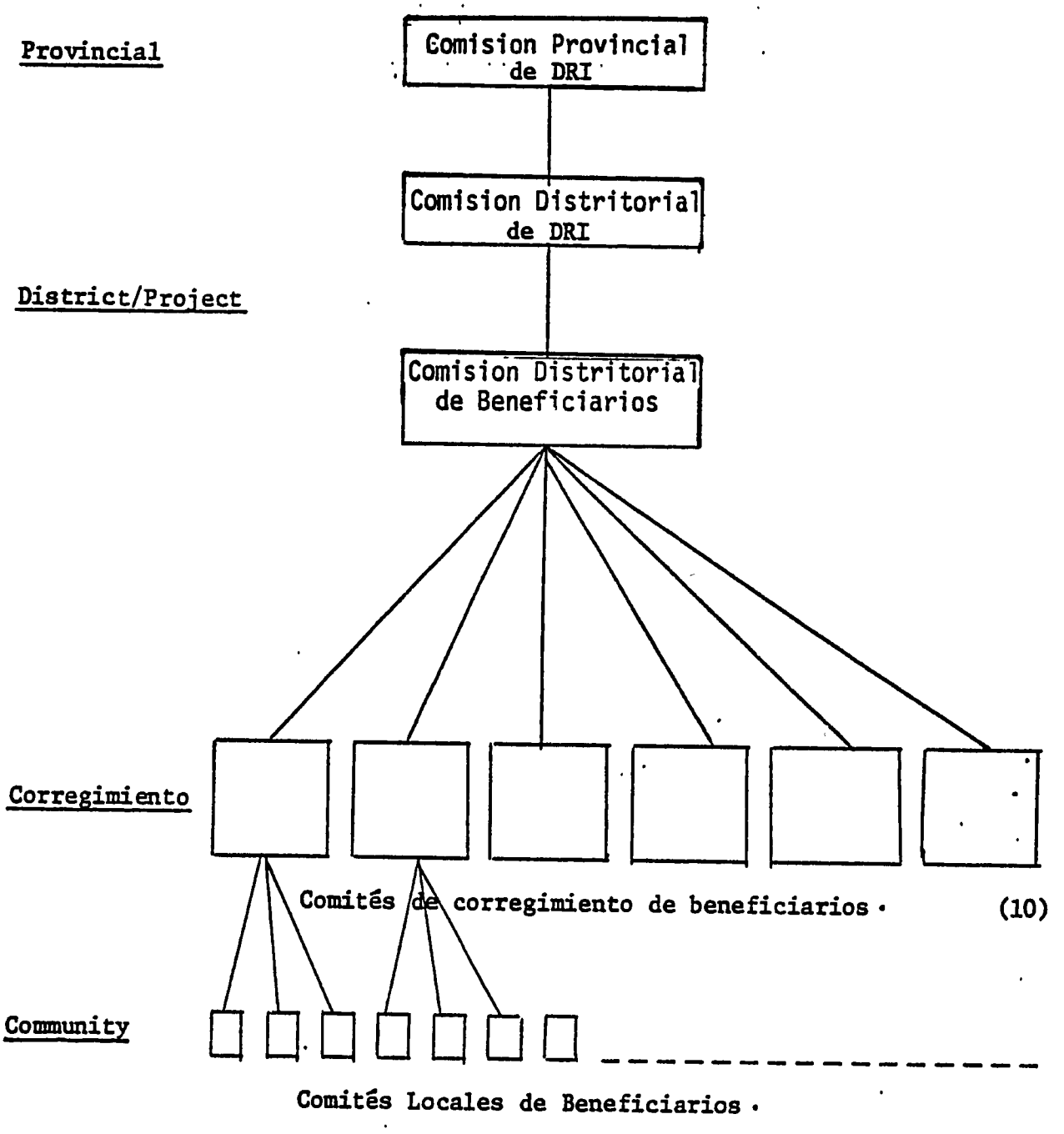
While these groups will facilitate the efforts of those technicians working directly with them, it is important that such beneificiary groups also be represented at the various levels of the project - as depicted in Figure 2. At the local or community level, these small beneficiary organizations - the Comite Local de Beneficiarios - may be incorporated into the existing junta local.

At the provinicial level there will be a Comision Provincial de DRI - very much a duplication of the Comision Distritorial - composed of the following:

Governor
Provincial head of MIPPE
Provincial head of MIDA
Provincial head of BDA
Provincial head of MOP
Provincial head of MIVI
Provincial head of Education
Provincial head of Health
Project Coordinator
Three direct beneficiaries

FIGURE 2

PROPOSED STRUCTURE OF BENEFICIARY PARTICIPATION IN THE IRD PROJECT



One asentamiento delegate
One representante
One delegate from the large landowners.

This provincial committee will be responsible for monitoring project activities and results, ascertaining that project accords with provincial planning guidelines, and resolving any problems unable to be resolved at the project level. By combining the two structures, government institutions and beneficiary representation, we have the following organizational chart for this project as depicted in Figure 3.

This system will work in the following manner. The Comision Tecnica, composed of the district heads of all participating agencies, will be responsible for producing the annual plan for IRD activities, programming activities on a quarterly basis, making changes in these activities where and when necessary. The key person in this whole process will be the extension agents from MIDA and BDA who will be working directly with the local committees. On one hand these committees can make their wants and needs known to them and they, in turn, will feed them to their superiors for possible inclusion in the annual plan. On the other hand, however, these committees will have another channel of communication - through their representative committees up to the Comision Distritorial at the project level. Proposals, suggestions, and recommendations agreed to there would be incorporated by the Comision Tenica into its annual plan. Final approval for this plan at the district level would come from the Comision Distritorial.

3. Proposed Information System

The decision to include an information system in this project is based on the assumption that it will make a difference to project performance, particularly in terms of an improved planning system and the more effective implementation of development activities. The fact that this is a pilot project makes it even more important that relevant information be generated on a timely basis to satisfy the needs of all interested parties - at local, project, provincial, national and international levels.

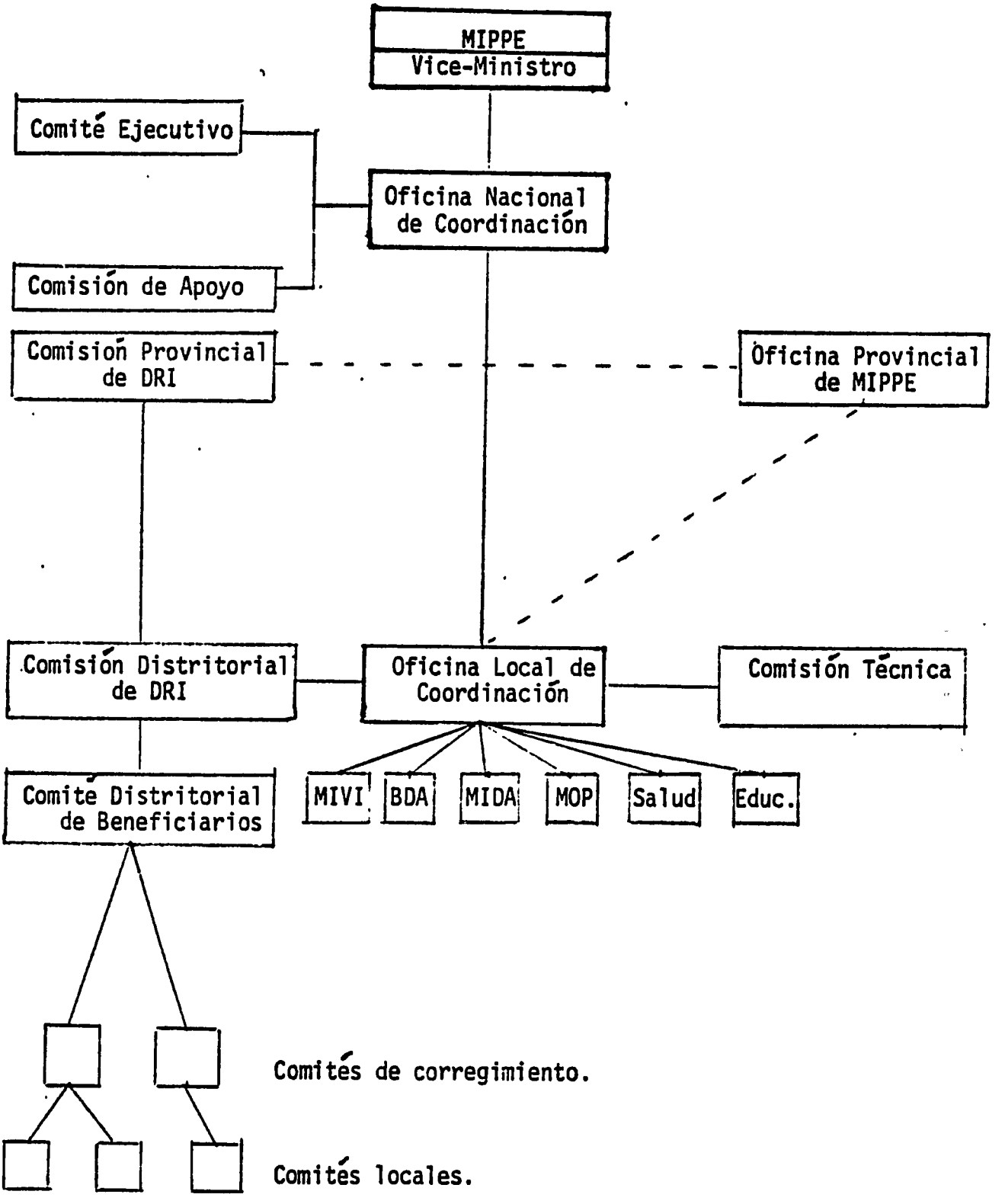
The proposed information system to be introduced through the coordinator's office will have the following responsibilties:

- To identify information requirements;
- To assist participating agencies in the gathering of relevant, timely information which they can utilize in their annual planning cycle - particularly through the design of relevant methodologies and instruments for data collection;
- To monitor project activities;
- To evaluate project activities; and
- To conduct special studies.

To develop an effective information system, the information requirements of each group of decision-makers involved in the project will have to be identified.

FIGURE 3

PROPOSED ORGANIZATIONAL CHART FOR THE IRD PROJECT



4. Monitoring Project Activities

The information system will monitor the initial results of project activities, e.g., kms. of road constructed, local committees formed, technicians trained, technologies developed and tested, beneficiaries trained, and so on. Information for monitoring purposes will be provided primarily by the quarterly reports presently prepared by the various agencies. In addition, measures will be introduced to indicate whether, in fact, resources are being allocated and used as planned, particularly at the local level. This will involve the active participation of the local committees.

5. Evaluating Project Activities

The evaluation activities will be of two types: measurement of target performance and measurement of development impact. Target performance will measure the extent to which the project has achieved its objectives. Development impact will have four categories:

- Direct benefits - including production and institution building.
- Benefit distribution - a measure of who the beneficiaries have been.
- Benefit continuation - a measure of the probability that benefits will continue once USAID financing is withdrawn (a measure also of the success of institutional capacity building).
- Indirect Benefits - a measure of the potential of the project to generate special effects not envisaged in the project design.

B. Agricultural Development
1. Farm Services

a. Constraints. In less than two decades the Sona District has gone from being the "promised land" of Veraguas Province to become one of Panama's worst pockets of poverty. Slash and burn agriculture has taken a heavy toll on the tropical forests at high social and ecological cost. Not only has the soil been depleted, but it also has resulted in the appearance of increasing numbers of marginal farmers and landless farm workers. During this same period there was little technical assistance given to small producers. Those few resources available after 1968 were concentrated on agricultural asentamientos. The situation was worsened by the extreme isolation and dispersion of the population and further exacerbated by the lack of an adequate transportation and marketing network.

Today the Ministry of Agriculture has an agricultural production center at Guarumal staffed with 13 production agents and 6 social workers. With only 2 jeeps and a poor road system, they are unable to attend to the needs of the asentamientos and medium-sized farms, not to mention small, marginal landholdings. A survey performed by the IRD project design team noted that 98% of the small independent farmers had not received direct technical assistance. This same survey further revealed that more than 60% considered technical assistance to be their second priority after rural roads.

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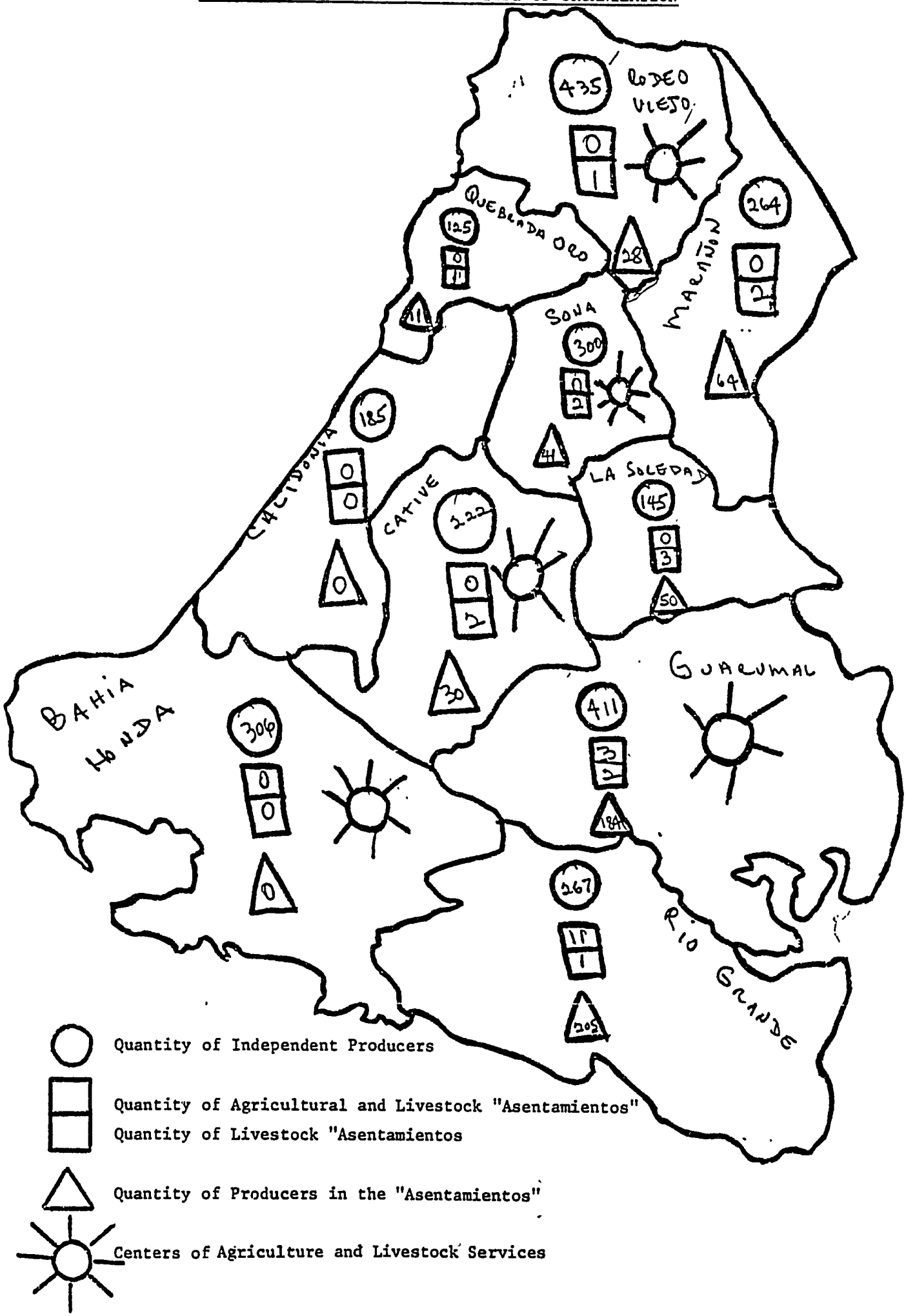
b. GOP Response. The farmer services component proposes to substantially improve the levels of technical assistance and training to small and medium farmers in order to help them make more rational use of their resources and to increase crop yields and animal production. Furthermore, it is anticipated that the accumulated experience from this component can be utilized and adapted in other regions of the country. Specifically, the component will attempt to assist at least 2,317 small and medium farmers as well as 613 members of agricultural asentamientos. Of this total of 2,930, two-thirds will receive direct outreach services through MIDA's production agents, with the remainder receiving benefits through group and mass methods such as field days, radio programs, etc.

To carry out technical assistance activities, thirty two production agents and technicians will be trained to form multidisciplinary production teams. These teams will be located in five production offices located throughout the district (see Map 3). The main center located in the town of Sona will also include facilities for additional MIDA, BDA, IMA and ISA staff; sub-centers will be small, functional multi-use facilities located in Cative, Bahia Honda and Rodeo Viejo. The number and location of the production centers and their staffing was established based on the number of small/medium farmers and the distances between corregimientos and the actual and planned road network.

c. Tech. Assist. Model The basic issue in providing technical assistance to small and medium farmers is one of developing a system which reaches individual and yet is economically feasible so as to reach a large number of producers. Assistance to organized producers does not represent a major problem. Those in greater need are the 2,317 producers with farms ranging in size from 1.0 to 49.9 hectares. Effective technical assistance to such a large number compared with the limited number of production agents available is impossible without some form of farmer organization. The model

MAP 3

DISTRIBUTION OF PRODUCERS BY TYPE OF ORGANIZATION



contemplated here makes use of the currently practiced junta system whereby the small producer is accustomed to work with his neighbors on community work days.

The first step will consist of the MIDA production agent with the help of MIDA's Region #2 social development staff developing a credit nucleus of 10 producers whose farms are contiguous or in close proximity. Once the role of the nucleus has been explained, each group will be asked to choose a president from among its members who will be the direct liaison with the production agent. Once formed, the nucleus will be given a special two day credit course focusing on the economic and social functions of credit, responsibilities of the nucleus, types of credit programs available, application procedures, bank inspections, disbursements, etc. The course will be conducted for three groups at a time with all members in attendance.

Key to the success of this system will be direct visits by the production agent to each nucleus on a twice weekly basis (see Table 2). The production agent will visit the nucleus' President's farm during the same two days in order to accustom the other members to come over and bring up any problems that have arisen. On each visiting day the MIDA agent will also visit one additional nucleus' farm on a rotational basis. An additional thrust of these visits will be to transform the President's farm into a model farm through which successful demonstration efforts may be transferred among
33 other members of the nucleus. Similar programs will be carried out by other production agents at the various agricultural asentamientos.

As this technical assistance model is untested in Panama, efforts will be made to monitor and evaluate its progress throughout the life of the project. One pre-field implementation effort will be a seminar-workshop

Table 2

PRODUCTION AGENT WORK SCHEDULE

Monday	Tuesday	Wednesday	Thursday	Friday
Nucleus 1 Plus 1 farmer	Nucleus 4 Plus 1 farmer	Disbursements or other activities	Nucleus 1 Plus 1 farmer	Nucleus 4 Plus 1 farmer
Nucleus 2 Plus 1 farmer	Nucleus 5 Plus 1 farmer		Nucleus 2 Plus 1 farmer	Nucleus 5 Plus 1 farmer
Nucleus 3 Plus 1 farmer	Nucleus 6 Plus 1 farmer		Nucleus 3 Plus 1 farmer	Nucleus 6 Plus 1 farmer

to be held with relevant representatives of MIDA, IDIAP, ISA, BDA and the University of Panama. Here the project will be explained specifically the technical assistance model and feedback and suggestions can be garnered to improve the initial implementation process. Later yearly evaluations will be used to make necessary adjustments and changes in identified problem areas. By using these small junta system-based nuclei and linking them with technical assistance, credit, marketing and other services, it is hoped that the transition to cooperatives or other production-oriented organizations will be facilitated and as a result they will become less dependent on subsidized, intensive government services.

d. Training. Special efforts have been designed into the farmer service component to train both GOP personnel and the farmers they will be assisting. During the first five months 15 program specialists and senior technicians will receive an intensive three week course conducted by MIDA's agricultural production, livestock and social development departments in conjunction with two international specialists. This will be followed by a total of 30 observation and training trips of one or two weeks duration for the same group and additional professionals to countries having useful models of agricultural, livestock and rural development. Similar observation trips will be made available for production agents during the life of the project to improve necessary skills. Sixty technicians including all the MIDA production agents will take a three week course conducted by the National Agricultural Institute (INA) at the Divisa training center, the production agents remaining for an additional six weeks of theoretical and practical study. This activity will be presented by professionals from MIDA, MPPE, IDIAP, BDA, ISA, IMA and the University of Panama with the assistance of three international experts. In addition, MIDA's technological transfer and training staff will carry out in-service training for the MIDA agents. Five one week courses for 20 participants will be offered yearly on agricultural production, livestock and rural administration. Production agents needing special skills or displaying outstanding performance will be sent to take 3-4 month courses and observation trips at CIAT, CATIE and other international agricultural/rural development centers.

Training for farmers will take place directly through the visits of the MIDA production agents. This will be augmented by more large group-oriented activities such as field days, workshops, short courses, radio programs and film presentations. Fifty field days will be conducted whereby two or three nuclei will be assembled for the purposes of special demonstrations organized by the production agent and his/her transfer of technology backstop. Workshops will be similarly organized, but with the end of detecting and ameliorating specific production problems. While direct contact is likely to be the most fruitful training methodology, general production techniques materials will be developed and presented through the intensive literacy campaign. Other useful information will be offered through radio programs. A recent survey demonstrated that over 90% of those using herbicides had done so after hearing about it on the radio. Thus, simple programs on the proper time to plant, suggested crop rotations, the damages caused by swidden agriculture etc. are likely to be quite effective. In addition, short film pieces will be developed on similar subjects for showing before the regular feature at commercial movie theaters in the district.

INTERNATIONAL TECHNICAL ASSISTANCE FOR AGRICULTURAL DEVELOPMENT

Man Months	Initiation Frequency	Purpose	Cost
2	4 months after project approval.	Assist in the planning and development of a three-week course for MIDA staff that will implement Sona agricultural programs.	$18,000
6	5 months after project approval	Assist in the planning and work as instructors of a nine-week course for the development agents.	$54,000
11	1 month after project approval for one month; two weeks every two months during the first 3 years; two weeks every 3 months in the fourth year.	Assist in the development of an implementation plan and the establishment of project operational mechanisms.	$88,000
35 1	1 month after project approval.	Assist in the planning and development of a workshop on the extension model to be implemented in the area.	$ 9,000
6	9 months after the initiation of the project for one month; 2 weeks during the second year.	Assist in the establishment and supervision of pasture and forest demonstrations.	$54,000
3	Second and third year of implementation.	Participate as instructors of a course on agricultural production, cattle raising and rural administration.	$27,000
1	two months after project approval.	Support to the soil classification study.	$10,000
			$260,000

e. Support Services. Reflecting the integrated nature of the project, project officials will be in close contact with agencies providing farmer support services. COAGRO, for example, will be informed of annual agro-chemical requirements so that these inputs will be available on a timely basis. Marketing will be encouraged by the construction of storage/ marketing areas at the Sona center and the four sub-centers (avg. size = 40 m^2). IMA has already expressed an interest in buying production and private buyers will also be sought. Crop insurance continues to cover the needs of many producers, but the project contemplates a study to determine the feasibility of covering independent producers with less than 10 hectare landholdings. The IICA team located in Santiago which is already working on this issue on the national level will also participate. Credit is described elsewhere in this paper; however, two points are worth reiterating. First, the MIDA production agent and the BDA credit agent will be part of a coordinated system and work together on a continuous basis on determining credit levels, disbursement frequencies, etc. Second, this relationship will be furthered by the establishment of mobile credit units which will visit each technical assistance center twice each month to take credit applications and make disbursements.

37 f. Applied Research/Field Demonstrations. In the short run many improvements in the district's production systems can be improved by merely applying technical principles and adopting proven practices from other similar areas. However, some medium and long-term production methodologies must be tested and verified before they can be disseminated to Sona area farmers. For this reason, the project contemplates the establishment of a working relationship with both IDIAP and RENARE. Specifically, three technicians will be added to IDIAP's staff to cover project research requirements and participate in field demonstrations. Examples of research activities contemplated include the following: observation of various legumes used as ground cover; fertilizer tests for traditional production systems; density tests for rice and corn seedlings; intensified plot production; and terrace, contour and plantation planting of various tree species. In addition, a soils classification study of the district's soils will be conducted in order to improve knowledge of crop zones and facilitate better agricultural programming. Also a natural resource inventory of the forested areas in and around Hahia Honda will be prepared.

RENARE will participate with MIDA and IDIAP on 300 pilot demonstrations of grazing land renovation over the life of the project, twenty each per year being carried out on three different ranges of slopes. Representatives of the three agencies will select sites and negotiate a contract with the landowner. The project will finance plants and materials, the producer will supply labor and agree to follow the technician's recommendations, and the farmer will be the owner of all that is harvested once test results have been registered. To provide farmers and cattlemen with the necessary seedlings and pasture materials, forest and forage nurseries will be located within each sub-project research area. Until such time as these are operational the required materials will be brought from IDIAP's "Gualaca" research station in Chiriqui and RENARE's "Alajuela" tree nursery.

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2. Credit

a. The Agricultural Development Bank (BDA)

The Agricultural Development Bank (BDA) is the institution created by the Government to finance the credit policy established by the Ministry of Agricultural Development (MIDA) which has the following basic functions: (a) to provide financing for the development of agricultural and agroindustrial activities to small and medium producers, farm organizations, cooperatives and other entities whose activities are within the framework of the economic policies of the Ministry of Agricultural Development, (b) to receive demand and long term deposits, (c) to issue all classes of financial paper and place it in the national and international markets, (d) to contract loans with international financial organizations and other national and international credit organizations, (d) to carry out investments which capitalize farming businesses, cooperatives, communal organizations, agroindustrial businesses with a right to participate in their management, (f) any other bank operations authorized by Executive Degree. To the present, the activities of the BDA have concentrated in providing credit to small and medium producers, individuals and organizations, and the utilization of the authority to contract loans with multinational, foreign and national organizations.

The total loans made to agricultural producers reached a value of $27.7 million dollars in 1975, increasing to $47.8 million in 1980. In 1980 the total value of loans increased $16.2 million in relation to the prior year of which 27.0% went to independent producers. In 1980 the Bank's disbursements reached the sum of $37,188,528. Of that figure, $27,944,344 were held by individual producers or 75.1% of the total disbursed, and 24.9% by the organized groups, or $9,244,184 of the total. As of December 31, 1980 the Bank portfolio consisted of 17,699 loans totalling $72,628,079. Of the total portfolio, 3,245 loan payments totalling $5,486,460 or 7.6%, are delinquent. The remainder, $67,141,619, represents the current portion of the loans.

The Bank provides a preferential, subsidized interest rate to the agricultural sector. The interest rates charged to the type of farmer benefitting from this project will be 10%. This is the highest rate presently charged by the BDA for small and organized producers.

b. BDA - Sona

The BDA branch in Sona manages ten programs each of which represents funds from a specific international agency, or revolving funds that were generated by loan repayments from previous international loans. BDA also manages funds that are government contributions to investment projects within the district.

It has been BDA policy to lend to small and medium size farmers on a short term basis with the only guarantee being a certificate of possession rights on the land granted by the Dirección Nacional de Reforma Agraria (Agrarian Reform Directorate) and the mortgage of the agricultural product. However, in the last two years, the practice has been to lend to farmers lacking even this certificate, providing that the farmer could demonstrate enough farming experience and that he was of good character.

Table 3 provides a summary of approved loan applications for the period 1977 - 1980 -- by specific credit program. As the table indicates, approximately 150 loans were made each year. They have been managed by one branch manager, seven technicians, and six administrative personnel including three secretaries.

Table 4 indicates that the BDA-Sona has had considerable experience with medium farmers--31% of the loans for those farms in the 10-49.9 has. range. Loans from farmers in the 9.9 hectare, however, represent only 6.7% of the portfolio.

The current loan portfolio as of mid 1981 consists of 692 loans for an amount of $4.3 million: 71% individual loans utilizing 50% of the portfolio and 29% asentamiento loans utilizing the remaining 50% of funds.

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c. BDA-Sona IRD Program

Assessments carried out by MIPPE and MIDA of the Sona District identified the availability of agricultural credit as one of the principal constraints to increased small farmer agricultural production. Institutional credit delivered through the BDA was deemed to be in short supply. Currently available credit serves the credit needs of the GOP Asentamiento Program and more affluent borrowers. The proposed credit component will more than triple the number of small and medium-size farmers receiving credit and will develop a capacity in BDA to supervise loans to small farmers. BDA agents will work closely with MIDA rural agents to provide the supervision and technical assistance critical to the success of the majority of small farmers who will be entering institutional credit channels for the first time.

As described elsewhere, the IRD program will generate some 2,200-2,500 additional loan demands averaging about 500 per year for a total value of approximately $4.9 million. To handle these additional loans, the present BDA-SONA staff of 14 will increase to 21. (A new manager assistant, 4 additional technicians, and 2 additional administrative personnel). And, to increase the staff's mobility 8 jeeps and 5 motorcycles will be provided.

BDA is well aware that it is cumbersome, expensive and wasteful for their clients to leave their farms, hitch a ride to Sona and once there, have to spend a day or more fulfilling the bureaucratic requirements demanded by the bank. In fact, it already has had some experience in taking the credit operation out of the office directly to the borrower. Under an earlier effort it was successful in reaching some small farmers located in the more isolated areas. Unfortunately the practice was discontinued due to budgetary constraints. The Sona IRD project will revive this element, providing at least three mobile units to cover the 10 corregimientos in the district at least twice a month, in order to facilitate the credit needs of each participating farmer.

d. Agricultural Credit $ 4,968,500

1. Crop Credit[1/] $1,514,875

The project proposes the following types of crop credit:

- For small farmers ($250,875), 225 loans averaging $1,115 each for the cultivation of rice, corn, cow peas and pigeon peas.

- For medium size farmers ($720,000), 180 averaging $4,000 each for the cultivation of rice, corn, cow peas, pigeon peas and sorghum.

- For asentamientos ($544,000), 8 loans averaging $68,000 each ($3,400 per family) for the cultivation of rice, corn and sorghum;

2. Livestock Credit[2/] $3,453,625

The project proposes the following type of livestock loans:

- Improved Dual Purpose Production ($870,000). Credit will be provided for 100 loans averaging $8,700 each for the purchase of up to 10 breeding age cross-bred heifers, one Cebu bull, wire fencing for up to 10 has. of pasture and for the planting of improved grass/legume pasture.

- Improved cow-calf production ($1,615,000). Credit will provide for 340 loans averaging $4,750 for up to 10 breeding age, cross-bred heifers, one Cebu bull, wire fencing for up to 10 has. of pasture, and for the planting of improved grass/legume pasture.

- Improved grass fattening production ($359,625). Credit will be provided for 125 loans averaging $2,880 for the purchase of up to 10 feeder calves, wire fencing for up to 10 has. of pasture, and for the planting of improved grass/legume pasture.

- Swine Improvement ($329,000). Credit will be provided for 937 loans averaging $350 to farmers who presently have less than 10 has. for the purchase of an improved boar and wire fencing for up to two has. of grazing lots.

- Bee Keeping ($280,000). Credit will be provided for 200 loans averaging $1,400 each for the purchase of ten beehives and bee-keeping equipment. These loans will primarily benefit small farmers with less than 3 has. of land.

1/ Please note that crop loans are seasonal and will be paid back and revolve so that within the life of the project 1009 crop loans will be made for a total of $3,873,500 (500 small, 489 medium and 20 asentamiento loans).

2/ A condition precedent to the loan requires that all cattle loans will be tied to the recipient planting improved grass/legume pasture.

TABLE 3 Number of Loan Applications Received and Approved Loans per Program. BDA Sona Branch, 1977-1980

Program	1977		1978		1979		1980	
	Total Applications	Total Approved	Applications	Approved	Applications	Approved	Applications	Approved
13	-	3	8	5	13	10	12	6
554	-	-			41	28	78	66
109	52	33	23	21	22	19	27	27
2- 240	29	22	27	25	13	10	-	-
241	-	-	3	21	1	-	-	-
340	14	23	28	20	15	11	-	-
PSP	23	34	33	33	85	56		
BDA	-	-	-	-	2	-		
404	4	6	40	31	21	6	-	-
55 554A					-	1	7	4
123							4	7
BDA-MAG	-	-	1	1	2	2		
404M	48	33	19	13				
AID	-	-					14	-
Asentamiento	-	-					20	42
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TABLE 4 Number of BDA Loans According to Farm Size, 1976-1981*

Program	9.9 Has. N°	10.0-49.9 Has. N°	50.0 Has. N°	Asentamientos N°	Total
PSP				203	203
123	2	8	18		28
MAG	2				2
13	3	3	8		14
404		39	127		166
340			59		59
240	1	54	5		60
241		1	4		5
554	17	89	36	5	147
109	28	51	29		108
TOTAL N°	53	245	286	208	792
Total in %	6.69	30.93	36.11	36.16	100

Source: Banco de Desarrollo Agropecuario, Sucursal Sona.

* As of April 30, 1981.

3. Agro-Industry (US $1,200,000)

a. Constraints

Small farmer interest and success in growing non-traditional crops has been very limited. This limitation is caused by lack of information on suitable crop alternatives, provision for production and processing incentives, and market identification.

b. GOP Response

To improve non-traditional utilization the $1.2 million Agro-industry IRD component will fund agro-industry studies and agroindustrial credits for exploitation of non-traditional crops which have been identified for possible processing. The five-year plan will incorporate interests of the small farmers, coops, church organizations, private business interests in agro-industry projects.

Two potential implementation institution have been identified: Corporación Financiera Nacional (COFINA) and Banco de Desarrollo Agropecuario (BDA). These financial development institutions will be utilized as ICIs in selecting agro-industrial projects for the Sona area with sub-loan selection criteria similar to those used under the Rural Growth and Service Center Loan 525-T-047. These financial development institutions will have the primary responsibility for implementing the agro-business projects in Sona, with technical and marketing support provided by the Agro-Industrial Division of MIDA.

Feasibility studies will be prepared which ensure that proposed projects are technically, economically and financially sound. The feasibility study must also show that the proposed project will not have a significant effect on the human environment or if such project does have a significant effect that a satisfactory environmental analysis has been prepared.

Preliminary studies by MIPPE, Sona businessmen and representatives of the Sona Chamber of Commerce have identified the following agro-industrial projects:

- Processing of tropical fruits such as mango, pineapple, papaya, guayaba for jellies and fruit juices.
- An ice plant for fish and shrimp packing and local consumption. Ice must at present be trucked in from Santiago, an hour's drive.
- Local cheese processing plant.
- Meat products from pork.
- A nursery for reforestation projects located in the Sona district.
- Broiler chickens: especially working with small and medium producers.
- Lime production: Agricultural grade calcium deposits exists in Sona. While people are aware of the acidity in the soils, the high cost of transporting lime into Sona makes application prohibitive.

Subloans in excess of $50,000 will require A.I.D. approval.

c. Institution Building

MIDA/AGROINDUSTRIA present administrative and technical capacity includes:

3 professionals in business administration (of whom one is experienced)

3 professionals in chemical engineering (of whom one has business-administrative experience as General Manager for FRIGOMIDA Canning plant at Divisa)

2 professionals in sugar refining, with experience in feasibility study work, food processing and agri-business management

1 professional in forestry

1 professional agricultural engineer

3 economists, recent graduates

1 land surveyor

Total professional staff is 15 plus the Director. Central offices are located in Santiago, Veraguas. The Director also maintains an office in Panama City, staffed with an administrator, four secretaries, and two drivers. Logistical support is provided by two vehicles.

This component will provide funds for MIDA/AGROINDUSTRIA to increase the division's logistical support of agri-business and monitoring of on-line projects, as loan funds are drawn down through COFINA for the Soná district. Staff would also be strengthened to do the necessary feasibility studies of potential ventures. The following staff be added to AGROINDUSTRIA:

1 experienced economist	$ 800/mo.	$ 9,600/yr.
1 accountant	$ 500/mo.	$ 6,000/yr.
1 industrial engineer	$ 950/mo.	$ 11,400/yr.
1 marketing specialist	$ 850/mo.	$ 10,200/yr
1 secretary	$ 275/mo.	$ 3,300/yr.
1 driver	$ 200/mo.	$ 2,400/yr.
Total per year:		$ 42,900

4. Rural Roads - Ministry of Public Works (MOP)

a. Background and Constraints

Two asphalt highways totalling approximately 80 kms. connect the southern region of the province of Veraguas to the country's national road network. One of these of some 47 kms. in length connects the most southern part of the region (Guarumal-El Tigre - San Lorenzo) with Sona, the second largest city in the province. The other connects Sona with Santiago, the capital of the province. In addition, an IDB Loan will reconstruct a high standard road linking Sona with the province of Chiriqui in the area of Guabalá. However, outside of these two principal road segments, parts of which are in urgent need of repair, the road network is extremely small, reaching a total of only 200 kms. Of these 200 kms., one-half are gravel, all-weather roads transitable the entire year. As for the remaining 100 kms. of road, even four wheel drive vehicles with double traction find it difficult to travel on the rainy season.

The agricultural technicians and officials unanimously agree that the poor condition of the road network is one of the principal obstacles to rapid agricultural development in the area. This is especially true in the cases of milk and grain products whose major production occurs during the rainy season. In addition, despite past efforts of the national government, there still exist totally isolated areas as a result of the lack of adequate roads. Such areas are Bahía Honda, Rodeo Viejo, Pixbae, and large parts of the corregimientos of Cativé and Calidonia.

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The construction or reconstruction of roads in the area will eliminate a major obstacle to development for the small and medium size producers. The resultant guaranteed year-round accessibility to the major market places will allow the farmers to obtain the needed inputs in a timely fashion and will lead to higher farmgate prices, increased area under production, and increased productivity.

Funds from existing IDB and AID road loans have already been committed and are not available to construct the tertiary roads anticipated under this project. Furthermore, the IDB project is aimed at secondary rather than tertiary roads.

b. GOP Response

Under this component the Ministry of Public Works (MOP) will construct approximately 66 kms. of rural roads and approximately 40 kms. of road will be rehabilitated using the standards developed under MOP-AID road loan 525-T-048.

These standards should eliminate or mitigate significant adverse impacts on the environment. In particular the selection process provides a mechanism for rejecting those roads where significant adverse environmental effects may occur. An environmental questionnaire is filled out for every potential road which provides the information needed to assess the environmental impact of each road.

The roads to be constructed will connect several corregimientos which were previously isolated from each other and from the district and provincial road network. New areas of production will be opened up and over 100 communities will be able to reach Sona district service centers within two hours and will be more easily reached by MIDA, BDA and other GOP institutions.

A new rural road maintenance section will be created to plan and carry out the maintenance requirements of the rural road network in Sona based on the community participation schemes developed under the MOP-AID road loan. Funds will be provided to MOP to purchase maintenance equipment such as graders, trucks, pick-ups and rollers.

Road improvements will be under the direction of the Ministry of Public Works (MOP) through its National Directorate of Construction (DNC). The regional director of MOP will implement the program in consultation with the Area Coordinator of the project. Most of the work is expected to be performed through local private contractors. The contracts will require maximum employment on unskilled local labor. This will apply particularly to masonry, ditching, culvert excabation, and spreading of gravel.

C. Social Services

1. Health

a. Constraints

The May 1980 Ministry of Planning report on basic needs within the health sector characterized all the districts of Panama as falling into one of three groupings: acceptable, below average and critical. The District of Sona was one of those described as critical. Medical statistics show that in all standard measures of health and health care the district fares poorly. For example, only 41% of all live births in 1977 received any form of medical assistance; the death rate for ages 1-14 is one of the highest in the country as is the incidence of death by measles and other contagious diseases (deaths preventable by a simple vaccination); water born diseases (the number one cause of death) have been lowered slightly - from worst in the country in 1960 to seventh worst in 1978; district health facilities are minimal and the district rates as one of the country's worst in beds per population and numbers of medical personnel; and in 1980 four of the district's communities had no medical facilities whatsoever.

Based on the needs described above, investment being carried out under the health sub-component seeks to raise health conditions for the rural and urban population of the district through the following:

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- The eradication and/or control of infectuous diseases such as tuberculosis, and dysentery.
- The reduction of mortality and morbidity caused by diseases preventable by immunization.
- The provision of potable water and latrine services to housing units to be constructed and rehabilitated in the district.
- The motivation of members of rural communities to participate in the identification and solution of their health problems.

b. GOP Response

In order to improve the health status of the rural marginal population in the District of Sona, the GOP will provide health care resources through expansion of its already developed integrated low-cost public health delivery system.

The rural health delivery system in the District of Sona, totally financed by the GOP will help provide the marginal

population effective accessible health through the construction of health services facilities in two basic areas: (1) environmental sanitation through the construction of community and individual sanitation facilities; and (2) preventive and curative health care through the construction of health services facilities.

(1) Environmental Sanitation Activities

(a) 14 rural aqueducts, constructed over a three-year period to serve rural community of up to 1,000 people with potable water.

(b) 40 hand-pumped wells, consisting of 20 individual drilled wells and 20 hand-dug wells, constructed over a period of three years to serve communities or cluster of houses of less than 25 people.

(c) 1,000 latrines, constructed over a four-year period will be the most feasible way of providing individual village households with a means of safe excreta disposal. The basic units will consist of a latrine unit on a concrete pad with a seat.

(2) Health Care Activities

(a) Six health posts will be constructed in marginal communities or cluster of communities with a total population of approximately 500 inhabitants. These posts will provide services to adjacent communities. The posts will be basic structures of approximately 35 square meters (enclosed area) divided into 2 rooms and maintained by the community. Construction will be over a three-year period.

(b) A maternal/child care annex, constructed in the health sub-center located in Guarumal, District of Sona. The construction of this annex to the health-sub-center will transform it to a center to provide more services including overall supervision and assistance to the various health posts within its area of influence. This center will be finished in the second year of the project.

2. Education

a. Constraints

Education levels, school attendance and the construction of related infrastructure improved dramatically in the Sona District over the last decade. Despite these improvements, serious deficiencies still remain. For example, the 1980 literacy rate (persons over 10 years) for the 9 communities surrounding the district capital was only 51.7%. The lack of classrooms and teachers (often one teacher must cover three grades) not only lowers the quality of education, but also encourages students to leave the system. Furthermore, most of the upper grades lack the specialized equipment necessary for adequate advanced teaching. Given the conditions in which an integrated development project is being planned, the deficiencies found in the educational and technical level of the district's population will have serious repercussions on project implementation if not corrected.

b. GOP Response

In response, the education component of the Integrated Rural Development Project of Sona attempts to help and remedy these
49 deficiencies as follows: (1) through the improvement and expansion of school infrastructure. The benefitted population is calculated at 3,000 at the primary level and 600 at the secondary level; (2) through an expanded literacy program, miminal reading and writing skills will be taught to approximately 3,000 illiterates; (3) through non-formal education programs it is estimated that approximately 1,500 persons previously not receiving any form of education can be reached; and (4) through the creation of a Pre-School Education Program it is hoped that approximately 120 children will receive basic pre-primary skills. Specific activities to be carried out are described below.

(1) Construction

Thirty-nine classrooms in 18 schools are to be constructed to improve deficiencies observed in school infrastructure (48% of the schools have serious deficiencies in this respect).

Twelve (12) dormitories will be constructed in 7 schools to house children from their respective areas of influence and will permit children from these areas to complete their final years of primary school.

Seven (7) sets of kitchen equipment will be provided in order to meet the needs to students living in the planned dormitories.

Four (4) classrooms will be added to the Sona secondary school to permit greater attendance on the part of students from rural schools in outlying areas.

One (1) physics-biology laboratory and one (1) industrial arts shop will be constructed and equipped in accordance with Ministry of Education requirements.

Two (2) classrooms will be built for the implementation of the Pre-School Education Program in Guarumal.

(2) Literacy

Using existing and new classrooms attempts will be made to erradicate illiteracy which is currently estimated at over 6,000 people. Also included will be special courses to upgrade teacher's skills in teaching basic reading and writing skills to adults.

(3) Non-Formal Education

A mass- media campaign and a series of workshops/ seminars will be developed to improve the basic skills and knowledge of rural residents in the areas of health, sanitation, appropriate technology, child-care, human relations, etc. Local residents, teachers, community leaders and government technicians will participate in the development and presentation of materials.

3. Housing

a. Background

(1) Description

Preliminary figures from the 1980 Census show the Sona District with 4,618 occupied units and a population of 23,583. Despite marked improvement in housing characteristics during the last decade, the situation remains precarious for AID's rural target group as evidenced by the following statistics: Almost half of all housing lacks both potable water and sanitary facilities; 85% lack electricity; 72% have earth floors; 61% and 58% have non-durable walls and roofs respectively. These indicators when viewed in conjunction with other equally low rural health indicators make clear that a significant portion of the district's population, perhaps the majority, is in need of an upgraded living environment.

(2) Major Constraints

51 Improving living conditions for the rural poor of the Sona District is hindered by a variety of geographic and economic factors. Currently, the 23,583 inhabitants of the district are located in 429 separate groupings, 77% of these having less than 50 persons, 94% less than 150 and 98% less than 250. This low density, highly dispersed and isolated settlement pattern, creates prohibitive infrastructure costs for the public sector, thus limiting both the scope and effectiveness of the services provided. Preliminary Census figures for 1980 demonstrate that out of 15,266 inhabitants 10 years of older, 62% received no income for the month of April, an additional 15% made less than $50, and another 9% earned between $50 and $100. Thus, over three-quarters of the Sona working age population earned less than $50 for the month of April, 1980.

These low incomes coupled with the geographic dispersion and isolation have been severe constraints to implementing traditional government and private sector housing programs.

(3) GOP Response

The Government of Panama's efforts in rural housing began in 1974; however the emphasis was focused mainly on the larger cities outside of the metropolitan area. For example, in FY 79 of the 4,809 housing units built countrywide by the GOP, 86% were located in the Panama City-Colon area with the remainder in the urban areas of David, Changuinola and Penonomé. No government housing was constructed in that same fiscal year in the central provinces of Herrera, Los Santos and Veraguas.

In the past, the GOP emphasis in the housing sector was primarily on completed units. Rural housing was differentiated from urban housing only by a larger lot size. However, due in part to the magnitude of the task, the relatively few government resources available and the rising expectations of the rural populace, the GOP has begun to loss its "edifice complex" and look toward more modest, often non-traditional solutions to rural demands. No small share of the credit for this change in policy should be given to AID's Office of Housing, which has pushed continually for more appropriate housing solutions in both the rural and urban areas, including expandible core housing, piso-techo (a unit with only a roof and a concrete slab), and sites and services. The GOP program for Sona echoes these policy prescriptions with the major emphasis being placed on the use of existing housing stock, provision of infrastructure and community services, and construction of housing consistent with the client groups needs and ability to pay.

b. Component Description

(1) Objectives

The four major objectives of the IRD housing component are as follows:

(a) To offer the rural families of the Sona District opportunities to improve their quality of life through gradual, financially acceptable improvements in housing and infrastructure services.

(b) To stimulate and encourage the clustering of new housing solutions on peripheral municipal land in order to improve the provision of public services and lower their associated delivery costs.

(c) To develop an effective training program for rural residents in self-help and community housing construction and maintenance.

(d) To gain experience in designing, administering and implementing rural housing programs for the Ministry of Housing, particularly at the provincial level, with specific emphasis on testing the most feasible types of solutions, phasing of construction, and efficient and equitable financing programs.

(2) Activity Criteria

The criteria to be used in selecting the activity mix of the housing component also reflects the positive policy changes that have occurred within the GOP over the last five years. These criteria can be categorized under the following four headings:

(a) Participation

Primordial importance is placed on the need for popular participation throughout the implementation of this component.

Residents will be surveyed regarding their housing and infrastructure needs and preferences. They will work with architects on appropriate designs and will participate in all aspects of the construction process, including learning new building and maintenance skills.

(b) Flexibility/Adaptation

Another key criterion will be a flexible implementation process. Although the planned socio-economic survey will be helpful in delineating parameters of the activity mix, emphasis will be placed on on-site adaptation of designs, materials and financing programs, in order to best meet the needs and capabilities of the residents and the demands of the site. For example, housing units, whether complete units or piso-techo, will be based on expandible modules that can range in area from 25 to 78 square meters. Other answers might be some minor/major rehabilitation of an existing structure or could involve a solution having nothing to do with the physical structure per se, i.e., water, sanitation, drainage, electricity, etc.

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(c) Standards

Related to the above and also indicative of positive changes in attitude towards the real needs of rural dwellers is the acceptance of a criteria of minimum standards, or better said, maximum tolerance toward the existing housing stock. While the component goal is a higher standard of housing, there exists the realization that improvements will be made slowly over time, and that unrealistic housing standards do little to meet the current needs of rural residence.

(d) Multiple-Use

In keeping with the integrated nature of the project, a fourth criterion supports the multiple use of housing sites. Thus, residents in newly developed or rehabilitated areas will be encouraged to continue or to begin complementary income-producing activities, such as bee-keeping, pig raising, or handicraft production. Technical assistance will be provided by MIDA-MIPPE and other GOP agency technicians.

3. Housing Solutions

Housing solutions of the following types will be provided: serviced lots, rehabilitated units, piso-techo and completed units. Table 5 illustrates in parametral form the possible sizes and quantities of lots and units to be developed. The relative distribution between each category is unlikely to vary substantially due to (a) the need to have certain minimum amounts of solutions, e.g., completed units in order to test their feasibility, (b) the need to reach a substantial amount of beneficiaries

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with relatively limited resources (e.g., rehabilitation being substantially cheaper than a completed unit). (c) the need to balance the outputs of the component with implementation resources available, and (d) the number of residents willing to relocate to new sites and their financial capability to afford the various solutions. Yet to be determined is how successful efforts can be to relocate residents to the eight cluster sites, what incentives are necessary and feasible, or whether substantial resources will need to be used for existing dispersed dwellings. Special emphasis will be placed on helping the already identified precaristas, that is, persons who are currently living in "precarious" conditions, on narrow strips of land between the vehicular right of way and fenced-in larger farms. These people will be the primary target of relocation efforts and will be given first priority for receiving the serviced lots to be developed on municipal lands which could include donation of the lot by the GOP. While financing will be initially set at a rate of 10% with 15-year payback period, flexibility will be encouraged where necessary in order to meet a resident's ability to pay. Mechanisms chosen could include grace periods, extended payback, lowered and variable mortgage rates, variable payments and the outright grant of land or infrastructure services, the latter only as a last resort or special incentive.

TABLE 5

HOUSING SOLUTIONS: ESTIMATED PARAMETERS

			Parameters			
			Size		Quantity	
Type		Costs	Minimum	Maximum	Minimum	Maximum
1.	Serviced Lot	$ 100	250 m^2	1,000 m^2	350	1,090
2.	Rehabilitation	500	-	-	400	558
3.	Piso-Techo	1,300	250 m^2(lot) 25 m^2(unit)	1,000 m^2(lot) 78 m^2(unit)	100	161
4.	Completed Unit	2,300	250 m^2(lot) 25 m^2(unit)	1,000 m^2(lot) 78 m^2(unit)	30	64

Notes:

1. Total funds available for all solutions = $508,000.
2. The costs of solutions 3 and 4 include the price of a 400 m^2 lot.
3. Both the piso-techo and completed unit prices have been rounded ($1,186.43 and $2,171.40 respectively) for convenience of presentation. Cost figures are based on a 42 m^2 unit.
4. Minimum quantities are estimates based on current information and subject to revision pending the socio-economic survey. Maximums are calculated using any three minimums and the total amount of funds available in order to find the maximum possible output for fourth variable. Lots sizes are based on 400 m^2 average and unit sizes are based on a 42 m^2 unit average.

(4) Support Activities

The housing component support activities consist of the socio-economic survey, training and technical assistance. The survey will be used to refine specific project outputs and make inputs more responsive to the needs and capacities of the rural residents. This survey will be part of a larger effort which will be utilized for all segments of the IRD project, not just housing. Technical assistance and training will be offered throughout the design and implementation processes.MIVI architects and engineers will develop site plans and plat maps in consultation with residents' specific needs. Technical assistance will be augmented by training in basic construction and maintenance skills which can be passed on to other residents through mutual self-help. Both technical assistance and/or training will be available to all interested parties, not just those receiving credit. Assistance on how to make applications for lots, solutions or home improvement loans and in basic financial planning as regards feasible loan amounts and payment schedules is also contemplated.

(5) Component Inputs

	$'000
(1) Building Materials/Construction Services	$ 508.0
(2) Titling/Plat Registration	85.8
(3) Equipment/Office and Storage Space	15.0
(4) Vehicles (Purchase and Operation)	82.1
(5) Personnel	172.2
(6) Travel/Per Diem	33.3
(7) Miscellaneous/Contingencies	23.2
5-Year Total	$ 919.6

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(6) Beneficiaries

Primary beneficiaries will be those family members receiving the housing services. This has been roughly calculated as ranging from 2,820 to 8,100 persons, or between 12% and 34% of the Sona District's 1980 population. Using a conservative direct beneficiary figure of 3,000 and assuming no recuperation of funds, the cost per person benefitted would be $307. Disaggregating credit funds from-sunk costs leads to a direct beneficiary cost of $109. This figure will be lower still when recuperated funds are relent and the beneficiary pool expanded correspondingly.

Of this same group, some 370 persons will receive additional direct benefits through the training in building and maintenance skills. These same skills are likely to be passed on to a much wider audience of indirect beneficiaries. Although difficult to quantify, there are also likely indirect social and economic benefits to members of the eight communities and other district citizens as a result of improved sanitary and health conditions and perhaps through increases in property values. Finally, there are likely to be direct benefits to the GOP regional personnel in improving their capacity to design and implement rural housing programs and similar indirect benefits to MIVI and MIPPE professionals at the national level.

IV. Project Analysis

A. Conclusions of Social Soundness Analysis

Introduction

The social soundness analysis was delivered to USAID Panama on June 10, 1981. It proved impossible to translate the Social Soundness Analysis from Spanish into English and send the analysis to AID/W for the June 30 DAEC review. What follows is a brief summary of its most important points. The concerned reader is strongly recommended to read the whole analysis which is included in Part V Annex H.

Acceptability of the Project

There are four principal reasons for concluding that this project is welcomed by the population of Soná. First, when it was announced that an IRD project would be implemented in Soná, rumors began circulating that it would include a land reform component and would be directed primarily towards the southern part of the district, where the heaviest concentration of asentamientos is found. These rumors have been dissipated. On a visit to the area in February 1981, the President of Panama promised two things: there would be no land reform and the project would be for all the corregimientos in the district.

Second, the local population has been consulted at various stages throughout the project design. This has included talking to all levels of society in Soná: from precaristas and small farmers to mill owners and large landowners, to the governor and the elected representantes.

Third, the local population believes that this project is not just promises and that something concrete can materialize. They feel there will be sufficient money available to satisfy their felt needs. Hence certain expectations have been created that, at long last, their luck will change.

Fourth, nobody is against the project. Those who know more about it become quite eloquent. In their opinion, the sooner implementation starts the better. Even those who were originally opposed to the project - specifically the large landowners and mill owners - no longer talk against it. They fully realize that this project, if successful, will work directly in their interests. First, they realize that it can help alleviate some of the existing social pressure exacerbated by increasing land concentration and, in the case of precaristas, increasing landlessness. If this pressure is not alleviated, then the potential for social conflict will increase accordingly. Second, this grupo poderoso will derive several direct economic benefits from the project. The roads will help them - as will the soil conservation and reforestation techniques. In addition, the majority of the credit component of this project is for the purchase of livestock - most of which will be bought directly from the large landowners. As one of the group expressed himself in an interview: "We'd be dammed fools to turn our backs on $20 million." They support the project - provided it works towards the achievement of its stated goals.

Project Benefits

This project has the potential to create the following benefits for the local population:

- Stabilize and even decrease an inter-related process of ecological degradation, elimination of subsistence agriculture, land concentration, and expulsion of people;
- Diversify traditional production methods;
- Improve traditional production and thereby increase cash income;
- For the first time make available to small and medium farmers resources previously denied them: credit, technical assistance, and training;
- Provide employment for the younger elements of the population who might otherwise migrate: specifically, activities involving swine, bee-keeping, and cottage industries;
- The social components of this project - training, literacy programs, and health - will benefit many;
- Road improvement and construction will improve the physical integration of the district; and
- An important indirect benefit will be the revitalization of the district capital, Soná, which presently has a rather stagnant air about it.

Potential Problems

Three possible issues which directly concern the local population may emerge in the process of implementation. First, if the project is not implemented, then there will be serious problems. On the one hand, expectations are high. On the other, if something is not done soon to alleviate the problem of environmental degradation and increasing land concentration, then the situation may become socially explosive. Second, it is important that effective local participation be created. Planificación de doble vía is a first step in the right direction, but much remains to be done. Third, the project should proceed slowly and carefully with the introduction of change for the small farmer. This is particularly true in the case of credit-as many potential beneficiaries have had no prior experience with this type of activity.

B. Conclusions of Technical Feasibility of Agricultural Component

1. Technical Feasibility of Project Targets

The topographical features, soils, rainfall and land use of the Sona area was reviewed. Existing conditions show the moisture regime of the area to be positive for crop production. On the negative side is the high incidence of crop land in pasture. The soils of the area although quite varied and including some with toxicity and low base status problems are not beyond existing knowledge for improvement - some soils are quite productive.

Increased agricultural production also depends on the effective utilization of technical inputs. In Sona the use of agrochemical inputs is related to farm size. This probably reflects the availability of capital and exposure to new techniques. Herbicides are the most commonly used chemical input, but the timing of applications, types of herbicides, and dosages used on smaller units may need improvement. On poor soils, fertilization has a high impact potential and is also a good means of establishing credibility with small farmers. On the agrarian reform farms, liming should have the greatest effect on maize and sorghum yields and may allow the production of other cash crops such as soybeans and black bean (*Phaseolus vulgaris*) varieties for export to the lucrative Venezuelan market. It is good practice to have the project begin to attack the most limiting factors in the local production systems and then move from there into tackling more long range soil conservation problems.

The economic value of insecticide use on subsistence crops can be questioned. It nonetheless needs to be studied. The inclusion of grass-legume rotations into production systems is an elementary agronomic practice. The use of green manure crops is always a sound practice in continuous cropping and both *Stilozobium spp.* and *Pueraria spp.* should do well in the area.

2. Technical Feasibility of the Proposed Production Increment

Production change due to fertilizer and lime applications have been quantified with "real world" data. Extrapolations of this information over the region are not unreasonable. Higher planting density should in itself increase yields with little effect on production costs. Labor utilization and costs have also been well documented by a rather complete and detailed survey on 70 farms. This information places the economic analysis on solid ground. Yield projections are conservative and in line with levels already attained within the region, the proposed yield increments for shifting agriculture are technically feasible.

With the possible exception of cassava, all the reported yields and projected yields are very low. Taking into account the productive capacity of the soils and the projected management practices and inputs recommended for the proposed project it would not be unreasonable to increase yields for rice, corn, red beans, yam and otoe by a conservative 10% (proposed yields + 10%).

While every effort has been made to make this agricultural component as technically feasible as possible, the difficulty of improving shifting agricultural production on small farms cannot be underestimated. Since both MIDA and BDA have concentrated their efforts in Sona to date in the agrarian reform sector, there is no established working relationship between subsistence farmers and government representatives. Nevertheless, there is evidence that a close collaboration and formal institutional linkage between IDIAP and MIDA is possible. Small farmers also expressed interest in receiving government technical assistance. Therefore, an effective research-extension model therefore seems feasible.

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C. Conclusions of Technical Feasibility of Livestock/Forestry Component

The design of all livestock/forestry component is based on the application of technologies appropriate to the human, economic and natural environment in the district of Sona. Livestock/forestry technology, while based largely on available research data and field experience under local or similar conditions, is designed for relatively short-term absorption by the target population. The general approach represents an innovative effort to address the complex problems associated with the inappropriate use of renewable natural resources by traditional small farmers in the humid tropical forest life zones. It is a program which has a high potential for replication in Panama as well as in other tropical environments.

The small farm livestock credit component will help 937 small farmers to at least double their production in the case of swine improvement loans and, in the case of cattle improvement loans, help 520 small and medium farmers to increase their annual cash income in varying amounts. The improved extension/mass technology transfer component will help raise calving rates from 50 to 70%, lower mortality rates from 10 to 5%, reduce fattening time from four to three years, and increase milk production from 2.5 to 4.0 ltr./day/cow.

The combination of Brachiaria humidicola/Desmodium ovalifolium with Terminalia ivorenses/Pinus caribeae in a forest-grazing system with cattle/tropical hair sheep has great potential to solve the severe economic, ecological, and sociological problems of natural resource degradation and human resource impoverishment associated with the traditional shifting cultivation-rural poor/cattle complex.

The specific approach in the design of activities has been to develop technical courses for action which fit as well as possible with existing socio-cultural patterns. An example of this is that traditional hillside slash and burn agriculturalists will be encouraged (via extensive field demonstrations) to plant Terminalia ivorenses and Pinus caribeae trees in their rice and corn fields. After rice and corn harvest, Brachiaria humidicola and Desmodium ovalifolium pastures will be planted between the trees. Three benefits will result. First, there will be improved income from small farm pastures by increasing production per hectare and by reducing weed control costs. Secondly, there will be a new source of income from growing and then selling mature timber trees. Thirdly, there will be reduced erosion and soil compaction, increased soil nitrogen and organic matter, and improved nutrient recycling, soil texture and aeration.

D. Conclusions of Economic Analysis

The agricultural/livestock component of the project is the only one subjected to quantitative analysis in the review documents. For the health, housing, and education components, the analyses conducted for existing USAID loans in the same three areas is valid (loans 045, 011, 043). Since the feasibility of each intervention in the three approved loans is based on a least cost type argument rather than on a rate of return analysis due to the complexity and difficulty in quantifying the benefits, and since the technical elements are almost identical in the project as in the existing, approved loans, it was felt unnecessary to conduct new analyses for them. In addition, no analysis is presented for the agribusiness component since the analysis of the agribusiness possibilities in the project will follow the ICI methodological approach developed in the Mission's already approved and functioning URBE project. While the methodology for analyzing the agricultural/livestock component in this project is essentially the same as in the Tonosi project, the differences between Tonosi and Sona in land fertility, rainfall, topography, etc., are great enough to require that we conduct and present an analysis based on information from Sona. The following paragraphs briefly summarize the methodology employed to analyze the economic feasibility of the agricultural/livestock component, the income changes expected to result from the technical assistance and credit interventions, and the overall internal rate for the loan excluding the social components.

The usual with and without project farm budget analytical procedure was applied to obtain the incremental costs and benefits generated by the agricultural/livestock component which were used in the internal rate of return analysis.

From extensive surveys, since corroborated by other smaller, independent studies, the MIPPE-MIDA group developed a series of agricultural and livestock farm profiles by farm sizes which were representative of the farms in the project area and which provided the without project farm for the analysis. In developing the with project farm budgets, the design team consciously decided to concentrate on improving the farming practices of those crops and animals already familiar to the farmer. The introduction of new varieties and practices was rejected first, because of insufficient agronomic information to allow the analysts to determine the impact of such interventions, and second, because the design team believed that the target farmers in the region were too inexperienced, too steeped in traditional practices to make the sharp break required by new and unfamiliar interventions.

Only those farmers receiving credit are considered in the analysis. The breakdown of the anticipated impact of the credit program by different farm sizes is summarized below:

$280,000 for loans to 200 landless families for the purchase of bees and bee-keeping apparatus, projected to raise family incomes up to $1,500 per year;

$557,236 for loans to at least 225 small (less than 10 ha.) landholders for inputs to improve yields on traditional crops and to encourage adoption of new crops, expected to raise farm incomes by approximately $1,000 per year and to provide up to $1,200 of additional paid labor per family;

$327,950 for 937 loans to small (less than 10 ha.) landholders for the purchase of swine, estimated to improve family incomes by about $100 per year;

$1,956,105 for loans to at least 180 families with 10-50 ha. farms for inputs to improve yields and expand varieties, expected to raise farm incomes by as much as $3,300 per year and provide an additional $200 of wage labor per family;

$2,230,670 for loans to 520 families who hold 10-50 ha. of land but have less than 10 cattle--for the purchase of cattle and fencing for improved cow-calf production, grass fattening or dual purpose operations--projected to raise farm incomes by at least $350 per year and possibly by as much as $4,600; and

$2,072,000 for loans to asentamientos for inputs to improve yields on traditional crops and to expand crops varieties, expected to improve the incomes of approximately 168 families by about $1,300 per year.

To obtain the costs associated with the benefits under this agricultural/livestock component it was necessary to prorate many cost items which covered more than one component. As an example, only 42% of the national administrative costs are allocated to this production component.

The internal rate of return (IRR) for this component is estimated to be slightly greater than 15% at the sixteenth year after the project begins. At the twelfth year the IRR would be slightly greater than 10%. These results are understated by some unknown amount because the analysis includes the total cost of the roads anticipated to be constructed under the project without assigning any additional benefits derived from this improved accessibility. The road information simply was not available in time. But because of the size of the road component and because its purpose is to improve agricultural production and farmer income, we decided to take a "worse case" approach by including the costs in the analysis of this agricultural/livestock component. The analysis further understates the rate of return because only the income changes of those farmers receiving credit are considered. This approach clearly omits some sizeable, but unknown, number of farmers who improve their practices as a result of observing the success the "credit" farmers have.

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TAGS:

SUBJECT: REPROGRAMMING OF LOAN 525-T-046 INTEGRATED RURAL DEVELOPMENT

REF.: PANAMA 02013

1. APPRECIATE REFTEL PROGRESS REPORT ON SUBJECT LOAN REPROGRAMMING. WE UNDERSTAND THAT THE MISSION'S PRESENT SCHEDULE IS TO HAVE THE PP AMENDMENT SUBMITTED IN FEBRUARY FOR AID/W REVIEW. THIS AMENDMENT WILL NEED TO BE A SELF-CONTAINED DOCUMENT WHICH JUSTIFIES THE REPROGRAMMING AND SUBSTANTIATES THE FEASIBILITY OF THE REVISED PROJECT ACTIVITIES. TO THE DEGREE ANY PORTION OF THE ANALYTICAL OR DESCRIPTIVE MATERIAL CONTAINED IN THE ORIGINAL PP IS STILL RELEVANT, IT CAN BE REFERENCED RATHER THAN REPEATED IN THE AMENDMENT. PP AMENDMENT TOGETHER WITH REFERENCED SECTIONS OF ORIGINAL PP SHOULD CONTAIN THE SAME DEGREE OF INFORMATION AND ANALYSES AS WOULD BE INCLUDED IN ANY PROJECT PAPER.

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2. ON THE BASIS OF THE REFTEL WE FORESEE SEVERAL SERIOUS ISSUES WHICH THE MISSION MAY WISH TO ADDRESS IN A PID-TYPE DOCUMENT PRIOR TO PROCEEDING TO DEVELOPMENT OF THE FULL PP AMENDMENT. THIS COURSE WOULD CAUSE A DELAY IN COMPLETION OF THE FINAL PP AMENDMENT, BUT COULD POSSIBLY PROVIDE THE MISSION WITH AN EARLIER RESOLUTION OF ISSUES. THE FOLLOWING COMMENTS AND CONCERNS RAISED DURING THE INFORMAL LAC REVIEW OF REFTEL ARE PROVIDED TO ASSIST MISSION IN PREPARATION OF PP AMENDMENT AND DECISION REGARDING NEED TO SUBMIT INTERIM DOCUMENT.

3. PROJECT PURPOSE AND RATIONALE. THE PURPOSE OF THE ORIGINAL PROJECT WAS TWOFOLD, I.E., (A) TO HELP THE GOP ESTABLISH AN OVERALL INSTITUTIONAL CAPABILITY FOR PLANNING AND IMPLEMENTATION OF REGIONAL IMPACT PROJECTS, AND (B) TO HELP IMPLEMENT A PROGRAM FOR THE ACCELERATED DEVELOPMENT OF THE FIRST OF THE PRIORITY IMPACT AREAS. IT APPEARS THAT THE REPROGRAMMING DOWNPLAYS OR ELIMINATES THE OBJECTIVE OF BUILDING AN OVERALL INSTITUTIONAL CAPACITY FOR THE PLANNING AND IMPLEMENTATION OF OTHER INTEGRATED RURAL DEVELOPMENT ACTIVITIES. IF THIS CHANGE REFLECTS A LACK OF GOP COMMITMENT TO INTEGRATED RURAL DEVELOPMENT, THIS CALLS

See Sectio D

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INTO QUESTION THE ORIGINAL RATIONALE FOR THE PROJECT. IF THE RATIONALE HAS CHANGED, THE MISSION MUST DEMONSTRATE HOW THE REPROGRAMMED PROJECT IS IN ACCORD WITH PRESENT GOP PLANS AND POLICIES AND IS CONSISTENT WITH THE CDSS. THE MISSION SHOULD NOTE THAT THE PP AMENDMENT WILL BE SUBJECT TO A GC REVIEW TO DETERMINE WHETHER OR NOT THE PROPOSED REPROGRAMMED PROJECT HAS CHANGED SO SUBSTANTIALLY AS TO BECOME A NEW PROJECT REQUIRING DEOBLIGATION OF FUNDS.

4. TARGET AREA. THE PROPOSED REPROGRAMMING ELIMINATES RESETTLEMENT AND DOES NOT INCLUDE ANY INTERVENTIONS WITH REGARD TO LAND TENURE. THE ANALYSIS OF THE TARGET AREA SHOULD PROVIDE SUFFICIENT DETAIL ON THE LAND TENURE SITUATION AND THE PRODUCTIVE POTENTIAL OF THE LAND TO JUDGE WHETHER THE PROJECT CAN HAVE A BENEFICIAL IMPACT ON THE TARGET GROUP, PARTICULARLY INDEPENDENT, INCLUDING SLASH AND BURN, FARMERS. WE UNDERSTAND THAT SOCIAL AND POLITICAL ANALYSES ARE BEING CONDUCTED TO ANTICIPATE ANY NEGATIVE REACTION FROM ASENTAMIENTOS OR LARGE LAND OWNERS. CONCLUSIONS FROM THESE ANALYSES WILL BE CRUCIAL IN DEMONSTRATING PROJECT FEASIBILITY.

See Sections I.C, and D, and Section II A.

5. BENEFITS TO INDEPENDENT FARMERS. IF, AS IT APPEARS, THE REPROGRAMMED PROJECT IS TO LEAD INTO, RATHER THAN FOLLOW ON, A GOP POLICY SHIFT TOWARD PROVIDING GREATER PRODUCTION SUPPORT SERVICES TO INDEPENDENT SMALL FARMERS, THE PP AMENDMENT SHOULD CLEARLY SHOW HOW THE PROJECT CAN BE DESIGNED TO ENSURE THAT BENEFITS DO INDEED ACCRUE TO INDEPENDENT SMALL FARMERS RATHER THAN JUST ASENTAMIENTOS. THE REFTEL INDICATES THAT EACH AGENT WOULD SERVICE 60 INDEPENDENT FARMERS AND 50 ASENTAMIENTO FARMERS PER WEEK. IF THIS FIGURE IS OVERLY AMBITIOUS, HOW WILL THE PROJECT DESIGN ASSURE THAT IT WILL NOT BE THE COVERAGE OF INDEPENDENTS THAT WILL SUFFER. WITH REGARD TO CREDIT, THE MISSION SHOULD ANALYZE THE CREDIT CAPACITY OF THE VARIOUS SUBGROUPS IN THE PROPOSED TARGET GROUP. IF THE CREDIT CAPACITY OF THE INDEPENDENT FARMERS IS SIGNIFICANTLY LESS THAN THE AVERAGE PROPOSED CREDIT PER BENEFICIARY, MOST OF THE CREDIT MAY END UP GOING TO COVER THE DEFICITS OF THE ASENTAMIENTOS. WOULD SUCH AN OUTCOME BE COMPATIBLE WITH THE MISSION'S AGRICULTURAL DEVELOPMENT STRATEGY, OR CAN THE PROJECT BE DESIGNED TO PREVENT SUCH AN OUTCOME?

See Sections I C, and II A, B, and C.

6. NUCLEOS FOR INDEPENDENT FARMERS. GIVEN POPULATION DISPERSION AND THE PRACTICES OF SLASH AND BURN FARMERS, THE SOCIAL, TECHNICAL AND ADMINISTRATIVE FEASIBILITY OF THIS MECHANISM SHOULD BE CAREFULLY ANALYZED.

See Sections I C and II A, B, and C.

7. INSTITUTIONAL ANALYSIS. GIVEN THE PROBLEMS BETWEEN THE MINISTRIES OF PLANNING AND AGRICULTURE, THE FEASIBILITY OF THE PROJECT'S ADMINISTRATIVE STRUCTURE DESERVES PARTICULAR ATTENTION.

See Sections I C and Annex C

See Sections I C.7
and Annex K

8. RURAL FEEDER ROADS. GIVEN THE FACT THAT THE IDB RECENTLY APPROVED DOLS 45.5 MILLION FOR RURAL ACCESS ROADS AND THE MISSION'S LAST REPORT ON THE RURAL ACCESS ROADS SHOWED A SIGNIFICANT AMOUNT UNCOMMITTED, THE MISSION SHOULD PROVIDE A JUSTIFICATION FOR ALLOCATING DOLS 3.0 MILLION IN PROJECT FUNDS FOR THIS ACTIVITY RATHER THAN NEGOTIATING WITH THE GOP A REPROGRAMMING OF IDB OR AID FUNDS FOR THE SONA AREA. HAIG
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DRAFT PROJECT AUTHORIZATION AMENDMENT

Name of Country: Republic of Panama

Name of Project: Integrated Rural Development (Soná)

Project Number : 525-0186

Loan Number : 525-T-046

1. The project's terminal disbursement date is changed from July 31, 1983 to a Project Assistance Completion Date (PACD) of July 31, 1986.

2. Delete paragraphs 2c., 2d., 2e., 2f., and 2h.

3. Section "3., Other Terms and Conditions of Amendment One" shall be added to the authorization as follows:

"3. Other Terms and Conditions of Amendment One

a. Except as otherwise agreed in writing by A.I.D., prior to the issuance of any commitment documents or any disbursements under the Loan, the Cooperating Country shall furnish to A.I.D. in form and substance satisfactory to A.I.D.:

67 An opinion of the Procurador General of Panama that the Amendment One (1) has been duly authorized and/or ratified and executed on behalf of the Government of Panama and that it constitutes a valid and legally binding obligation of the Government of Panama in accordance with all of its terms.

b. Except as otherwise agreed in writing by A.I.D., prior to the issuance of any commitment documents or any disbursements under the loan other than technical assistance, the Cooperating Country shall furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(i) Evidence that a resolution has created the National Committee, composed of Ministers of Planning and Political Economy, Agricultural Development, Education, Health, Public Works, and Housing.

(ii) Evidence that a resolution has created the National Coordination Office in the Ministry of Planning and Political Economy.

c. All other terms and conditions contained in the original agreement remain in full force and effect."

MOVED TO PART II, SECTION A, PAGE 1

AID 1020-28 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project:
From FY 78 to FY 86
Total U.S. Funding $9,700,000
Date Prepared: 6/13/81

Project Title & Number: Integrated Rural Development - Sonâ 525-0186

PAGE 1

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes:	Measures of Goal Achievement:		Assumptions for achieving goal targets:
Goal: Improve incomes, employment and the quality of life of the rural poor in underdeveloped areas of the country.	1. Substantial reduction in urban-rural income disparity and in rural unemployment/under-employment. 2. Vital social services including health and education are within 2-3 hours walk for all inhabitants.	1. Census 2. GOP records and census.	1. Integrated rural development continues to be a priority area for the GOP. 2. Sufficient financing from internal and external sources.

Annex D
1 of 4

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AID 1020-28 (7-71)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 78 to FY 86
Total U.S. Funding $9,700,000
Date Prepared: 6/13/81

Project Title & Number: Integrated Rural Development - Soná 525-0186

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose: A. Establish an overall institutional capability for planning and implementing regional impact projects within the government of Panama. B. Establish first integrated rural development program.	Conditions that will indicate purpose has been achieved: End of project status. A.1 A National Coordinating Office for Integrated Rural Development capable of planning, budgeting, coordinating, monitoring and evaluating development activities in approximately 5 impact areas. 2. Capability within the public agricultural sector for planning and implementing agricultural components of rural development projects. 3. National Committee for Integrated Rural Development headed by Minister of Planning and Economic Policy and made up of Ministers of MIDA, MOP, Education Health, Housing and BDA approving new IRD projects and providing policy guidance and area selection. 4. An integrated implementation mechanism providing or assuring TA, credit farm inputs and resource management for target population functioning in Soná.	A.1-5 Verification of these EOPs will be made through on-site inspections and GOP records.	Assumptions for achieving purpose: A.1 High level personnel continue to devote sufficient time to the project. 2. Inter-agency coordination develops as planned.

Annex D
2 of 4

AID 1020-28 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Integrated Rural Development - Sona 525-0186

Life of Project:
From FY 78 to FY 86
Total U.S. Funding $9,700,000
Date Prepared: 6/13/81

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose: B. Establish first integrated rural development program.	Conditions that will indicate purpose has been achieved: End of project status. B.1. Minimum net family incomes of about $2,500 at 1980 prices equivalent to about $500 per capita for most of the 2,500 target families. 2. All weather road network within a maximum of 2 hours by foot or horse for the entire population. 3. An incremental value of ag. production at 1980 prices of $5 million or about 150% increase over estimated 1980 level. 4. Minimum of 300 hectares of demonstration plots under improved pasture/reforestation. 5. Existence of a sound economic social and institutional basis for both broadening and deepening economic and social development of the district over subsequent 5 years.	B.1.6. Verification will be through on-site inspections, review of GOP and project records such as farm credit plans and evaluation surveys.	Assumptions for achieving purpose: B.1. Area Coordinator and other project officials able to motivate participants. 2. Prices of agricultural inputs and outputs do not change in ways that are detrimental to the project. 3. Climatic conditions remain favorable.

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AID 1020-28 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 78 to FY 86
Total U.S. Funding $9,700,000
Date Prepared: 6-13-81

Project Title & Number: Integrated Rural Development - Sonã 525-0186

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs: 1. Design and implement applied research and technological transfer program. 2. Rotating credit fund established in BDA along with necessary mechanisms for granting credit. 3. Construction of 1 farm service center and 4 subcenters. 4. Road improvements. 5. Reforestation 6. Forest conservation 7. Health facilities constructed 8. Educational facilities constructed. 9. Housing solutions constructed. Inputs: See financial plan (Annex F) for details on funding.	Magnitude of Outputs: 1. Adequate technological packages and management practices developed for all planned lines of production. 2. Fund capitalized in the amount of $4.9 million (AID=$4.0 million/ GOP=$0.9 million)) 2,500 loans granted to 2,000 beneficiaries. 3. One center and 4 sub-centers in operation. 4. 30 kilometers of road constructed and an additional 40 kilometers improved. 5. 5 forest nurseries established. 6. Slash and burn practices reduced. 7. 6 health centers; 40 wells; 14 aqueducts; 1000 latrines. 8. 39 classrooms; 18 schools; 12 dormitories; 2 laboratories. 9. 30 complete houses built; 100 piso-techo; 400 rehabilitated 350 serviced lots.		Assumptions for achieving outputs:

Annex D
4 of 4

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Evaluation and Implementation Plan

1. Evaluation Plan

The reprogrammed loan shall be evaluated at least annually during the disbursement period. The evaluation will endeavor to measure in overall terms progress toward the primary objectives of the loan.

It is contemplated that these evaluations will be carried out jointly by the GOP and USAID/Panama and such outside expert assistance as the joint evaluation team may consider necessary and appropriate at the time of preparation for the evaluation.

2. Implementation Plan

a. The Project's Implementation Plan is comprised of three phases.

First Phase

The first phase is one of preparation for the successful execution of the Project and will last approximately one year.

75 In this phase units responsible for programming, administration and implementation will be established and all the operating procedures for coordination, monitoring and evaluation will be designed.

The selection, hiring and training of Project personnel is of critical importance. The first persons to be trained will be those having supervisory functions so that they can participate later in the training of the remaining personnel to be carried out in this phase. A strong effort is needed to assure that Project personnel receive proper training and an understanding of their work before they begin working with the project beneficiaries.

Development of designs, plans, specifications and calls for bid relating to the major infrastructure is also to be done during this phase.

By taking advantage of the dry season, at least three road sections (Sona-Rodeo Viejo, Sona-Calidonia, Sona-Cative) can begin and as a result bring a large number of independent producers into assistance programs.

Basic studies such as socio-economic surveys and analysis of production systems which are required to begin direct assistance to producers will also be done in this phase.

Second Phase

At the beginning of this two year phase personnel located in work areas will begin providing technical assistance to the beneficiaries. Corregimientos serviced by vehicle transitable roads will be given priority assistance.

In the case of cattle-raising, credit could be given taking into account future road construction. This phase will include a massive training activity aimed at farm families. Based on the developing relationship between production agents and producers and as a result of model farms and other extension methods, the new technology will begin to be slowly accepted. The design of the 1983-84 implementation plan based on prior achievements will be an important point in the project. It is estimated that during this phase all infrastructure construction will be completed.

Third Phase

This phase comprises the last two years of the project. In this phase the results of demonstrations aimed towards changing production systems based on annual cultivations to systems with permanent components which will better conserve the land and forest will begin to be adopted. The accumulation of experience and training by project personnel will permit in this phase the beginning of training of technicians in other regions.

b. Implementation Schedule

(1) Reprogram approval - July, 1981.

(2) Selection and establishment of the Executive Committee of the Rural Development Commission - August 3, 1981.

(3) Selection of National Coordinator of Rural Development and staff personnel - August 3, 1981.

(4) Selection of the Rural Development Support Commission - August 3, 1981.

(5) Selection of the local coordinator of the Sona Project. Selection of the multidisciplinary production team personnel - August 3, 1981.

(6) Beginning of the design of the annual implementation plan - August 10, 1981.

(7) Background requests for applicants - August 27, 1981.

(8) Preparation of documentation for the acquisition of vehicles, office furniture, office equipment, etc. - August 27, 1981.

(9) Study of roads to be built under the project - August 27, 1981.

(10) Contract for soil classification survey - September 14, 1981.

(11) Training course for the multidisciplinary production support team begins - September 14, 1981.

(12) Selection and training course of production and credit agents. September 28 to November 30, 1981.

(13) Project included in the Investment Budget of the Republic of Panama - October, 1981.

(14) Begin the roads bid - October 30, 1981.

(15) Development of designs, specifications, and budget for construction under the project - November 30, 1981.

(16) Begin workshops for public relations, motivation and outreach - November 30, 1981.

(17) Design of a detailed system of disbursements, replenishments, and general accounting system - November 16, 1981.

177 (18) Begin construction of Sona-Rodeo Viejo, Sona-Cative roads - December 15, 1981.

(19) Selection of credit agents - December 30, 1981.

(20) Selection of production agents - December 30, 1981.

(21) Signing of institutional work agreements - January 6, 1981.

(22) Begin social surveys - January 6, 1981.

(23) Begin feasibility studies for agroindustrial projects - February, 1982.

(24) Agents begin area work. Inventory of human and physical resources. Characterization of production systems - February, 1982.

(25) Improvements to the Miguel Alba de Sona School - February, 1982.

(26) Selection of MIVI personnel for the housing component - April, 1982.

(27) Begin establishment of agricultural field demonstrations - April, 1982.

(28) Construction of health posts, five rural water systems, ten wells, 200 latrines - April to December, 1982.

(29) Begin program of adult training - April, 1982.

(30) Construction of centers and sub-centers for technical assistance - April to December, 1982.

(31) Construction of ten primary schools classrooms - April, 1982.

(32) Construction of the secondary school classrooms - December, 1982.

(33) Begin workshops and field days for producers - June, 1982.

(34) Design of agricultural production programs - June, 1982.

(35) Selection of assistance recipients. Development of investment plans by credit and development agents - July, 1982.

(36) Begin training and formation of groups dedicated to improving housing - August, 1982.

(37) Evaluation of first project year - August, 1982. Implementation Plan (1982-1983) - August, 1982.

(38) BDA loans - Formalization and Disbursements - September, 1982.

(39) Continue road construction - January, 1983.

(40) Project personnel begin formal training of technicians from other regions, 1984-85.

(41) Continue the implementation and adjust the project in accordance with evaluations - 1984-86.

(42) Final project evaluation - August, 1986.

PROYECTO DE DESARROLLO RURAL INTEGRADO DEL SUR DE VERAGUAS
CONSOLIDADO
DISTRIBUCION DE FONDOS POR AÑO, SEGUN FUENTE

(En miles de Balboas)

Detalle	Total			Años del Proyecto														
				1			2			3			4			5		
	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP
TOTAL	19517.5	9520.0	9997.5	4311.6	2724.1	1587.5	4713.0	2341.3	2371.7	3630.1	1823.0	1807.1	3557.0	1454.0	2103.0	3305.8	1177.6	2182.2
Serv. Agropecuarios	3060.4	1698.5	1361.9	1362.0	1074.0	288.0	690.9	392.5	298.4	368.4	104.0	264.4	361.8	94.0	267.8	277.3	34.0	243.3
Caminos	2904.5	2000.0	904.5	1073.1	950.0	123.1	915.1	750.0	165.1	489.1	300.0	189.1	206.1	-	206.1	221.1	-	221.1
Planif. y Administ.	3100.8	766.0	2334.8	822.0	410.6	411.4	541.4	103.6	437.8	573.2	103.6	469.6	569.0	74.1	494.9	595.2	74.1	521.1
Agroindustrias	1200.0	898.0	302.0	222.4	162.0	60.4	221.4	161.0	60.4	210.4	150.0	60.4	275.4	215.0	60.4	270.4	210.0	60.4
Crédito	5857.6	4157.5	1700.1	271.1	127.5	143.6	1146.2	934.2	212.0	1378.5	1165.4	213.1	1585.5	1071.1	514.5	1476.4	859.5	616.9
Vivienda	919.6	-	919.6	121.3	—	121.3	151.4	-	151.4	194.0	-	194.0	234.6	-	234.6	218.3	-	218.3
Educación	1400.0	-	1400.0	226.0	—	226.0	671.3	-	671.3	177.4	-	177.4	170.4	-	170.4	154.9	-	154.9
Salud*	1074.6	-	1074.6	213.7	—	213.7	375.3	-	375.3	239.1	-	239.1	154.3	-	154.3	92.2	-	92.2

* Incluye B/. 172,564.00 de aporte de la Comunidad.

ACTIVIDAD: SERVICIOS AGROPECUARIOS

DISTRIBUCION DE FONDOS POR AÑO, SEGUN FUENTE

(En miles de Balboas)

Detalle	Total			Años del Proyecto														
				1			2			3			4			5		
	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP
TOTAL ...	3,060.4	1698.5	1361.9	1362.0	1074.0	288.0	690.9	392.5	298.4	368.4	104.0	264.4	361.8	94.0	267.8	277.3	34.0	243.3
Personal.....	767.5	-	767.5	153.5	-	153.5	153.5	-	153.5	153.5	-	153.5	153.5	-	153.5	153.5	-	153.5
Viajes y viáticos.....	144.0	-	144.0	28.8	-	28.8	28.8	-	28.8	28.8	-	28.8	28.8	-	28.8	28.8	-	28.8
Equipo y maquinaria.....	70.0	50.0	20.0	50.0	40.0	10.0	20.0	10.0	10.0	-	-	-	-	-	-	-	-	-
Vehículos.....	213.5	213.5	-	150.0	150.0	-	63.5	63.5	-	-	-	-	-	-	-	-	-	-
Op. y mantenimiento - vehículos.....	270.4	-	270.4	43.7	-	43.7	54.1	-	54.1	55.1	-	55.1	58.5	-	58.5	59.0	-	59.0
Entrenamientos.	320.0	320.0	-	200.0	200.0	-	80.0	80.0	-	20.0	20.0	-	20.0	20.0	-	-	-	-
Asistencia técnica.....	260.0	260.0	-	180.0	180.0	-	10.0	10.0	-	30.0	30.0	-	20.0	20.0	-	20.0	20.0	-
Construcciones.	375.0	375.0	-	300.0	300.0	-	75.0	75.0	-	-	-	-	-	-	-	-	-	-
Fondos especiales.....	610.0	460.0	150.0	250.0	200.0	50.0	200.0	150.0	50.0	75.0	50.0	25.0	75.0	50.0	25.0	10.0	10.0	-
Misceláneos....	30.	20	10	6	4	2	6	4	2	6	4	2	6	4	2	6	4	2

ACTIVIDAD DE CREDITO

DISTRIBUCION DE FONDOS POR AÑO, SEGUN FUENTE

Detalle	Total			Años del Proyecto														
				1			2			3			4			5		
	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP
TOTAL	5,857.6	4,157.5	1,700.1	271.1	127.5	143.6	1,146.2	934.2	212.0	1,378.5	1,165.4	213.1	1,585.5	1,070.9	514.5	1,476.4	859.5	616.0
Personal.....	477.8	-	477.8	95.4	-	95.4	95.6	-	95.6	95.6	-	95.6	95.6	-	95.6	95.6	-	95.6
Viajes y viáticos.....	84.0	-	84.0	16.8	-	16.8	16.8	-	16.8	16.8	-	16.8	16.8	-	16.8	16.8	-	16.8
Equipo y maquinaria....	12.0	12.0	-	12.0	12.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehículos.....	95.5	95.5	-	95.5	95.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Mantenimiento-vehículos	132.1	-	132.1	22.4	-	22.4	25.5	-	25.5	26.6	-	26.6	28.0	-	28.0	29.6	-	29.6
Entrenamientos.....	50.0	50.0	-	20.0	20.0	-	30.0	30.0	-	-	-	-	-	-	-	-	-	-
Asistencia técnica.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construcciones.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fondos especiales.....	4,968.4	4,000.0	968.5	-	-	-	971.1	904.2	66.9	1,232.3	1,165.4	66.9	1,437.9	1,071.0	366.9	1,327.2	859.5	467.0
Misceláneos.....	37.8	-	37.8	9.0	-	9.0	7.2	-	7.2	7.2	-	7.2	7.2	-	7.2	7.2	-	7.2

ACTIVIDAD: COMPONENTE AGROINDUSTRIAL

DISTRIBUCION DE FONDOS POR AÑO, SEGUN FUENTE

(En miles de Balboas)

Detalle	Total			Años del Proyecto														
				1			2			3			4			5		
	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP
TOTAL ...	1,200	898.0	302.0	222.4	162.0	60.4	221.4	161.0	60.4	210.4	150.0	60.4	275.4	215.0	60.4	270.4	210.0	60.4
Personal.....	285.3	-	285.3	57.1	-	57.1	57.1	-	57.1	57.1	-	57.1	57.1	-	57.1	57.1	-	57.1
Viajes y viáticos.....	12.0	-	12.0	2.4	-	2.4	2.4	-	2.4	2.4	-	2.4	2.4	-	2.4	2.4	-	2.4
Equipo y maquinaria.....	10.0	10.0	-	10.0	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehículos.....	12.0	12.0	-	12.0	12.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Op. y mantenimiento - vehículos.....	4.7	-	4.7	0.9	-	0.9	0.9	-	0.9	0.9	-	0.9	0.9	-	0.9	0.9	-	0.9
Entrenamientos.	20.0	20.0	-	-	-	-	10.0	10.0	-	10.0	10.0	-	-	-	-	-	-	-
Asistencia técnica.....	50.0	50.0	-	-	-	-	25.0	25.0	-	25.0	25.0	-	-	-	-	-	-	-
Construcciones.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fondos especiales.....	700.0	700.0	-	100.0	100.0	-	100.0	100.0	0	100.0	100.0	-	200.0	200.0	-	200.0	200.0	-
Misceláneos....	100.0	106.0	-	40.0	40.0	-	26.0	26.0	-	15.0	15.0	-	15.0	15.0	-	10.0	10.0	-

ACTIVIDAD: VIVIENDA

DISTRIBUCION DE FONDOS POR AÑO, SEGUN FUENTE
(En Miles de Balboas)

	TOTAL			Años del Proyecto														
				1			2			3			4			5		
	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP
TOTAL	919,642		919,642	121,360		121,360	151,395		151,395	193,981		193,981	234,566		234,566	218,340		218,340
Personal.....	172,250		172,250	34,450		34,450	34,450		34,450	34,450		34,450	34,450		34,450	34,450		34,450
Viajes y Viáticos.....	33,850		33,350	6,670		6,670	6,670		6,670	6,670		6,670	6,670		6,670	6,670		6,670
Equipo y Maquinaria.....	15,000		15,000	7,000		7,000	2,000		2,000	2,000		2,000	2,000		2,000	2,000		2,000
Vehículos.....	52,000		52,000	52,000		52,000	-		-	-		-	-		-	-		-
Operación y Mantenimiento - Vehículos.....	28,115		28,115	3,000		3,000	3,000		3,000	5,000		5,000	8,000		8,000	3,115		3,115
Entrenamientos..	-		-	-		-	-		-	-		-	-		-	-		-
Asistencia Técnica.....	-		-	-		-	-		-	-		-	-		-	-		-
Construcciones..	85,800		85,800	13,200		13,200	19,200		19,200	25,200		25,200	28,200		28,200	-		-
Fondos Especiales.....	507,927		507,927	-		-	81,035		81,035	115,621		115,621	150,206		150,206	161,065		161,065
Miscelâneos.....	25,000		25,200	5,040		5,040	5,040		5,040	5,040		5,040	5,040		5,040	5,040		5,040

ACTIVIDAD: EDUCACION

DISTRIBUCION DE FONDOS POR AÑO, SEGUN FUENTE

(En miles de Balboas)

Detalle	Total			Años del Proyecto														
				1			2			3			4			5		
	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP
TOTAL ...	1,400.0		1,400.0	226.0		226.0	671.3		671.3	177.4		177.4	170.4		170.4	154.9		154.9
Personal.....	622.2		622.2	95.0		95.0	149.6		149.6	124.2		124.2	127.2		127.2	126.2		126.2
Viajes y viáticos.....																		
Equipo y maquinaria.....	293.0		293.0	53.5		53.5	172.7		172.7	23.4		23.4	22.4		22.4	21.0		21.0
Vehículos.....																		
Op. y mantenimiento - vehículos.....																		
Entrenamientos.																		
Asistencia técnica.....																		
Construcciones.	484.4		484.4	77.5		77.5	349.0		349.0	29.8		29.8	20.8		20.8	7.7		7.7
Fondos especiales.....																		
Misceláneos....																		

ACTIVIDAD: SALUD

DISTRIBUCION DE FONDOS POR AÑO, SEGUN FUENTE

(En miles de Balboas)

Detalle	Total			Años del Proyecto														
				1			2			3			4			5		
	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP
TOTAL ...	1,074.6		1,074.6	213.7		213.7	375.3		375.3	239.1		239.1	154.3		154.3	92.2		92.2
Personal.....	274.1		274.1	6.1		6.1	15.7		15.7	76.3		76.3	83.8		83.8	92.2		92.2
Viajes y viáticos.....																		
Equipo y maquinaria.....	30.2		30.2	5.1		5.1	21.9		21.9	3.2		3.2	-		-	-		-
Vehículos.....																		
Op. y mantenimiento - vehículos.....																		
Entrenamientos.																		
Asistencia técnica.....																		
Construcciones.	770.3		770.3	202.5		202.5	337.6		337.6	159.6		159.6	70.5		70.5	-		-
Fondos especiales..... ...																		
Misceláneos....																		

ACTIVIDAD: ADMINISTRACION PLANIFICACION

DISTRIBUCION DE FONDOS POR AÑO, SEGUN FUENTE

(En miles de Balboas)

Detalle	Total			Años del Proyecto														
				1			2			3			4			5		
	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP
TOTAL ...	3100.8	766.0	2334.8	822.0	410.6	411.4	541.4	103.6	437.8	573.2	103.6	469.6	569.0	74.1	494.9	595.2	74.1	521.1
Personal.....	1735.6	-	1735.6	304.1	-	304.1	327.9		327.9	356.8	-	356.8	361.8	-	361.8	385.0	-	385.0
Viajes y viáticos.....	160.0	-	160.0	26.3	-	26.3	28.9		28.9	31.8	-	31.8	35.0	-	35.0	38.0	-	38.0
Equipo y maquinaria.....	110.0	110.0	-	110.0	110.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehículos.....	100.0	100.0	-	100.0	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Op. y mantenimiento - vehículos.....	405.2	-	405.2	81.0	-	81.0	81.0	-	81.0	81.0	-	81.0	81.1	-	81.1	81.1	-	81.1
Entrenamientos.	217.6	217.6	-	108.2	108.2	-	33.6	33.6	-	33.6	33.6	-	21.1	21.1	-	21.1	21.1	-
Asistencia técnica.....	350.0	316.0	34.0	70.0	70.0	-	70.0	70.0	-	70.0	70.0	-	70.0	53.0	17.0	70.0	53.0	17.0
Construcciones.	22.4	22.4	-	22.4	22.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Fondos especiales.....																		
Misceláneos....																		

ACTIVIDAD: CAMINOS

DISTRIBUCION DE FONDOS POR AÑO, SEGUN FUENTE

(En miles de Balboas)

Detalle	Total			Años del Proyecto														
				1			2			3			4			5		
	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP	Total	AID	GOP
TOTAL ...	2904.5	2000.0	904.5	1073.1	950.0	123.1	915.1	750.0	165.1	489.1	300.0	189.1	206.1	-	206.1	221.1	-	221.1
Personal.....	433.0	-	483.0	96.6	-	96.6	96.6	-	96.6	96.6	-	96.6	96.6	-	96.6	96.6	-	96.6
Viajes y viáticos.....	13.0	-	13.0	2.0	-	2.0	2.0	-	2.0	3.0	-	3.0	3.0	-	3.0	3.0	-	3.0
Equipo y maquinaria.....	58.5	-	58.5	4.5	-	4.5	6.5	-	6.5	9.5	-	9.5	16.5	-	16.5	21.5	-	21.5
Vehículos.....	600.0	600.0	-	400.0	400.0	-	200.0	200.0	-	-	-	-	-	-	-	-	-	-
Op. y mantenimiento - vehículos.....	350.0	-	350.0	20.0	-	20.0	60.0	-	60.0	80.0	-	80.0	50.0	-	90.0	100.0	-	100.0
Entrenamientos.	50.0	50.0	-	25.0	25.0	-	25.0	25.0	-	-	-	-	-	-	-	-	-	-
Asistencia técnica.....	50.0	50.0	-	25.0	25.0	-	25.0	25.0	-	-	-	-	-	-	-	-	-	-
Construcciones..	1300.0	1300.0	-	500.0	500.0	-	500.0	500.0	-	300.0	300.0	-	-	-	-	-	-	-
Fondos especiales.....																		
Misceláneos....																		

ECONOMIC ANALYSIS

Introduction

The economy of Sonâ district is overwhelmingly dependent on agriculture and the poverty which typifies the area is attributable to the low level of technology employed by Sonâ's farmers and to prolonged degradation of the topsoil. The economic goal of this project is to increase agricultural incomes, especially among Sonâ's poor. This is to be accomplished directly through programs aimed at improving agricultural and livestock practices and by expanding and improving the district's system of roads and, indirectly, by project efforts to upgrade education and health care delivery services.

Increases in crop and livestock yields are to be achieved by methods which increase the awareness of the farmers of the long term problems of soil depletion and which enlist their support in the search for remedies. The project will improve agricultural productivity by:

- Expanding the capacity of existing governmental institutions to provide research, education, efficient administration, and planning for Sonâ's rural economy;
- Expanding the network of extension services and demonstration projects for the farmers; and
- Providing new sources of credit for inputs into improved agricultural and livestock systems.

Expanded Administrative Capacity

An expanded and improved system of public institutions is needed to reinforce and direct the efforts of Sonâ's farmers to adopt new technologies with appropriate speed. New governmental capacity is needed to plan, to

administer research and rural education programs, and to coordinate activities so that the system remains flexible, responsive to new information and able to profit from its mistakes. Effective systems are needed to gather data and monitor progress toward project goals.

Recommendations regarding organizational structure are included in Ch. 11. Cost estimates of the economic components of the Sona project were compiled by the MIPPE/MIDA design team and are presented in Table 1.

Expanded Agricultural Services

Twenty-eight new development agents will be employed to aid Sona's farmers in the adoption of new technologies, the utilization of new inputs and the generation of new varieties of output. They will be trained specifically to implement the agriculture and livestock programs described in Ch.4 &5. Project-sponsored research findings will be channeled through these agents to the farmers and research programs will be modified as necessary to benefit from their experience. They will work with BDA credit officers to insure that loan-funded activities are compatible with project goals.

Nurseries will be established for the propagation of improved varieties and 300 on-farm demonstrations of pasture renovation and forest grazing will be established. Training materials will be developed for farmer education to be used in schools and adult education centers and will be adapted for radio broadcast.

TABLE 1: ESTIMATES OF PROJECT COSTS
(Thousands of Dollars)

		Year 1	Year 2	Year 3	Year 4	Year 5	Total
Admin. of Credit	GOP	144	145	146	148	149	732
	AID	128	30	-	-	-	158
Agri-Livestock Services	GOP	288	298	264	161	146	1,157
	AID	1,074	353	144	56	14	1,641
Road Const. & Maintenance	GOP	123	165	189	206	221	905
	AID	950	750	300	-	-	2,000
National Admin. Costs	GOP	173	184	197	208	219	981
	AID	172	44	44	31	31	322
Aggregates	GOP	728	792	796	723	735	3,775
	AID	2,324	1,177	488	87	45	4,121
Total		3,052	1,969	1,284	810	780	7,896

Source: MIPPE/MIDA Design Team

NOTE: The cost estimates of the Design Team have been adjusted for this table by deducting costs not attributable to the Sona project: costs of agricultural services were reduced by 40% in years 4 and 5, and costs of national administration were reduced by 50% for each year. In addition only 84% of national administration costs were assumed to be associated with economic (vis a vis social) activities and were included here.

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Extended Credit

The project will provide an expanded credit flow to Sona's rural areas for the following component programs:

$280,000 for loans to 200 landless families for the purchase of bees and bee-keeping apparatus, projected to raise family incomes up to $1,500 per year;

$557,236 for loans to at least 225 small (less than 10 ha.) landholders for inputs to improve yields on traditional crops and to encourage adoption of new crops, expected to raise family incomes by approximately $1,000 per year and to provide up to 400 days of additional paid labor per family;

$327,950 for 937 loans to small (less than 10 ha.)landholders for the purchase of swine, estimated to improve family incomes by about $100 per year;

$1,956,105 for loans to at least 180 families with 10-50 ha. farms for inputs to improve yields and expand varieties, expected to raise family incomes by as much as $3,300 per year and provide an additional $200 of wage labor per family;

$2,230,670 for loans to 520 families who hold 10-50 ha. of land but have less than 10 cattle --for the purchase of cattle and fencing for improved cow-calf production, grass fattening or dual purpose operations -- projected to raise family incomes by at least $350 per year and possibly by as much as $4,600; and

$2,072,000 for loans to asentamientos for inputs to improve yields on traditional crops and to expand crop varieties, expected to improve the incomes of approximately 168 families by about $1,300 per year.

Economic Benefits

Table 2 summarizes estimates of monetary benefits from the agricultural components of the credit programs for each group of loan recipients. (Similar estimates for the livestock credit components are provided in Table 3.) These projections are based on estimates of farm income per hectare before and after implementation of the proposed programs, estimates compiled by the MIPPE/MIDA design team and included as Annex 2. Projected increases

TABLE 2: NET ECONOMIC BENEFITS - AGRICULTURAL PROGRAMS

	Year	Number of Families	Total Benefits
Less than 10 ha.	2	5	$ 3,750
1-S, 2-S → 1C	3	15	11,250
$750 per family	4	45	33,750
	5	55	41,250
Less than 10 ha.	2	5	3,900
1-S, 2-S → 2-C	3	20	15,600
$780 per family	4	50	39,000
	5	70	54,600
Less than 10 ha.	2	15	14,175
1-S, 2-S → 3-C	3	40	37,800
$945 per family	4	80	75,600
	5	100	94,500
10-50 ha.	2	40	41,400
4-S → 5-C	3	60	62,100
$1,035 per family	4	110	113,850
	5	130	134,550
10-50 ha.	2	25	82,500
5-S → 6-C	3	37	123,750
$3,300 per family	4	37	123,750
	5	50	165,000
Asentamientos	2	21	26,400
5-S → 6-C	3	42	52,800
$1,257 per family	4	63	79,200
	5	84	105,600
Asentamientos	2	21	28,720
5-S → 7-C	3	42	57,440
$1,368 per family	4	63	86,160
	5	84	114,880
Total Benefits	2	117	200,845
	3	256	360,740
	4	448	551,310
	5	573	710,380

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TABLE 3: NET ECONOMIC BENEFITS - LIVESTOCK PROGRAMS

Program	Year	Number of Families	Aggregate Net Profit
Bees	2	50	22,750
	3	100	58,900
	4	150	106,650
	5	200	168,300
	6	200	217,350
	7	200	256,550
	8	200	284,150
	9	200	297,850
	10	200	301,400
	11	200	301,400

NOTE: It is assumed that 50 families begin program in year 2, 50 in year 3, 50 in year 4, and 50 in year 5. Estimates of profit or loss per farm are included in Annex 2.

Dual Purpose - Cattle	2	5	-505
	3	25	-1,385
	4	40	2,255
	5	50	24,180
	6	50	91,925
	7	50	127,940
	8	50	161,420
	9	50	173,595
	10	50	204,915
	11	50	229,900

NOTE: It is assumed that 5 families begin program in year 2, 20 in year 3, 15 in year 4, and 10 in year 5. Estimates of profit or loss per farm are included in Annex 2.

Swine	2	100	200
	3	300	18,600
	4	650	38,900
	5	937	87,774
	6	937	101,834
	7	937	103,316
	8	937	116,363
	9	937	114,795
	10	937	122,705
	11	937	116,230

NOTE: It is assumed that 100 families begin program in year 2, 200 in year 3, 350 in year 4, and 287 in year 5. Estimates of profit or loss per farm are included in Annex 2.

TABLE 3: (continued)

Program	Year	Number of Families	Aggregate Net Profit
Improved Grass Fattenings	2	30	-77,970
	3	60	-52,440
	4	90	36,060
	5	120	-41,910
	6	120	61,590
	7	120	124,560
	8	120	-41,910
	9	120	61,590
	10	120	124,560
	11	120	-41,910

NOTE: It is assumed that 30 families begin program in year 2, 30 in year 3, 30 in year 4, and 30 in year 5. Estimates of profit or loss per farm are included in Annex 2.

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Cow-Calf	2	45	- 4,005
	3	135	3,915
	4	260	15,920
	5	350	85,805
	6	350	211,315
	7	350	349,340
	8	350	456,180
	9	350	507,240
	10	350	546,425
	11	350	625,940

NOTE: It is assumed that 45 families begin program in year 2, 90 in year 3, 125 in year 4, and 90 in year 5. Entimates of profit or loss per farm are included in Annex 2.

Aggregate Benefits from Livestock Programs	2	235	-59,530
	3	635	19,760
	4	1,230	199,785
	5	1,707	324,149
	6	1,707	684,014
	7	1,707	961,706
	8	1,707	976,203
	9	1,707	1,155,070
	10	1,707	1,300,005
	11	1,707	1,231,560

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in income per family were multiplied by the number of loan recipient families to derive the totals in Table 2. The last section of the table aggregates the previous parts.

The total of 573 families listed as loan recipients in the fifth year represents the minimum number of families which might participate in this series of loans. If some of the loans in years two through four are received by families not borrowing in year five, the total number of affected families will be increased.

The economic benefits from the agricultural components will not end after year 5. The annual benefit flow may increase thereafter — the result of "learning by doing" and the "demonstration effect". There may, however, also be offsets to the flow of benefits after the fifth year when the project formally terminates. A convenient compromise assumption utilized in the projections here is that project benefits in the fifth year continue unchanged in each successive year thereafter.

Table 3 aggregates estimated benefits from the expanded credit flow for the livestock components of the project. Projections are for 10 years beginning in the project's second year, and the benefit level in the 11th year is assumed to continue in successive years thereafter. Estimates of profits and losses for livestock operations were compiled by the MIPPE/MIDA design team and the relevant profit and loss statements are included in Annex 2. These estimates of profit or loss per farm were multiplied by the number of loans to be made each year for the totals in Table 3.

Other Economic Benefits

Beyond the aggregates in Tables 2 and 3 there are several other categories of economic benefit which, while likely to result from the project, are more difficult to quantify. These include:

Benefits arising from the project's upgrading of the government's capacity to plan, coordinate, and administer rural assistance programs;

Benefits, both in Soná and elsewhere, from the expanded research efforts sponsored by the project;

Benefits from improved extension services reaching beyond those farmers directly benefitted by the new loan programs, as supplemented by the development of educational materials and the use of mass media;

Benefits from the project's demonstration of integrated land use related to pasture renovation and reforestation;

Benefits from project efforts to introduce into the Soná area industrial and commercial enterprises related to agricultural outputs; consideration will be given to the use of Soná's traditional agricultural products as inputs to new or expanded enterprises and opportunities to develop new markets for agricultural outputs will be explored;

Benefits from the construction of new roads and the improvement of existing roads servicing Soná's rural areas; and

Benefits from project-sponsored improvements in Soná's educational and health care delivery systems.

Comparison of Costs and Benefits

If the total costs of the project are as estimated in Table 1, the benefits listed in Tables 2 and 3 will provide an internal rate of return of 10% if benefits are aggregated through year 12. An internal rate of return of 15% will be generated if benefits through the 16th year are considered. Table 4 presents a comparison of the calculated present values of the project's economic benefits and the costs related thereto.

If actual costs prove to be 25% higher than estimated costs or if actual benefits prove to be 25% less than estimated, the project will generate an internal rate of return of 10% in about 15 years.

Given the ecological and economic distress of the target area and given the fact that economic benefits are certain to be generated beyond those enumerated, the economic prospects for the project seem favorable.

TABLE 4: AGGREGATED COSTS AND BENEFITS
COMPARISON OF PRESENT VALUES
(in Thousands of Dollars)

Year	Costs			Economic Benefits		
		Present Value			Present Value	
	Actual	D.F. 10%	D.F. 15%	Actual	D.F. 10%	D.F. 15%
1	$ 3052	$ 3052	$ 3052			
2	1969	1790	1712	$ 141	$ 128	$ 123
3	1284	1061	971	381	315	288
4	810	609	533	751	564	494
5	780	533	446	1035	707	592
6	$ 7895	$ 7045	$ 6714	1394	866	694
7	–			1672	944	723
8				1687	866	634
9				1865	870	610
10				2010	852	571
11				1942	749	480
12				1942	681	417
13				1942	$ 7542	363
14				1942		316
15				1942		275
16				1942		239
						$ 6819

Social Soundness Analysis

Introduction

The social soundness analysis was delivered to USAID Panama on June 10, 1981. It proved impossible to translate the Social Soundness Analysis from Spanish into English and send the analysis to AID/W to the June 30 DAEC review. What follows is a brief summary of its most important points. The concerned reader is strongly recommended to read the whole analysis which follows this summary.

Acceptability of the Project

101 There are four principal reasons for concluding that this project is welcomed by the population of Soná. First, when it was announced that an IRD project would be implemented in Soná, rumors began circulating that it would include a land reform component and would be directed primarily towards the southern part of the district, where the heaviest concentration of asentamientos is found. These rumors have been dissipated. On a visit to the area in February 1981, the President of Panama promised two things: there would be no land reform and the project would be for all the corregimientos in the district.

Second, the local population has been consulted at various stages throughout the project design. This has included talking to all levels of society in Soná: from precaristas and small farmers to mill owners and large landowners, to the governor and the elected representantes.

Third, the local population believes that his project is not just promises and that something concrete will materialize. They feel there will be sufficient money available to satisfy their felt needs. Hence certain expectations have been created that, at long last, their luck will change.

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Fourth, nobody is against the project. Those who know more about it become quite eloquent. In their opinion, the sooner implementation starts the better. Even those who were originally opposed to the project - specifically the large landowners and mill owners - no longer talk against it. They fully realize that this project, if successful, will work directly in their interests. First, they realize that it can help alleviate some of the existing social pressure exacerbated by increasing land concentration and, in the case of precaristas, increasing landlessness. If this pressure is not alleviated, then the potential for social conflict will increase accordingly. Second, this grupo poderoso will derive several direct economic benefits from the project. The roads will help them - as will the soil conservation and reforestation techniques. In addition, the majority of the credit component of this project is for the purchase of livestock - most of which will be bought directly from the large landowners. As one of the group expressed himself in an interview: "We'd be damned fools to turn our backs on $20 million." They support the project - provided it works towards the achievement of its stated goals.

Project Benefits

This project has the potential to create the following benefits for the local population:

- Stabilize and even decrease an inter-related process of ecological degradation, elimination of subsistence agriculture, land concentration, and expulsion of people;
- Diversify traditional production methods;
- Improve traditional production and thereby increase cash income;

- For the first time make available to small and medium farmers resources previously denied them: credit, technical assistance, and training;
- Provide employment for the younger elements of the population who might otherwise migrate: specifically, activities involving swine, bee-keeping, and cottage industries;
- The social components of this project - training, literacy programs, and health - will benefit many;
- Road improvement and construction will improve the physical integration of the district; and
- An important indirect benefit will be the revitalization of the district capital, Soná, which presently has a rather stagnant air about it.

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Potential Problems

Three possible issues which directly concern the local population may emerge in the process of implementation. First, if the project is not implemented, then there will be serious problems. On the one hand, expectations are high. On the other, if something is not done soon to alleviate the problem of environmental degradation and increasing land concentration, then the situation may become socially explosive. Second, it is important that effective local participation be created. Planificación de doble vía is a first step in the right direction, but much remains to be done. Third, the project should proceed slowly and carefully with the introduction of change for the small farmer. This is particularly true in the case of credit - as many potential beneficiaries have had no prior experience with this type of activity.

ANALISIS SOCIAL

I. El Contexto Socio-Económico del Distrito de Soná

El Distrito de Soná, que comprende diez Corregimientos [1/] y donde se localiza el Proyecto de Desarrollo Rural Integrado del Sur de Veraguas, presenta una serie de características socio-económicas que a la vez que justifican la realización de un proyecto de esta naturaleza, servirán de marco y en gran medida condicionarán la ejecución del mismo. A continuación se hará una breve presentación de algunas de dichas características con el fin de establecer el contexto socio-económico en que deberán desarrollarse las actividades del proyecto.

1. En primer lugar, la zona, en décadas pasadas, vivió un proceso de crecimiento demográfico sostenido, reflejo quizás de un cierto crecimiento económico; tal crecimiento poblacional (véase Cuadro No. 1) se debió fundamentalmente a la atracción que la zona ejerció sobre grupos humanos que emigraban de otras regiones del país en búsqueda de mejores oportunidades, las cuales esperaban encontrar en el Distrito de Soná. Esta etapa de expansión demográfica fue seguida durante la década de 1970-1980 por una paralización en el crecimiento poblacional, reflejo, de nuevo, de agudos problemas económicos locales. Una tasa tan baja de crecimiento (0.5) puede deberse a varios factores que operan simultánea o escalonadamente; basta mencionar la expulsión de población adulta "excedente" hacia los centros urbanos de otras regiones, hacia zonas de colonización de reciente apertura (como puede ser el caso de El Darién), suspensión de la corriente inmigratoria anterior y un bajo crecimiento vegetativo por reducción en las tasas de natalidad sin una mejora correspondiente en las tasas de mortalidad. En síntesis, el Distrito tiende a perder el recurso humano porque éste no encuentra allí las condiciones para un más cabal desenvolvimiento; si el Proyecto logra estimular una mayor retención de este recurso habrá cumplido un objetivo central para el desarrollo de la zona.

1/ Los diez Corregimientos son los siguientes: Cabecera, Guarumal, El Marañón, Cativé, Calidonia, Quebrada de Oro, Rodeo Viejo, La Soledad, Rio Grande y Bahía Honda.

Cuadro No. 1
POBLACION DE VERAGUAS Y SONA
CENSOS DE 1930, 1940, 1950, 1960, 1970 y 1980

Detalle	1930	1940	1950	1960	1970	1980
Veraguas	69,543	84,994	106,998	131,685	151,849	173,195
Soná	8,786	10,975	14,254	19,372	22,568	23,583
Cabecera	-	-	-	4,620	5,869	7,700
Bahía Honda	-	-	-	1,245	2,742	1,892
Calidonia	-	-	-	1,439	1,423	1,112
Cative	-	-	-	1,591	1,616	1,459
Marañón	-	-	-	1,689	1,688	1,788
Guarumal	-	-	-	3,131	2,902	3,085
La Soledad	-	-	-	837	852	972
Quebrada de Oro	-	-	-	1,205	1,046	913
Río Grande	-	-	-	1,469	2,139	2,541
Rodeo Viejo	-	-	-	2,146	2,291	2,121
República	467,459	622,576	805,285	1,075,541	1,428,082	1,830,175

Fuente: Dirección de Estadística y Censo

(-) Cifras no disponibles

2. Un conjunto de indicadores económicos muestran cómo las condiciones locales han sido negativas para el pleno desenvolvimiento del recurso humano; según Documento del MIPPde Octubre de 1980 1/ éstos son algunos de dichos indicadores:

a) El Distrito de Soná con 63,694 Ha. sembradas (Censo 1970: última cifra disponible) ocupaba el primer lugar en el país y superaba netamente en el hectareaje sembrado a los distritos de Changuinola y Barú que ocuparon el primer y segundo lugar respectivamente en cuanto a la participación en el PIBA de los cuatro principales rubros agropecuarios del país.

b) La productividad por hectárea, dado lo extensivo de su actividad agropecuaria, colocan al Distrito por debajo de la productividad promedio nacional y muy por debajo de los dos distritos antes mencionados. (La productividad por hectárea de Soná es de B/ 30, mientras la promedio nacional es de B/ 60 y la de Barú y Changuinola exceden los B/ 200).

c) En cuanto a su participación en el PIBA agropecuario (4 principales rubros) el distrito ocupa el séptimo lugar en la República. Como contraste, el PIBA per cápita coloca al distrito entre los 30 más pobres del país (aproximadamente B/ 100 per cápita cuando el promedio nacional era en 1970 aproximadamente de B/ 160).

d) Respecto a la productividad de la mano de obra, Soná ocupa el décimo tercer lugar a nivel nacional, lo cual aunado al hectaraje sembrado muestra una generación baja de empleo, factor principalísimo para la expulsión de la población.

1/ "Situación actual de las áreas rurales. Tipificación y caracterización". Documento Preliminar.

3. Esta población migrante casi obligadamente debe abandonar el territorio del Distrito pues la alternativa de que una porción importante de la población rural se asiente en la cabecera aparentamente no es viable en las actuales circunstancias. En efecto, la cabecera aparece, para el visitante que por primera vez llega, como un asentamiento estancado, que vivió mejores épocas cuando era paso obligado (la carretera hacia David y Costa Rica pasaba por ahí) de muchos viajantes, que seguramente se detenían allí para tomar algún descanso. Hoy Soná ha perdido esa función, fue marginada del gran tráfico y aparece tan solo como centro de prestación de servicios para el área rural circundante. Todavía se recuerda en el área la intensa actividad que se presentaba antes y se le compara con la mucho menor que se observa ahora. Sin embargo, no puede concluirse que ninguna actividad de importancia se desarrolla en la cabecera; porque allí se localizan 9 molinos arroceros,[1/] que trillan la producción local más alguna producción traída de la Provincia de Chiriquí; además el sector comercial mantiene una dinámica importante que aunada a la prestación de los servicios financieros y sociales para el área local llevan a concluir que Soná posee una base que puede ser revitalizada positivamente por las actividades relacionadas con el Proyecto. (Véase Cuadro 2.) En otras palabras, aún la población y las actividades localizadas en la cabecera podrán beneficiarse al incrementarse la demanda de los servicios que actualmente se prestan en Soná pero que necesitan un estímulo adicional para salir de su estancamiento. No cabe duda que este estímulo deberá provenir de la ejecución del Proyecto de Desarrollo Rural Integrado.

Si se consolida como centro de servicios, vinculado estrechamente al centro urbano mayor de Santiago, capital de la Provincia de Veraguas, podrá

1/ Central Molinera, Buenos Aires, Vianet, Prinvesa, Ruby, S.A., Malof, S.A., Don Bosco, Coinsa, El Cobre.

Soná desempeñar mejor un rol adicional como es el de cumplir sus funciones de centro principal de la microrregión del Occidente de Veraguas, compuesta por los Distritos de Cañazas, La Mesa, Las Palmas, Río de Jesús y Soná. Es decir, por efecto de una dinamización socio-económica de las áreas rurales del distrito, su cabecera se consolidará como centro de servicios con un radio de acción ya no limitado al territorio distrital sino a toda una microrregión. Así se lograría una mayor integración de la Provincia de Veraguas, objetivo fijada en un Documento del MIPPE, 1979.1/

CUADRO No. 2

POBLACION ECONOMICAMENTE ACTIVA SEGUN RAMA DE ACTIVIDAD ECONOMICA DEL DISTRITO DE SONA. CENSO DE 1980, Cifras Preliminares
(Población de 10 años y más)

Actividad Económica	Total	Cabecera	Otros Corregimientos
Total	7,336	2,752	4,584
Agricultura, caza, silvicultura y pesca	4,653	587	4,066
Industria manufacturera	1,201	1,020	181
Electricidad, gas y agua	15	13	2
Construcción	189	127	62
Comercio al por mayor y al por menor	269	196	73
Restaurantes y Hoteles	43	38	5
Transporte, Almacenaje y Comunicación	120	85	35
Establecimientos Financieros, Seguros, Inmobiliarias.	33	29	4
Servicios Comunales Sociales y Personales	766	636	130
Actividades no bien especificadas	47	21	26

1/ "Directrices para el Desarrollo de la Región Central".

4. La situación general del sector agropecuario en los diez Corregimientos del Distrito puede ser caracterizada de la manera siguiente:

a) En el aspecto tenencial, es fácilmente observable que una gran cantidad de la tierra, y particularmente la de mejor calidad (la tierra "baja", o sea, la plana aluvional), está concentrada en muy pocas manos. Es un hecho evidente, suficientemente conocido por la población local pues basta recorrer las mayores vías del distrito y preguntar a quién pertenecen las tierras a lado y lado de la vía y se obtendrán respuestas en las que aparecen unos pocos apellidos. 1/

b) Este proceso de concentración se ha venido acentuando en las últimas décadas, lo cual se refleja en los datos censales (Véase Cuadro 3). En efecto, en términos de área en 1950, las propiedades de 50 Ha. y más concentraban un poco más de la tercera parte (38.4%) de la tierra censada; este porciento saltó a 62.7% en 1960 y se elevó un poco más en 1970 (64.0%). En el proceso la peor parte la han llevado las fincas más pequeñas (de menos de 10 Ha.) que en promedio tienden a ser cada vez más chicas (en 1950, 3.5Ha. en promedio y en 1970, 2.9 Ha.). (Véase Cuadro 4). Las fincas medianas han tendido a aumentar su tamaño promedio (de 18.0 Ha. en 1950 a 23.8 Ha. en 1970), no así las grandes que incrementaron su tamaño promedio entre 1950 y 1960 pero lo disminuyeron entre este último año y 1970. Los datos aún no disponibles del censo agropecuario de 1981 podrían arrojar algunas variaciones sobre este proceso aunque no

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1/ De la información cadastral que existe para tres corregimientos (Rio Grande, La Soledad y Guarumal) se puede deducir que una sola familia posee el 24% de la tierra titulada en esa zona (9,770 Ha. de un total de 41,084).

se espera sean significativas. Respecto a las fincas medianas ha habido un importante crecimiento en sú número, que se réfleja en su peso relativo sobre el número total de fincas; sin embargo, el porcentaje de área controlada por este tipo de explotación se ha mantenido relativamente constante entre 1950 y 1970 como puede observarse en el Cuadro No. 3.

c) Ésta situación de agudos contrastes en la estructura tendencial del recurso tierra creó condiciones favorables para la aparición y consolidación de los asentamientos campesinos, cuando fué política gubernamental fomentar este tipo de explotación colectiva de la tierra como un medio para buscar una más equitativa distribución del recurso. En efecto, así como en otras áreas del país, donde quizás los contrastes no sean tan visibles, los asentamientos no prosperaron, en Soná se multiplicaron rápidamente y actualmente más de la tercera parte (28) de todos los asentamientos (72 de la Provincia de Veraguas se encuentran en sus corregimientos y es el Distrito que individualmente tiene más grupos productivos organizados. Sobre este fenómeno se volverá más adelante; hasta ahora basta consignar el hecho de que en la zona del Proyecto los asentamientos campesinos han constituído una importante presencia tanto en el campo de la producción agropecuaria como en el de la acción del estado durante la última década. Siendo que el gobierno se planteó ojbetivos determinados[1/] al tratar de implementar su política de las organizaciones campesinas y siendo que en el distrito de Soná éstas tuvieron gran aceptación, no puede

1/ Stanley Heckadon Moreno ha señalado como objetivos de los asentamientos los siguientes: 1) disponer de un medio transitorio de capacitación del campesino; 2) buscar una mayor igualdad entre los campesinos, darle seguridad en la tenencia de la tierra e incrementar la producción mediante una renovación tecnológica; 3) generar para los beneficiarios mayor empleo y mayores ingresos; 4) cambiar las actitudes tradicionalistas e individualistas del campesinado. ("Peasant Systems and Group Farming Models in Panama. Seminar Paper. July 1977).

CUADRO No. 3

SONA: DISTRIBUCION DE LAS EXPLOTACIONES SEGUN TAMAÑO
CENSOS DE 1950, 1960 y 1970

Rango (Ha.)	1950		1960		1970	
	Fincas	Area (Ha.)	Fincas	Area (Ha.)	Fincas	Area (Ha.)
1-9.99	1,815	6,351.9	1,618	6,011	1,291	3,732
	(78.8%)	(28.1%)	(58.4%)	(9.5%)	(45.1%)	(4.6%)
10-49.9	415	7,576.3	833	17,675	1,084	25,791
	(18.0%)	(33.5%)	(30.1%)	(27.8%)	(37.9%)	(31.4%)
50-999.9	72	8,667.4	318	39,821	486	52,544
	(3.1%)	(38.4%)	(11.5%)	(62.7%)	(17.0%)	(64.0%)
Total	2,302	22,595.6	2,769	63,507	2,861	82,067
	(99.9)	(100.0%)	(100.0%)	(100.0%)	(100.0%)	(100.0)

CUADRO No. 4

SONA: TAMAÑO PROMEDIO DE LAS EXPLOTACIONES AGROPECUARIAS
SEGUN RANGOS DE TAMAÑO
CENSOS DE 1950, 1960 y 1970

Rangos	1950	1960	1970
1-9.99	3.5	3.7	2.9
10-49.9	18.3	21.2	23.8
50-999.9	120.4	125.2	108.1

dejar de reconocerse que su impacto en el medio circundante ha tenido que ser grande, no importa el éxito o fracaso económico que hayan podido tener. La simple proliferación y permanencia de este tipo de empresas tan distintas a las tradicionales implicó una modificación substancial en el espectro observable en las áreas rurales de Soná.

d) Otra importante característica del sector agropecuario en Soná es la coexistencia de los más "modernos" sistemas de producción agrícola comercial (mecanización, uso de semillas mejoradas, utilización de insumos químicos) con la tumba y la quema y la agricultura de chuzo que utiliza intensivamente la fuerza de trabajo familiar y cuya producción se destina primordialmente para al consumo doméstico. La cultura del fuego y de la agricultura itinerante se mantienen arraigadas en los hábitos productivos del campesino sonaeño y aún los asentados siguen aferrados a estas prácticas en sus parcelas individuales. Son prácticas heredadas de muchas generaciones, que les brindan seguridad dada su probada eficacia si bien sus beneficiarios no pueden medir los efectos perniciosos cuando la presión sobre la tierra aumenta y deben reducir los períodos de descanso a la vez que buscar extraer mayores cantidades sin mejoras tecnológicas compensatorias.

No puede esperarse un cambio repentino y brusco en estos patrones de cultivo por parte de los pequeños y medianos productores de Soná; ellos seguirán cultivando de esta manera (tumba, quema, utilización de la coa y el machete, mínimos insumos, alta utilización de la fuerza de trabajo). Sin embargo, sí es posible introducir pequeñas

variaciones en sus prácticas actuales que mejoren la eficacia de su esfuerzo productivo de tal manera que manteniendo su forma básica de producir aumenten las cantidades producidas y quizás diversifiquen un tanto su producción; a la vez, actividades complementarias podrían ser diseñadas para generar más ocupación a la mano de obra familiar y para incrementar aún más sus ingresos. Las variaciones en las prácticas productivas tradicionales como las nuevas actividades deberán ser diseñadas y ejecutadas cuidadosamente por los técnicos respectivos teniendo presente que el campesino no está dispuesto a dar grandes saltos, especialmente si se trata de abandonar hábitos vistos y comprobados por él como los más seguros, por lo menos a nivel de su propia subsistencia. Esto no significa que una vez se convenza de la bondad de ciertas prácticas nuevas no las vaya a aceptar con cautela hasta que se convenza de lo beneficiosas que son. De ahí que sean muy importantes las parcelas demostrativas para que el campesino vaya asimilando paulatinamente lo nuevo a la vez que se le posibilita mejorar sus condiciones de vida sin cambios drásticos en lo que él aprendió a hacer de sus antepasados. El campesino no es reacio a los cambios pero sólo los aceptará cuando esté plenamente convencido de que el riesgo implícito en ellos no es tan grande que le lleguen a significar la pérdida de lo poco que ha logrado conseguir o mantener. Estos sentimientos afloraron en varias de las cortas entrevistas que se hicieron a algunos pequeños propietarios.

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e) De tiempo atrás ha existido un grupo de productores agrícolas sin tierra o propietarios de extensiones claramente insuficientes para sostener a una familia, que han tenido que recurrir a obtener "monte" para sus siembras en tierras de otros. Este arreglo de los llamados precaristas con los propietarios de la tierra incluye como

duda el principal determinante para que vínculos sociales establecidos entre grupos y estratos sociales diversos tiendan a desaparecer y sean reemplazados por nuevas formas de relacionamiento. Cuán conflictiva sea esta transición es difícil de anticipar con seguridad. Lo que sí es posible esperar es que si el precarista no llega a visualizar soluciones alternativas a su actividad tradicional, el potencial de conflicto será mucho mayor.

5. Los indicadores sociales muestran tendencias hacia un mejoramiento sostenido en los aspectos de educación, saneamiento ambiental más no en las condiciones de vivienda y en la distribución espacial de la población.

a) En efecto, el porcentaje de analfabetismo disminuyó entre 1970 y 1980 de 52.8% a 40.3% siendo más pronunciada esta caída en los corregimientos distintos a la cabecera donde el analfabetismo ya era bajo en 1970 y decreció en menor medida. (Véase Cuadro 5). Por otra parte, la escolaridad mejoró substancialmente en los tres niveles de enseñanza (primaria, secundaria y universitaria), notándose el incremento especialmente en los niveles de enseñanza secundaria y universitaria, dada la precariedad de la situación que se presentaba en 1970. (Véase Cuadro 6).

Estos datos alentadores no deben conducir a un exagerado optimismo pues se requieren avances substanciales en varios órdenes: Aún hay deficiencia en la cobertura de las plazas de maestros pues en varias de las comunidades visitadas se pudo observar que no habían sido nombrados todos los maestros requeridos; además las condiciones

CUADRO No. 5

ANALFABETISMO DE LA POBLACION DEL DISTRITO DE SONA,

SEGUN CORREGIMIENTO: CENSOS DE 1970 y 1980

(Población de 10 años y más de edad)

CORREGIMIENTO	1970			1980 P/		
	TOTAL	ANALFABETAS NUMERO	ANALFABETAS PORCENTAJE	TOTAL	ANALFABETAS NUMERO	ANALFABETAS PORCENTAJE
TOTAL	14,418	7,612	52.8	15,266	6,146	40.3
Cabecera	3,834	1,049	27.4	5,141	1,252	24.3
Bahía Honda	1,672	1,203	71.9	1,189	710	59.7
Calidonia	901	654	72.6	701	400	57.1
Cativé	1,010	775	76.7	913	630	69.0
El Marañón	1,082	627	57.9	1,131	466	41.2
Guarumal	1,845	872	47.3	1,965	681	34.7
La Soledad	537	333	62.0	615	292	47.5
Qbda. de Oro	664	346	52.1	594	264	44.4
Río Grande	1,313	705	53.7	1,568	653	41.6
Rodeo Viejo	1,560	1,048	67.2	1,449	798	55.1

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CUADRO No. 6

POBLACION QUE HA APROBADO ALGUN GRADO, SEGUN NIVEL DE ENSEÑANZA

DEL DISTRITO DE SONA, CENSOS DE 1970 Y 1980

(Población de 7 años y más de edad)

NIVEL DE ENSEÑANZA	1970 NUMERO	1970 PORCENTAJE	1980 P/ NUMERO	1980 P/ PORCENTAJE	VARIACION PORCENTUAL
TOTAL	16,814	100.0	18,055	100.0	7.4
Ningún Grado	8,435	50.2	5,642	31.3	- 33.1
Primaria	7,758	46.1	10,641	58.9	37.2
Secundaria	581	3.5	1,611	8.9	177.3
Universitaria	40	0.2	161	0.9	302.5

P/ Cifras Preliminares.

en que éstos y los educandos deben trabajar siguen siendo, en muchos casos, deficitarias.

Finalmente, a medida que la matrícula en el nivel primario completo aumente se sentirá con mayor fuerza la presión para que se incremente el número de cupos a nivel de secundaria pues los padres de familia en general manifiestan su interés en que sus hijos continúen estudiando aún a costa de sacrificios enormes.

b) Respecto a la situación de 1970, se dió un mejoramiento notable en cuanto al número de viviendas con agua potable y con servicio sanitario. (Véase Cuadro 7). Actualmente, más de la mitad de las viviendas disponen de estos servicios cuando en 1970 tan sólo una cuarta parte disfrutaban de los mismos. Queda, sin embargo, un gran trecho por recorrer pues habrá que dotar a aproximadamente la mitad de las viviendas rurales que carecen de estos servicios.

c) Las viviendas, por su parte, tienden a mantener su estructura y disposición tradicionales. Ciertamente se han producido mejoras en algunos de sus aspectos (el piso de tierra es cambiado por el de concreto y las paredes como los techos tienden a ser construídos con "materiales" - bloques y zinc), lo cual es deseable pero se deberá tratar de darle la mejor utilización posible a los materiales tradicionales con que se han construído las viviendas y que se adaptan muy bien a las condiciones climatológicas de la zona. En otras palabras, se debería buscar la mayor creatividad necesaria para combinar los materiales autóctonos con los traídos de afuera para

CUADRO No. 7

ALGUNAS CARACTERISTICAS DE LAS VIVIENDAS OCUPADAS DEL DISTRITO DE SONA,

POR CORREGIMIENTO: CENSOS DE 1970 Y 1980

CORREGIMIENTO	VIVIENDAS OCUPADAS	SIN AGUA POTABLE		SIN SERVICIO SANITARIO		CON PISO DE TIERRA		CON PAREDES DE QUINCHA, PENCA Y OTROS MATERIALES RUSTICOS		CON TECHO DE PAJA O PENCA		SIN LUZ ELECTRICA	
		TOTAL	%	TOTAL	%	TOTAL	%	TOTAL	%	TOTAL	%	TOTAL	%
1970 a/	4,332	3,214	74.2	3,206	74.0	3,626	83.7	--	--	--	--	3,890	89.0
1980 p/	4,618	2,287	49.5	2,121	45.9	3,302	71.5	2,842	61.5	2,675	57.9	3,845	83.3
Cabecera	1,439	88	6.1	113	7.9	560	38.9	474	32.9	349	24.2	677	47.0
Bahía Honda	346	317	91.6	332	96.0	303	87.6	247	71.4	242	69.9	346	100.0
Calidonia	196	192	98.0	175	89.3	191	97.4	184	93.9	189	96.4	196	100.0
Cativé	277	235	84.8	245	88.4	271	97.8	262	94.6	259	93.5	277	100.0
El Marañón	346	248	71.7	247	71.4	303	87.6	275	79.5	213	61.6	342	98.8
Guarumal	646	343	53.1	240	37.2	478	74.0	355	55.0	449	69.5	640	99.1
La Soledad	212	94	44.3	89	42.0	184	86.8	180	84.9	185	87.3	211	99.5
Quebrada de Oro	174	168	96.6	138	79.3	166	95.4	154	88.5	152	87.4	174	100.0
Río Grande	510	206	40.4	179	35.1	387	75.9	305	59.8	311	61.0	510	100.0
Rodeo Viejo	472	396	83.9	363	76.9	459	97.2	406	86.0	326	69.1	472	100.0

a/ Información no Disponible por Corregimiento.

p/ Cifras Preliminares.

-- Información no Disponible.

producir una vivienda funcional a las condiciones climáticas y a a la idiosincracia del campesino sonaeño. Debe tenerse presente que las pautas habitacionales están fuertemente enraizadas en una tradición cultural de estrecha convivencia de todos los miembros de la familia entre sí y con los animales domésticos, los productos de sus siembras y sus pocos haberes personales. El cambio de tal tradición se va produciendo a medida que otras condiciones van cambiando y a menudo se da tan solo con el relevo generacional siendo los hijos que han alcanzado ciertos niveles de escolaridad los que exigen o imponen nuevas formas de vida.

Las soluciones de vivienda individuales han tendido a ser iniciativa también individual, por aquellos que han logrado algún grado de acumulación. La acción del MIVI se ha concentrado hasta la fecha en grupos de asentados (y no en todos, pues actualmente hay solicitudes de varios asentamientos a los que no se les ha podido satisfacer su demanda), debiéndose destacar dos hechos relacionados con este aspecto: de una parte, los costos se han incrementado pues el material traído de afuera se encareció por el transporte del mismo y de otra, ha habido cierta morosidad en el pago de las cuotas estipuladas debido quizás a las dificultades económicas afrontadas por los asentados, ante las cuales, probablemente, el rubro vivienda pase a ocupar un lugar secundario.

d) La distribución espacial de la población muestra una alta dispersión como efecto de las bajas tasas de crecimiento de todos los corregimientos y a la probable salida de un buen número de sonaeños del territorio distrital. Las densidades por km^2 sólo se incrementaron en la cabecera (100 a 131.4) entre 1970 6 1980 en forma significativa y en una mucha menor intensidad en El Marañón, Guarumal,

La Soledad, Río Grande. (Véase Cuatro 8). A la vez, los lugares poblados disminuyeron, especialmente los más pequeños (Menos de 50 habitantes); en cambio, hubo un incremento (de 2 a 5) de los poblados entre 250 y 349 habitantes. (Véase Cuadro 9). Si ésto refleja una cierta tendencia a la nucleación en asentamientos de alguna envergadura, es difícil de afirmarlo. Si ello fuera así, se estarían creando condiciones favorables para la posterior dotación de una infraestructura mínima que permitiera mejorar el bienestar de la población rural.

CUADRO No. 8

SUPERFICIE, POBLACION Y DENSIDAD DE POBLACION

DEL DISTRITO DE SONA, SEGUN CORREGIMIENTO

CENSO DE 1970 Y 1980 P/

CORREGIMIENTO	SUPERFICIE EN Km^2	POBLACION 1970	POBLACION 1980	HABITANTE Km^2 1970	HABITANTE Km^2 1980
TOTAL	1,488.0	22,568	23,589	15.2	15.9
Cabecera	58.7	5,869	7,714	100.0	131.4
Bahía Honda	286.5	2,742	1,875	9.6	6.5
Calidonia	137.4	1,423	1,115	10.4	8.1
Cativé	184.4	1,616	1,456	8.8	7.9
El Marañón	112.2	1,688	1,789	15.0	15.9
Guarumal	207.7	2,902	3,091	14.0	14.9
La Soledad	86.4	852	973	9.9	11.3
Qda. de Oro	55.8	1,046	911	18.7	16.3
Río Grande	241.2	2,139	2,545	8.9	10.6
Rodeo Viejo	117.7	2,291	2,120	19.5	18.0

P/ Cifras Preliminares

CUADRO No. 9

LUGARES POBLADOS SEGUN MAGNITUD POBLACIONAL DEL DISTRITO DE SONA,

POR CORREGIMIENTO: CENSOS DE 1970 y 1980 P/

NUMERO DE HABITANTES	TOTAL		CABECERA		BAHIA HONDA		CALIDONIA		CATIVE		EL MARAÑON		GUARUMAL		LA SOLEDAD		QUEBRADA DE ORO		RIO GRANDE		RODEO VIEJO	
	1970	1980	1970	1980	1970	1980	1970	1980	1970	1980	1970	1980	1970	1980	1970	1980	1970	1980	1970	1980	1970	1980
TOTAL	476	429	34	33	70	61	50	43	53	46	49	49	31	29	20	20	23	21	60	47	86	80
Menos de 50	367	331	23	20	53	54	43	37	42	38	38	39	14	14	16	15	15	12	49	33	74	69
50 - 149	88	74	7	4	13	5	7	6	11	7	11	10	11	11	3	3	8	9	7	9	10	10
150 - 249	15	15	2	5	4	2	-	-	-	1	-	-	3	2	-	1	-	-	4	3	2	1
250 - 349	2	5	-	-	-	-	-	-	-	-	-	-	1	2	1	1	-	-	-	2	-	-
350 - 599	3	2	1	2	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
600 - 1,499	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,500 y más	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

P/ Cifras Preliminares.

II. LOS BENEFICIARIOS DEL PROYECTO

El título del presente acápite sugiere una serie de puntos que serán presentados en los párrafos siguientes con algún detalle. La intención de las consideraciones que se exponen a continuación es la de contribuir a establecer líneas prioritarias de acción durante la ejecución del Proyecto. Están basadas dichas consideraciones en el conocimiento que se adquirió de las especificaciones de la zona y del proyecto mismo mediante la lectura de algunos de los documentos disponibles, la visita a gran parte del área y la discusión entre los participantes en esta etapa preparatoria.

1. Es preciso ante todo establecer una distinción aparentemente obvia pero que amenudo no se tiene presente en las discusiones que se llevan a cabo. Esta es la distinción entre lo que se pudiera denominar beneficiarios "directos" y beneficiarios "indirectos", o beneficiarios "específicos" y beneficiarios "globales". Por beneficiario "directo" o "específico" se entiende aquella persona que es objeto directo de una actividad o acción específica del Proyecto DRI. Por ejemplo, aquel productor que reciba un
123 crédito, o a quien se le brinde asesoramiento técnico o se le capacite técnicamente; o aquel jefe de familia que reciba un crédito para mejorar su vivienda. En cambio, por beneficiario "global" o "indirecto" se entiende todo aquel que potencialmente puede obtener alguna ventaja de acciones o actividades encaminadas a favorecer no a una persona en particular sino a un grupo, una comunidad o una área determinada. Es el caso, por ejemplo, de la construcción de una vía, un centro o puesto de salud, una aula escolar; la difusión de un programa radiofónico; la reforestación de una cuenca hidrográfica que abastece de agua a una comunidad. A través de estas actividades se busca beneficiar indeterminadamente a todo un grupo (de productores, por ejemplo, para que puedan sacar sus productos al mercado; o de niños para que puedan asistir a la escuela, si se construye una vía).

Podría decirse que estos beneficios son primordialmente sociales, de difícil cuantificación en términos monetarios pero muy importantes si se tiene en cuenta que un Proyecto DRI busca promover el desarrollo integral de la persona humana. Los otros beneficios, los directos y específicos, son primordialmente económicos, más posiblemente cuantificables aunque algunos de ellos adquieren rasgos muy cualitativos (como sería la naturaleza del conocimiento técnico adquirido por un grupo de productores). Un desarrollo integral no será posible sin uno y otro tipo de beneficios y si bien se busca con un Proyecto DRI beneficiar en forma directa y específica a un grupo social determinado - los pobres, los desposeídos - el impacto global positivo debería recaer sobre toda la comunidad o la sociedad en general.

2. Hecha esta obvia distinción, surge la pregunta: quiénes pueden ser los beneficiarios directos y específicos del componente productivo? Con qué criterios se les escogerán y se les clasificará? De los beneficiarios potenciales (aquellos que satisfacen determinados criterios) cómo se seleccionará a unos en lugar de otros, en caso de que todo el grupo desee beneficiarse del Proyecto? Teniendo claros los criterios se pueden responder preguntas como las siguientes: cuántos productores requieren y necesitan apoyo financiero y técnico? De éstos, cuántos podrán ser asistidos realmente? y cómo - conqué prioridad y con qué medios - lo serán?

Una enumeración preliminar de criterios que podrían ser utilizados y las categorías a que dan lugar, se presenta en el cuadro siguiente. Con base en dicho cuadro se harán a continuación algunos comentarios respecto a la situación de Soná y a posibles formas de utilización de los criterios listados.

CRITERIOS DE CLASIFICACION DE BENEFICIARIOS PARA LAS DISTINTAS ACCIONES DE APOYO A LA PRODUCCION

CRITERIOS	CATEGORIAS DE POSIBLES BENEFICIARIOS
Acceso a la Tierra	Sí = Propietarios Individuales Sí = Asentamientos Campesinos No = Precaristas
Forma en que acceden a la Tierra	Individual = Productor individual o familiar Colectiva = Asentamiento Campesino
Cantidad de Tierra a la que tienen acceso como propietarios (promediar en el caso de los asentamientos campesinos)	Ninguna = Precaristas Menos de 3 Ha = Minifundistas 3 - 9.9 Ha = Pequeños Propietarios 10 - 49.9 Ha= Medianos Propietarios 50 - 99.9 Ha= Medianos Grandes Propietarios
Status Legal	Derecho Posesorio Con título de propiedad
Calidad de la Tierra	Pendiente : 0 - 8° 8° - 30° 30°- 45° 45°- y más
Localización de la Tierra	Distancia a la vía más próxima: cerca - lejana
Uso de la Tierra	% dedicado a la ganadería, % a la agricultura, % a otros usos
Destino de la producción agrícola	% autoconsumo % mercadeable

2.1 Una primera cuestión hace relación con los precaristas. Hasta qué punto este grupo, totalmente desposeído del recurso tierra podría ser objeto de beneficios del componente productivo? Su mismo carácter de precariedad, inestabilidad, potencial movilidad geográfica los conviertan en un grupo de difícil alcance y quizás de dudosa respuesta. No obstante, su situación de extrema pobreza, inseguridad de ingresos, incertidumbre futura para producir en tierras de otros, además de que numéricamente puede tener un peso significativo entre los grupos sociales del área rural de Soná, indican que no se les debe descartar totalmente. Es decir, algunas de sus características recomendarían que no se les tuviera en cuenta pero otras parecerían indicar que se les debe incluir como objeto del componente productivo del Proyecto. El problema a ser solucionado es el peso que se le daría a uno y otro conjunto de características para decidir su exclusión o inclusión. De todas maneras, no pareciera que los precaristas puedan ser escogidos como beneficiarios prioritarios del Proyecto. Varias razones sustentan esta posición: a) es recomendable trabajar inicialmente con aquellos grupos que den una cierta garantía de éxito, y sin duda el trabajo con los precaristas es altamente riesgoso, por lo menos si se buscan efectos a un mediano plazo; b) para trabajar en el componente productivo con este grupo quizás es necesario adelantar una serie de acciones previas, por ejemplo, relocalización o dotación de tierras para los mismos, que no están contempladas por el Proyecto o si lo están, serán implementadas con posterioridad; c) se carece de mecanismos institucionales especiales para trabajar con el grupo que presenta características también especiales (por ejemplo, qué tipo de garantía se estaría dispuesto a aceptar; igual para el tipo de rentabilidad económica).

2.2 El criterio de la forma - individual o colectiva - como los posibles beneficiarios acceden a la tierra, plantea la cuestión de cómo los asentamientos campesinos van a ser participantes del Proyecto DRI. Dentro de la historia del Proyecto del Sur de Veraguas, Distrito de Soná, parece que algunas personas inicialmente fueron partidarias de concentrar principalmente los esfuerzos en los asentamientos campesinos fortaleciendo lo que se venía haciendo por parte del MIDA en Soná. Esta posición fué descartada rápidamente por varias razones que no es del caso entrar a discutir aquí. Se asumió por parte de otras personas la posición contraria, a saber, que los asentamientos campesinos debían ser excluídos de los beneficios directos del Proyecto bajo el argumento de que los asentados habían recibido suficiente apoyo por parte del estado panameño, en cierta forma constituían un sector privilegiado en el campo, y con el Proyecto se buscaba una distribución más equitativa de los beneficios entre grupos que habían permanecido marginados.

A continuación se presentan algunas consideraciones con el objeto de refutar esta posición según la cual los asentamientos campesinos deberían ser excluídos:

a) No se puede hablar de un éxito o fracaso de los asentamientos campesinos como forma de explotación colectiva de la tierra. Tal como lo muestran los estudios recientes que se han hecho sobre los 28 asentamientos del Distrito de Soná, algunos exhiben un progreso notable, otros no han avanzado como era lo deseable y finalmente, algunos afrontan dificultades serias. Probablemente varias son las explicaciones que pueden aducirse para está performance dispar; las lecciones para no repetir errores o capitalizar aciertos deberían ser motivo de reflexión. Pero ni siquiera los que afrontan las más serias dificultades deberían ser descartados

de plano pues dependiendo de los factores que han incidido en dichas dificultades, un trabajo fortalecido con tales asentamientos podría producir resultados altamente benéficos; o sea que removidos los obstáculos que han impedido un mejor desenvolvimiento de algunos asentamientos sería factible trabajar eficientemente aún con estos grupos más problematizados. Debería eso sí analizarse cada caso en particular y prestarse especial atención a los factores que se consideren relevantes para explicar su éxito o su fracaso; puede pensarse, por ejemplo, en factores como los siguientes: características de los asentados (edades, escolaridad, tamaño de sus familias); experiencia anterior como precaristas, pequeños propietarios u ocupantes; lucha para conseguir la tierra; utilización de la tierra, etc.

b) El estado panameño, como ya se señaló, ha realizado importantes inversiones en los asentamientos campesinos através de diversos mecanismos siendo el crédito, la asistencia técnica y el asesoramiento para su organización quizás los más evidentes. Cortar repentinamente esta ayuda o disminuirla substancialmente podría significar el hundimiento de algunos de los asentamientos que aún están en proceso de consolidación, lo que implicaría además del perjuicio sufrido por los mismos asentados, la pérdida de gran parte del esfuerzo realizado por el estado mismo.

c) En algunos casos se puede observar que los recursos de que disponen los asentamientos - la tierra, los medios de producción, el conocimiento técnico ya adquirido, la fuerza de trabajo - están siendo subutilizados por diversas razones. Estos asentamientos tienen un potencial para expandirse que no está siendo hecho realidad. Con la ayuda que el Proyecto les pueda brindar quizás estos asentamientos puedan aprovechar mejor estos recursos subutilizados.

d) Puede decirse por otra parte, que los asentamientos más antiguos tienen ya una generación de jóvenes crecidos y educados bajo este sistema productivo, los cuales si el asentamiento mismo no puede retener por falta de recursos, deberán salir necesariamente a buscar mejores oportunidades en otras partes, produciéndose un drenaje de recursos humanos desde todo punto inconveniente. La mejor manera de retenerlos es dotando al asentamiento de alternativas para que esta generación joven sea empleada e integrada al grupo mayor que constituyó la organización originalmente.

e) En términos de la tierra promedio disponible por asentado, los asentamientos podrían ser considerados como organizaciones de medianos productores; su gran ventaja sobre productores individuales es que han ganado en disciplina para el trabajo de grupo y por tanto, se puede establecer más fácilmente, una división de labores que permita una acción de efecto multiplicador más amplia. Además su relación con diversos órganos estatales los hace más receptivos a nuevas acciones y propuestas provenientes de estas entidades.

Teniendo presente las anteriores consideraciones se recomienda lo siguiente respecto a los asentamientos campesinos:

- destinarles algunos de los créditos para apicultura con el fin de que los jóvenes se hagan cargo del manejo de las colmenas.
- destinarles algunos de los créditos para porcinos a fin de que los manejen jóvenes y mayores indistintamente.
- destinarles algunos de los créditos para producción agrícola que busquen diversificar o mejorar los cultivos. Varias alternativas podrían ser ensayadas con los asentados:
  - i) fortalecer la producción comercializable: cultivo más intensivo del guandú; por ejemplo.

ii) introducir productos con mayor valor nutritivo para la subsistencia de los asentados mismos: cultivos de huertas caseras, por ejemplo.

iii) mejorar las técnicas de cultivo en las tierras actualmente mecanizadas: una adecuada rotación de cultivos, por ejemplo.

- destinar algunos de los créditos para parcelas demostrativas a fin de que las manejen los jóvenes de los asentamientos seleccionados.
- destinarles algunos de los créditos para agroindustrias domésticas con el fin de que las manejen las mujeres o los jóvenes.

Se debería procurar que los responsables de estos créditos sean los asentamientos, como empresa colectiva, y no los asentados en forma individual. O sea, que tanto la responsabilidad por los créditos como la misma gestión deberían ser del grupo y no de los individuos. De otra parte, podría pensarse para un futuro trabajo de monitoreo y evaluación en tomar las acciones que se adelanten con los asentamientos y su capacidad de respuesta como un grupo testigo para comparar con los efectos que se logren con productores individuales de parecidas características.

2.3. Un tercer criterio para definir los beneficiarios es el de la cantidad de tierra a que se tiene acceso, la cual, da origen a varias categorías, acerca de las cuales se harán algunas consideraciones a continuación.

a) Sobre los precaristas, que no tienen acceso a la tierra por lo menos en forma estable (de hecho, pueden ser ocupantes de tierras de otras personas o tierras nacionales pero pueden tener que desalojarlas muy rápidamente) ya se hicieron algunas observaciones acerca de su participación en el Proyecto en su componente de producción.

b) De aquellos que tienen acceso a la tierra el 16% lo hacen en forma mínima; son los minifundistas cuyas fincas tienen menos de 2.9 Has., o sea que sus parcelas son claramente insuficientes para brindar posibilidades de subsistencia a sus propietarios y a sus familias (Véase Cuadro No. 10). Deben entonces salir a trabajar como asalariados en fincas mayores o en otras labores del sector, o conseguir tierras para cultivar "a medias" o bajo otro arreglo. Pocas son las alternativas que se pueden ofrecer a este minifundista, las cuales ya han sido diseñadas por el equipo técnico responsable del componente de producción. Su condición de propietarios, aunque lo sean de un tamaño mínimo de tierras, los diferencia nítidamente de los precaristas quizás no tanto en términos de ingresos (que pueden ser muy similares) como en términos de estabilidad y arraigo a la zona. Pero, por otro lado, su baja capacidad de endeudamiento, hace que hayan tenido poca experiencia con las entidades crediticias y mantengan una actitud de recelo frente a las mismas: "Si yo arriesgo y pierdo lo poco que tengo, mi familia se morirá de hambre". En consecuencia, para que las acciones encaminadas a estos minifundistas tengan éxito, se impone, en primer lugar, una labor de convencimiento y luego, un estrecho seguimiento y asesoramiento para evitar fracasos que serían desastrosos para los recipientes y motivo de frustración para todo el proyecto.

c) Los pequeños propietarios (3.0 - 9.9 Has.) que representan el 14% de todos los que tienen acceso a alguna cantidad de tierra (Cuadro No. 10) no se distinguen mucho de los minifundistas en cuanto a que tampoco disponen en abundancia del recurso tierra. Sin embargo, sus posibilidades son mayores pues pueden dar un uso agrícola mayor a esa mayor cantidad disponible de tierra aunque la ganadería en principio les está vedada. Si bien actualmente

CUADRO Nº 10

PRODUCTORES AGROPECUARIOS, SEGUN TAMAÑO DE LA FINCA DEL DISTRITO DE SONA, POR CORREGIMIENTO: AÑO 1980

TIPO DE PRODUCTORES	TOTAL	CABECERA	BAHIA HONDA	CALIDONIA	CATIVE	LA SOLEDAD	GUARUMAL	MARAÑON	QUEBRADA DE ORO	RIO GRANDE	RODEO VIEJO	PORCENTAJE
TOTAL	3273	341	306	185	252	195	595	328	136	472	463	100
ORGANIZADOS	621	41	---	---	26	56	205	50	11	204	28	20
MINIFUNDIO (MENOS DE 2.9 HAS)	529	203	28	18	8	29	14	93	29	---	107	16
PEQUEÑA PROPIEDAD (3.0-9.9 HAS)	471	21	44	12	46	34	92	101	28	---	93	14
MEDIANA PROP. (10.0-49.9 HAS)	1123	49	170	95	107	44	189	49	56	183	181	34
MEDIANA PROP. (50.0-119.9 HAS)	529	27	64	60	65	32	95	35	12	85	54	16

FUENTE: MINISTERIO DE DESARROLLO AGROPECUARIO-VERAGUAS

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la mayoría de su producción será para el autoconsumo, pequeñas cantidades de la misma pueden ser canalizadas al mercado para generar unos pocos ingresos que les permitan adquirir lo básico de su consumo que no es producido domésticamente (sal, azúcar, kerosin, jabón, tabaco, etc.). Con este grupo se podrán adelantar más acciones dentro del Proyecto (en su componente de producción agrícola) que con los minifundistas aunque quizás se encuentre un recelo similar en cuanto a endeudarse y correr ciertos riesgos por el hecho de que no han tenido experiencia con entidades crediticias. También debe tenerse presente que si su vinculación al mercado es débil y si es intención del Proyecto lograr una mayor vinculación al mismo, este cambio les implicará riesgos adicionales dependientes de las fluctuaciones de precios a los que no han estado sometidos estos productores y que los podrían golpear negativamente conduciéndolos a un rechazo posterior del Proyecto. Se hace imperioso por lo tanto, utilizar prácticas de convencimiento, motivación, capacitación y seguimiento para asegurarles en la medida de lo posible el éxito que, sin embargo, nunca podrá ser garantizado en su totalidad. Algunos de los corregimientos - Cabecera, Marañón y Rodeo Viejo tienen una gran mayoría de minifundistas y pequeños propietarios, de tal forma que puede decirse que allí lo típico es la pequeña propiedad (en cuanto a número de fincas aunque puede no ser el caso en número de hectáreas).

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d) El grupo que accede a cantidades de tierra que fluctúan entre las 10 y las 49.9 Ha. es el más numeroso (más de la tercera parte = 34%). Son los medianos propietarios, que podrían ser definidos como la principal población objetivo del Proyecto y que tienen un mayor peso en cuanto a número de fincas de estos tamaños en Bahía Honda, Cativé, Guarumal y Río Grande.

Sus características socioeconómicas más sobresalientes son: predomina entre ellos, lo que Heckadon Moreno, ha denominado mentalidad ganadera, aunque no sean ganaderos en el sentido pleno del término. Seguramente la mayoría quisiera tener el mayor número posible de cabezas pues ven la inversión en ganadería como la más segura. Por eso, tampoco les gusta vender su ganado ya que ven la venta como su alcancía o caja de ahorros. Las transacciones las hacen principalmente cuando algún evento importante (enfermedad, muerte, festividad, viaje, etc.) les demanda un dinero que no poseen en forma líquida o se ven obligados a hacerlas por efectos de una sequía prolongada. Comienzan usualmente con ganado de cría, pasan luego al de ceba y algunos se aventuran al de leche pero éstos últimos son escasos y dependen de su fácil acceso a una vía permanente por donde puedan llevar el producto diariamente al centro de acopio o de consumo. Este grupo combina en general la ganadería con la agricultura de tumba y quema cuya producción destina principalmente para el auto-consumo ya que su vinculación principal al mercado es a través de la ganadería. Cuanto menos tierra tengan deberán vender parte de su fuerza de trabajo para obtener ingresos monetarios o "peones" (trueque de trabajo) con los que completarán sus ingresos insuficientes que les produzca su finca propia. Heckadon Moreno sostiene también que a menor tamaño de la finca propia mayor será el tiempo que este propietario mediano dedica a la agricultura y mayor la importancia que tiene la mano de obra familiar en la propia parcela.

Por su mentalidad ganadera este grupo estará más dispuesto a ampliar sus actividades propias de la ganadería que a incrementar su producción agrícola. Sin embargo, si se lo incentiva debidamente estaría en capacidad de diversificar su producción teniendo en cuenta que a menudo dispone de un excedente de fuerza de trabajo que debe por necesidad "vender" fuera de su finca. Dado que posee mayor cantidad de tierra que los grupos antes

mencionados estará también en capacidad de ampliar su producción pues a menudo ve limitada su expansión por falta de recursos de capital. Su experiencia es mayor con entidades crediticias pudiéndose decir que a mayor tamaño de la finca mayor probabilidad de que haya obtenido alguna vez crédito. Puede, pues, afirmarse que este grupo no presenta limitaciones en cuanto a escasa disponibilidad de tierra y mano de obra o en cuanto a falta de experiencia con entidades crediticias. Sí está limitado por carecer de suficientes recursos financieros o por deficiencias en el manejo administrativo y sobre todo técnico de sus empresas productivas. Estos serán los campos en que se deberá trabajar más fuertemente con los miembros de este grupo. Debería, por otra parte, evitarse el empujarlos inexorablemente a una superespecialización ganadera a través de una irreversible potrerización y más bien buscar que mantengan una especie de equilibrio entre sus actividades ganaderas y agrícolas lo cual será más difícil de lograr a medida que los medianos propietarios - disponen de más tierras para convertir en potrero.

e) Hay un grupo de propietarios de explotaciones que fluctúan entre las 50 y las 119.9 Ha., que llegan a tener un cierto peso relativo en cuanto a número de fincas en los corregimientos de Bahía Honda, Calidonia, y Cativé. Este grupo, si se toma el criterio de la cantidad de tierra de que dispone, estaría excluído del Proyecto como beneficiario directo, por considerársele que el tamaño de sus tierras ya permite que sean definidos sus miembros como propietarios con una posición socio-económica sin demasiadas estrecheces. Sin embargo, habría que tomar en consideración otros criterios, a los que se hará referencia a continuación, a fin de decidir su exclusión definitiva o su posible inclusión condicionada.

2.4 El criterio del status legal con que se tiene acceso a la tierra, hace referencia a la cuestión de la titulación. Es un hecho el bajo número de propiedades tituladas en el Distrito de Soná. En este aspecto la situación distrital es similar a la del resto del país. Para Soná en 1970 (véase Cuadro N° 11) tan sólo un poco más de la décima parte (10.7%) de las propiedades tenía título (en plena propiedad o con título de propiedad) y el área titulada abarcaba tan solo un poco más de la cuarta parte (26.6%) pudiéndose notar que entre las fincas de más de 50 Ha. era donde se presentaba más frecuentemente la titulación; ello no significaba que aún grandes explotaciones carecían de título. Respecto a la distribución espacial, los corregimientos que tenían el mayor número de propiedades con título eran Quebrada de Oro (27.3%), La Soledad (23.1%) y la Cabecera (21.5%) en tanto que el área titulada era más alta en los corregimientos de La Soledad (44.8%), El Marañón (44.5%) y Quebrada de Oro (28.9%). Durante la última década se han hecho substanciales avances en este campo tanto en todo el país como en

CUADRO N° 11

SONA:

NUMERO DE EXPLOTACIONES Y AREA TITULADAS POR CORREGIMIENTO - CENSO DE 1970.

Corregimientos	Fincas Número	Area Hectáreas	Fincas Número	Fincas del % Total	Area Número	Area del % Total
TOTAL	3,117	97,631	332	10.7	26,014	26.6
Cabecera Soná	251	10,031	54	21.5	2,360	23.5
Bahía Honda	409	12,065	5	1.2	780	6.5
Calidonia	235	9,888	20	8.5	1,001	10.1
Cativé	249	9,263	12	4.8	1,066	11.5
El Marañón	316	7,909	42	13.3	3,523	44.5
Guarumal	498	18,871	39	7.8	3,190	16.9
Quebrada de Oro	161	4,650	44	27.3	1,345	28.9
Río Grande	370	9,614	21	5.7	1,480	15.4
Rodeo Viejo	459	8,225	56	12.2	1,718	20.9
La Soledad	169	7,115	39	23.1	3,190	44.8

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el Distrito de Soná. Sin embargo, aún queda un alto porcentaje de fincas sin título de propiedad. Como ejemplo de este progreso en la titulación, se muestra el caso de tres corregimientos de Soná de los que se obtuvo información catastral. Según ésta, aparecen con registro catastral 268 fincas en Río Grande para un total de 472 explotaciones, en Guarumal 263, para un total de 595 y en La Soledad 69 de 195 fincas. Sobre esta situación de todavía escasa titulación cabe hacer algunas consideraciones:

a) Tradicionalmente el Derecho Posesorio ha cumplido la función de la plena propiedad para diferentes efectos (reconocimiento social por parte de la comunidad, transmisión hereditaria, transacciones comerciales, crédito) y por tanto, los productores rurales no han sentido la necesidad urgente de obtener el título de sus propiedades. Si a la aceptación social y económica de este derecho consuetudinario se añade el hecho de que la obtención del título implica una erogación que para un productor de bajos ingresos puede ser considerada como cuantiosa, además de que los trámites son complicados especialmente para quien no está acostumbrado a ellos, es comprensible que la titulación no tenga la receptividad que se desea. Puede decirse que el productor rural de Soná, y particularmente el pequeño y mediano, no rechaza la titulación si no ve que su importancia amerita los costos que ella implica.

b) Ante esta situación es posible hacer las siguientes recomendaciones:

- el productor sonaeño aceptará embarcarse en una serie de trámites y asumir ciertos costos cuando esté convencido de que este esfuerzo le retribuirá ciertas ventajas. Mientras no obtenga ese convencimiento se sentirá obligado a hacerlo y por tanto, opondrá todo tipo de resistencia (sutil o abierta).

- Aún estando convencido de que el título le reporta ciertas ventajas, es probable que el productor se enfrente a dos obstáculos de difícil superación para él: uno es la complicación de los trámites (solicitudes, obtención de la mensura, edictos, registro notarial); y otro los costos del proceso. Todo esfuerzo que se haga para minimizar ambos aspectos facilitará enormemente la ampliación de la titulación. La cuestión está en quién va a asumir los costos implícitos en los trámites[1/]; es decir, si todos los pasos indispensables (que tienen un costo) serán pagados en última instancia por el productor o si dicho costo será asumido por el Estado subsidiando en este caso al productor. A esta cuestión habría que añadir la de las tarifas por hectárea de tierra titulada que actualmente son bajas para los pequeños propietarios, pero que aún siendo bajas no llegan a ser atractivas para ese productor. Sería posible reducirlas aún más dentro del marco del Proyecto reduciéndolas prácticamente a un valor simbólico?

- Varios mecanismos pueden ser diseñados para financiar a los productores aquellos costos, por muy reducidos que sean, en que necesariamente deben incurrir. Para una decisión última se debería contar con la asesoría de la Dirección de Reforma Agraria que cuenta con gran experiencia en este campo. Sin embargo, a manera de recomendación general, se sugiere que las medidas encaminadas a promover la titulación no deberían ser prioritarias, o sea, que no se debe hacer aparecer la titulación como una condición <u>sine qua non</u> si no que ésta será el resultado de un proceso

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1/ Pagos monetarios directos como gastos en asesoramiento legal.

de mejoramiento económico y social del productor, quien al ver su progreso podría estar más motivado a buscar mayor seguridad sobre el recurso tierra.

2.5 Los dos criterios de calidad de la tierra (tipos de pendiente) y localización de la finca realmente son maneras de refinar un tanto la selección de los beneficiarios, cuyo peso específico sin ser muy grande podría ser definitivo para tomar cietas decisiones de detalle. Algunos ejemplos servirán para aclarar este punto. Dos fincas de igual tamaño pero una con un mayor porcentaje de tierra de alta pendiente (45° ó más) que la otra, tendrán posibilidades distintas para adelantar un programa de producción eficientemente; o sea, que su respectivo potencial productivo será diferente. De otra parte,los mismos programas productivos podrían variar según se trate de fincas con diferentes calidades de tierra. A su vez,una finca localizada cerca a una buena vía podrá sacar su producción más facilmente y en mejores condiciones; por tanto, su propietario tendrá una ventaja comparativa mayor que otro cuya propiedad se halla en un sitio de difícil acceso. Los riesgos para este último son mucho mayores y quizás se muestre más reticente a embarcarse en un programa de crédito.

Las sugerencias que se pueden hacer al respecto son las siguientes:
a) Utilizar en la medida de lo posible los dos criterios de calidad de tierra y localización de la finca como factores discriminatorios para establecer prioridades en la escogencia de los beneficiarios. Quizá durante los primeros años dar preferencia a los propietarios cuyas explotaciones ofrecen mayores ventajas comparativas (mejores tierras y mejor localizadas) no con el ánimo de consolidar las diferencias socioeconómicas ya existentes en la zona del Proyecto sino con el objeto de garantizar una mayor viabilidad al Proyecto mismo; resultados positivos iniciales asegurarán una mayor estabilidad a las actividades posteriores.

Una vez avance el Proyecto se podrá pensar en invertir la utilización de estos criterios y dar preferencia a las explotaciones con menores ventajas comparativas con el objeto de hacer contrapeso a las tendencias diferenciadoras que se puedan haber generado con la política inicial.

b) Utilizar los dos criterios de calidad de la tierra y localización de la finca en el diseño de los programas de producción en cada caso específico para tratar de contrarrestar efectos degradantes de los suelos que ya se están produciendo o para obtener mejores resultados. Es decir, buscar adaptar el programa de producción a las características de la finca en cuanto a su potencial productivo y a las facilidades de sacada al mercado del producto.

c) Asignar un puntaje determinado a estos criterios que les permita ejercer su función de factores discriminatorios en la selección de los beneficiarios actuales de un universo dado de beneficiarios potenciales.

2.6 Los dos últimos criterios - utilización de la tierra y grado de participación en el mercado - deberán tener también un alto valor discriminatorio y servir, por tanto para la selección de los beneficiarios. El hecho de que una explotación determinada sea utilizada en forma diversificada o, por el contrario, tienda a la especialización o, en el otro extremo, a ningún uso, debería ser un elemento de juicio para su escogencia o exclusión como beneficiaria del programa de crédito y/o de asistencia técnica. Se dan varias situaciones en este respecto a las que es preciso confrontar con una política de participación en los diversos programas de producción:

a) A aquellas fincas, cuya tierra es utilizada en agricultura y ganadería (es decir, que un porcentaje apreciable se le dedica a la producción agrícola o está en descanso) se les buscaría estabilizar en este patrón de uso de la tierra? Se tratará de parar el proceso de potrerización? O se acelerará lo

que ya es un proceso inevitable? Se recomienda que, en principio, se opte por la primera alternativa.

b) Cuál va a ser la política que se va a seguir con aquellas fincas que ya han alcanzado una etapa avanzada de potrerización? Pareciera que con respecto a esta situación, la mejor alternativa sea el uso más racional y eficiente de la tierra actualmente sembrada en pastos. Se destaca entonces la importancia de la asistencia técnica y de la ayuda financiera para hacerlas más productivas, cuando no lo sean, evitando a la vez que se acelere el proceso de degradación de los suelos.

c) Puede darse el caso de fincas con una baja utilización (producción agrícola o ganadera) de su tierra que podrían ser utilizadas más intensamente (tienen potreros subutilizados o terrenos en descanso que podrían ser sembrados en cultivos temporales o perennes). Su gran limitación puede haber sido su baja capacidad financiera. Tienen potencial de expansión pero necesitan el crédito para lograrlo. Estas son las que podrían exhibir incrementos más altos en la producción si obtienen la ayuda financiera pero requerirán igualmente un fuerte apoyo técnico.

La otra cara de la moneda hace relación a la vinculación al mercado de los productores. Puede afirmarse que la mayoría de éstos no tienen ninguna vinculación o ésta es muy débil, especialmente en lo que respecta a la producción agrícola de chuzo; el ganadero, particularmente el mediano, sí mantendrá una mayor vinculación al mercado de ganado aunque a veces debe entrar al mismo muy a pesar suyo y bajo condiciones desfavorables.

Dos cuestiones básicas surgen respecto a este criterio: la política vigente es vincular más fuertemente al pequeño y mediano propietario al mercado (vinculación que se puede dar a través de un mayor porcentaje

de la producción que sea mercadeable o a través de sacar al mercado una producción más diversificada)? Si la respuesta es afirmativa, bajo qué condiciones que les garanticen un mínimo de seguridad (precios favorables, sobre todo), podrán vincularse más intensamente los productores de Soná al mercado agropecuario? No se pretende esbozar soluciones a esta última cuestión pero sí se quiere poner énfasis en lo delicado de sus implicaciones. En efecto, un importante incremento en el flujo de productos hacia el mercado bajo condiciones de caída de precios podría afectar muy negativamente a los productores y al Proyecto mismo. Qué control se puede ejercer sobre los precios es pregunta muy pertinente para ofrecer seguridad al productor que precisamente se ha abstenido de producir más por miedo a perder cuando realice un producto a precios bajos, producto que le ha costado mucho producir (insumos caros especialmente).

2.6 Se ha entrado con cierto detalle a la presentación de los varios criterios con que se podrían definir, clasificar y seleccionar los beneficiarios directos de los programas de producción con el objeto de mostrar que, si bien se pueden establecer varios estratos de beneficiarios mediante la utilización de uno o dos criterios (tamaño de la explotación y/o número de cabezas de ganado bovino), al interior de cada estrato sus integrantes pueden ser desagregados según otros criterios. El tomar en cuenta estos criterios adicionales discriminatorios permitirá hacer una mejor selección de beneficiarios que tengan una mayor capacidad potencial de respuesta a los varios programas diseñados de producción; se podrá trabajar más racional y eficientemente con ellos y entonces se obtendrán mejores resultados globales. No todo productor (sea él pequeño, mediano o mediano-grande) calificará automáticamente para un programa determinado: tomando en cuenta los

varios criterios se podrá hacer una selección más ponderada y por tanto, se podrán establecer los beneficiarios prioritarios, los que tiene una segunda prioridad y los que definitivamente no califican, y entonces se podrían planificar y ejecutar más sistemáticamente las varias acciones.

III. El Proyecto DRI del Sur de Veraguas: Lecciones Aprendidas de Tonosí.

A este proyecto de desarrollo rural integrado lo rondó en un principio el fantasma de Tonosí. El traumático fracaso de este proyecto arrojó sombras de duda sobre el nuevo proyecto pero a la vez sirvió para aprender algunas lecciones que bien aprendidas al parecer han servido para evitar cometer algunos de los errores que causaron el descalabro de Tonosí. A continuación se presentan algunas consideraciones que se relacionan con dichas lecciones, consideraciones que se fundamentan sobre el rápido conocimiento que se pudo tener de las condiciones en que se ha venido desenvolviendo el proyecto de Soná.

En primer lugar, es evidente el fuerte apoyo político de que disfruta el proyecto. Este apoyo viene desde la más alta jerarquía del gobierno y llega a las instancias provinciales donde el gobernador y el jefe de la Guardia Nacional son fervientes defensores del proyecto. A su vez el apoyo popular se manifiesta en el interés manifestado por los Honorable Representantes de los diez corregimientos que forman el distrito de Soná. Existe entre las varias instancias políticas un clima no sólo de apoyo y receptividad sino de expectativa y una cierta impaciencia para que las cosas anden un poco más. Puede decirse que desean un poco de menos estudios y un poco más de acción. Quizás esto podría deberse al temor de que si la implementación del proyecto llegara a demorarse, ello se traduciría en un mayor riesgo para el mismo; piensan que con el tiempo los

asuntos se podrían complicar si los planes no se traducen en hechos concretos y actividades específicas pues el entusiasmo y motivación iniciales se podrían convertir en desilusión, apatía y aún rechazo. Con esta manifestación de un sentimiento determinado no se está implicando que se deban quemar etapas a fin de responder a las urgencias expresadas a varios niveles de la estructura política sino que dichas urgencias se han tomado como una indicación del interés que existe para que el proyecto finalmente se ejecute. Este clima ciertamente no prevaleció en Tonosí.

En Tonosí, de otra parte, tampoco se dió participación alguna en la etapa de planificación y diseño a los beneficiarios y afectados futuros. Se dice que las cosas fueron impuestas desde arriba creándose un ambiente no solo de desconfianza sino de franco repudio por parte de la población local. No se tomaron en cuenta las condiciones socio-culturales del área del proyecto (no obstante que se hicieron serios estudios y análisis sociales y por tanto, no se visualizaron los obstáculos que finalmente contribuyeron al fracaso del Proyecto. Por el hecho de que los planes venían desde arriba sin contar con las características locales se quiso implementar acciones que chocaban abiertamente contra el sentir de ciertos sectores de la población, lo cual provocó su reacción negativa. Es bien conocido lo que pasó después.

En el caso del Proyecto se ha procurado seguir por caminos diferentes. Una vez se escogió la zona del Proyecto y se seleccionó el

el equipo de elaboración del plan, este equipo en estrecha colaboración con los Representantes de los corregimientos entró en contacto directo con los diferentes comunidades y se dialogó con éstas a fin de que expresaran sus necesidades más sentidas. Se procuró posteriormente involucrar estas expresiones comunitarias a los programas que se han venido diseñando al interior del Proyecto. Además, se han descartado totalmente acciones que en el caso de Tonosí se mostraron contraproducentes por crear un ambiente de incertidumbre e inseguridad entre ciertos factores de la población; se hace referencia a ciertas medidas de Reforma Agraria (por ejemplo adquisición de tierras) que pudieran convertirse en centro de atención desplazando otras acciones igualmente o no menos importantes. El Proyecto no contempla compras de tierras disipando así rumores que pudieran haberse heredado de Tonosí de que el mismo era un proyecto de redistribución de tierras, todo lo cual ha contribuido a que se lo mire con mayor tranquilidad. El hecho de que se haya entrado en contacto con la población beneficiaria y se hayan escuchado sus necesidades no quiere decir que el Proyecto sea suficientemente conocido por los probables beneficiarios futuros ni que se haya asegurado su cabal participación en el futuro cuando se está en la fase de la ejecución.

Es difícil afirmar con seguridad que tan conocido es el Proyecto entre los distintos grupos que serán afectados por el mismo; aún más, habría que reflexionar cuán conveniente es iniciar una campaña de divulgación

Cuando todavía no se ha asegurado su ejecución ni se han ultimado los detalles; se correría el riesgo de crear altas expectativas que en caso de no ser satisfechas podrían convertirse en frustración y desencanto. Al discutirse la conveniencia de una campaña de divulgación del Proyecto en la actualidad no significa que la misma no sea indispensable en un futuro próximo. Porque una de las causas del fracaso de muchos proyectos ha sido la falta de difusión y promoción que ha incidido en que se creen falsos rumores y no se logre la participación de los beneficiarios a veces por simple desconocimiento o por desmotivación. Esta campaña de divulgación y promoción o motivación debería ser adelantada cuidadosamente cuidándose de caer en el otro extremo, como es el de la saturación informativa: la sobreexposición del proyecto puede hacerlo también impopular.

En cuanto a la participación de los beneficiarios - directos e indirectos- habrá que dar especial consideración a dos aspectos: uno se refiere a la motivación de los diferentes grupos para que se vinculen a las varias actividades y lleguen a desempeñar un papel activo; otro se refiere a los mecanismos que aseguren que el interés por participar se pueda hacer realidad. Sobre los dos aspectos se ha venido trabajando durante el diseño del Proyecto y sus detalles aparecen en otras partes del Informe. No sobra insistir demasiado en la importancia de estos aspectos de la participación de los beneficiarios, por la cual se garantiza la planificación de doble vía, se evita la imposición de arriba o el paternalismo estatal, se canalizan los recursos a veces inexplotados existentes en la base y se fortalece el proyecto al hacer que éste sea visto como patrimonio propio por los mismos beneficiarios y no simplemente una donación u obligación del gobierno.

Si bien el Proyecto no es conocido en forma detallada, pareciera existir una aceptación general del mismo. Con base en la información limitada que se obtuvo (no se hizo un muestreo riguroso sino entrevistas aisladas y tres reuniones con grupos comunales) puede decirse que la población local desea que se les ayude en diferentes campos y saben que el Proyecto vendrá a responder a dicho deseo. De ahí que sean tan enfáticos en expresar sus necesidades y en manifestar su interés en colaborar. Ciertamente el lograr que sea una realidad su participación no dependerá tanto de la gente misma (aunque un buen número de ellas ya tienen experiencia en trabajo comunitario), sino de las mismas campañas de motivación, de la capacidad de los técnicos para estimular dicha participación, de que el proyecto efectivamente esté respondiendo a las necesidades sentidas y que los cambios no se impongan autoritariamente sino que sean precedidos de una labor de conocimientos y capacitación. Llenar todos estos requisitos no es labor fácil y requiere de los ejecutores, a todo nivel, no sólo "mística" sino habilidad para trabajar con la gente y obtener una positiva respuesta.

Esto último lleva lógicamente al aspecto del fortalecimiento institucional. De nuevo es preciso hacer referencia al fracaso de Tonosí. En una breve evaluación de este caso hecha por Del Castillo[1/] su autor señala algunos puntos relacionados con este aspecto, a saber: 1) El enfrentamiento entre MIDA - MIPPE lo cual hizo prácticamente imposible la labor de coordinación; 2) Como consecuencia de esta ausencia de coordinación, el

1/ "The Integrated Rural Development Program in Panama: A Case Study of Failure". 9/10/80.

proyecto más que un programa global de metas, guías de acción y dirección sistemática, fue una amalgama de acciones aisladas: "Tonosí fué, en síntesis, excesivamente detallado en sus partes constitutivas pero insuficientemente coherente como un todo". (Pág. 6); 3) MIDA puso mucho énfasis en los asentamientos campesinos; en cambio, MIPPE tuvo un enfoque mucho más amplio; 4) Existió una excesiva centralización politca y administrativa (las oficinas Centrales se fortalecieron sin un correspondiente desarrollo de las oficinas regionales y locales); 5) Existió una pobre capacidad técnica para analizar los problemas a cada nivel y proponer alternativas y soluciones.

Qué ha sucedido en el proyecto respecto a algunos de los puntos señalados y otros relacionados con el fortalecimiento institucional? Con base sobre todo en la observación directa se pueden adelantar las siguientes conclusiones: 1) las dos instituciones, principales responsables del proyecto, han venido trabajando estrechamente y en forma muy integrada. Las rencillas del pasado cedieron su lugar a una franca colaboración entre el MIDA y el MIPPE a todo nivel siendo conscientes sus directivos que de no subsanarse las anteriores diferencias, el Proyecto se vería nuevamente abocado al fracaso. Solo si sigue aún la colaboración se podrá augurar éxito a la ejecución de todo el Programa de actividades que permitirán el logro de las metas que se han fijado. 2) Si bien se ha venido dando una buena colaboración entre las dos instituciones, que hasta la fecha ha permitido un notable progreso en el diseño del proyecto, parece que falta una más precisa definición

de funciones en ciertos campos así como líneas de autoridad claramente establecidas a ciertos niveles. De estos puntos son conscientes los integrantes de las dos instituciones, quienes han venido trabajando en el asunto y es de esperarse que las líneas confusas y ambiguas se clarifiquen definitivamente. Sin embargo, no puede esperarse una claridad total al inicio ya que algunos aspectos se harán más protuberantes cuando ya se esté en la etapa de la ejecución y entonces habrá que encontrar las soluciones sobre la marcha; esto no quiere decir que se debe dejar un gran margen de improvisación sino que será inevitable el surgimiento de elementos no anticipados aun cuando se haya hecho el máximo esfuerzo para prever todo. 3) Respecto a la sindicación de que MIDA ha concentrado sus esfuerzos en los asentamientos campesinos (Sindicación que ya se dió en Tonosí y que se repite en Soná), habrá que aceptarla en parte y tambien explicarla. No puede decirse que todas las actividades que lleva a cabo la región 2 del MIDA (correspondientes a la provincia de Veraguas) se hayan concentrado en los asentamientos campesinos aunque éstos sí han recibido una atención preferencial. Esta situación puede haber sido más evidente en el distrito de Soná dada la importancia que los asentamientos campesinos han tenido allí. En cuanto a la principal expli ación que se pueda esgrimir para este comportamiento institucional habría que decir que ante la escasez de recursos de toda índole había que buscar su utilización más eficiente y eficaz, y ciertamente trabajar con grupos organizados parece ser el mecanismo de efecto más multiplicador. Aún más, dada la escasez de ciertos recursos financieros y de equipamiento, el recurso huma-

no técnico no ha logrado ni siquiera dar el mejor asesoramiento a los asentamientos. O sea el personal técnico que labora en Soná es consciente de su énfasis en el trabajo con los asentamientos pero al cual le encuentran una debida explicación. Al cambiar las circunstancias actuales dicho énfasis cambiaría igualmente.

En efecto, de lo que se pudo observar a nivel de la oficina del MIDA en el distrito de Soná, se puede decir lo siguiente: su personal tiene ganas de trabajar, se interesa por los problemas de los productores y busca solucionárselos, tiene muy buenas relaciones con el campesinado pero está tremendamente limitado para desarrollar su trabajo; no cuenta con recursos especialmente de movilización y ésto hace que el contacto entre el técnico y el productor en el campo se dificulte sobremanera especialmente para aquellos lugares cuyo acceso exige un buen vehículo del que carece el equipo local. Se tiene la plena seguridad de que aumentada la facilidad de movilización se incrementará la eficiencia en el trabajo.

Sobre el nivel técnico y la capacidad para transferir los conocimientos no se puede decir algo con algún fundamente ya que profundizar en estos aspectos hubiera implicado una más prolongada permanencia en el campo a más que no era el objeto del trabajo la evaluación de este campo. No obstante es evidente que se requerirá un refuerzo de personal técnico tanto cuantitativa como cualitativamente y habrá que trabajar en el área de la capacitación de este personal para que se haga más eficiente en la transferencia de su conocimiento a los beneficiarios con el objeto de que la dependencia que se pueda crear del productor con respecto al técnico no se fortalezca sino que, por el contrario, se reduzca paulatinamente.

Es probable que esta dependencia sea grande inicialmente pero a medida que se promueva la participación y se capacite a los beneficiarios debería ser más y más pequeña.

Se dice que otra causa del fracaso de Tonosí residió en la excesiva centralización decisoria y administrativa en las oficinas centrales con un pobre desarrollo regional y local de éstas. Soná no ha exhibido esta hipercefalia. Ello no quiere decir que la instancia central haya sido desinflada (no lo debería ser pues ciertamente se necesita un órgano central directivo y coordinador no sólo de este proyecto sino de otros de igual naturaleza que se generen en el futuro) sino que se ha venido trabajando en el fortalecimiento de la oficina provincial y del proyecto. La oficina del proyecto que funciona en Santiago, capital provincial, se ha fortalecido con la participación de técnicos de la Región 2 del MIDA, quienes trabajan en estrecha colaboración con funcionarios del MIPPE, oficinas centrales y provincial. Esta estructura se fortalecerá aún más con el nombramiento de personal adicional del MIPPE para que labore a nivel provincial y finalmente, con el nombramiento de un equipo adicional para que trabaje exclusivamente en el Proyecto de Desarrollo Rural.

Las anteriores consideraciones han pretendido puntualizar un hecho central muy importante en el Proyecto de Soná, a saber: cómo el fracaso de Tonosí sirvió para evitar algunas fuentes aparentes de conflicto en la configuración del nuevo proyecto. Se han señalado aquellos aspectos que demuestran que se ha trabajado reflexivamente tratando de aprender del pasado para asegurar el éxito del fururo. Puede, pues, concluirse que sehan procurado establecer bases firmes para que el proyecto marche.

No quiere ello decir, sin embargo, que se cuente con una obra perfecta y acabada; sin duda habrá posibilidades de mejoramiento, de creación de cosas nuevas, de problemas y soluciones no previstas. Pero estas posibilidades tienen una mayor probabilidad de que se concreten positivamente por el hecho de que se han establecido mejores fundamentos. Las condiciones están dadas para que el Proyecto vaya. Es preciso darle el empujón final.

A. Technical Analysis Agricultural Component

Introduction

Agricultural systems evolve in a given region in response to local ecological and social factors. Agricultural production in the Sona District of Panama, which has an annual rainfall in excess of 2,500 m.m. and a medium annual temperature of 25°C is characteristic of colonization of the humid tropics. The settlement pattern in such regions utilizes slash and burn agriculture to clear the existing humid tropic rainforest, exploiting the nutrients present in the policulture biomass of the native vegetation for the production of basic grains (rice, corn, and beans) and garden crops (bananas, yuca, yams, and fruit trees).

AGRICULTURAL PRODUCTION CONSTRAINTS

Weeds

Several technical constraints arise when monoculture oriented basic grain production replaces the ecological diversity of the native vegetation of the humid tropics. Weed control is a persistent problem in sustaining monocultures requiring larger increments of labor as the monoculture is prolonged. At the early stages of crop development, weed competition can severely reduce growth and decrease eventual production. It is interesting to note that in the Sona district, labor shortages at critical periods in the cropping cycle have led to the widespread use of herbicides. This is the only agrochemical input that both small farms and large farms have in common, even though the small and medium size

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farmers seldom recognize differences in types of herbicides or utilize the most effective application frequencies and doses.

Insects

Monoculture plantings of food crops also provide a more ideal micro-environment for rapid multiplication of insect populations and disease pathogens. Although subsistence level farmers on small and medium size holdings are often aware of insect damage to their crops, particularly to the visible damage done by leaf cutter insects on cowpeas and other broad-leaf crops, they do not consider the resulting decreases in yields sufficient to warrant agrochemical insect control methods. In fact, no information currently exists on insect population dynamics in relation to crop production in the Sona district. Without this baseline information it is impossible for agricultural extension personnel to determine economic threshold levels, on which to base insecticide recommendations.

Soil Fertility

However, soil fertility has become perhaps the most serious technical constraint to agricultural production in Sona. Slash and burn agriculture is a one-way extraction process, in which soil fertility is mined to produce foodstuffs. Since the majority of the essential elements, which are necessary for plant growth, are present in the biomass of humid tropical rain-forest, soil fertility declines rapidly after the forest is cleared and soil organic matter is oxidized. Heavy rainfall futher contributes to loss due to leaching. As a result, crop yield levels decline sharply in proportion to decreases in soil fertility after the initial clearing. At the same time, weed infectation increases to the point at

which crop production ceases to compensate for the labor investment required to control weeds. The farmer, then, moves into a new forest area, allowing the previous areas to regenerate soil fertility via secondary forest growth.

Distribution of Land as a Productive Resource

When virgin forest area is limited, cultivation is shifted back onto previously cropped units. The length of the forest fallow and, therefore, the overall shifting agricultural cycle is directly related to topography. On steeper slopes longer forest fallows are necessary. As population pressures on the land increase, and soil fertility levels on even the best soils continue to decline, long forest fallow periods are no longer possible and short fallows further exhaust the soils so that crop production is no longer a viable enterprise. It is at this point that shifting cultivators abandon their holdings and migrate to other areas which can sustain their subsistence needs and shifting agricultural system.

Cumulative Effect of Agricultural Production Constraints

The abandoned acreages are normally absorbed by larger land holders for extensive livestock growing. In some cases, small units of large farms are sharecropped by shifting cultivators for the purpose of establishing pasture grasses in the final cropping cycle and thereby extending the grazing acreages of the large holdings. In other cases shifting cultivators voluntarily plant pasture and sell exhausted holdings that can no longer support agricultural production. Whatever the rational, the land use pattern which results is one of a constant expansion of livestock enterprises, a steady deterioration of soil fertility, and an out-

migration of subsistence level farmers.

AGRICULTURAL PRODUCTION MODELS

Two agricultural production models exist in Sona. The first involves shifting cultivation on small and medium size holdings (less than 50 hectares) in the Northwest and Central regions (e.g., the Corregimientos of Quebrada de Oro, Calidonia, and Cative), where the topography is predominantly hilly. The second model applies to the flat lands in the Eastern region, such as those found in the Corregimientos of La Soledad and Guarumal, where mechanized capital intensive agriculture is practiced either on large holdings or by agrarian reform groups. The latter represent the government's attempt to modernize peasant agriculture by replacing shifting agricultural practices with large scale commercial farming enterprises dedicated primarily to rice and livestock production.

Agrarian Reform Concept

The underlying assumption of the continuous agricultural model on agrarian reform farms is that one land tenure is secured and collective holdings are commercialized via the introduction of technological packages developed for capital intensive production, family income and employment will be increased. Unfortunately, transferring technical and managerial skills to the cooperative members has not been as easy as anticipated. The result has been a heavy dependence on government technicians from MIDA, BDA, ENDEMA, IMA and ISA for management and operational decisions. Instead of developing self reliance on the part of cooperative members to

manage their own enterprise, the massive indebtedness brought on by restructuring peasant agriculture according to this model has led to basically state run farms. This can be viewed as a constraint to effective rural development.

Shifting Agriculture

Farmers on small and medium size farms depend on shifting agriculture to supply their basic grain subsistence needs. Garden crops such as bananas, yams, and yuca and fruit trees are produced on a more permanent basis in dooryard gardens near the house. This model is also found to some extent on the agrarian reform farms where individual members continue their traditional shifting agricultural practices on small family plots or on small plots outside the cooperative farm.

In spite of this slight overlap of traditional subsistence and capital intensive production techniques on the agrarian reform farms, the main volume of agricultural output comes from commercialized production on collective lands.

Mechanized Capital-Intensive Agriculture

Data from the Panamanian Agricultural Development Bank (BDA) illustrate the scale and importance of rice production in the capital intensive model. While only 14 of the agrarian reform farms in Sona received credit for rice production in 1979, three of these received a total of $153,328 for planting 266 hectares of rice. The total area and production of rice on agrarian reform farms during the last four years are presented in Table 1. Although the agrarian reform farms only represent 0.5% of the total number of rice farms in the Sona district, they

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account for 28.0% of the total rice production. Rice yields on these farms were more than twice as high as those obtained in shifting agriculture.

Table 1: Rice Production on Agrarian Reform Farms in Sona District (1977-1980

Production Factor	1977	1978	1979	1980
Area (ha.)	1,138	1,190	1,066	1,038
Production (TM)	2,276	3,273	2,612	2,751
Yield (TM/ha)	2.00	2.72	2.45	2,65

Source: Banco de Desarrollo Agricola Credit records.

It is also interesting to note that 92% of the credit given to agricultural enterprises in the project area went to agrarian reform farms (Table 2). This fact reflects the distribution of government assistance between the two production models, suggesting another serious production constraint in agriculture.

Table 2: Credit Distribution by Type of Enterprise in Sona District (1979)

	Agrarian Reform		Private Farms		Total	
Type of Enterprise	No. of Loans	Amount Credit ($)	No. of Loans	Amount Credit ($)	No. of Loans	Amount Credit ($)
Agriculture	17	516,865	24	47,112	41	563,977
Cattle	33	724,144	66	370,982	99	1,095,126

Source: Banco de Desarrollo Agricola Credit records.

DESCRIPTION OF THE PRESENT CROPPING SYSTEMS

A survey conducted in early 1981 by the project team in 70 farms throughout the project area identified twelve cropping systems (Table 3). Rice was the principal crop of the first planting season in all systems, Maize was intercropped with rice in seven of the twelve systems. Earlier census information confirms the concentration of maize and rice production during the first planting season of each year (Table 4).

Field observations and farmer contacts made during a two-day tour of the project region revealed that intercropped maize is most commonly planted in the deeper more fertile soils on the more level areas of the field while rice planting is allocated to the steeper slopes. The greatest frequency of sharecropping by landless peasants was also noted in the rice-

Table 3. Cropping Systems in Sona District.
(1981 Survey)

Cropping System					
No.	1st Season	2nd Season	Ave. Farm Size (has.)	Ave. Area Under Cultivation (has.)	Frequency in Survey
1	R+M	M	52.6	2.3	7
2	R+M	—	22.8	2.2	23
3	R+M+Y	C	28.3	5.2	3
4	R(Mechanized)	—	49.3	3.4	4
5	R	C	66.0	1.0	1
6	R+PP	C	24.0	3.0	1
7	R+M+PP	C	6.0	6.0	1
8	R+M+PP	—	10.0	4.0	1
9	R+M	C	63.1	4.7	13
10	R	M	24.6	3.1	12
11	R	M+C	30.5	3.5	2
12	R+M+Y+PP	—	45.0	4.5	2

R= Rice

M= Maize

Y= Yuca

PP= Pigeon Pea

C= Cow Pea

Table 4: Production and Acreage of Basic Grains in Sona District by Planting Season 1950-1960

Crop	Area (has.)				Production (qq)			
	1950		1960		1950		1960	
	First	Second	First	Second	First	Second	First	Second
Rice	2,665	74	4,096	93	94,268	2,616	132,162	1,963
Maize	2,077	470	2,294	596	39,249	8,696	[illegible],486	9,183
Cowpeas	150	398	673	222	2,019	5,750	3,932	957

Source: Censo Nacional Agropecuario.

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maize systems. Yuca was the only non-basic grain crop found in the various crop associations, appearing in 7% of the surveys. Pigeon peas were occasionally planted in the first rainy season to be harvested during the dry period in the bimodal rainfall pattern. On the other hand, cowpea was the principal food legume in all the systems. According to the survey, it was planted on 29% of the farms during the second cropping season. The survey did not show a positive correlation between farm size and acreage planted, suggesting a mixed crop-livestock system on larger farms.

Planting Techniques

In the most common cropping system, secondary regrowth is cut down in February and burned off in March. Rice and maize are planted in the remaining ash using a dibble stick (coa). About 26 pounds of rice seed is planted per hectare along with 20 pound of maize seed. Both rice and maize are planted in clumps with approximately ten and five seeds to a hole respectively. Although planting distances between clumps vary according to slope and physical obstacles (big rocks, tree trunks, etc.), rice is seldom planted closer together than 50 cms. and maize spacings are approximately double that. Intercropping patterns are randomized with more emphasis given to the importance of rice.

Agrochemical Inputs

The herbicide 2-4-D is applied approximately 25 days after planting to control broadleaf weeds, but grassy weeds must be eliminated by hand. This normally requires two manual weedings in May and June. It should be noted that in the mechanized production model the post-emergence

herbicides Prowl and Stam LV-10 are applied twice to control all weeds. Harvesting is done by hand at crop maturity, and rice panicles are stacked on poles for sun drying (embancan en anegas) then stored on wooden benches (jorones o tabancos de madera).

In the traditional system no other agrochemical inputs aside from herbicides are used with maize and the succeeding cowpea crop. Cowpeas are planted in late October following a manual clearing of the stubble from the preceding crops. Seeding again is done with a dibble stick (coa) placing 5-6 seeds per hole. The first weeding is conducted at the end of November using a machete. Harvesting of the field dried pods normally occurs in January, and the cowpeas are subsequently shelled by placing them in a tank and beating them with a stick (pisotes). Wood ash is often mixed with the cowpeas in storage to prevent insect damage.

Cultural Aspects

Traditional production technologies in the shifting agriculture model add a certain folk flavor of rural life to crop production. One medium size farm operator near the town of Califonia reported that he pays day laborers $1.75 per day for their labors, plus supplying them with two meals and strong homemade beer (más chicha fuerte). Brush is cleared a certain distance (una braza) from surrounding vegetation during land preparation so that the burning operation does not damage nearby areas. Fires are set against the wind to prevent fast uneven burns. Herbicides mixtures are calibrated using one and a half small Tomato Paste cans in a three gallon bucket of water.

PROPOSED PROJECT ELEMENTS

In order to have an impact on agricultural production in Sona, the agriculture component of this project seeks to establish a series of activities with both of the existing production models that will carry on beyond the life of the project. This component will consist of the following elements:

- Development of an improved shifting agriculture model for both small and medium sized farms;
- Development of an improved continuous agriculture model;
- Technology generation and transfer; and
- Training and technical backstopping.

Development of an Improved Shifting Agriculture Model

Social and ecological considerations dictate that the agricultural component of the project also address the traditional agricultural model to alleviate poverty, social migration, and the destruction of soil resources. It has already been shown that shifting agriculture results in a movement of people into the more remote and inaccessible areas. The subregion of Bahia Honda represents the last colonization frontier in Sona. It has the largest acreage of annual subsistence crops (Table 5). It is also the only subregion which has experienced a significant increase in the number of farms and acreage devoted to rice and maize production (Table 6). If the same land use pattern and out-migration is not to evolve in this subregion, an alternative production model must be introduced before it is too late. The same model can be applied in other subregions to improve the well-being of the families on small and medium sized farms.

Table 5. Annual Crop Acreage by Subregion in Sona District (1970)

Subregional	Econ. Active Population		Annual Crops		Perennial Crops	
	#	%	# has.	%	# has.	%
Sona township	1,753	26	337	4	96	3
Bahia Honda	835	12	1,245	13	581	20
Calidonia	412	6	891	9	540	18
Cative	474	7	838	9	239	8
El Maranon	526	8	724	8	73	2
Guarumal	821	12	1,849	19	461	16
La Soledad	278	4	935	10	223	8
Quebrada de Oro	304	4	640	7	121	4
Rio Grande	691	10	1,041	11	296	10
Rodeo Viejo	781	11	1,089	11	292	10
TOTAL	6,875	100	9,589	100	2,922	100

Source: Censo Nacional Agropecuario.

Table 6. Number of Farms and Surface Area in Basic Grains by Subregion - (1960-1970)

SUBREGION	1960 Rice Farm	1960 Rice Has.	1960 Maize Farm	1960 Maize Has.	1960 Cowpeas Farm	1960 Cowpeas Has.	1970 Rice Farm	1970 Rice Has.	1970 Maize Farm	1970 Maize Has.	1970 Cowpeas Farm	1970 Cowpeas Has.
Sona (Town)	126	158	114	91	30	14	99	162	83	77	37	17
Bahía Honda	223	406	200	316	131	120	355	602	324	483	257	175
Calidonia	219	432	209	319	117	85	219	381	202	282	122	78
Cative	273	459	268	440	160	69	226	397	218	258	132	71
El Marañon	320	395	310	243	146	58	278	371	274	245	137	60
Guarumal	822	1341	679	740	331	240	375	1312	344	319	197	118
Soledad	166	259	152	156	55	22	135	369	109	105	67	52
Odd. Oro	156	247	146	200	75	54	132	170	127	120	91	75
Río Grande	--	--	--	--	--	--	314	466	300	327	222	185
Rodeo Viejo	419	492	394	385	326	233	434	487	398	300	329	224
TOTAL	2,724	4,189	2,472	2,890	1,371	895	2,567	4,717	2,379	2,516	1,585	1,055

Since previous efforts (e.g., the Tonosi project and the agrarian reform model) to convert the traditional shifting agricultural system into a semi-mechanized commercial farming enterprise have not succeeded, this project proposes an improved management of the existing system to intensify basic grain production without further degradation of soil resources. Additional input costs to accomplish this goal will be offset by the introduction of cash crops (e.g., pigeon peas) into the system as well as by the increased production of basic grains some of which can be marketed. The combined project production components also seek to diversify incomes via livestock and forestry.

Strategy for Small Farms (1-10 hectares)

On farms with limited available acreages, agriculture can do little more than provide for the subsistence needs of the farm family. In the vast majority of cases, off farm employment in sugar mills or larger farms accounts for the cash income on such farms while agricultural activities simply help to stock the family foodshelf. Since shifting cultivation has reduced the productivity of the farmer's land base, he is often forced into sharecropping other plots or clearing small plots on unattended lands.

The 1970 agricultural census shows that 49% of the total number of farms in Sona had less than 10 hectares of land. These farmers are trapped in poverty by limited production alternatives, limited marketability of their produce, and few off farm employment opportunities. Table 7 shows that both the number and acreage of these farms are declining as shifting

agriculture yields to cattle grazing. It can be assumed that most of these farmers have migrated to other areas of the country, have joined the growing ranks of the landless peasants living along the major roads, or have moved to the larger urban areas to seek employment.

Table 7: Land Distribution by Farm size in the Sona District (1950-1970)

Farm Size	1950		1960		1970	
	Number	Area (has)	Number	Area (has)	Number	Area (has)
0-10	1,815	6,352	1,749	6,103	1,541	3,810
10-50	415	7,575	833	17,675	1,084	25,791
50-100	44	2,964	179	11,725	333	21,143
100-500	27	5,003	131	22,026	145	25,457
More 500	3	8,000	13	25,431	14	21,430

Source: Censo Nacional Agropecuario

Production Alternative

The most appropriate production alternative for this farming sector would be swine production using home grown bananas and other dooryard garden crops as a swine feed source. Nevertheless, this commercial activity is not likely to do away with the traditional basic grain production activities of the small farmer. Therefore, both credit and technical assistance will focus on intensifying traditional production by increasing planting densities, controlling insects, replacing deficient soil nutrients, and improving herbicide effectiveness.

Expanding Role of Food Legumes

The incorporation of food legumes into the rice-maize cropping system of small farms in one means of improving soil fertility through nitrogen fixation and nitrogen cycling. It also serves to diversify production and improve family nutrition. Both cowpeas (Vigna sinensis) and pigeon peas (Cajanus cajun) are commonly grown in the region and thus are known by the farmers and well adapted to acid soils. Although market demand for cowpeas is low with prices ranging from $0.20 to $0.35 per pound compared to $0.59 per pound of dry beans (Phaseolus vulgaris), it is an important source of protein in low income family diets.

With the possibility of installing a pigeon pea canning facility in the town of Sona (see Agroindustrial Component), market price and demand can be expected to increase. This should reverse the production decline of pigeon peas in the region (Table 8).

Table 8: Number of Producers and Area of Cowpeas and Pigeon Peas in Sona District (1960-1970)

	1960		1970	
Bean Type	No. of Farms	Area (has.)	No. of Farms	Area (has.)
Cowpea	1,371	895	1,585	1,055
Pigeon Pea	960	245	571	89

Source: Censo Nacional Agropecuario

Credit and Technical Assistance

Until now subsistence level shifting agriculturalists have functioned totally outside the orbit of government-sponsored credit and technical assistance activities. Their willingness to participate in credit programs and thereby incur public debts for traditional crops has to be developed. Since subsistence level farmers place more importance on yield stability (thereby guaranteeing survival) than yield maximization, which involves greater risk, the project will have to begin very slowly and carefully so that subsistence level producers become convinced that changing their production techniques is in their best interests. Once creditibility has been established, the demand for credit and technical assistance will grow rapidly.

In sum, the project proposes the following for shifting agriculturalists:

- For small farmers, 500 loans averaging $1,000 each will be made available for the cultivation of a maximum of three hectares. Estimated benefits are approximately $250 per hectare; and this program will benefit a minimum of 225 farmers; and
- For medium farmers, 250 loans averaging $1,400 each will be made available for the cultivation of a maximum of three hectares. Estimated benefits are approximately $345 per hectare. This program will benefit a minimum of 130 farmers.

This program will open the doors for technical assistance efforts to intensify basic grain production and set the stage for future diversification into providing agro-industrial raw materials, livestock (e.g., swine, cattle, and tropical hair sheep), and forestry products on a commercial scale. Nevertheless, it would be unrealistic to expect dramatic increases in basic

grain production to occur on small and medium farms during the life of this project. That is not, however, to underestimate the importance of extending public services, such as credit and technical assistance, to the poorest rural producer or the value of establishing a wording relationship and mutual confidence between government technicians and those in the subsistence sector.

Development of an Improved Continuous Agriculture Model

It is not surprising that in a region dominated by shifting agriculture, only about 10% of the total surface area of Sona is devoted to annual crop production. Likewise the growth of extensive grazing enterprises and the
173 decline in basic grain yields (Table 9) in response to exhausted soil resources all are to be expected. However, the increase in rice acreage and production volume due to government price support incentives and emphasis on agrarian reform production activities deserve special attention.

From the standpoint of land use potential, the subregions of Rio Grande and Guarumal, in which 57% of the total number of agrarian reform farms are located, have the soils most adapted to continuous intensive rice production (Table 10). In total, only 17.2% of the soils in the region (Classifications IA, IP, IIA) are suitable for intensive cultivation and only about half of these are on flat lands. The best quality (IA Classification) soils in the La Soledad and El Maranon subregions have long been overworked by shifting agriculture and converted into permanent pastures. Therefore, based on agronomic production potential of agrarian reform farms, the agricultural component of this project cannot ignore the need to improve the continuous agriculture production model.

Table 9: Acreage, Total Production, and Yield of Basic Grains In the Sona District (1950-1970)

Crop	Acreage (has.)			Production (qq.)			Yield (MT/has.)		
	1950	1960	1970	1950	1960	1970	1950	1960	1970
Rice	2,739	4,189	4,717	96,884	134,125	165,041	1.77	1.60	1.75
Maize	2,547	2,890	2,576	47,945	48,669	30,675	0.94	0.84	0.61
Cowpea	548	895	1,055	7,769	4,889	5,296	0.71	0.27	0.25

Source: Censo Agropecuario 1950, 1960, 1970.

Although there are only 28 agrarian reform farming units in the Sona district, their combined acreage represents 12% of the total regional acreage in annual crops. These are also flat lands with great potential for intensive agricultural production. However, as discussed previously, continuous agricultural production in the humid tropics is limited by soil fertility and weed infestation. Repeated use of heavy machinery compacts the soil and destroys soil texture. Frequent application of acid forming fertilizer formulas accentuates micronutrient and phosphorus deficiencies.

Improved Soil Management Techniques

Proven management practices and technologies for acid soils are known and can immediately be put into practice in the agrarian reform farms. These involve land engineering techniques to control erosion on rolling topography, installing drainage tiles for water control, and liming soils to decrease the chemical fixation capacity of the soils and to improve base status. Technical assistance in soil management and pilot project

Table 10: Acreage of Soil Types by Subregion in Sona District

Subregion	Total Area (has.)	Soil Classifications IA	IP	IIA	IIP	IV	IIIFP	IIIM
Sona (township)	5,870	252	2,548	-	3,070	-	-	-
Rodeo Viejo	11,770	-	2,636	-	8,651	483	-	-
Quebrada de Oro	5,580	-	2,533	-	3,047	-	-	-
Maranon	11,220	2,008	999	-	5,767	2,446	-	-
Calidonia	13,740	-	-	-	3,740	-	10,000	-
La Soledad	8,640	3,560	510	-	2,290	-	760	1,520
Cative	18,440	-	-	-	6,196	-	12,244	-
Guarumal	20,770	250	-	3,000	10,000	-	3,020	4,500
Bahia Honda	28,650	-	-	-	-	-	28,650	-
Rio Grande	24,120	-	3,521	3,763	-	-	16,836	-
Total	148,800	6,071	12,747	6,763	42,760	2,928	71,510	6,021

Source: Rolando Armuelles. 1979. Mapa de Uso Potencial del Suelo. MIDA-MIPPE.

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demonstrations to convey these new concepts to the producers will be financed by the project.

Crop Diversification

Attention will also be given to diversifying and improving the cropping systems used on agrarian reform farms. At present rice is the only field crop produced, and rice production only occurs during the first rainy season of the bimodal rainfall pattern. Many persistent weeds multiply during the idle period between rice cultivations, magnifying the weed control problem in the succeeding crop cycle. A common grass weed called Manisuri or Tuquito (Rotboella exaltata) is particularly difficult to control. The use of legume cover crops and green manure crops such as Velvetbean (Stilozobium spp.) or Kudyu (Pueraria spp.) would suppress weed multiplication during the period of the year when the land is not in rice. These crops would also improve soil fertility. Cowpeas are another legume alternative for rotating with rice. However, the introduction of short season sorghum and maize varieties for commercial production after the rice is harvested might offer greater economic returns.

Administrative Self-Reliance

Given that Panama is currently experiencing production deficits of basic grains both to support its growing urban population and for conversion to concentrate feeds for livestock, emphasis should be placed on intensifying commercial basic grain production on the large land units such as the agrarian reform farms, which have an average sizeof 428 hectares in the Sona district. Unlike efforts to modify the shifting agriculture model, technology exists for the continuous commercial agriculture

model. However, the management problem on agrarian reform farms must be solved before this model can become a viable alternative to agricultural self-sufficiency in Panama. A special effort will, therefore, be made during the life of this project to instruct agrarian reform members in farm management decision making to reduce the dependency on government technicians and to build administrative self-reliance.

Credit and Technical Assistance

During the course of the project eight agrarian reform farms will be selected and developed as models according to their potential demonstration effect on similar farms, including those in the private sector. The cost of improvements and diversification will be covered by a rotating credit fund established by the project. It must be emphasized that project funds will not be utilized to replace existing credit sources for crop production in the present operational pattern, but instead will be used to stimulate maize and sorghum production as cash crops in the second planting season. Legume rotations, using either cowpeas or green manure crops, and soil conservation techniques, such as physical land management alterations and liming, will also be supported by these funds.

Technical assistance will focus on administrative self-reliance and a *modus operandi* to encourage sustained yield levels without damaging soil productivity. These agrarian reform model farms will serve as a field laboratory in which to quantify technical improvements in continuous agriculture and to transfer these principles to a wide range of people including

members of other agrarian reform and private farms; technicians from the various institutions involved in this project, and political decision makers from outside the region. For this reason, an identical technical package will be offered to medium farmers in the area who also practice a continuous agriculture model. Although this represents a substantial credit investment on the part of the Government of Panama, these showcase operations could have a significant multiplying effect on operation techniques for other commercial scale agricultural enterprises.

In sum, the project proposes the following for the continuous agriculture model:

- For asentamientos, 20 loans averaging $103,000 each ($4,900 per family) for the cultivation of 80 hectares. Estimated benefits are approximately $1,300 per family. This program will benefit a minimum of 168 families.

- For mechanized medium farmers, 150 loans averaging $10,000 each for the cultivation of 10 hectares. Estimated benefits are approximately $330 per hectare. This program will benefit a minimum of 50 farmers.

As a consequence, these demonstration farms will not only function to measure the effect of the project on large mechanized farms and to show visitors how the project is working, but they may also significantly increase the total volume of basic grain production in the region, while at the same time improving the economic viability of agrarian reform farms. The importance of designing a viable production model for continuous agriculture and for agrarian reform farms has a national importance that cannot be overemphasized, particularly if other integrated rural development projects are to be patterned according to the structure and success of what is being proposed for the Sona district.

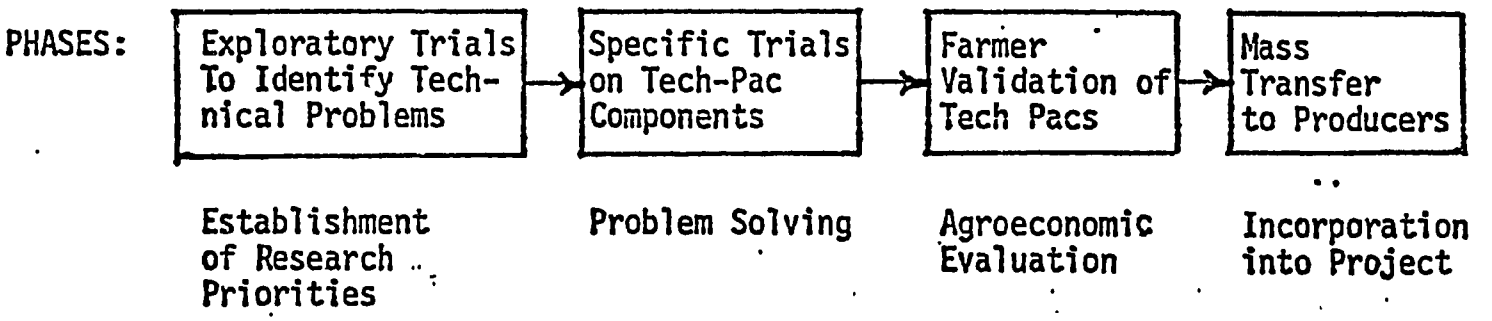
Technology Generation and Transfer Methodology

Much of the success of the agricultural component hinges on the introduction of appropriate technological innovations into the present production systems. Technical problems related to soil fertility, insect infestation cycles, and polyculture interactions are dynamic by nature, and in most cases the solutions are site specific. While to some extent technical recommendations can be transferred within similar ecological zones, there is a deficiency in technical information for the humid tropics. Since an integrated rural development project can not be based solely on the importation and dissemination of technical recommendations developed elsewhere for a different framework of agroeconomic conditions, adaptive on farm agricultural research will be given high priority.

The agricultural component will therefore finance three IDIAP technicians to monitor and validate the effectiveness of the technological innovations introduced by the project. These technicians will also identify related technical problems and conduct on-farm research toward their solution. While IDIAP currently has three technicians assigned to the Sona district, one of their eight national priority areas, their work is oriented almost completely to the continuous agriculture production model on agrarian reform farms. For this reason, the additional IDIAP personnel will be assigned to adaptive research on the shifting agriculture model under the existing IDIAP regional coordinator. This helps to balance out the research effort over both production models and allows a close coordination between IDIAP and MIDA activities and planning.

In the first stage of the proposed research-extension methodology (Figure 2), IDIAP and MIDA personnel will collaborate in a series of

Figure 1: Schematic Technology Generation Methodology



exploratory trials to identify the technical factors which presently restrict basic grain production. These preliminary on-farm trials will allow the government technicians to establish creditability with farmers and to compile basic information on a general agro-ecological diagnosis of the region. Once research priorities have been defined, research units will work out the appropriate research strategies and designs for their respective production models. The problem solving process leads from an analysis of individual variables within a production system to an overall evaluation of a package of recommendations managed by farmers themselves on a typical production scale. The rapid dissemination of recommended techniques to producers is facilitated in this methodology by the organizational structure of IDIAP-MIDA activities via organized nuclei of private farmers and agrarian reform groups. Each MIDA change agent will work with up to 10 of these farm groups, each of which will be composed of approximately 10 farmers. Research will focus on a wide gamut of subjects including types of inputs, application frequency, varietal improvement, and zero tillage techniques. (These change agents will be increase from the present number of 13 to a total of 32). Operational costs for technical assistance,excluding salaries and vehicles purchases, in the agricultural and livestock components will total $1,115,000.

Training and Technical Backstopping

The orientation and technical training of MIDA, IMA, IDIAP, and RENARE field workers as well as farmer participants is essential to a successful research-extension methodology. A total of $265,000 will be required for short courses, seminars and workshops on both livestock and agriculture during the life of project. An additional $375,000 will be needed for sub-regional centers from which the government technicians will work. The first

year of the project will be spent in constructing and equipping the subcenters while organizing and instructing the new field workers on technology transfer techniques and credit operations. Short seminars will be conducted periodically thereafter to update transfer agents on research discoveries and related activities outside the project area.

Since the concept of farming systems research, particularly mixed livestock-agricultural-forestry systems, is relatively new in Panama, long-range technical backstopping will be required during the evolution of this project. The International Center for Tropical Research and Training (CATIE) in San Jose, Costa Rica, is an outstanding candidate to provide this technical guidance and support, because of their experience in similar activities throughout Central America. Their highly trained multidisciplinary staff could also play an important role in training sessions, bringing in outside expertise and lessons learned in neighboring countries.

Technical Feasibility

While every effort has been made to make this agricultural component as technically feasible as possible, the difficulty of improving shifting agricultural production on small farms can not be underestimated. Since both MIDA and BIA have concentrated their efforts in Sona to date in the agrarian reform sector, there is no established working relationship between subsistence farmers and government representatives. Nevertheless, there is evidence that a close collaboration and formal institutional linkage between IDIAP and MIDA is possible and small farmers have expressed an interest in receiving government technical assistance. Therefore an effective research-extension model seems feasible.

Technical Feasibility of Project Targets

The topographical features, soils, rainfall and land use of the Sona area was reviewed. Existing conditions show the moisture regime of the area to be positive for crop production. On the negative side is the high incidence of crop land in pasture. The soils of the area although quite varied and including some with toxicity and low base status problems are not beyond existing knowledge for improvement - some soils are quite productive.

Increased agricultural production also depends on the effective utilization of technical inputs. In Sona the use of agrochemical inputs is related to farm size. This probably reflects the availability of capital and exposure to new techniques. Herbicides are the most commonly used chemical input, but the timing of applications, types of herbicides, and dosages used on smaller units may need improvement. On poor soils, fertilization has a high impact potential and is also a good means of establishing credibility with small farmers. On the agrarian reform farms, liming should have the greatest effect on maize and sorghum yields and may allow the production of other cash crops such as soybeans and black bean (Phaseolus vulgaris) varieties for export to the lucrative Venezuelan market. It is good practice to have the project begin to attack the most limiting factors in the local production systems and then move from there into tackling more long range soil conservation problems.

The economic value of insecticide use on subsistence crops can be questioned. It nonetheless needs to be studied. The inclusion of grass-legume rotations into production systems is an elementary agronomic practice. The use of green manure crops is always a sound practice in continuous cropping and both Stilozobium spp. and Pueraria spp. should do well in the area.

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Technical Feasibility of the Proposed Production Increment

Production change due to fertilizer and lime applications have been quantified with "real world" data. Extrapolations of this information over the region are not unreasonable. Higher planting density should in itself increase yields with little effect on production costs. Labor utilization and costs have also been well documented by a rather complete and detailed survey on 70 farms. This information places the economic analysis on solid ground. Yield projections are conservative and in line with levels already attained within the region, the proposed yield increments for shifting agriculture are technically feasible.

With the possible exception of cassava, all the reported yields and projected yields are very low. Taking into account the productive capacity of the soils and the projected management practices and inputs recommended for the proposed project, it would not be unreasonable to increase yields for rice, corn, red beans, yam and otoe by a conservative 10% (proposed yields + 10%).

While every effort has been made to make this agricultural component as technical feasible as possible, the difficulty of improving shifting agricultural production on small farms cannot be underestimated. Since both MIDA and BDA have concentrated their efforts in Sona to date in the agrarian reform sector, there is no established working relationship between subsistence farmers and government representatives. Nevertheless, there is evidence that a close collaboration and formal institutional linkage between IDIAP and MIDA is possible. Small farmers also expressed interest in receiving government technical assistance. Therefore, an effective research-extension model therefore seems feasible.

B. Technical Analysis Livestock/Forestry Component

The humid tropical forests in Panamá are presently undergoing large scale deforestation in favor of extensive pasture/cattle development. Forests are substituted with faragua grass (Hyparrhenia rufa) following traditional shifting cultivation. The slash and burn farmer is part of a migratory wave of colonizers who enter and clear forest lands and plant foodcrops (rice, corn and beans) for one or two cropping seasons. The soil fertility is quickly depleted by erosion and oxidation of organic matter so that he must change his crop area to a new clearing.

Most often, small farmers who enter and clear land and thus establish usufruct rights lack capital to buy cattle. Before migrating again, they plant the cleared land with faragua grass and "sell" these usufruct rights to large ranchers who use the land for extensive cattle grazing. In the Soná district colonization has recently come to an end as there are now no free lands available since most of the former areas of humid tropical forest have been replaced by pastures for extensive cattle ranching. There now exists a new migrating pattern towards either the urban centers or the final frontier on the Caribbean coast and Darien.

Not only is the limit of the shifting agriculture/cattle frontier being quickly reached, but also, degradation of already "developed" lands from inappropriate land use management is reducing existing potentials. As an indicator of this general phenomenom, the land area in forests and foodcrops is presently beginning to decline while extensive pasture land

continues to increase. Cattle management practices are also deficient as calving rates are less than 50%, calf mortality rates are over 10%, and weight gains are low requiring 4-5 years to reach market size.

By far the most serious problem facing pasture/cattle development, however, is the alarming rate of soil deterioration and weed invasion which is critically decreasing yields per hectare (stocking rates) precisely as maintenance costs per hectare are increasing (labor cost for weed control). Today many of these pastures can not be economically maintained and are being abandoned.

The highly eroded soils of the area are the major source of natural resource degradation and human resource impoverishment. The traditional shifting cultivation - rural poor/cattle complex is the direct source of many of the problems of rural to urban migration, spontaneous colonization and deforestation of the marginal hinterland, and natural resource degradation. These are the problems which this chapter will address.

It is quite feasible that within the next two decades Panamá will exhaust most of its forest reserves (Table 6), given the intensity of colonization and the vast scale on which the tropical forest is being transformed into extensive "downhill" pastureland at high social and ecological costs. When the colonization of the remaining forests of the Caribbean coast and Darien has been completed, most of the small farm settlers will be no better off economically, only twice as numerous! Then what?

LIVESTOCK/FORESTRY PROFILE OF PROJECT AREA

Natural Resources of Area

The Soná district (MAP 1) covers 148,000 hectares of Humid Tropical

Forest, Very Humid Tropical Forest, Very Humid Premontane Forest, and samples of Premontane Fluvial Forest life zones (MAP 2). The area has a very broken and uneven physiography with slopes that vary from 0-8%, 8-20%, 20-45%, to more than 45% (MAP 3).

The Soná district has a humid tropical climate with a mean annual rainfall of approx. 3,000 mm. (MAP 4). Characteristically, the rain falls in brief, very intense showers. There is a nine month rainy season (April to December) and a three-month dry season.

The major soil types in the area (from most to least prevalent) are: oxisols, ultisols, alfisols, inceptisols, and entisols. Soil capability and recommended development (MAP 5) for the Soná District, are as follows:

Capability Class	%	Recommended Development
I A + P	13.4%	Intensive Crop/Livestock
II A + P	35.4%	Extensive Crop/Livestock
III F - P	51.2%	Extensive Forest/Livestock

Background of Livestock Development[1/]

Sonanian ranching is technologically simple and its massive increase in the present century has been achieved largely by expanding horizontally towards the humid forest frontiers. To understand the evolution of Sonanian ranching and the forces that have contributed to its massive increase, we have to look beyond local events to the relationship between the district and the wider national socio-economic system. Its unprecedented growth in the present century has been a direct result of the following:

1 / After Stanley Heckadon Moreno. "La Colonización Campesina de Bosques Tropicales en Panamá" en : Simposio que señala la finalización de"La Flora en Panamá", Universidad de Panamá, Abril 14-17, 1980.

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- The construction of the Canal (1904-1914) caused sharp increases in beef demand and greatly stimulated the change from subsistence agriculture to commercial ranching. The heavy increase of U.S. defense spending in the Second World War to protect the Canal caused an even greater beef demand;

- Expropriation of communal lands by the new Panamanian central government in the first decade of the present century and their sale to individuals led to a rapid enclosure of large tracts of land;

- The introduction of faragua grass allowed ranching to break away from the drier native savannas (along the Pacific coast between Panama and the Azuero Peninsula) and penetrate the wetter forested regions first throughout the Western Pacific coast regions, (e.g., Sona) and presently on to Panama's last frontier, the Caribbean coast and Darien;

- The introduction of wire fencing;

- The introduction of Cebu cattle; and

- The introduction of health and sanitary innovations. With the sharp decrease in nortality a demographical revolution took place. The population of the Sona district doubled between 1940-1960, though another contributing factor was inmigration.

Present Livestock Industry

Extensive cattle raising comprises 91.9% of the economic activities in the rural sector of the Sona district. The district is presently undergoing large scale pasture/cattle development. The cattle population grew by 94% between 1961 and 1971, from 26,816 to 52,023 head. Pastureland also increased by 63% between 1961 and 1971, from 31,458 has. to 51,183 has.,

from 37.9% to 52.4% of all land in farms in the district. Of the 3,117 farms in the Soná district, however, only 865 (27.8%) have cattle and the cattle industry utilizes only 6.5% of the available labor force.

The other important farming system in the Soná district involves 1,909 (61.2%) small farms under 20 ha. with traditional mixed foodcrop/small stock/firewood production. Whereas only 865 (27.8%) of all farms in the district have cattle, 1,437 (46.1%) have pigs and 2,805 (93.1%) have chickens. The land use pattern in the district also involves 12,511 has. (12.8%) of total farm land for multiple foodcroping (arroz, maíz, frijol, guandú, yuca, otoe, ñame, banano, guineo, plátano, papaya, piña, naranja, coco, aguacate, limón, guayaba, marañón, mango de papaya, mango de calidad, pixbae, guaba, etc.) and 14,079 has. (14.4%) of crop fallow land which also produces firewood. As a result of extensive shifting field cultivation, these small farms produce over 90.0% of all foodcrops and small stock feedcrops in the district and utilize 93.5% of the labor force. Extensive shifting field cultivation is a fact of life!

It is important to note that the slash and burn agricultural process per se is not detrimental to the tropical forest ecosystem. With a normal population density, swidden techniques represent an optimal balance between the tropical forest enviroment and a man-made mixed cropping system. Leaching and erosion of soil are limited by allowing regeneration of the forest after one or two years of cultivation. This land is not reoccupied until the forest has regenerated to an extent comparable to its earlier state. Rather than viewing this system as an evil that necessarily leads to deterioration of the soil erosion and often longlasting soil degradation, as described earlier, this project should try to improve it. Reducing the tendency to irreversible land degradation will be the strategy used in intensifying the traditional shifting

cultivation/ livestock-forestry production in the area.

LIVESTOCK FORESTRY PROBLEMS AND POTENTIALS

Lack of Credit for Small Farmers

Livestock owners that already have 10, 100 or 1,000 head can simply double their heads to 20, 200 or 2,000 head in five years with good management due to natural reproduction increases (80% calf crop). These same livestock owners also have sufficient income to purchase wire fencing. For the small farmer with little income, however, the purchase of the first 10 animals and the purchase of wire fencing for the first ten hectares is an obstacle that most can not surmount. It is for this reason that the small farmer sells his land to large ranchers following shifting field cultivation and continues his migrating pattern. This problem can easily be solved with credit to small farmers for the purchase of animals and wire fencing.

Deficient Livestock Management Practices

Improved cattle and swine management practices such as, black leg vaccination, parasite control, and phosphorus/mineral supplimentation are not widely practiced in the area. These practices would greatly improve the birth rates, lower mortality rates, and increase growth rates. These are the three most important improved management practices that should be promoted in the area. These practices can show at least a 4:1 investment return in less than one year. These practices can be easily promoted with an improved extension/mass technology transfer system.

Soil Deterioration and Weed Invasion

By for the most serious problem facing pasture/cattle development is the alarming rate of soil deterioration and weed invasion which is critically decreasing yields per hectare (stocking rates) precisely as maintenance costs per hectare are increasing (labor costs for weed control). Most of the pastures in the Sona district are in faragua grass under traditional extensive management practices. Since 1960 Sona credit institutions, sometimes supported by multinational and bilateral agricultural assistance programs, have loaned money to medium and large farmers to encourage range extension through the planting of faragua, with generally no convenants or control mechanisms with respect to where and how these land use changes were to be carried out.

Under current agriculture practices, the slash and burn farmer is the first to enter new areas. He fells and burns the forest to provide a site for his crops, frequently using a mixed cropping system for one or two cropping seasons, followed by an indefinite fallow period. The length of the fallow period (5-8 years) is dependent upon population pressures on the land. However, it has been observed that after the second or third cropping cycle (approximately 20 years), the land is frequently converted to pasture to be sold to large ranchers, and the small farmers migrates to new land to start the same process over again. This is done because the land is "worn out", "hard" and "weedy" (the land has passed the point of diminishing returns for crop production) but can still be used for pasture/cattle production for 20-40 years in a "downhill" extensive grazing system.

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Estimates have been made showing that up to one half of the topsoil is lost during the 20-year slash and burn cultivation period. When this happens, crop production is no longer economical. Estimates also show that during the first 20 years in pasture, up to half of the remaining topsoil is lost, during which time the stocking rate drops from one animal unit/ hectare (1.0 A.U./ha.) to 0.5 A.U./ha. The rancher must then compensate for this by increasing the size of his ranch, for an ever more extensive grazing system. Estimates also show that during the next 20 years of pasture, up to one half of the remaining top soil is again lost, and the stocking rate drops from 0.5 A.U./ha. to 0.25 A.U./ha., at which time the production per hectare about equals the labor cost for weed control. The rancher then resorts to burning the pasture every one to two years to maintain the pasture and also buys more pastureland to compensate for the ever decreased stocking rate per hectare. The burning, however, only further degrades the soil, until the land for all practical purposes is completely degraded.

The cause of soil deterioration is the following: faragua, by natural growth habit, is a bunch grass which grows in clumps and spreads by seeding rather than shooting out runners. Consequently, even during the rainy season, a faragua pasture is 40-50% bare ground and consists of a series of grass clumps circumnavigated by muddy cattle trails. Exposed soil surfaces occupy an extremely high percent of total surface areas in faragua pastures due to overgrazing and burning, trailing, compaction and the growth characteristics of faragua grass.

A5

Pasturing of land with slopes up to 70% is common in Soná, and occasionally cattle are seen on even steeper slopes. The combination of very steep slope, the dry season, burning and the frequent overgrazing sometimes causes complete destruction of the grass in small areas, usually the steepest spots. In some cases, the destruction of the grass is not complete, but the hillside becomes corrugated or honey-combed by closely-spaced cattle paths, with patches of grass in between. The cattle paths often collect runoff water, causing accelerated erosion or miniature gullies where the paths turn uphill or down.

The principal grazing animals in Soná are cattle, although tropical hair sheep are found in Los Santos, Herrera and Coclé. Since cattle are less agile than tropical hair sheep and less inclined to climb steep slopes, they have a tendency to first graze the flat lands and the moderate slopes, and graze the steeper slopes only when driven by hunger. Cattle also cause much more soil compaction than tropical hair sheep. The maximum slope gradient which cattle will graze under normal circumstances varies according to a number of factors, but is usually in the 45% slope category.

Given the characteristics of faragua pastures, however, the cattle tend to quickly overgraze available pastures with moderate slopes and are forced to graze more steeply sloped pastures to avoid starvation during the dry season. The consequent development of cattle trails and terraces, which lack vegetative cover and become unstable and subject to sliding and accelerated erosion, is a common phenomenon.

Since faragua grass withstands burning, a common practice of the traditional rancher is to burn off the grass and weeds every year or two

toward the end of the dry season. The burning removes the topgrowth of brush and consumes the stemmy low quality dry faragua grass. Burning leaves a substantial amount of the soil surface exposed directly to the force of the rain at the beginning of the wet season. Equally important, it destroys material which is needed to maintain the organic content of the relatively thin topsoils. Organic matter in the soil is one of several key factors in resisting soil erosion.

The effect of soil deterioration is the following: The colonization of Soná can be divided into three stages, first an extraction phase from 1940, when small farmer colonization began in earnest, until roughly 1960 when in-migration ceased[2/]. The second stage was an expulsion phase, when free land was no longer available, natural resources had been extensively depleted and the socio-economic system of the small farmers showed severe signs of stress. This culminated in an intensive expulsion of the small farmer towards other, newer frontiers of settlement. The third and final stage now beginning is an exhaustion phase, when low cattle stocking rates no longer equal labor costs for weed control. The rancher then resorts to burning, which further degrades the soil, until the land for all practical purposes is completely degraded.

The extractive phase was the most dynamic period of colonization as many small farmers moved into the region within a short period of time. In the case of Soná, the population doubled in twenty years

2/ After Stanley Heckadon Moreno. "Santeno Colonization of Tropical Forest Areas in Panama: a peasant economy and natural resources". In: Conference on the Development of Amazonia in Seven Countries, Center of Latin American Studies, University of Cambridge. Sept. 23-26, 1979.

from 10,975 inhabitants in 1940, to 19,372 in 1960 and finally reached 22,568 by 1970. The bulk of the increase occurred between 1940 and 1960 when free lands were still available and privately held ones could be purchased at low prices. By 1980, however, the population in the Soná district (excluding the Cabecera which includes the town of Soná) had dropped from 16,699 in 1970 to 15,883 in 1980. The table that follows (Table 1) shows the expansion of the ranching system in Soná between 1950 and 1980.

Table 1: Expansion of the Farming Sector in Soná, 1950-1980.

Year	No. of Farms with Cattle	Total No. of Cattle	Total Area with Pastures	Total Area with Forest (has.)
1950*	657	15,158	15,427	67,736
1960**	659	26,816	31,458	29,206
1970***	865	52,023	51,183	15,292
1980****	n.a.	125,623	n.a.	n.a.

Source : * Censos Nacionales de 1950, Primer Censo Agropecuario, Vol.II, "Características de las Explotaciones", Panamá, 1957

** Censos Nacionales de 1960, Segundo Censo Agropecuario, Vol. III. "Características de las Explotaciones", Panamá, 1965

*** Censos Nacionales de 1970, Tercer Censo Agropecuario, Vol. I, "Características de las Explotaciones", Panamá, 1973.

****MIDA (1981) por encuestas realizadas durante los años 1980 y 1981.

The second stage in the colonization was the expulsive phase marked by the privatization of all the formerly free available lands which took place in Soná in the early 1970's. Migration into the area ceased and there was a rapid shrinkage in the availability of natural resources, forest in particular. Primary forests quickly disappeared and secondary formations survived only in the most steep and isolated parts of the region. Forests were turned into pastures until the whole landscape became one enormous "potrero" or pasture of seeded grass. The pastureland can not be sustained and runs a "downhill" course. The destruction of the forest, however, poses more than ecological problems as it threatens the viability of the small farm and thus of the farm family. Without forests the farm family can not plant the key slash and burn grain crops (rice, corn, beans), that form the basis of the family diet. This crisis of the subsistence agricultural sector has deep repercussions on the whole small farm society of the frontier. The end result of all these processes is a massive expulsion of the small farmers from this recently colonized area to new more distant frontiers where the cycle is repeated anew (Caribbean coast and Darien).

Given the intensity of colonization and the vast scale on which the humid tropical forests are being transformed into extensive pastureland, Panamá will exhaust most of its forest reserves within the next two decades (Table 6). The tables that follow give a clear indication of the changing patterns of land tenure in the Soná district from the height of the extractive phase in 1950 to the early years of the expulsive phase in 1970.

Table 2 : Distribution of Farms According to Size in Soná, 1950.

Farm Size (has.)	No. of Farms	% of Total Farms	Surface Area (has.)	% of Total Farm Area
1.0-9.9	1,815	78.9%	6,351.9	28.1%
10.0-49.9	415	18.0%	7,576.3	33.5%
50.0-999.9	72	3.1%	8,667.4	38.4%
	2,302	100.0%	22,595.6	100.0%

Source: Censos Nacionales de 1950, Primer Censo Agropecuario, Vol. II, "Características de las Explotaciones", Panamá, 1957.

Table 3: Distribution of Farms According to Size in Soná, 1960

Farm Size (has.)	No. of Farms	% of Total Farms	Surface Area (has.)	% of Total Farm Area
1.0-9.9	1,618	58.4%	6,011	9.5%
10.0-49.9	833	30.1%	17,675	27.8%
50.0-999.9	318	11.5%	39.821	62.7%
	2,769	100.0%	63,507	100.0%

Source : Censos Nacionales de 1960, Segundo Censo Agropecuario, Vol. III, "Características de las Explotaciones", p.98, Panamá, 1965.

Table 4: Distribution of Farms According to Size in Soná, 1970.

Farm Size (has.)	No.of Farms	% of Total Farms	Surface Area (has.)	% of Total Farm Area
1.0 -9.9	1,291	45.1%	3,732	4.5%
10.0-49.9	1,084	37.9%	25,791	31.4%
50.0-999.9	486	17.0%	52,544	64.1%
	2,861	100.0%	82,057	100.0%

Source : Censos Nacionales de 1970, tercer Censo Agropecuario, Vol. I. "Características de las Explotaciones", Panamá, 1973.

The last stage is the exhaustion phase when cattle stocking rates no longer equal labor costs for weed control. The rancher then resorts to burning which further degrades the soil until the land for all practical purposes is completely degraded. This process can happen in a time span of from 60 to 80 years. The Quebrada de Oro area of the Soná district is located on the old Interamerican highway just outside of the town. This area is one of the oldest cattle areas in the district and has the least amount of forest land(5.1%)of any area in the districtThe table that follows (Table 5) gives a clear indication that the Quebrada de Oro area is now showing early signs of this exhaustion phase.

Table 5 : Human and Cattle Population in Soná and Quebrada de Oro, 1950-1960-1970.

Year	Soná		Quebrada de Oro	
	Cattle No.	People No.	Cattle No.	People No.
1950	15,158	19,372	689	1,205
1960	26,816	22,568	2,008	1,046
1970	52,026	23,583	2,052	913

Source : Dirección de Estadística y Censo, Panamá.

A Plea for Sound Land Use Mangement

The potential use to be made of any given parcel of land must be a function of land slope and existing erosion, soil nutrient fertility and toxicity, soil depth and texture, structure of soil parent material, and the micro-climate (temperature and precipitation, including seasonal distribution). These should all be considered. However, it is possible to use one factor, i.e. slope as the primary determinant of potential land use. Also, current land use in the Soná district (slash and burn agriculture and extensive grazing) may not be optimal, but is an element of an existing socio-economic/land tenure system which is difficult to change. The plan is to improve the economic profitability, ecological stability, and sociological viability of the present production systems through improved land use management.

Land use management studies indicate that the most appropriate response to the current colonization and deforestation taking place in Soná is an integrated land use management program which would involve the use of forest-grazing technologies within existing production systems. The most important integrated land use management system for the Soná district is forest-grazing (pasture renovation with reforestation) involving improved grass/legume pasture (i.e. Brachiaria humidicola/Desmodium ovalifolium) with reforestation (Terminalia ivorensis or Pinus caribeae depending on slope) and cattle or tropical hair sheep (also depending on slope). The three types of integrated land use management systems are detailed in TABLE 7.

In recent years improved grass/legume pastures have been introduced into Panamá. Brachiaria humidicola and Desmodium ovalifolium are the most promising for the Soná district as they are stoloniferous and spread by rooting at the joints or nodes. It should also be noted that these forage/forest species have

been selected for their tolerance and ability to produce acceptable yields under the extremely low fertility oxisols and ultisols that predominate in the Soná district.

The combination of Brachiaria humidicola/Desmodium ovalifolium with Terminalia ivorenses /Pinus caribeae in a forest-grazing system with cattle/ tropical hair sheep has great potential for solving the severe economic, ecological and sociological problems of natural resource degradation and human resource impoverishment associated with the traditional shifting cultivation-rural poor/cattle complex. The general approach represents an innovative effort (development alternative) to address the complex problems associate with the inappropriate use of renewable natural resources by traditional farmers and ranchers in the humid tropical forest life zones.

The specific approach in the design of activities has been to develop technical courses of action which fit as well as possible with existing socio-cultural patterns. An example of this is that traditional slash and burn agriculturalists will be encouraged (via extensive field demonstrations) to plant Terminalia ivorenses and Pinus caribeae trees in their rice and corn fields. After the rice and corn harvest, Brachiaria humidicola and Desmodium ovalifolium pastureswill be planted between the trees. Three benefits will result. First, there will be improved income from small farm pastures by increasing production per hectare and by reducing weed control costs. Secondly, there will be an additional source of income from growing and then selling mature timber trees. Thirdly, there will be reduced erosion and soil compaction, and improved soil nitrogen and organic matter, and improved nutrient recycling, soil texture and aeration.

LIVESTOCK/FORESTRY PROGRAMS

The three types of on-site activities to be initiated by the project will include the following:

- Livestock credit for small farmers (BDA);
- Improved extension/mass technology transfer (MIDA); and
- Pasture renovation/reforestation demonstrations (MIDA).

Livestock Credit for Small Farmers

Small farmer livestock loans will be made for both cattle and swine. Cattle credit will be given to small farmers that have more than 10 has. but less than 10 head of cattle. The number of cattle loans will be projected to cover approximately 50% of farmers who fall in this category. There will be the following types of loan"

Improved dual purpose production

Credit will be given for the purchase of up to 10 breeding age, cross-bred heifers, one Brown Swiss bull, and wire fencing for up to 10 has. of pasture. The maximum amount of each loan will be $8,269. 50 loans will be given. Estimated benefits per family range from $484 in year five to $4,098 in year ten.

Improved cow-calf production

Credit will be given for the purchase of up to 10 breeding age cross-bred heifers, one Cebu bull, and wire fencing for up to 10 has. of pasture. The maximum amount of each loan will be $4,340. 350 loans will be given. Estimated benefits per family range from $245 in year five to $1,561 in year ten.

Improved grass fattening production

Credit will be given for the purchase of up to 10 feeder calves and wire fencing for up to 10 has. of pasture. The maximum amount of each loan will be $2,456. 120 loans will be given. Estimated benefits range from $400 in year six to $1,038 in year ten.

Small Farmer Swine Credit

Swine improvement loans will be given to 937 small farmers who presently have less than 10 has. for the purchase of an improved boar and enough wire fencing for up to two hectares of grazing lots for improved traditional open range management. The maximum amount of each loan will be $320. This will cover approximately 100% of small farmers who fall in this category and will be closely linked with local adult education programs. Estimated benefits per family range from $94 in year five to $131 in year ten.

Improved Extension/Mass Technology Transfer

Improved livestock management practices such as parasite control, black leg vaccination, and phosphorus/mineral supplementation will be widely promoted via the preparation of small farmer training materials for use in village adult education centers, radio education, field days, etc.

These practices greatly improve livestock birth rates, lower mortality rates, and increase growth rates. These are the three most important improved management practices that should be promoted in the area. The practices can show at least a 4:1 investment return in less than one year.

Pasture Renovation/Reforestation Demonstrations

The integrated land use management demonstrations will be a pilot program. The program will consist principally of the establishment of 300 demonstration pasture renovation/reforestation parcels of one hectare each on farms in the Sonâ District. It will also include an extension component which will provide a substantial amount of technical assistance to the small farmers. Finally, because a choice of technologies exists for the establishment of forest-grazing systems, field tests will be conducted to determine which is the least cost method for the conditions of the Sonâ District. RENARE and IDIAP will cooperate in this effort. Specifically, this component will include the following activities:

- 100 Demonstrations on 8 - 20% slopes. Twenty demonstrations of one hectare, each year, for five years involving improved grass/legume pastures (Brachiaria humidicola/Desmodium ovalifolium) with reforestation (Terminalia ivorenses). Total cost $100,000. These costs are based on the experience generated by the RENARE Watershed Management Project.

- 100 Demonstrations on 20-45% slopes. Twenty demonstrations of one hectare, each year, for five years involving improved grass/legume pastures (Brachiaria humidicola/Desmodium ovalifolium) with reforestation (Pinus caribeae). Total cost $100,000.

- 100 demonstration on 45%+ slopes. Twenty demonstrations of one hectare, each year, for five years involving improved grass/legume pastures (Brachiaria humidicola/Desmodium ovalifolium) with reforestation (Pinus caribeae) and cattle replaced with tropical hair sheep. Total cost $100,000.

- Five pasture and forestry nurseries. Pasture nurseries are required in order for farmers to make the change over to the improved grass and legume, Brachiaria humidicola and Desmodium ovalifolium, respectively. These improved species are most readily propagated by transplanting stems rather than by use of seed. This requires that pasture nurseries be available to provide the necessary planting material. Therefore, subproject nurseries should be established at each location where pasture planting will be required for demonstrations. Initially this will consist of bringing in planting material from the IDIAP Research Station in Gualaca, Chiriquí and establishing nurseries of about five to eight hectares. Farmers and farmer groups should be encouraged to establish local farm nurseries by obtaining plant material from these sub-project nurseries to be used as sources of planting material on the farm. Similar nurseries should be established for Terminalia ivorenses and Pinus caribeae. These species are availabe through the RENARE Research Station in Alajuela, Panamá. Total cost $100,000.

- Tropical hair sheep multiplication center. Since tropical hair sheep are uniquely suited to forest-grazing systems on slopes of more than 45%, a multiplication center of 200 tropical hair sheep will be established within the project. It should also be noted that tropical hair sheep do not cause erosion or soil compaction on slopes of more than 45%. They are also much more economically feasible for small farm production systems. Total cost $100,000.

TECHNICAL FEASIBILITY OF LIVESTOCK/FORESTRY PROGRAM

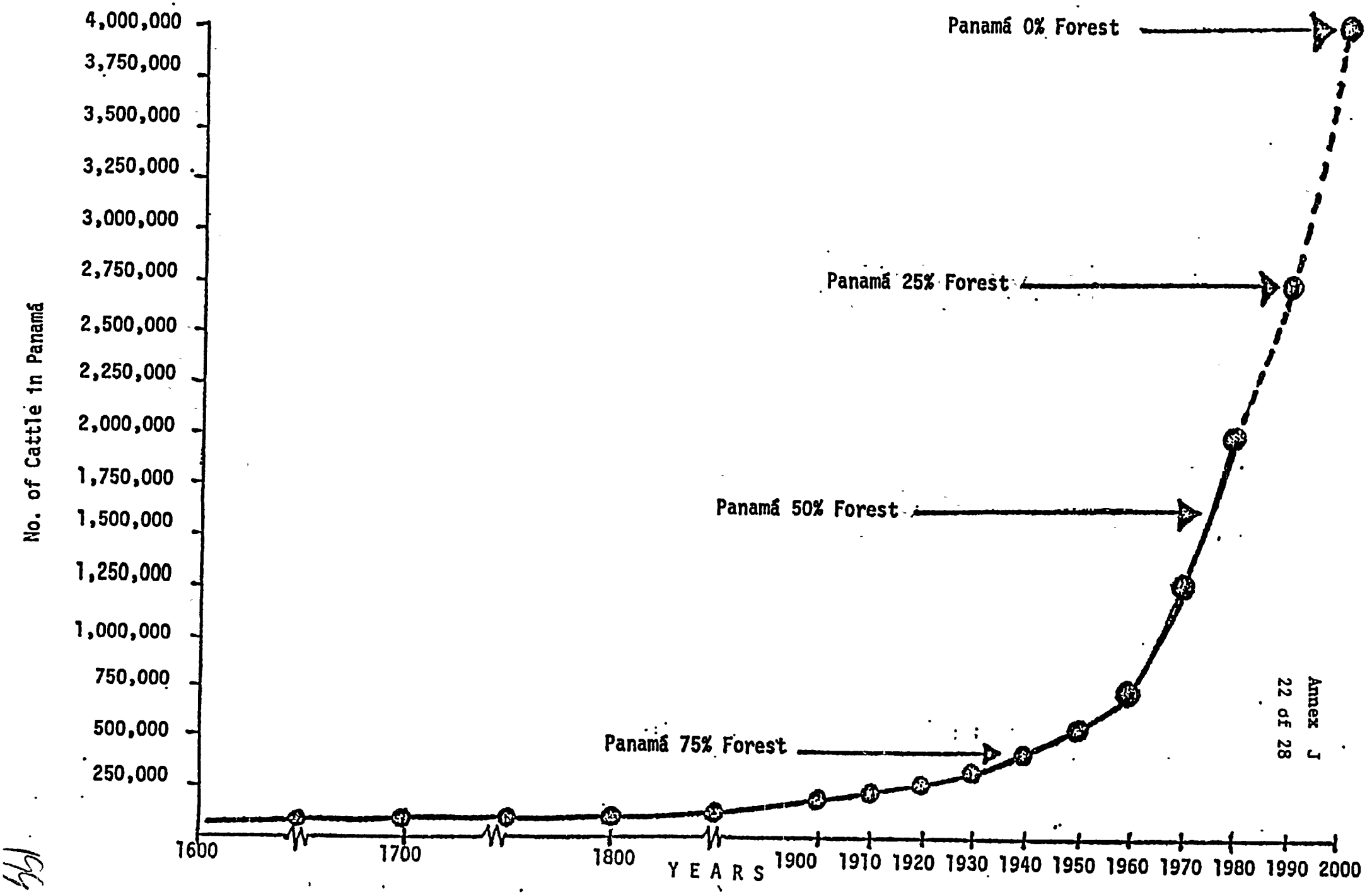
The design of all livestock/forestry components is based on the application of technologies appropriate to the human, economic and natural environment in the district of Sona. Livestock/forestry technology, while based largely on available research data and field experience under local or similar conditions, is designed for relatively short-term absorption by the target population. The general approach represents an innovative effort to address the complex problems associated with the inappropriate use of renewable natural resources by traditional small farmers in the humid tropical forest life zones. It is a program which has a high potential for replication in Panama as well as in other tropical environments.

The small farm livestock credit component will help 937 small farmers to at least double their production in the case of swine improvement loans and, in the case of cattle improvement loans, help 520 small and medium farmers to increase their annual cash income in varying amounts. The improved extension/mass technology transfer component will help raise calving rates from 50 to 70 %, lower mortality rates from 10 to 5%, reduce fattening time from four to three years, and increase milk production from 2.5 to 4.0 ltr./day/cow.

The combination of Brachiaria humidicola/Desmodium ovalifolium with Terminalia ivorenses/Pinus caribeae in a forest-grazing system with cattle/tropical hair sheep has great potential to solve the severe economic, ecological, and sociological problems of natural resource degradation and human resource impoverishment associated with the traditional shifting cultivation-rural poor/cattle complex.

The specific approach in the design of activities has been to develop technical courses for action which fit as well as possible with existing socio-cultural patterns. An example of this is that traditional hillside slash and burn agriculturalists will be encouraged (via extensive field demonstrations) to plant Terminalia ivorenses and Pinus caribeae trees in their rice and corn fields. After rice and corn harvest, Brachiaria humidicola and Desmodium ovalifolium pastures will be planted between the trees. Three benefits will result. First, there will be improved income from small farm pastures by increasing production per hectare and by reducing weed control costs . Secondly, there will be a new source of income from growing and then selling mature timber trees. Thirdly, there will be reduced erosion and soil compaction, increased soil nitrogen and organic matter, and improved nutrient recycling, soil texture and aeration.

TABLE 6: FOREST TO PASTURE : PANAMA.

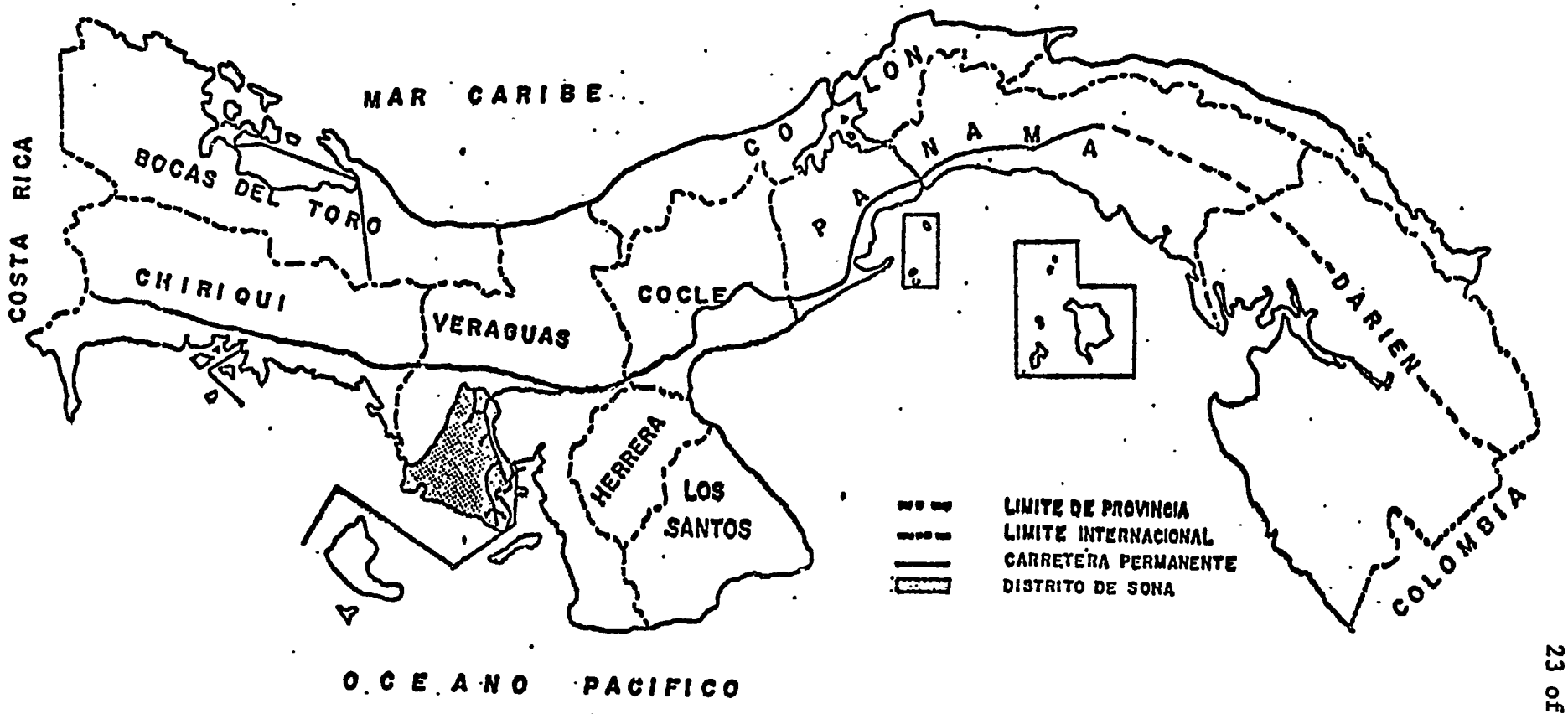


SOURCE : After Heckadon (1980)

DISTRITO DE SONA

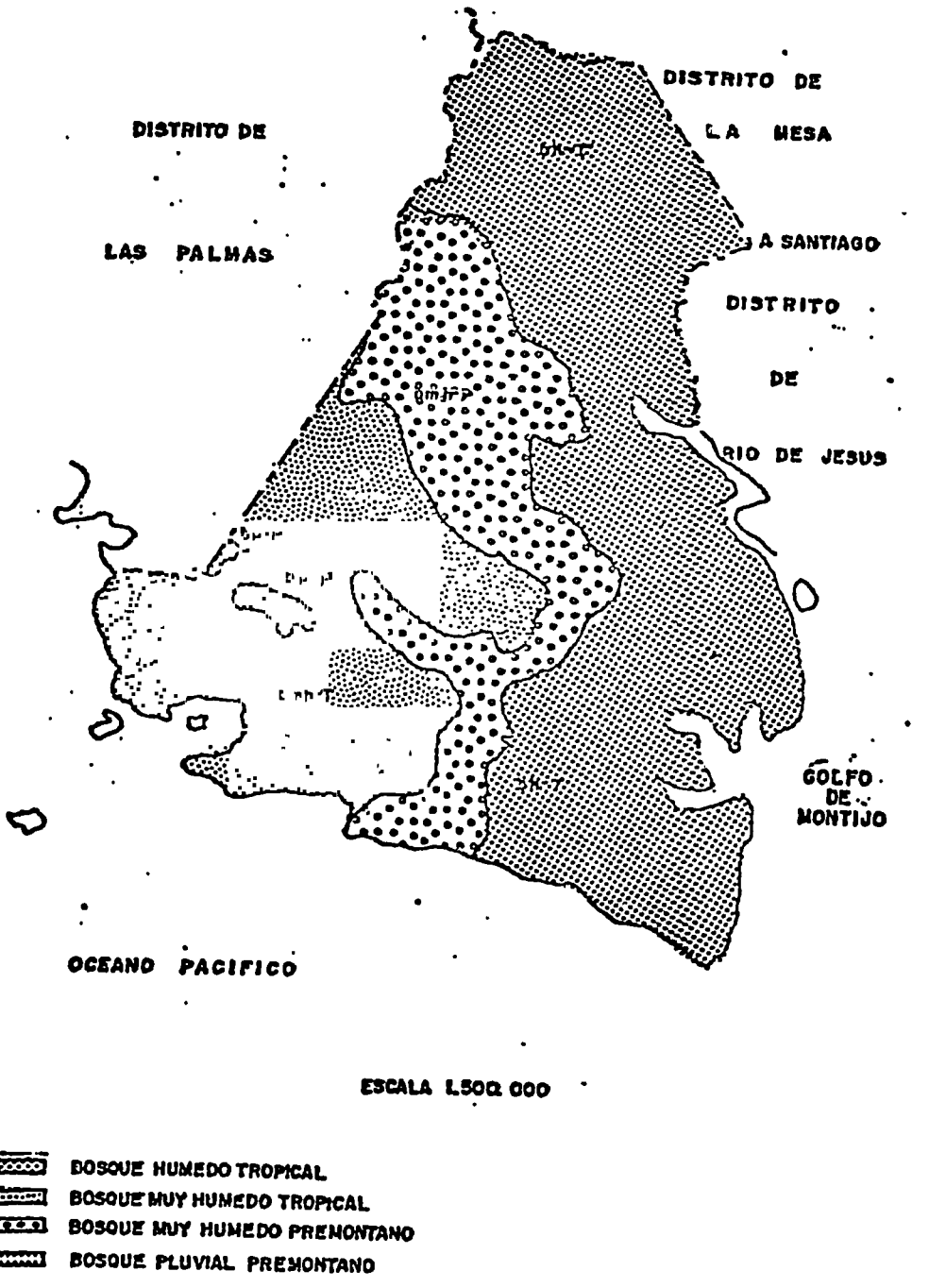
LOCALIZACION NACIONAL

MAP 1



DISTRITO DE SONA
ECOLOGICO

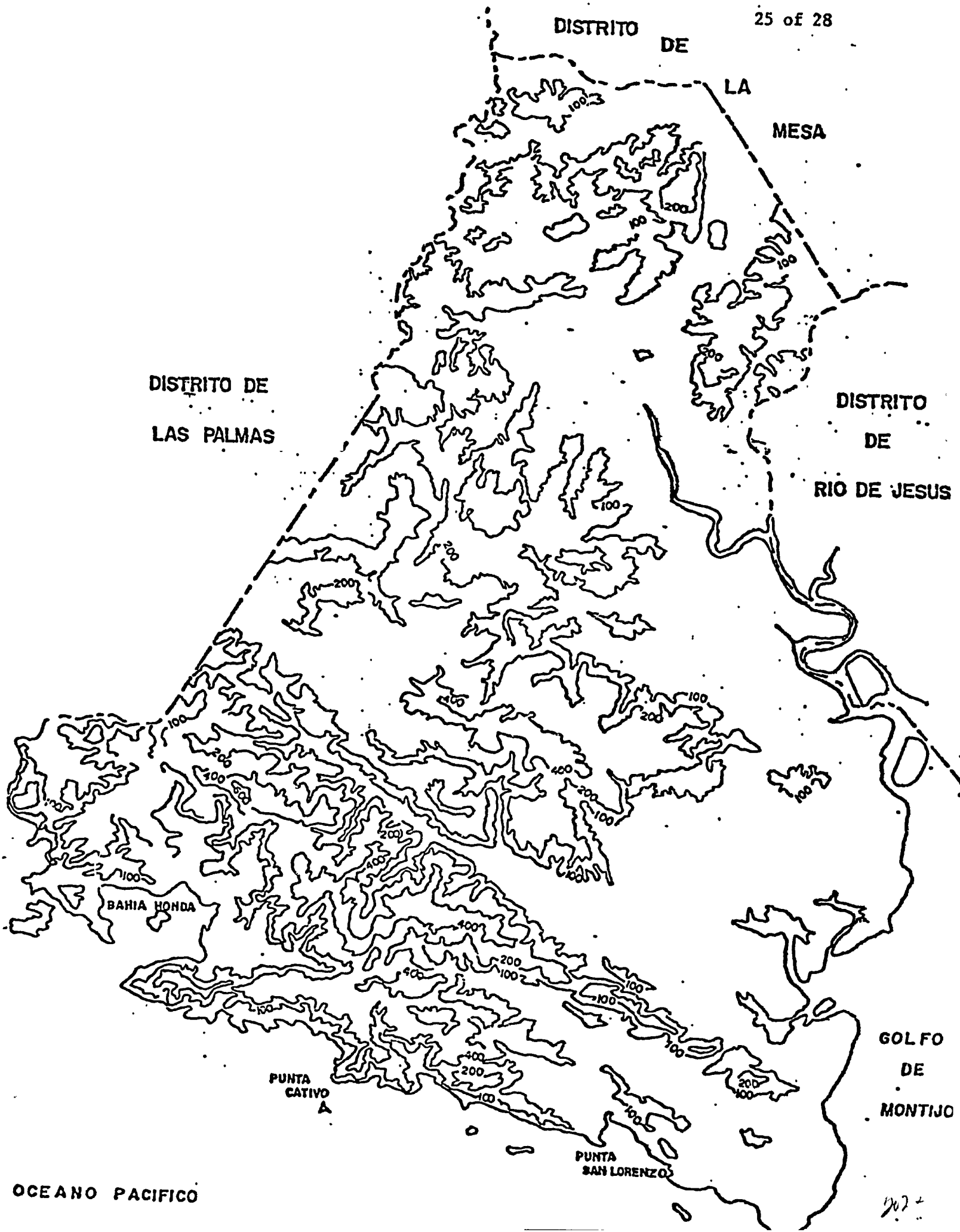
MAP 2



OCEANO PACIFICO

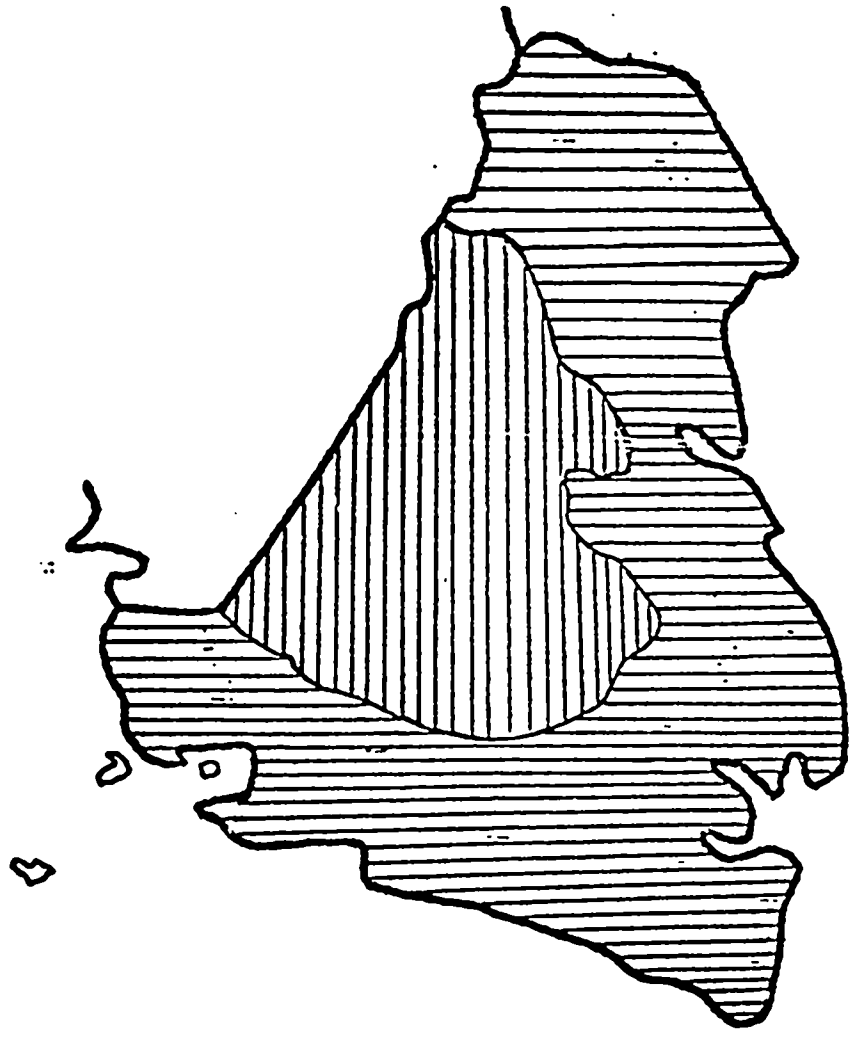
TOPOGRAFIA

MAP 3



PRECIPITATION

MAP 4

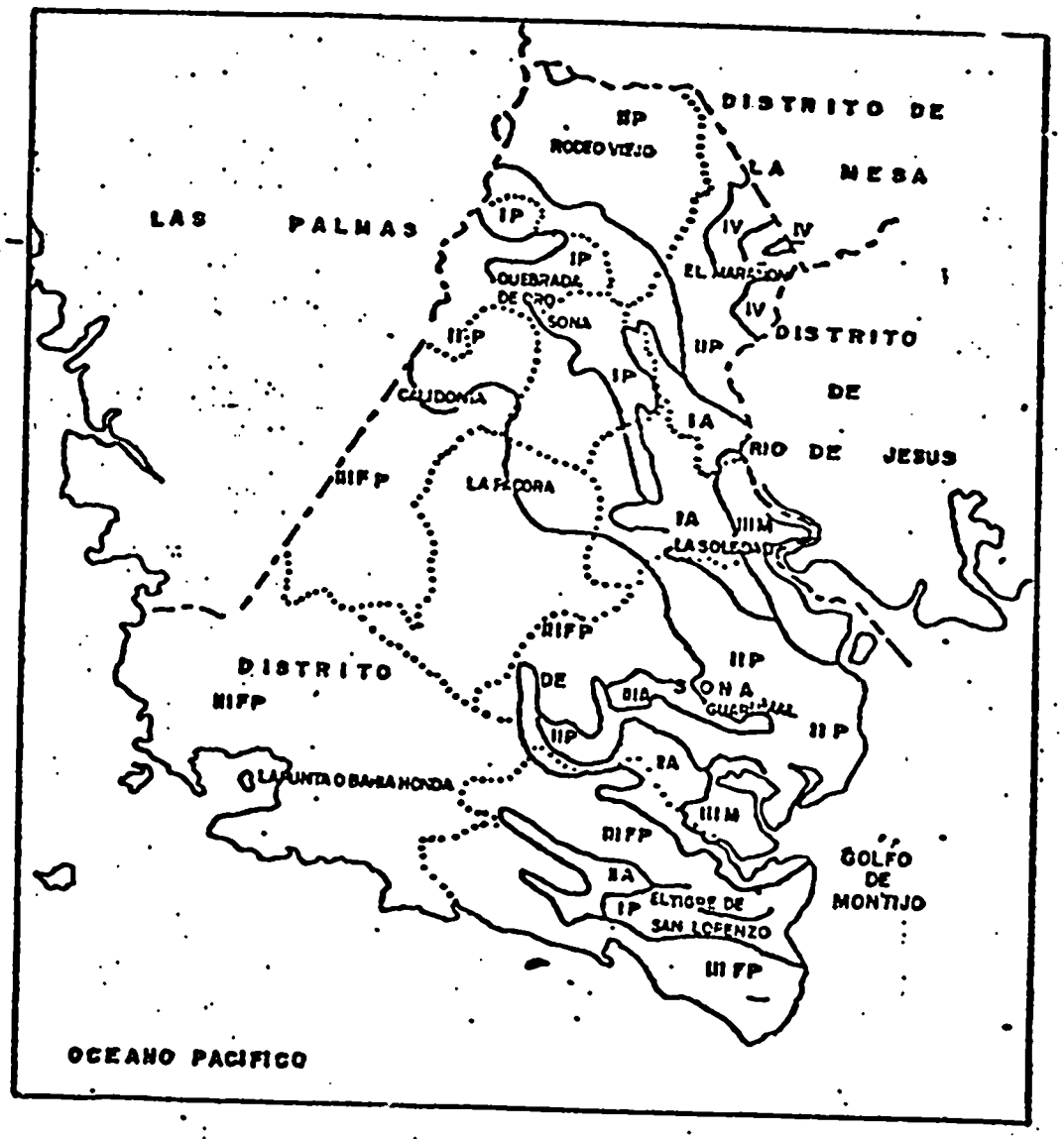


2500 - 3000 mm

3000 - 3500 mm

DISTRITO DE SONA
USO POTENCIAL DEL SUELO

MAP 5



ESCALA 1:500.000

IA IP	USO INTENSIVO
IIA IIP	USO EXTENSIVO
IV.	USO MUY EXTENSIVO
III.	USO FORESTAL
IIIFp	USO DE BAJO RENDIMIENTO AGROPECUARIO
IIIEob	POSIBLE EXPLOTACION COMERCIAL DE BOSQUES DE EXISTIR MANEJOS
IIIFe	AREA DEDICADA A LA REGENERACION NATURAL

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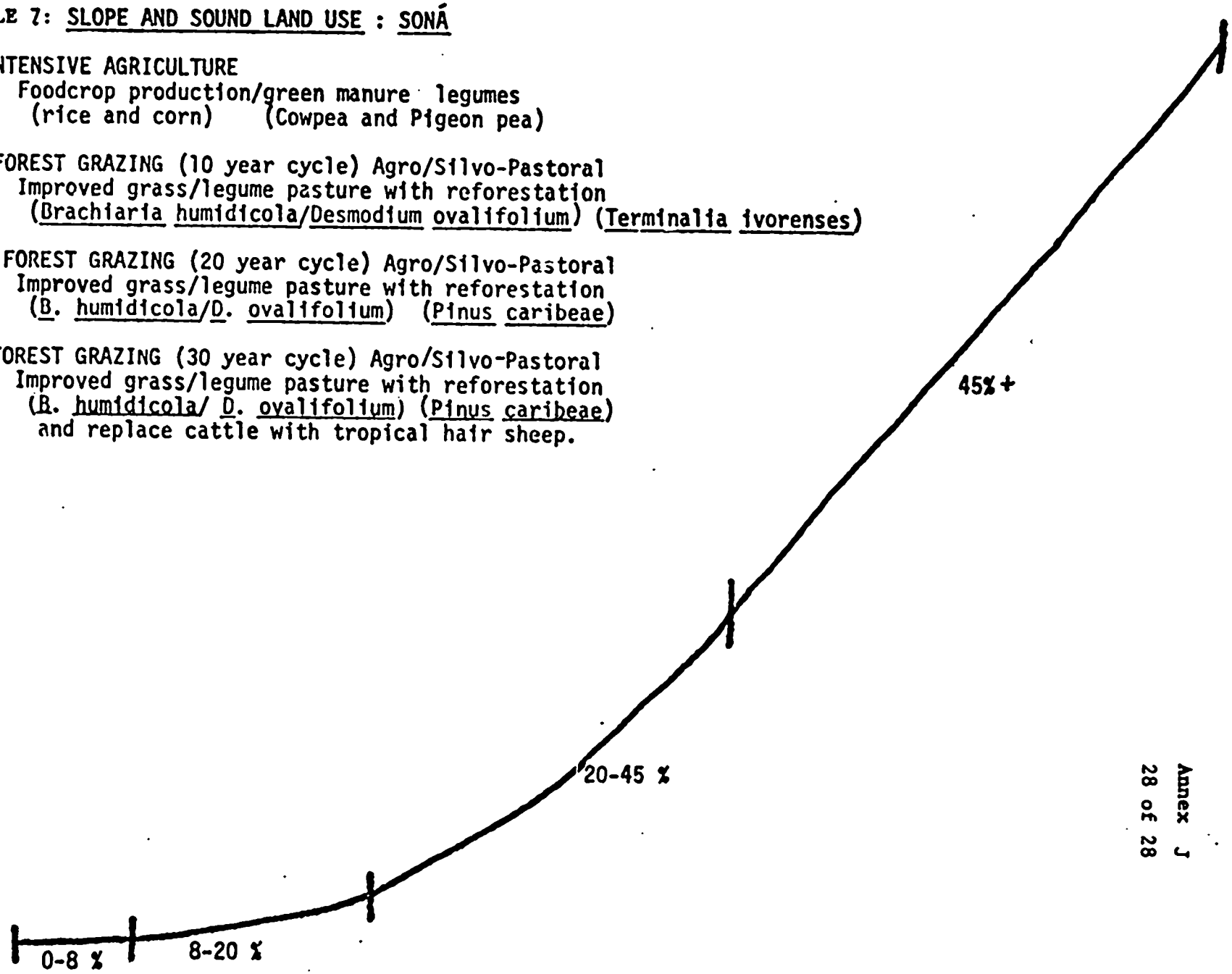
TABLE 7: SLOPE AND SOUND LAND USE : SONÁ

0-8% INTENSIVE AGRICULTURE
Foodcrop production/green manure legumes
(rice and corn) (Cowpea and Pigeon pea)

8-20% FOREST GRAZING (10 year cycle) Agro/Silvo-Pastoral
Improved grass/legume pasture with reforestation
(Brachiaria humidicola/Desmodium ovalifolium) (Terminalia ivorenses)

20-45% FOREST GRAZING (20 year cycle) Agro/Silvo-Pastoral
Improved grass/legume pasture with reforestation
(B. humidicola/D. ovalifolium) (Pinus caribeae)

45% + FOREST GRAZING (30 year cycle) Agro/Silvo-Pastoral
Improved grass/legume pasture with reforestation
(B. humidicola/ D. ovalifolium) (Pinus caribeae)
and replace cattle with tropical hair sheep.



TECHNICAL ANALYSIS: RURAL ROADS

I. Introducción

II. Caminos Rurales (Presentación)

III. Proceso de Selección

IV. Metodología

Relación Beneficio/Costo

V. Evaluación

Muestra Representativa

VI. Calendario de Cultivos

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CAMINOS RURALES

COMENTARIOS GENERALES.

La red vial es de gran importancia para el desarrollo socioeconómico de cualquier región, especialmente en las que presentan posibilidades de desarrollo agroindustrial como medio para mejorar las condiciones de vida de la población que reside en el área de influencia de la red. El distrito de Soná, cuenta actualmente, con aproximadamente 287.4 Kms, de los cuales 74.5 Kms son de asfalto lo que representa un 25.9 %, 83 Kms. son revestidos (28.95) 117 Kms de tierra transitable en toda época (5.9%) y 112.9 Kms de caminos de verano (39.3%). Ver cuadro Nº 1.

El gobierno a través de las diferentes administraciones han venido desarrollando programas de construcción y mantenimiento de carreteras y caminos como, por ejemplo, la efectuada en 1964 de la carretera central de Santiago - Soná y la construída en 1968 que va de Soná - La Soledad - Guarumal - Tigre de San Lorenzo. Cabe destacar que anteriormente la vía Santiago - Soná era utilizada para comunicarse con la provincia de Chiriquí. Al construírse la carretera Panamericana el tránsito por dicha vía disminuyó notablemente.

La situación de la red vial del distrito de Soná es la siguiente:

Camino de asfalto (80.8 Kms.)

i. Se requiere la reconstrucción parcial de la carretera Santiago - Soná (46.4 Kms) y revisión total de los puentes; el MOP está estudiando alternativas para la reconstrucción de éstas. En lo que se refiere a la carretera Soná - Guarumal - Tigre de San Lorenzo amerita la colocación de sello para su conservación.

Caminos revestidos (73.5 Kms):

Estos caminos necesitan ser rehabilitados (Cuneteo, riegue de selecto conformación y limpieza de tuberías).

Caminos de tierra transitables en toda época (17 Kms):

Requieren conformación de cunetas y calzada.

Camino de verano: (112.9 Kms):

Como su nombre lo indica estos caminos solo son transitables en verano por lo que requiere se realicen trabajos de corte en la estación seca. Sería recomendable que los mismos se habilitaran para permitir el acceso durante todo el año, ya que la mayoría comunica con áreas de producción agropecuarias.

A pesar de los esfuerzos realizados por el Gobierno Nacional, aún existen áreas totalmente aisladas debido a la falta de vías de comunicación adecuadas como lo son la Bahía Honda, Rodeo Viejo, Pixvaé y gran parte de los corregimientos de Cativé y Calidonia. La construcción o reconstrucción de estos caminos aumentaría la frontera agrícola, debido a que se ha comprobado que el mayor obstáculo que confrontan los pequeños y medianos productores de éstas áreas es la carencia de caminos transitables durante todo el año que les permitan la obtención de los insumos necesarios para mantener una producción aceptable y a la vez les garantice el acceso a los mercados de la zona para obtener precios justos que se reflejarán en la rentabilidad de las fincas, trayendo como consecuencia la incorporación de nuevas áreas a la producción y el aumento en la productividad (rendimiento/has así como el mejoramiento socioeconómico de los moradores de estas regiones, que redundaría en beneficios no sólo del distrito de Soná sino también de la Provincia de Veraguas.

3. Caminos de tierra transitables en toda época:

(Carrizal - Farfán) Aguas Blancas	2.5
(Santiago - Soná) El Cajón - Boca del Monte	5.0
Carrizal - Farfán	8.0
(Carrizal - Farfán) Los Amarillos	1.5
Total transitable en toda época	17.0

4. Caminos de Verano:

(Soná - Guarumal) Pueblo Nuevo - La Feria	6.0
Soná - Cativé - Nanzal	13.0
Santiago - Soná - El Limón - Circunvalación	5.0
Trinchera - Corozal - Borracherón	6.5
(Soná - Guarumal) La Soledad	0.7
Guarumal - Tigre de San Lorenzo - Zancudo - Dos Bocas	6.7
Corozal - Senegal - La Zumbona	3.0
Rodeo Viejo - Boca del Monte	3.0
Rodeo Viejo - Llano Grande	3.0
Rodeo Viejo - Paraguay	5.0
(Soná - Zapotillo) El Espino del Cobre	4.0
(Soná - Zapotillo) Tobálico - El Espino	7.0
Calidonia - Platanares - Pixvaé - Bahía Honda	40.0
Soná - Rodeo Viejo	10.0
Total de verano	112.9
GRAN TOTAL	287.4

Personal disponible:

La división dispone de 6 cuadrillas para el mantenimiento, con un total de 50 empleados para realizar las funciones asignadas.

Equipo:

El equipo existente en la división es el siguiente:

CANTIDAD	EQUIPO
1	Caminones Volquete
1	Apisonadora
1	Camioneta
1	Aplanadora

Mecanismos de funcionamiento:

Para el mantenimiento que realiza la división del MOP en Soná, se cuenta con el método siguiente:

- El superintendente sección Soná, inspecciona los caminos.
- Recibe informe de los Honorables Representantes sobre la situación de los caminos.
- De acuerdo a las prioridades y a la disponibilidad de equipo se programan por bimestre los trabajos a realizar.
- Con las necesidades básicas se solicita el apoyo de la Dirección Provincial.

Necesidades:

Las necesidades básicas para dentro del sector transporte son las siguientes:

- Mantenimiento de la red vial existente.:
- Caminos de asfalto 74.5 Kms
- Caminos revestidos 83.0 Kms
- Caminos de tierra transitables toda época del año 17.0 Kms.

Para integrar todo el distrito a red vial del país, se necesita la construcción de 90 Kms. de caminos.

Para el mantenimiento de la red vial existente es preciso aumentar el equipo.

Para fortalecer la división del MOP se requiere de mas personal técnico, administrativo y de campo.

OBJETIVOS Y METAS DE LAS ACTIVIDADES

Objetivos:

Con la implementación del proyecto se mejorará sustancialmente la red vial del Distrito de Soná, posibilitando un fácil y adecuado acceso a las áreas de producción en todas las estaciones del año, lo que dará como resultado:

- Ampliación de la frontera agropecuaria.
- Incorporación de un gran número de habitantes a los centros de servicios.
- Facilitar la prestación de servicios socioeconómicos.

Metas:

- Rehabilitación de 40 Kms. de caminos de producción.
- Construcción de 67 Kms. de caminos. Se recomienda como primera prioridad la construcción del camino a Bahía Honda y el de Soná - Rodeo Viejo.
- Fortalecimiento de la sección del Ministerio de Obras Públicas en Soná a través de personal, equipo y acondicionamiento del edificio que alberga la sección y permitirá el mantenimiento de la red vial del distrito.

DESCRIPCION DE LA ACTIVIDAD:

La rehabilitación y construcción de los caminos antes señalados se desarrollará de la siguiente manera:

- El MOP jugará un papel esencial en la rehabilitación de caminos con el apoyo efectivo de la comunidad, cabe realcar que el MOP

tiene su sección en el Distrito de Soná.

- La construcción de caminos se someterá a licitación pública y se le otorgará su construcción a la empresa que presente la mejor propuesta, basada en los costos y en el cumplimiento de las especificaciones requeridas.

Debido a que los caminos van a ser de producción se espera una estrecha coordinación entre las instituciones gubernamentales responsables de la red vial y el sector agropecuario, MOP y MIDA respectivamente más aún cuando habrá capacidad ejecutiva y decisoria en el Distrito.

CRITERIOS DE SELECCION:

Para identificar las necesidades de construcción, rehabilitación y mantenimiento de caminos se utilizarán criterios de selección empleados en el programa MOP - AID, préstamo 525-T-048, Caminos Rurales de Acceso; con modificaciones que permitan a las áreas beneficiadas desarrollar actividades mas amplias para cumplir con el concepto del "Desarrollo Rural Integrado"; se establecen los siguientes criterios:

Construcción:

- Que el área de influencia del camino tenga un potencial productivo que permita su rentabilidad.
- Que el área de influencia permita la asistencia social.
- Que permita el uso de recursos naturales en el área de influencia.
- Que no impacte en forma negativa el uso de la tierra, la calidad del agua, aire, recursos naturales, etc.

- Que sea una prioridad de las comunidades beneficiadas.
- Que los beneficiarios sean propietarios y radiquen dentro del área de influencia.
- Que permita la integración a la red existente (a un camino transitable durante todo el año).
- Que las comunidades se comprometan formalmente al mantenimiento preventivo del camino.

Rehabilitación:

- Los caminos a rehabilitación serán revestidos de tosca de modo que sean transitables en todas las épocas del año. Los criterios para la rehabilitación serán:
- Que permitan aumentar la producción y la productividad del área justificando su rentabilidad.
- Que permitan el uso pleno de los recursos naturales del área.
- Que contribuyan al beneficio social de las comunidades.
- Que las comunidades se comprometan a su mantenimiento preventivo.

Mantenimiento:

Los criterios que guiarán al programa de mantenimiento serán los siguientes:

- Que las condiciones del camino así lo exijan.
- Que pueda hacerse un uso racional del equipo y del recurso humano.
- Que beneficie un área de producción significativa.
- Que las comunidades se comprometan al mantenimiento preventivo del camino.

PROPUESTA DE CAMINOS PARA CONSTRUCCION, REHABILITACION, Y MANTENIMIENTO:

Construcción:

Camino: Río Grande - Mamey - Pixvae 35 Kms

Necesidades: Actualmente las comunidades del corregimiento de Bahía Honda, no están incorporadas al desarrollo socioeconómico del Distrito de Soná, por las limitaciones en la comunicación vial. Todas estas comunidades para su comunicación lo hacen por vía marítima, en forma inadecuada y costosa.

Comunidades Beneficiadas: Las comunidades que se beneficiarán con la construcción de este camino son: Río Grande, El Bongo, Jaén, Jaencito, Ballena, Honduras, Managua, Miguel, El Mamey, Salmonete, Bahía Honda, y Pixvae. La población total beneficiada directa e indirectamente es de más de 5,000 habitantes.

Superficie de los Corregimientos Beneficiados: La superficie que permite beneficiar el camino es de 317 Kms^2.

Tipo del camino a construir: El camino que se pretende construir es de tipo revestido con material selecto. Para su construcción se utilizará material selecto del área y mano de obra intensiva de la comunidad.

Potencial del camino: El camino permite desarrollar el potencial siguiente:

- Puerto de Bahía Honda: Este es el puerto natural más profundo del Océano Pacífico.
- Recurso tierra: Ampliar la frontera de producción agropecuaria, haciendo énfasis en la productividad.
- Pesca: Permite la explotación de la pesca artesanal o industrial.
- Turismo: Promover el turismo interno, por las condiciones naturales del área.
- Mina de Manganeso: Iniciar los estudios de factibilidad pertinente para demostrar las posibilidades de explotación de la mina.
- Mina de Cal: El Proyecto de desarrollo rural integrado del sur de Veraguas, plantea la explotación de la Mina de Cal, para apoyar la producción agropecuaria del Distrito.
- Manejo de Forestación: Permite el manejo adecuado de la cuenca hidrográfica del Río Grande y las posibilidades de iniciar un proyecto de reforestación.
- Uso de Recursos Energéticos: La construcción de una Minihidroeléctrica en la quebrada San Juanito.
- Medio Ambiente: El camino no afecta el medio ambiente del área, por el contrario facilita su mejoramiento.
- Impacto Espacial: Este camino permite iniciar los procesos de nuclearización en el corregimiento de Bahía Honda con la formación del Subcentro de Asistencia Agropecuaria en Salmonete, unidos a otros servicios sociales. Además propiciaría la dotación de los servicios sociales a gran parte de la población residente en el área de influencia.
- Producción del área: Para impulsar la producción del área se pre

tende extender los beneficios de la asistencia técnica y crediticia a más del 50% de las 360 fincas existentes en el corregimiento de Bahía Honda que son miembros del grupo objetico. Los principales rubros de producción son los siguientes: ganadería, coco, granos básicos, pesca y otros.

Posibilidades del Proyecto: Dado la longitud del camino se recomienda que su construcción se realice en dos etapas:

Río Grande - Mamey - Salmonete (23 Kms)

Mamey - Pixvae (12 Kms)

Para los mismos debe contarse con los respectivos estudios de factibilidad económica, técnica, social y ecológica, se sugiere que la primera etapa se inicie en el verano de 1982.

Camino Soná - Rodeo Viejo (14 Kms):

Necesidades: El corregimiento de Rodeo Viejo actualmente no está integrado a la red vial del distrito de Soná, dificultando el fácil acceso de las comunidades a los servicios.

Comunidades Beneficiadas: Las comunidades que se beneficiarán con la construcción de este camino son: El Mamey, Bajo del Tobálico, Bajo del Cobre, Lírique, La Gallota, Los Algarrobos, La Conga, El Santo, Manzanillo, El Nay y Rodeo Viejo. La población beneficiada directa e indirectamente con el camino es de 2,500 habitantes.

Superficie del corregimiento beneficiado: La superficie del corre-

gimiento de Rodeo Viejo es de 117.7 Kms^2.

Tipo del camino a construir: El camino será de tipo revestido con material selecto del área y mano de obra intensiva de la comunidad.

Potencial del camino:

Recurso Tierra: Ampliar la frontera agropecuaria del distrito y permitirá desarrollar fincas de ganadería de doble propósito.

Medio Ambiente: El camino no afecta el medio ambiente del área.

Impacto Espacial: Este camino permitirá iniciar los procesos de nuclearización e integración de las 76 comunidades, con la creación de un puesto de asistencia agropecuaria unido a otros servicios sociales en Rodeo Viejo.

Producción del área: Para impulsar la producción del área se pretende extender los beneficios de la asistencia técnica y crediticia del 70% de las 463 fincas que existen en el área. El principal rubro de producción es la ganadería tanto de leche como de carne.

Posibilidades del Proyecto: Se recomienda hacer un estudio sobre la construcción del puente sobre el Río Cobre o la factibilidad de utilizar una bacha. Se programa la construcción del camino en el verano de 1982.

Otros Caminos a Construir:

Se recomienda estudiar la construcción de los siguientes caminos:

Primera Etapa:

La Soledad - Palma alta - Alto de San Juanito (8.5 Kms)

Cativé - Bongo (13.0 Kms)

Dos Bocas - La Patriota (6.0 Kms)

Segunda Etapa:

La Patriota - Platanares (14 Kms)

Estos caminos podrían construírse en una segunda etapa y van a fortalecer los subcentros y puestos de asistencia agropecuaria, además son un elemento de nuclearización de la población.

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Los costos de estos caminos, aproximadamente, es de B/20,000.00 por Kms., dado que atraviesan áreas montañosas. El monto total de la segunda etapa es de 25 Kms por un valor de B/50,000.00 (estos costos se están revisando debido a la constante alza de los insumos).

Estos caminos se recomiendan de acuerdo a la estructura espacial del proyecto y a las posibilidades de desarrollo agropecuario.

<u>Rehabilitación de Caminos</u>:

De acuerdo a los criterios antes establecidos para rehabilitación de caminos de producción se seleccionaron los siguientes:

- (Carretera Soná - Guabalá) Puente Río Tobálico.
- Camino del Cobre - San Francisco - Querqué Abajo 9.5 Kms.

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- Camino El Tigre - Hicaco - Santa Catalina 12.0 Kms
- Camino Zancudo - Dos Bocas 17.0 Kms
- Caminó Soná - Cativé 13.0 Kms
- Carretera Santiago - Soná - El Marañón - Cerro Largo - La Chumicosa - Asiento Bonito 10.0 Kms.

Con la rehabilitación de estos caminos se benefician 1,968 fincas de los miembros del grupo objetivo en 6 corregimientos.

Los caminos prioritarios para rehabilitación deben iniciarse en el verano de 1982.

Mantenimiento de Caminos:

Para mantenimiento de la red vial se utilizará el procedimiento siguiente:

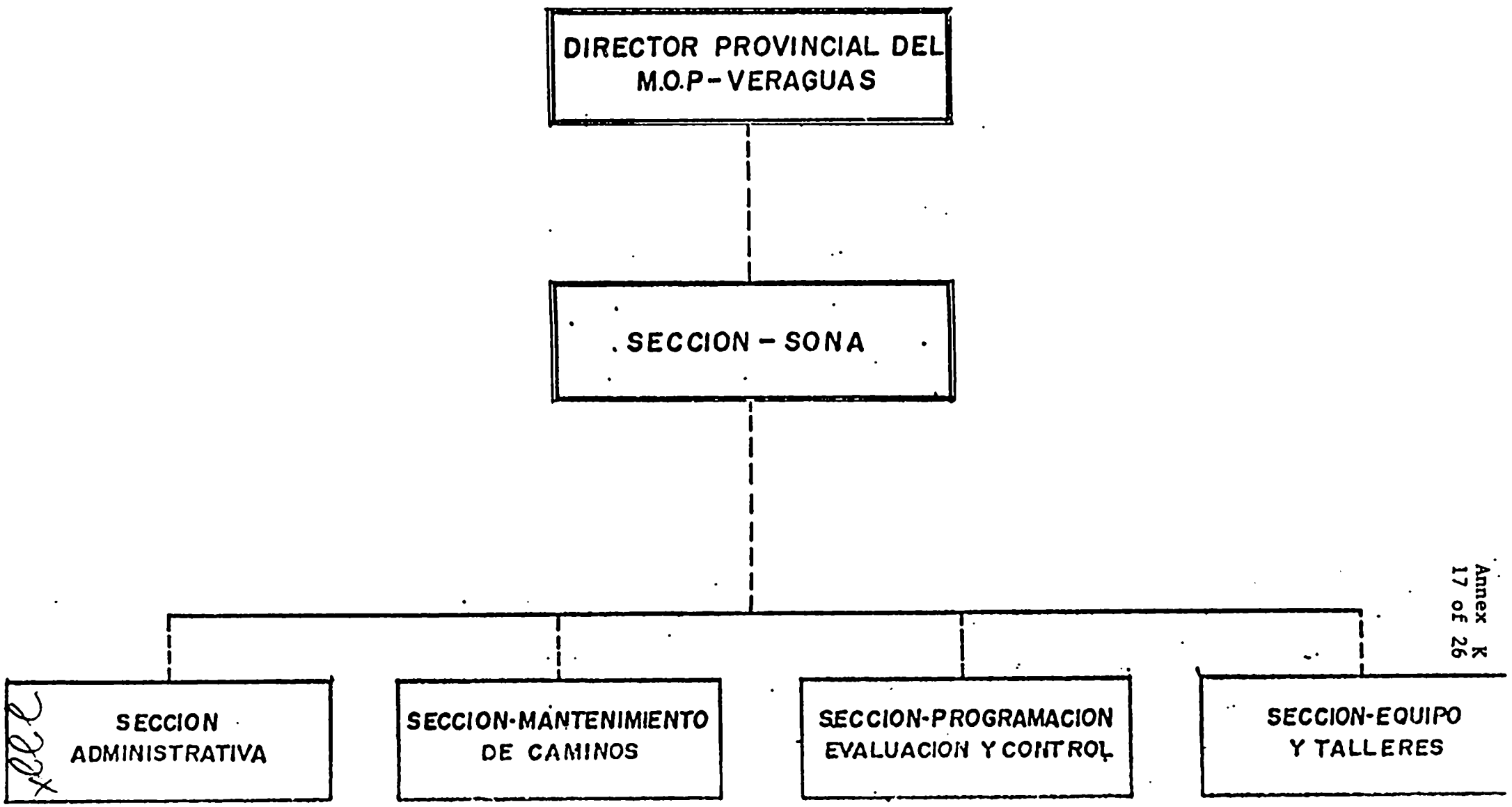
- Le corresponde a las comunidades darle mantenimiento a los caminos revestidos, transitables de tosca en toda época y de verano. Para tal efecto se adietrará a miembros de la comunidad en el sistema de mantenimiento preventivo, proporcionándole el equipo necesario.
- En los casos en que amerite ayuda de equipo este será suministrado por la Sección del MOP de Soná.

MECANISMOS DE OPERACION PROYECTADOS:

Funcionamiento de la Sección del MOP de Soná:

De acuerdo al organigrama que propone la reorganización de la División del MOP en Soná se plantean las funciones siguientes:

ORGANIGRAMA PROPUESTO DE LA SECCION DE SONA



- Establecer las necesidades de mantenimiento de la red vial del área.
- Evaluar la ejecución de los caminos construídos, rehabilitados, y mantenidos.
- Capacitar a las comunidades en el proceso de mantenimiento de los caminos.
- Prestar el asesoramiento técnico correspondiente a las comunidades para el mantenimiento de caminos.
- Mantener el equipo en las mejores condiciones técnicas.
- Contribuír a adiestrar al personal de la división.

Construcción de caminos:

Para la construcción de caminos se seguirá el procedimiento siguiente:

- Se someterá al estudio de factibilidad socioeconómico y técnico a cada uno de los caminos.
- Presupuesto y específicaciones del camino.
- Someter a licitación la construcción de estos caminos.
- Adjudicación:
- Ejecución
- Inspección y presentación de cuentas.
- Preparación de la comunidad para el mantenimiento del camino.

Rehabilitación de caminos:

Para la rehabilitación de caminos se seguirá el procedimiento de construcción.

Mantenimiento de caminos:

Para el mantenimiento del camino se seguirá el procedimiento siguiente:

- Concientizar a la comunidad sobre las necesidades del mantenimiento.
- Dotar de herramientas a las Juntas de Caminos.
- Identificar las fuentes de materiales.
- Apoyar con equipo de la división del MOP cuando así se requiera.

REQUERIMIENTOS:

Personal:

Los requerimientos de personal están establecidos en el cuadro Nº 2, siguiendo los lineamientos del cronograma de ejecución y organigrama de la sección.

Resumen de costos de operación:

Los costos de operación del cuadro Nº3, responde al cronograma de ejecución proyectado para los cinco años del proyecto.

Presupuestos de Inversiones en el Componente:

El presupuesto de inversión en el Cuadro Nº4, que detalla las necesidades del equipo está acorde con los programas de manteniento y fortalecimiento que la sección del MOP deberá llevar a cabo. Con este equipo es posible cubrir las necesidades de mantenimiento de la red vial del Distrito de Soná.

RESUMEN DE LA INVERSION DEL COMPONENTE:

Construcción y rehabilitación de caminos:

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CUADRO Nº 2

NUEVO PERSONAL PARA LA SECCION DEL MOP EN SONA

(EN BALBOAS)

CARGO	UNIDADES	SUELDO MENSUAL	SUELDO ANUAL
Jefe de la Sección Ingeniero Jefe	1	700.00	8,400.00
Administrador-Contador	1	400.00	4,800.00
Secretaria	2	250.00	5,000.00
Evaluador	1	400.00	4,800.00
Mecánico Jefe	1	400.00	4,800.00
Operadores	5	300.00	18,000.00
Conductores	7	225.00	18,900.00
Trabajadores Manuales	12	180.00	25,950.00
		TOTAL	B/91,620.00

CUADRO Nº 3

RESUMEN DE COSTOS DE OPERACION DE LA SECCION DEL MOP

(EN MILES DE BALBOAS)

DETALLE	TOTAL	AÑOS 1	2	3	4	5
TOTAL	904.50	123.10	165.10	189.10	206.10	221.10
Servicios Personales	483.00	96.60	96.60	96.60	96.60	96.60
Sueldos Fijos	458.00	92.60	91.60	91.60	91.60	91.60
Viáticos	10.00	2.00	2.00	2.00	2.00	2.00
Otros Servicios personales	15.00	3.00	3.00	3.00	3.00	3.00
Servicios no personales	7.50	1.50	1.50	1.50	1.50	1.50
Publicaciones, Impresión Encuadernación	2.50	0.50	0.50	0.50	0.50	0.50
Mantenimiento y Reparación en general	5.00	1.00	1.00	1.00	1.00	1.00
Gastos Generales	414.00	25.00	67.00	91.00	108.00	123.00
Combustibles y lubricantes	350.00	20.00	60.00	80.00	90.00	100.00
Materiales y suministros	51.00	3.00	5.00	8.00	15.00	20.00
Imprevistos y Gastos varios	13.00	2.00	2.00	3.00	3.00	3.00

CUADRO Nº 4

PRESUPUESTO DE INVERSIONES EN EQUIPO REQUERIDO

CAMINOS RURALES

(EN MILES DE BALBOAS)

DETALLE	MONTO
TOTAL	680.00
4 Camiones Volquete	80.00
4 Pick Up	80.00
2 Moxreveladoras	100.00
2 Cargadores	120.00
2 Tractores	260.00
Equipo de Oficina	5.00
Herramientas y Repuestos	35.00

La construcción de caminos proyectados es de B/1,000,000.00 para construir 67 Kms de caminos revestidos, con un promedio de B/15,000.00 por Kms. La primera etapa incluye 25 Kms de camino a un monto de B/500,000.00 para un promedio de B/20,000.00.

La rehabilitación de caminos en la primera etapa es de 40 Kms, por un valor de B/400,000.00, un promedio de B/10,000.00 por camino rehabilitado.

Edificio:

Para el manejo y control del equipo, se proyecta la construcción de un edificio por valor de B/20,000.00 en la ciudad de Soná.

Ver Cuadros Nº5 y 6 que detallan la inversión del componente, y su fuente de financiamiento. Adicionalmente los cuadros Nº7 y 8 detallan la programación de las actividades y el calendario de actividades propuesto.

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CUADRO Nº 5

RESUMEN DE LA INVERSION DEL COMPONENTE CAMINOS RURALES

(EN MILES DE BALBOAS)

Actividades	TOTAL	1	2	3	4	5
TOTAL	2.10	4.3	1.4	0.27		
Construcción	1.0	0.2	0.6	0.2		
Rehabilitación	0.4	0.1	0.3			
Compra de Equipo	0.68	0.11	0.5	0.07		
Edificio	0.02	0.02				

CUADRO Nº 6

RESUMEN DE LA ACTIVIDAD DEL COMPONENTE CAMINOS RURALES POR FUENTE DE FINANCIAMIENTO

(En millones de balboas)

Fuente de Financiamiento	TOTAL	1	2	3	4	5
TOTAL	3.00	0.55	1.6	0.47	0.2	0.2
Prestatario	0.90	0.12	0.17	0.2	0.2	0.2
A.I.D.	2.10	0.43	1.4	0.27		

CUADRO Nº 7

PROGRAMACION PROPUESTA DE LA RED VIAL

	Kilómetros	Año de Inicio
I. PROYECTO SONA		
Construcción	66.5	
1. Río Grande-Mamey-Pixvae	35	
i. Río Grande-Mamey-Salmonete	23	1982
ii. Salmonete - Pixvae	12	1983
2. Soná - Rodeo Viejo	10	1982
3. La Soledad-Palma Alta-Alto de San Juanito	8.5	1983
4. Cativé - Bongo	13	1982
Rehabilitación de Caminos	40.5	
1. Río Tobálico-Espino del Cobre-San Francisco - Querqué Abajo	9.5	1982
2. Zancudo - Dos Bocas	17	1982
3. Soná - Cativé	14	1982
4. El Marañón - Cerro Largo - Chumicosa - Asiento Bonito	10	1983
II. PROYECTO M.O.P. - A.I.D.		
1. Calidonia - Platanares		1982
III. MANTENIMIENTO DE CAMINOS		
1. El Tigre - Hicaco - Sta. Catalina	12	1982

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CUADRO NO. 8

CALENDARIO DE ACTIVIDADES PROPUESTO DEL COMPONENTE CAMINOS RURALES

ACTIVIDADES	1	2	3	4	5	6	7	8	9	10	11	12	OBSERVACION
Incorporación del Personal													
1.1. Asig. al proyecto personal existente actualmente													
1.2. Presentación de curiculum													
1.3. Selección y nombramiento													
Estudios de factibilidad económica y técnico													
2.1. Investigación de camino													Para cada camino hay que hacer un estudio.
2.2. Finca tipos sin y con el camino													
2.3. Trazado de la ruta													
2.4. Informe													
Construcción de edificio													
3.1. Diseño													
3.2. Licitación													
3.3. Construcción de edificio													
Capacitación de las comunidades													
4.1. Promoción y capacitación													
4.2. Demostración													
Compra de vehículos													
5.1. Licitación													
5.2. Compra													
Construcción y Rehabilitación de caminos													
6.1. Licitación													
6.2. Construcción y Rehabilitación													
6.3. Evaluación													

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON D C 20523

LAC/DR-IEE-81-28

ENVIRONMENTAL THRESHOLD DECISION

Project Location:	:	Sona District, Veraquas Province, Panama
Project Title and Number	:	Integrated Rural Development - Sona 525-0186
Funding	:	Five years, FY 81 - FY 85
IEE Prepared by	:	Frank Miller USAID/Panama
Recommended Threshold Decision	:	Negative Determination
Bureau Threshold Decision	:	Concurrence with Mission Recommendation

ACTION : Copy to Frank Almaguer
Deputy Director, USAID/Panama

: Copy to Frank Miller

: Copy to Peter Orr, LAC/DR/CEN

: Copy to IEE file

Date 7/15/81

James F. Smith
Chief, LAC/DR/MAD
Bureau for Latin America
and the Caribbean

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INITIAL ENVIRONMENTAL EXAMINATION

Project Location:	Sona District, Veraquas Province, Panama
Project Title:	Integrated Rural Development -- Sona
Funding:	FY 77 US$9,700,000
Life of Project:	Five years (for reprogrammed project, which starts in FY 81)
IEE Prepared by:	Frank Miller USAID/Panama Date: 7/9/81
Environmental Action Recommended:	Negative Determination

Concurrence: Frank Almaguer Date: 7/9/81
Frank Almaguer
Deputy Director, USAID/Panama

I. Examination of Nature Scope and Magnitude of Environmental Impact

A. Description of Project

In the Panamanian context, integrated rural development (IRD) is defined as a combined effort, in specific rural poverty areas of the country, of the Government's various sectorial programs and policies with the goal of increasing production within these development areas and of improving the quality of life of their inhabitants.

This project will be the first test of this rural development strategy. The dual purpose of the project is to help the Government (1) establish an overall capability within the Ministry of Planning (MIPPE) to design, plan, coordinate and evaluate IRD projects with regional impact, and (2) implement a program for the accelerated development of the first of the priority impact areas in the District of Sona.

B. Identification and Evaluation of Environmental Impact

1. Agricultural Development

The proposed project attempts to improve the livelihood of the rural poor by emphasizing increased agricultural production, productivity and income and by reversing the trend of environmental soil degradation caused by primitive slash and burn shifting agriculture. This soil degradation is further exacerbated by extensive cattle operations which, coupled with the large scale use of faragua grass (a bunch grass which does little to prevent erosion) for pasture and the burning of pasture every one or two years to control weeds, further degrades the soil, until the land for all practical purposes is completely exhausted for agricultural purposes.

a. and b. Farm Services and Credit

The farm services component coupled with credit proposes to substantially improve the quantity and quality of technical assistance and training provided to small and medium size farms in order to help them make more rational use of their resources and increase crop yields and animal production.

(i) Crop Production -- In the area of crop production, the project will develop an improved shifting agricultural model for both small (less than 10 hectares) and medium (10-50 hectares) size farms in order to intensify and diversify production and expand the commercial nature of traditional agriculture. The specific production practices to be promoted and financed by the project include: higher planting densities, appropriate nitrogen and phosphorous fertilization, improved herbicide utilizations, effective insect control, intercropping and cropping with legumes, and soil conservation techniques.

The GOP Institute for Agricultural Research (IDIAP) currently has three crop production researchers assigned to the Sona District; however, their work is oriented almost completely to the continuous production model. For this reason the project will finance three additional IDIAP personnel to carry out adaptive research on the shifting agriculture model under the existing IDIAP

regional coordinator. One of their first tasks will be to collaborate with MIDA technicians in a series of exploratory trials to identify the technical factors which presently restrict basic grain production. These preliminary on-farm trials will allow MIDA and IDIAP technicians to begin to establish creditability with small and medium size independent farmers and to compile basic information on a general agro-ecological diagnosis of the region. Another important task of this group will be to collaborate with IICA personnel already working in Sona in the important area of soil surveys. The existing IICA-MIDA soil classification study of 1979 will be improved by further field work and by taking additional aerial photos of a greater disaggregation as a basis for developing agricultural zoning. Special attention will be placed on developing a more detailed natural resource inventory of the Bahia Honda area which is the only area left in Sona with primary forests. The Directorate General of Natural Resources (RENARE) will participate in this effort with possible additional assistance from CATIE.

Another important focus of this project will be the development of an improved continuous agriculture model for the asentamientos (agrarian reform farms) which are comprised of rural poor families who were formerly landless laborers or subsistence minifundistas (less than 3 hectares). From the standpoint of land use potential the corregimientos of Southern Sona (La Soledad, Gurumal, and Rio Grande) have 57% of the soils suitable for intensive cultivation (soil classifications 1A, 1P and 11A) in the Sona District. Southern Sona is also the area with the high concentration of asentamientos, medium to large size mechanized farms and as one would expect, the most important area in the entire province for basic grain production. While the agricultural asentamientos in Southern Sona only number 14 and this represents only 0.5% of the total number of rice farms in the entire Sona district, these asentamientos account for 28% of Sona's total rice production.

Although the rice and basic grain yields on the agrarian reform farms are twice as high as those obtaining in shifting agriculture farms, the agronomic production potential of agrarian reform farms is still largely untapped. Since Panama is currently experiencing production deficits of basic grains, emphasis is being placed on intensifying commercial basic grain production on agrarian reform farms and larger commercial farms.

While the asentamientos as well as many of the medium to large (above 50 hectares) mechanized farms have great potential for increased production, they have been plagued by poor soil management practices which have led to soil fertility problems and weed infestation. Repeated use of heavy machinery has compacted the soil and weakened soil texture. Frequent application of acid forming fertilizers has accentuated micronutrient and phosphorus deficiencies. However, proven soil management practices and techniques for the acid soils of Sona are known and can immediately be put into practice in the asentamientos. These practices involve land engineering techniques to control erosion, installing drainage tiles for water control, and liming soils to decrease the chemical fixation of the soils and to improve base status. Attention will also be given to diversifying and improving the cropping systems to include short season sorghum and maize varieties for commercial production after rice is harvested. The use of legume cover crops and green manure crops will be increased to suppress weeds when land is not in grain production and to improve soil fertility.

A special effort to improve the management and decision making skills of the agrarian reform farms is being initiated with the help of IICA and CATIE.

The GOP realizes that instead of developing self-reliance on the part of asentados to manage their own enterprises, the present asentamiento model has led to heavy dependence on MIDA technicians for management and operational decisions. This project will accelerate this effort by creating eight model agrarian reform farms which will be given special assistance in farm management decision making to reduce dependence on MIDA technicians and to build administrative self-reliance. The eight agrarian reform farms chosen to be included in this project will be selected and developed as models according to their potential demonstration effect on similar farms. These models will also serve as a field laboratory in which to quantify technical improvements in continuous agriculture and to transfer these principles to a wide range of farms including medium and large private farms.

2. Livestock Production

According to the current MIDA-IICA soil classifications of Veraguas, approximately 60-65% of the soils in Sona are suitable for pasture-cattle development. However, small and medium size farmers face three problems in livestock production. By far the most serious problem is the alarming rate of soil deterioration and weed invasion which is critically decreasing yields per hectare (stocking rates) precisely as maintenance costs per hectare are increasing (labor costs for weed control). Most of the pastures in Sona are in faragua grass under traditional extensive management practices.

The cause of soil deterioration is the following: faragua is a bunch grass which grows in clumps and spreads by seeding rather than shooting out runners. Consequently, even during the rainy season, a faragua pasture is 40-50% bare ground. Cattle tend to quickly overgraze available pastures with moderate slopes and are forced to graze more steeply sloped pastures during the dry season to avoid starvation. The hillsides then convert to cattle trails and terraces with little patches of grass which become unstable and subject to accelerated erosion and sliding which is a common phenomenon in Sona. To make matters worse, faragua grass withstands burning. Therefore, a common practice of the traditional rancher is to burn off the grass and weeds every year or two towards the end of the dry season. The burning removes the top growth of bush and conserves the grass. The burning also leaves a substantial amount of soil surface exposed directly to the force of rain at the beginning of the wet season. Equally important, it destroys material which is needed to maintain the organic content of the relatively thin topsoils. Repeated cycles of burning further degrades the soil, until the land for all practical purposes is completely degraded.

The second problem facing the small producer is deficient management practices. Present calving rates for small and medium size producers are less than 50%, calf mortality rates are over 10%, and weight gains are low requiring 4-5 years to reach market size.

The final problem is the lack of sufficient capital for the small and medium size producer to purchase livestock. While credit is available for larger farmers, there is a scarcity of credit for farmers in our target group for the purchase of the first ten animals and wire fencing for the first ten hectares. It is for this reason that many small and medium size farmers rent their pasture to larger ranchers or sell their land to larger ranchers following shifting field cultivation and continues his migratory pattern.

The credit and farm services components of this project propose to improve the productivity and income of the small and medium size farmer/rancher by providing him with credit to buy improved livestock, fencing material and

to plant improved grass/legume pasture. This credit will be combined with known improved cattle and swine management practices such as black leg vaccination, parasite control and phosphorus/mineral supplementation. These practices would greatly improve the birth rates, lower mortality rates, increase growth rates and can be easily promoted by the extension system provided under the farm services component. To ensure that steps are taken to address soil degradation caused by cattle operations utilizing faragua grass for pasture, a condition precedent will be included in the loan requiring that all cattle loans will be tied to the recipient planting improved grass/legume pasture.

The farm services component will also finance on farm demonstrations of forest-grazing technologies within existing production systems. One important integrated land use system is forest-grazing involving improved grass/legume pasture with reforestation and cattle or tropical long-hair sheep (depending on slope). Another example is the inclusion of trees in the rice and corn fields of the shifting agriculturalist model. After the rice and corn are harvested, improved pastures can be planted between trees.

3. Agro-Industry

This activity will attempt to foster the exploitation of non-traditional crops. Financial development institutions will be utilized as ICIs in selecting projects with sub-loan selection criteria similar to those used under the Rural Growth and Service Center Loan 525-T-047. Feasibility studies will be prepared which ensure that proposed projects are technically, economically and financially sound. The feasibility study must also show that the proposed project will not have a significant effect on the human environment or if such a project does have a significant effect that a satisfactory environmental analysis has been prepared.

4. Rural Roads

Under this component the Ministry of Public Works (MOP) will construct 66 km of roads and 40 km will be rehabilitated. As a condition precedent to disbursement for this component, MIPPE and MOP will agree to utilize the same standards and selection criteria developed under the ongoing Rural Access Road Loan 525-T-028 for activities under the IRD project. These standards should eliminate or mitigate significant adverse impacts on the environment. In particular the selection process provides a mechanism for rejecting those roads where significant adverse environmental effects may occur. An environmental questionnaire is filled out for every potential road. This questionnaire provides the information needed to assess the environmental impact of each road. An environmental engineer funded under Loan 525-T-028 just finished a six month consultation with MOP. Not only did he improve the use of the questionnaire and train MOP engineers in techniques of environmental assessment, he also convinced the Minister of Public Works and his senior staff of the importance of environmental assessments. This has led to the inclusion of these assessments on all MOP road projects regardless of the source of funding.

5. Social Services

The proposed activities in health, education and housing will be funded by GOP counterpart contributions utilizing the design and selection criteria established under ongoing AID loans in these sectors.

a. Health

The Ministry of Health (MOH) will supervise construction of 14 community

aqueducts serving small villages up to 1000 people, 40 hand-pumped wells serving communities of less than 25 people and 1000 latrines (pit privies). Improperly designed, these facilities could have the negative impacts of overpumping the aquifer and spillage of water at yard faucets and hand-pumped well silos could cause puddles which can become mosquito breeding areas. These possible negative impacts will be mitigated by proper design which calls for pumps to be sized according to test pumping results and for the provision of adequate drainage at individual faucets and well sites.

The MOH will also construct 6 health posts (35 sq. meters each) and a maternal/child care annex to an existing health sub-center. The design and site selection and provision of sewage and solid waste disposal systems for these facilities under the ongoing Health Sector Loan has resulted in no significant negative impacts.

b. Education

Under this component the Ministry of Education will supervise the construction of 45 classrooms and laboratories which will be added to 26 existing schools. A two room pre-school will also be constructed in the corregimiento of Guarumal. The design and selection criteria developed under the ongoing Education Sector Loan, 525-T-043, will be utilized for this modest amount of construction of classroom facilities to existing schools. It is unlikely that significant impact on the environment will occur as a result of the construction of the classrooms or as a result of their operation.

c. Housing

The Ministry of Housing (MIVI) will supervise the construction of various housing solutions such as serviced lots for precaristas, persons currently living in precarious conditions on narrow strips of land between vehicular rights of way and fenced-in larger farms. Funds will also be provided to small and medium size farmers for the rehabilitation of existing housing, piso-techo and completed units. The design and selection criteria developed by AID's Office of Housing in collaboration with MIVI for AID's Housing Guarantee Program. Primary emphasis will be placed on the use of existing housing stock, the provision of infrastructure and community services, the construction of housing solutions consistent with the client groups' needs and ability to pay, and the optional use of available land. No significant impact on the environment is expected to occur as a result of the proposed housing activities.

II. Mission Threshold Decision Recommendation

After analyzing the various components which form this project, the Mission finds that no significant negative effects on the environment are reasonably foreseeable. On the contrary, many funded activities such as the agricultural development and health components will make important contributions towards improving the environment. Therefore, no further environmental action is needed beyond those approaches built into the design of the project, and the Mission recommends a negative threshold determination.

Attachment 1

Impact Areas and Sub-Areas	Impact Identification and Evaluation 1/
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	N
b. Extracting natural resources.	N
c. Land clearing	N-L
d. Changing soil character	L-M
2. Altering natural defenses.	N
3. Foreclosing important uses	N-L
4. Jeopardizing man or his works	N
5. Other factors	
_____	_____
_____	_____
B. WATER QUALITY	
1. Physical state of water	N
2. Chemical and biological states.	L
3. Ecological balance	N
4. Other factors	
_____	_____
_____	_____

1/ N - No environmental impact.
L - Little environmental impact.
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

C. ATMOSPHERIC

1. Air additives . . . . . N
2. Air pollution . . . . . N-L
3. Noise pollution . . . . . N
4. Other factors

D. NATURAL RESOURCES

1. Diversion, altered use of water . . . . . N
2. Irreversible, inefficient commitments . . . . N
3. Other factors

E. CULTURAL

1. Altering physical symbols . . . . . N
2. Dilution of cultural traditions . . . . . N
3. Other factors

F. SOCIO ECONOMIC

1. Changes in economic/employment patterns L
2. Changes in population . . . . . N
3. Changes in cultural patterns . . . . . N
4. Other factors

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G. HEALTH

1. Changing a natural environment . . . . . N

2. Eliminating an ecosystem element . . . . . N

3. Other factors . . .

_____ _____

_____ _____

H. GENERAL

1. International impacts . . . . . N

2. Controversial impacts L

3. Larger program impacts . . . . . N

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