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SECOND ANNUAL EVALUATION
of the
INSTITUTE FOR RURAL FARMER WELFARE
— INVIERNO —

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Agriculture

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Robert R. Nathan Associates, Inc.
Washington, D.C.
July 1978

SECOND ANNUAL EVALUATION
OF THE
INSTITUTE FOR
RURAL FARMER WELFARE
- INVIERNO -

Agency for International Development
and the
Government of Nicaragua

by

Robert R. Nathan Associates, Inc.
Washington, D.C.

FINAL REPORT

5240118

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SUMMARY AND CONCLUSIONS

This report constitutes the second annual joint evaluation of the Instituto de Bienestar Campesino (Institute for Rural Farmer Welfare), or INVIERNO. The report covers its two years of operation, 1976 and 1977, particularly the period since the first evaluation, which was conducted in October 1976. It examines, in the first place, the progress made in developing the institution and advancing its field activities. It then evaluates policies, operations, and effectiveness relative to purposes and goals. Recommendations stemming from these evaluation perspectives are summarized at the end of Chapters IV, V, and VI, respectively.

Some of these recommendations reflect INVIERNO's own thinking with respect to future program management and are already in various stages of implementation. Those falling within this category which were considered by the evaluation team to be of major significance are here included for emphasis. Other recommendations generated through the evaluation process are directed at two fundamental objectives: (1) To assist INVIERNO in carrying forward the implementation of certain program elements which are considered crucial to the achievement of balance and comprehensiveness within the INVIERNO program, in relation to the needs of the target population and to the integrated rural development objective; and

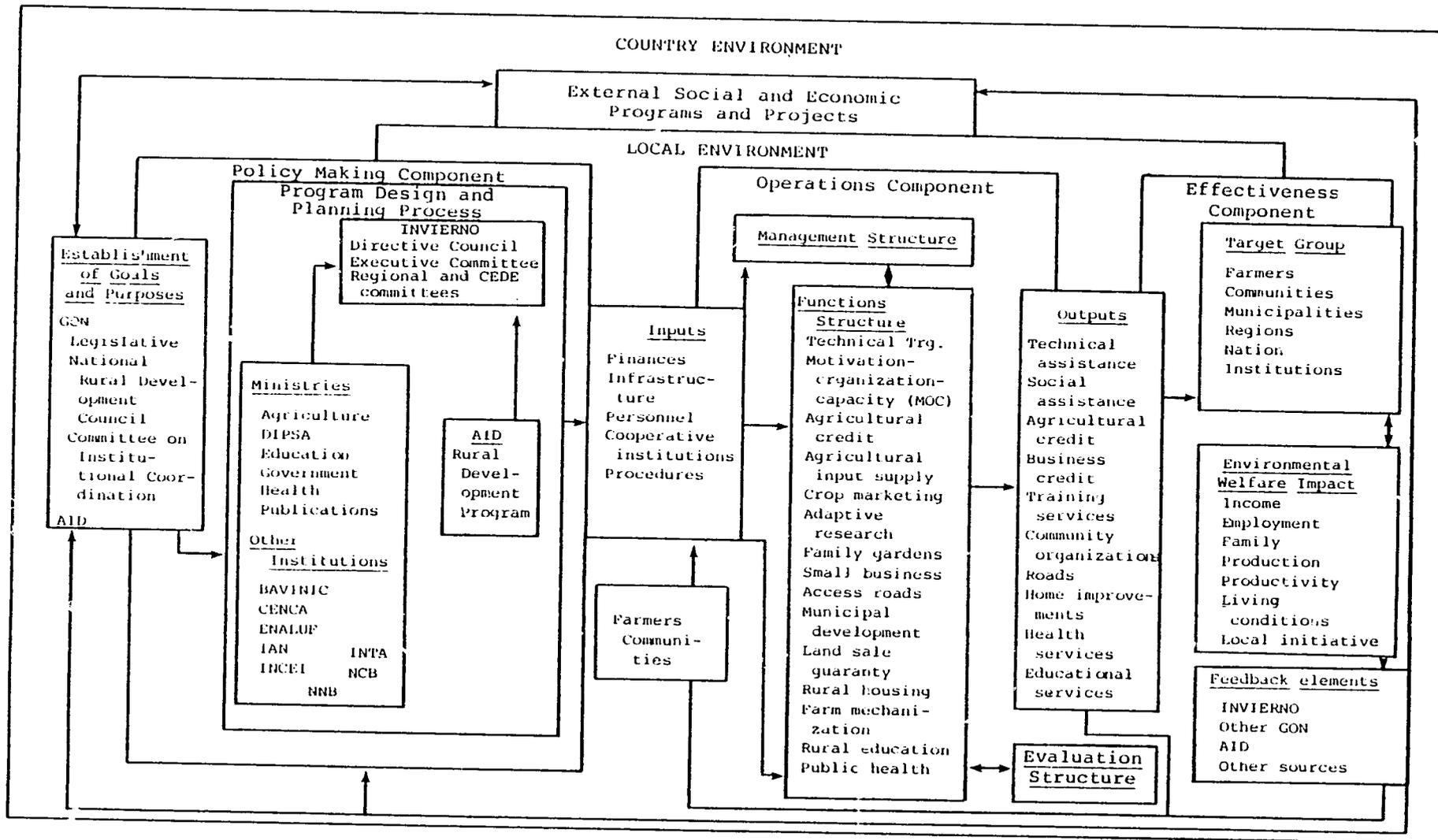
(2) To assist in the further design and implementation of record-keeping and data collection procedures which will permit the earliest attainment of a more thorough and continuous program monitoring and impact evaluation capability. It is felt that, to the extent possible, and to an increasing extent as the program matures, evaluation of the program in terms of its impact on the target population should become a routine internal function. Given the short period of INVIERNO's operation and the complexity of the rural development process, it is considered that the institution has already made significant progress in this direction.

INVIERNO seeks to attain its welfare objectives through two interrelated strategies: assistance in increasing family income and assistance in improving social amenities. These approaches are carried out through a number of line-projects (fifteen of them are specifically discussed in this report). Some are executed directly by INVIERNO, others by cooperating specialized institutions.

The conceptual structure of the program is summarized in the accompanying chart. Critical issues identified for each of the indicated components, together with conclusions and recommendations, are discussed in corresponding sections of the text.

The major elements of the INVIERNO operational plan were found to be in place and functioning. The line-projects that had been most emphasized in the planning -- farm and small business credit, personnel and farmer training, community organization, agricultural input supply, and adaptive research -- are receiving major attention. However,

CONCEPTUAL STRUCTURE OF THE INVIERNO RURAL DEVELOPMENT PROGRAM



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several potentially important activities were still not operational by the end of 1977, particularly roads, land-sale guaranty, and municipal development. The first two of these can become especially significant complements to the present rural welfare efforts and merit earliest implementation. The municipal development project warrants reconsideration from the viewpoint of employment generation.

INVIERNO's management has, in the overall, been highly effective. Finances have been prudently handled, personnel are well selected and enthusiastic, and inter-institutional cooperation has progressed reasonably well. Close relationships exist between INVIERNO and AID counterparts. A structure has been established to evaluate performance in the several elements of the organization and to provide feedback for policy and program adjustment.

At the operation level, several important problems were noted. In general, the evaluation procedures were inadequate to determine effectiveness. This was usually reported in terms of physical inputs used or outputs provided to the target population, but did not focus on the welfare impact attained. It is consequently not possible to form a reliable judgment on how the program is impacting on primary welfare criteria, such as farm income, employment, and social conditions. Neither is it certain what impact the agricultural program is having on production and yield. It is appropriate to point out that assessment of socioeconomic impact in a rural development program of this complexity is not simple; however, the team developed a substantial number of recommendations that, if implemented, should improve various aspects of impact assessment.

Another important operational issue that the evaluation team considered was the high cost of the program as measured in terms of total expenditures per participant-farmer or of credit expenditures per amount loaned. After studying the budgetary structure and observing input operations, we concluded that the cause lay in the innate nature of the program, rather than on shortcomings in financial management. High cost rates are inevitable in the start-up stage of an extensive operation like INVIERNO; they could be reduced by expanding the program and thereby diluting the fixed-cost components, especially those ascribable to the central office. The team recommends various measures to increase earnings and expand certain important activities, but cautions against rapid expansion into new areas of the country at this time. It emphasizes that the losses have been small relative to assets, and do not threaten the financial liquidity of the institution. Given this assessment, it seems more important to assure the technical feasibility of the undertaking, in the welfare sense, at essentially present levels, than to expand the program solely to improve the cost rates.

A third broad operational issue examined was goal attainment. INVIERNO's programming procedure has been to establish annual input-output goals for its various activities in conformity with the original AID/GON plans as amended. Those goals relating to organizational aspects have, in general, been met. Social-development goals, including those concerned with community organization and services, have in most instances been reasonably matched by performance. However, the agricultural program goals, both the original ones and those established at the start of each year, have

been notably over-optimistic. Performance shortfalls have been most noticeable in farm-credit volume, production-input purchases, and crop yields. To a certain extent, these are interacting phenomena that reflect climatic hazard; unfavorable weather in 1976 may have discouraged farmer acceptance of technology and credit risk in 1977. If so, performance may come closer to goals in 1978. However, the evaluation team feels that the agricultural expectations have probably been over-optimistic from the start in respect to the real yield and farm-income benefits of technology as well as the risk proclivity of the small farmers typical of INVIERNO's clientele. It is suggested that goal-programming procedures be improved, particularly as to demonstrable likelihood of performance based on past experience, thereby contributing to more effective resource allocation.

At the policy level, the team finds that the activities are generally in line with goals. Especially noteworthy in this respect are INVIERNO's small-farmer orientation, community participation focus, and multi-service approach.

A serious policy gap exist in the vagueness in defining welfare impact goals. At this time, it is possible only to cite the input effort expended and in most instances, the physical results achieved; but the extent to which these activities may be improving family income or other primary welfare criteria, remains largely undetermined.

The lack of welfare goals has, in the team's view, possibly biased program planning. The programming strategy is basically predicated on the supposition that agricultural

technology can increase yields on the target farms. This is primarily an agronomic approach to poverty; most of the other activities have been conceived as facilitating appendages (i.e., roads to facilitate movement of production inputs and produce; community boards to facilitate production credit operations). However, even if the agronomic approach attained its projected expectations (which at this point is questionable), a question arises regarding the contribution that would be made in overcoming poverty, given the very small size of these farms. Failure to define rural poverty in concrete terms precludes any effort to evaluate the agronomic approach, or alternative approaches, for overcoming or ameliorating it. Based on observations in other areas, the evaluation team considers that really substantial strides in reducing poverty for these small farmers are likely to require substantial changes in the present program mix, with efforts directed primarily at massive increases in employment opportunity and human productivity.

Fortunately, INVIERNO is well structured to shift emphasis and indeed, has done so to a limited extent. The team believes that strategy shifts should be considered more intensively and has made a number of recommendations in this respect.

Some areas of potential policy conflict were noted. INVIERNO is seeking to increase the financial viability of the farm credit project by enlarging the size of loans and number of borrowers, a policy that conflicts with farmers' reluctance to assume indebtedness and INVIERNO's objective

of assisting them to become financially independent and self-sufficient. Thus, if the credit project is successful in increasing income, it may become less viable as an INVIERNO operation unless new lines of credit and more simplified procedures can be introduced.

It is also felt that in a labor surplus farm economy employment creation, both on and off-farm, should receive greater emphasis, relative to overall program composition, than at present. The relatively greater emphasis on production inputs in the present credit programming stems from profitability calculations that fail to distinguish between financial and opportunity costs of labor to highly underemployed farmers. The report contains several recommendations as to how credit programming can be improved in this respect.

A final area of policy conflict exists in INVIERNO's objective of increasing farmers' financial security and at the same time, stimulating higher technology, which increases risk. Resolution of this conflict would be promoted if INVIERNO were to substitute actuarial risk analysis for its present procedure of average yield (or income) benefit analysis in its credit programming.

Thus, at the end of the second year of operation, INVIERNO should be regarded as a pilot program which is well run and extremely interesting. It has a good target-group focus. The multi-service approach that it embodies is sound, and it, along with its AID cooperator, has demonstrated the ability to operate such a complex program while maintaining the pragmatism and flexibility essential to benefit from experience.

SECOND ANNUAL EVALUATION OF THE NICARAGUAN
INSTITUTE FOR RURAL FARMER WELFARE (INVIERNO)

Introduction

Background

In accordance with the terms of the agreement between AID and the Government of Nicaragua for a Rural Development Sector Loan (524-T-031, par. 5.08), the second annual evaluation of the INVIERNO program was undertaken. The PIO/T number of this activity was 524-0118-3-50071.

The evaluation team was led by Henry Hopp under an AID contract with Robert R. Nathan Associates, Inc. Various local AID and Government of Nicaragua personnel participated in the evaluation. The following individuals drafted certain parts of the report:

AID	David Bathrick
	Guzzie L. Daniels
	Gloria de Mongalo
	Paul Wilson

INVIERNO	Waldo Hooker
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DIPSA

Edgar Robleto
Francis Zamora

The evaluation within the country was conducted during the period March 28 to April 22, 1978. The following schedule was followed:

March 28 to April 3. Review of INVIERNO operations and interviews with key personnel, as follows:

1. Gustavo Gómez Casco, General Manager
2. Francisco Barea, Assistant Manager, Operations
3. Noel Vargas, Assistant Manager, Data Processing
4. Waldo Hooker, Director, Planning and Evaluation
5. Atilio Bravo, Director, Credit Program for Municipal Development
6. Mario Pfaeffle, Director, Farmer Enterprise Development
7. Rudy Mairena, Chief of Rural Engineering Division
8. Pascal Serres, Chief of Marketing Division
9. Cesar Estrada, Acting Director, Agricultural Production
10. Danilo Rodríguez, Assistant Chief, Marketing Division
11. Carlos Brenes, Farm Accounts
12. Esteban Castillo, Assistant Director, Farm Enterprise Development
13. Leonel Brautigam, Chief, Finance Division

April 4 to 7. Examinations of the role of cooperating agencies. The following interviews were held.

1. Leonardo Green, Director, Agricultural Sector Planning (DIPSA) in the Ministry of Agriculture
2. Gustavo Narvaez, Chief of Rural Credit, National Bank of Nicaragua
3. Roberto Sequeira, Director General of the Budget
4. Ernesto Rugama Nuñez, Chief, Urban Municipal Development (DEMU), Ministry of Government
5. Allen Austin, AID consultant on Urban Municipal Development to DEMU
6. Jose Antonio Carrillo, Vice-Minister of Public Works, Director General of Roads
7. Lufs Vera Barandiaran, Consultant on Roads to the Ministry of Public Works
8. Luís Osorio, General Manager, Nicaraguan Institute of Agricultural Technology (INTA), and Ivan Flores, Assistant Manager; Oscar Hidalgo, Director of Science and Technology; and Carlos Zepeda, Director of Extension
9. Pablo Stone, Rural Development Specialist, OAS-Interamerican Institute of Agricultural Sciences, assigned to the Ministry of Agriculture
10. David Santamaria, General Manager National Institute of Domestic and Foreign Comercio (INCEI)

11. María Helena de Porras, Minister of Public Education; and Cesar Grijalba Villalta, Vice Minister; Abraham Rocha Tercero, Chief of Community Development; and Augusto Zelaya Ubeda
12. Rene Uriza, AID/Rural Health Services loan to the Ministry of Public Health

April 8 to 12. Evaluation of field operations, with trips to the following activities.

1. Matagalpa. Visited INTA-INVIERNO adaptive research headquarters, and observed closing session of a 4-day training course for 32 farmer leaders of seven communities from three CEDES.
2. San Ramón. Region V headquarters and CEDE office; observed fertilizer distribution operation; visited three farmer participants in the community of Piedra Colorada and Guadalupe.
3. Matiguás. CEDE office; visited a group of approximately 20 farmers and local school teachers in the community of Maisama.
4. Jinotega. CEDE office; observed loan processing for approximately 30 farmer participants belonging to the Potato Growers Cooperative; discussion with Augusto Córdón, local official in the Nicaraguan National Bank agricultural loan program; visited the shops of a cabinet maker, tailor, saddler, and auto mechanic who had received loans under INVIERNO's small business loan program; visited a farmer participant in the community of Mojón.

5. Pantasma. Sub-CEDE office; observed a group orientation session given by the social promoter to about 20 farmer participants newly approved for lines of credit; visited a farmer participant and a larger nonparticipating farmer.
6. Sébaco. Observed agricultural practices and community development in a prosperous irrigated valley; this served as a contrast to the poorly endowed communities where INVIERNO concentrates its efforts.
7. La Trinidad. CEDE office. Visited in the community of Santa Cruz a country general store that had received a loan under INVIERNO's small business loan program; visited a farmer participant who was INVIERNO's voluntary community collaborator and another small farmer who was not an INVIERNO participant.
8. La Condega. CEDE office. In the community of Guasuyuca observed orientation sessions given by community promoter and AGROMOCS to 57 farmer participants who had been authorized loans; discussions concerned land preparation in advance of the spring planting season, about to begin.

April 13 and 14. General policy review. Discussions with Klaus Sengelmann, Minister of Agriculture; Leonardo Green, Director of DIPSA; and Gustavo Gómez Casco, General Manager of INVIERNO.

April 15 to 22. Summarization and coordination of data; preparation of draft report; final discussions with evaluation team members, INVIERNO, and AID officials, and the Minister of Agriculture.

During the evaluation, the team received a large number of documents including plans, performance reports, and prior evaluations, particularly: the initial annual evaluation;¹ an evaluation of INVIERNO's structural organization and management system;² INVIERNO's internal staff evaluation;³ and a detailed analysis of the agricultural credit program⁴ (the latter in partially completed draft form). These and other source documents are cited at appropriate places in later sections of this report. In accordance with the AID Project Implementation order instructions, the report updates and summarizes these documents for evaluation purposes but does not repeat their detail.

Evaluation Methodology

INVIERNO, in addition to being an institution performing certain activities specified by its organic legislative authority,⁵ is also the spearhead of a coordinated interagency governmental effort. The overall purpose of this effort is "promoting the social and economic progress of the rural sector, allowing its population a sustained and continuous integrated improvement, with the aim of

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1. INVIERNO-The First Year. American Technical Assistance Corporation. McLean, Virginia: October 1976.
 2. Project INVIERNO-Preliminary Study of Sector Management. Trip report covering visit of Bernard Fisker. Development Associates, Inc., Washington, D.C.: March 23, 1977.
 3. Informe de Evaluación del Instituto de Bienestar Campesino, Grupo del Estudio, INVIERNO. Managua, Nicaragua: January 1978.
 4. González-Vega, Claudio, and Ronald Tinnermeier. INVIERNO: Small Farmer Credit as Administered by an Innovative Rural Development Program in Nicaragua (Draft Manuscript). San Jose, Costa Rica: March 1978.
 5. Ley Creadora del Instituto de Bienestar Campesino, enacted by the Nicaraguan Congress and published on May 5, 1975.

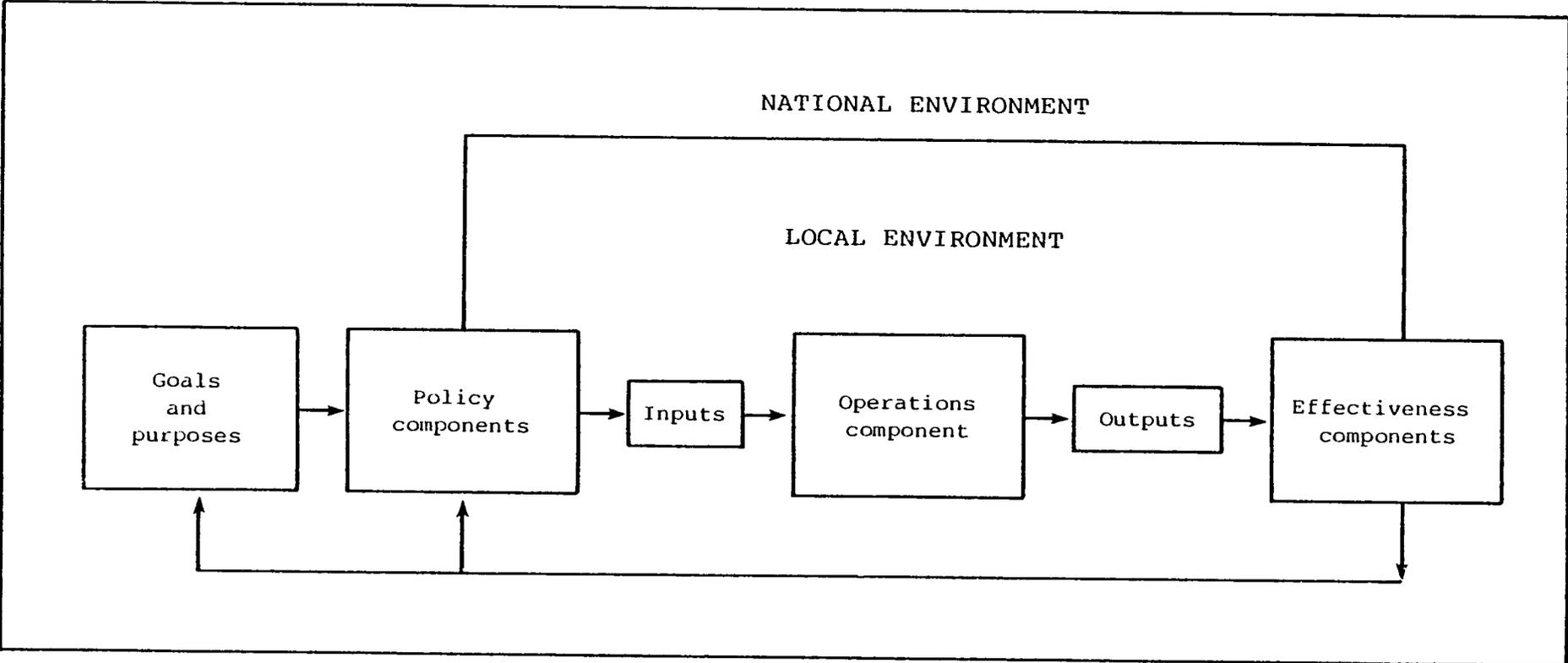
attaining a more effective participation of this population in the economic, social, cultural and political life of the nation."

This statement clearly implies fundamental social policy objectives whose attainment falls partly within the realm of various agencies of government. An evaluation that responds to the conceptual philosophy enunciated in the law (and adopted in the AID loan documentation)¹ should therefore consider performance in the broader aspects of its national policy and public sector, inter-institutional focus as well as in the narrower aspects of specific intra-INVIERNO project activities. It should also be concerned with the dynamics of feedback from the target group and from its performance to policy, structure, and operations in a changing environment.

An appropriate methodology for this kind of evaluation is to consider INVIERNO as a goal oriented system. The system consists of policy, operations, and effectiveness, as well as the forward and backward movement among these components. A highly synthesized and idealized representation of the system is shown in Figure 1. Goals and

1. Capital Assistance Paper Proposal and recommendations for the review of the Development Loan Committee. Nicaraguan Rural Development Loan. AID OLC/P-2091, 1975.

Figure 1. Generalized Structure of the INVIERNO Program



purposes are activated by a policy component that plans programs; for these, inputs are provided that are utilized in turn through an operational component, and the operations result in outputs. This forward movement in the system is evaluated through an effectiveness component. The latter in turn provides guidance that feeds back to influence adjustments in policy and possibly in goals and purposes. This system operates, as shown in the diagram, in at least two environments: goals and purposes of INVIERNO are established at the national level, as are some aspects of policy formulation and effectiveness evaluation. Other parts of the system operate in local environments, within the framework of the national setting.

This report is intended to evaluate how well this system is performing, its progress relative to original and modified goals, its adequacy to perform the assigned functions, and the potential of the system for expansion. In accordance with the PIO/T, particular emphasis is placed on progress since the first AID evaluation, the extent to which its recommendations have been adopted, and recommendations that are appropriate following the second year's experience.

Organization of the Report

This report is divided into two parts, one descriptive, the other analytical.

Part I describes the development of the institution relative to three identified structural elements: management, functions, and evaluation. While this part repeats

some descriptive information given in prior documents, it does so only to the extent necessary to make the presentation coherent. The emphasis, rather, is on developments since the first evaluation, essentially those for 1977. This part includes factual information, principally from INVIERNO sources, on accomplishments, finances, etc.

Part II is an analytical evaluation of INVIERNO from the viewpoint of policies, operations, and effectiveness. This part identifies issues detected by the evaluation team and offers recommendations when appropriate.

PART I. INSTITUTIONAL DEVELOPMENT

I. MANAGEMENT STRUCTURE

I-A. Organizational Structure

I-A1. General Description¹

INVIERNO operates through a central office located in Managua, a regional office located at San Ramón to serve the Central Interior Region (Region V), CEDEs and sub-CEDEs. The CEDEs and sub-CEDEs are the components that deal directly with the target group. Their efforts are focused on helping low income farmers and others located in target communities. At the community level, INVIERNO selects with community participation a member of that community to serve as a voluntary collaborator, or point of contact for INVIERNO personnel. Ultimately, INVIERNO stimulates the formation of community boards, whose members are elected by farmer participants from among their group. Services to farmers are mainly provided by INVIERNO field personnel, but certain aspects involve personnel of other institutions.

1. This description of INVIERNO structure is highly synthesized; a more detailed, recent description can be found in the paper by González-Vega and Tinnermeier, op. cit.

2.

Figure 2 shows the location of development regions, CEDEs, and sub-CEDEs.

INVIERNO is supported with funds provided by the Government of Nicaragua (GON) and under loan, by the United States Agency for International Development (AID). INVIERNO serves as a credit, technical training and social promotion installation, and its funding reflects these roles. In addition, INVIERNO serves as a spearhead to focus activities of other public institutions into the target communities. Such activities are financed either directly by INVIERNO (as in the case of access road construction) or indirectly from other services (as in the case of public health activities).

INVIERNO's personnel are stationed primarily at the field locations. In their activities, they tend to be specialized by function. Most of them provide technical guidance to the farmers and these have been given a special title, AGROMOC (an acronym for Agricultural Motivation, Organization, and Capacitation). Personnel who provide for production inputs, marketing assistance, and handle loans to small business are designated as CREDOMERC (meaning Credit-Marketing). Community organization, involving the formation of farmer groups, identification of projects, etc., is handled by Social Promoters. The purely loan aspects of the program are assigned to cashiers; these officials actually disburse the loans to the participating farmers and collect repayments from them.

INSTITUTE OF RURAL FARMER WELFARE
 INVIERNO SELECTED REGIONS

- Regional boundaries
- - - International boundaries
- · - · - Departmental boundaries

- Central Office - Managua
- Regional Office - Matagalpa

0 25 50 75 100 Kilometers

March, 1978

- CEDEs and sub-CEDEs
1. San Ramón
 - 1a. Wasaca
 2. Matiguás
 3. Jinotega
 - 3a. Pantasma
 - 3b. Pita del Carmen
 4. La Trinidad
 5. Condega
 - 5a. Yalí
 6. Masatepe

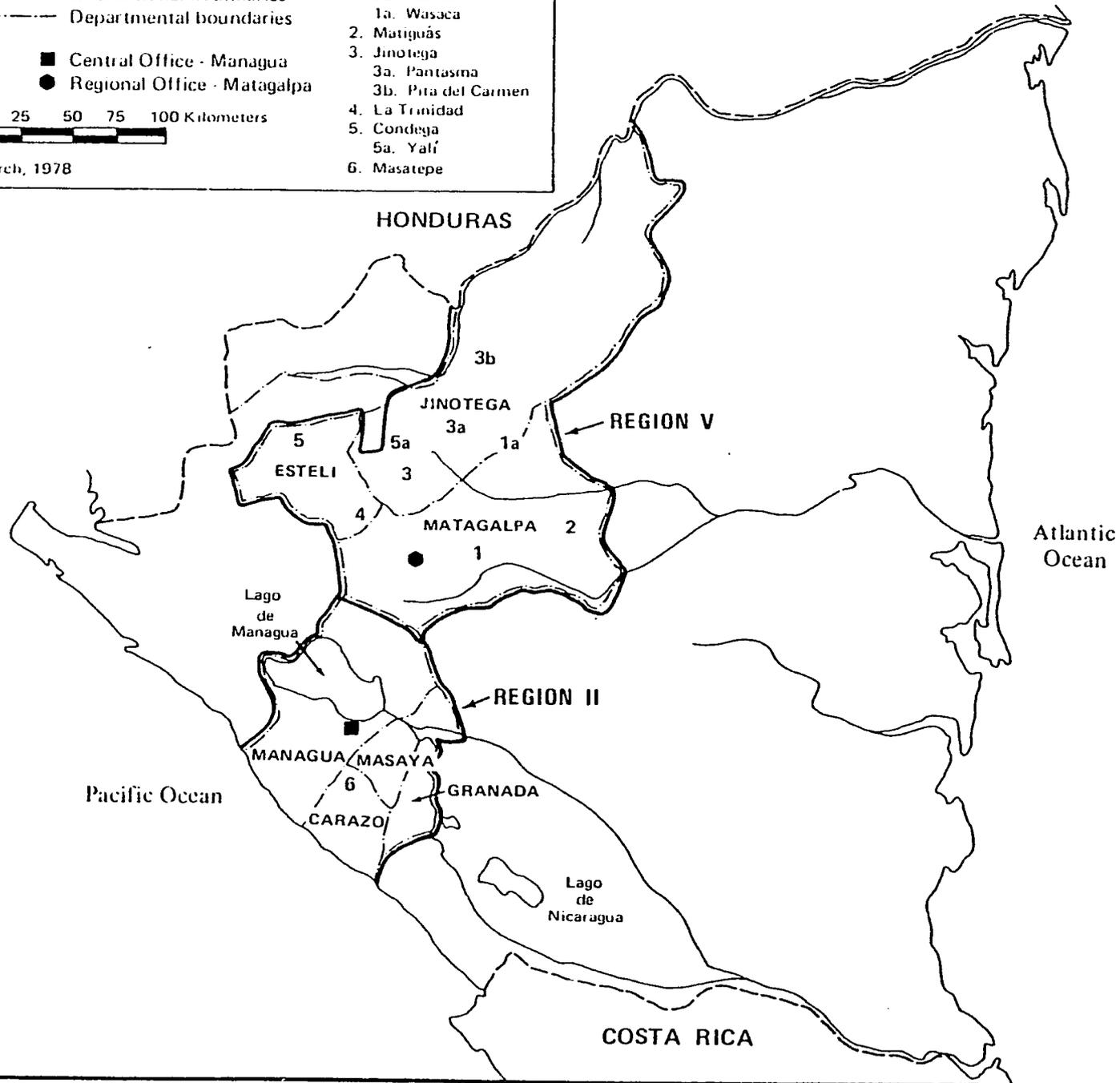


Figure 2.

4.

The loan activities are centrally administered through a computer located in the Managua office. The computer alleviates the field personnel of bookkeeping routine and much of the related record maintenance.

The organic structure of INVIERNO as established in 1976 is shown in Figure 3. A revision was issued in June 1977 and this structure is currently in effect (Figure 4).

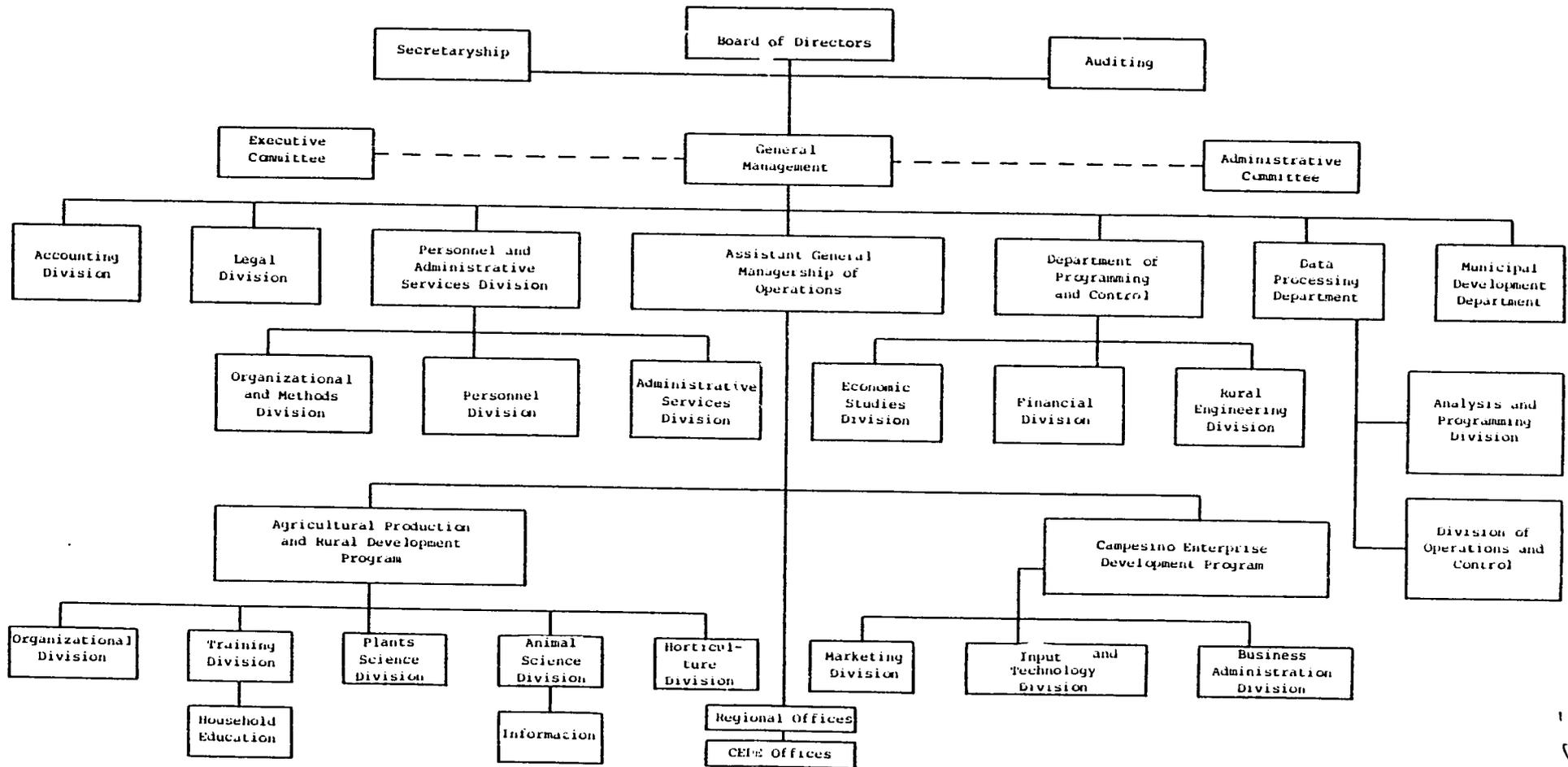
I-A2. Central Office

As shown in Figure 4, the administrative elements consist of a Board of Directors, General Manager, Executive and Administrative Committees, and Auditors Office. The business aspects are managed by three departments: legal, accounting, and personnel/administrative services.

At the operational level, there are two Assistant General Managers, one in charge of operations and the other in charge of data processing. In addition, there are two departments: Programming and Control, and Municipal Development.

The Assistant General Manager in charge of operations is essentially responsible for operating activities concerned with individual farmers and their immediate local communities, that is, those activities that encompass the main thrust of INVIERNO's present program. Two other field activities -- municipal development and rural engineering -- are structured independently of the operations office. Both are concerned less directly with individual farmers and, as explained in

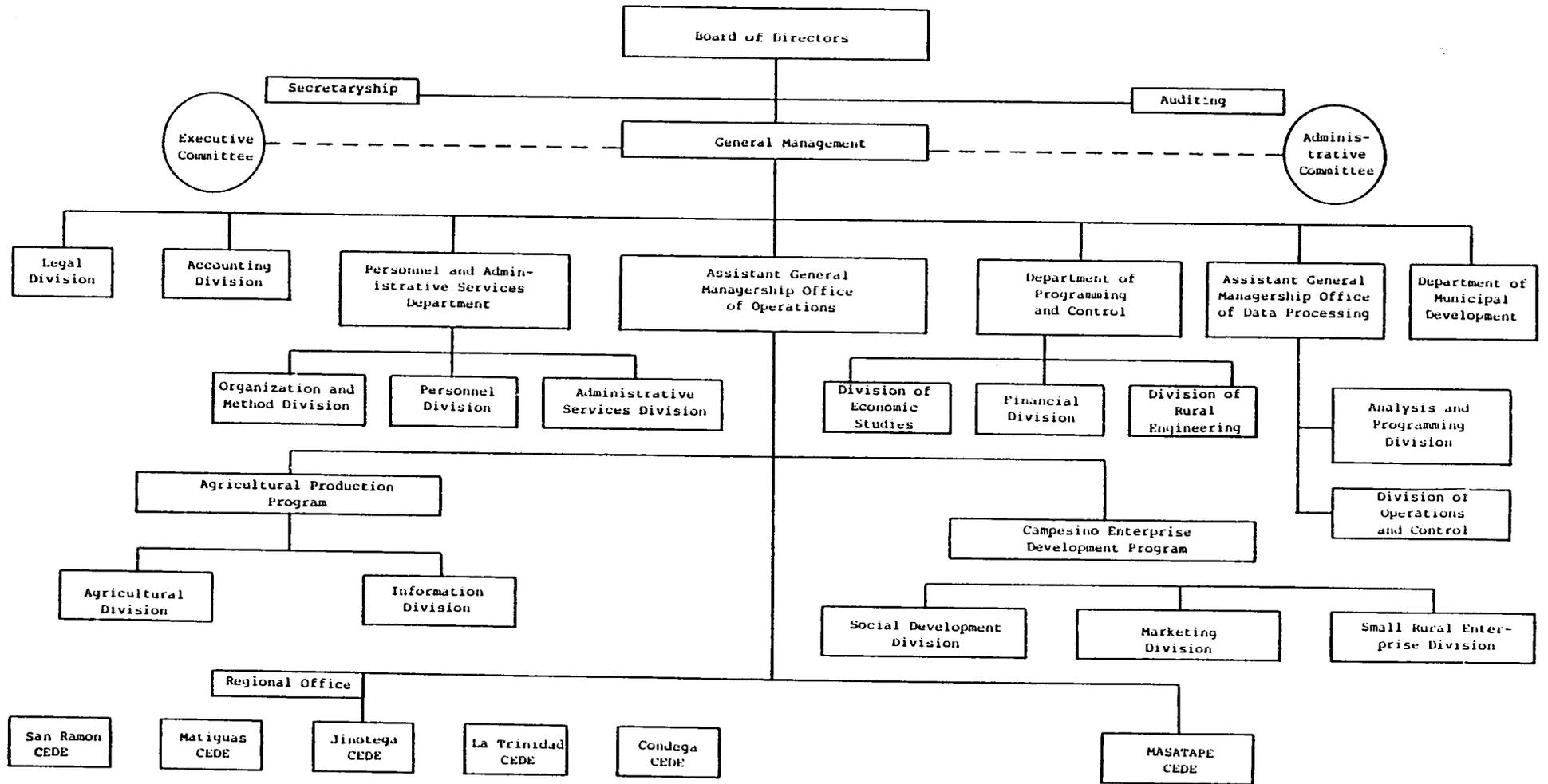
Figure 3.
 INSTITUTO DE BIENESTAR CAMPESINO
 (Institute of Rural Welfare)
 Organizational Chart
 1976



- 5 -

Figure 4
 INSTITUTO DE BIENESTAR CAMPESINO
 (Institute of Rural Welfare)

Organizational Chart
 1977



-6-

explained in Chapter II, are intended to be operated in cooperation with other government institutions.

The Programming and Control Department is assigned three functions that would appear to be somewhat unrelated. The Division of Economic Studies is in charge of evaluating the benefits of the farm production program, especially the effects on farm production and income; the Finance Division keeps track of the financial status of the agricultural credit program; and the Rural Engineering Division which is a field activity. This department also headed up INVIERNO's internal staff evaluation (op. cit.).

Comparison of the 1976 and 1977 organization charts shows three significant changes, all of which the evaluation team considers to have been desirable.

- a. Technical Divisions. The idea of establishing a corps of technical specialists within INVIERNO has been eliminated. In our opinion, this is a good decision. Not only are salary and overhead expenses thereby reduced, but more important, it should strengthen the quality of field operations. INVIERNO now intends to depend on the research specialists of INTA and especially on those assigned to the adaptive research project. This should be mutually advantageous, providing better technical backstopping for INVIERNO field personnel while orienting research personnel on field problems that may require investigation.
- b. Social Development. This activity had originally been assigned to the agricultural production program; it is

now assigned to the farm enterprise development program. Operationally, this means that Social Promoters are charged with the full gamut of rural development activities (whether carried out directly by INVIERNO or by cooperating institutions) and especially with stimulating community organization, participation, and project execution. The promoter's role is not focused solely on agricultural production as might have tended to occur had they continued to be assigned to the agricultural production program. After observing social promoters' activities in the field, we consider the change to have been definitely advantageous.

- c. Commercial Activities. The initial plan was to have two divisions handling commercial activities, one for assisting the farmers in marketing their production, the other for providing production inputs (fertilizer, seed, pesticides, etc.) and transporting them. Both of these business oriented activities have now been combined into a single commercial division. INVIERNO is no longer considering direct involvement in marketing, which it had intended to do in cooperation with INCEI, a government institution that operates buying centers in towns and cities for price and supply stabilization purposes. Also, the dates of the input-supply period tend to complement the marketing period. Hence the same personnel serves both functions. Our opinion, after observing input supply activities in a few locations, visiting several INCEI buying installations, and discussing this subject with farmers, is that this organizational change is sound and should not be a deterrent to the farmers' interests. INVIERNO's central office is handling both functions within a single, business oriented unit, and this seems to be an effective arrangement.

I-A3. Regional Offices

The original plan was to establish a regional office in each of the development regions where INVIERNO operates. (The country is divided into 8 such regions.) Operations were started in Region V, and a regional office was established for that area, located in San Ramón, a few doors away from the CEDE office in the same town. In 1977 a CEDE was opened in Region II, at Masatepe, but regional activities are handled directly through the central office, Managua being located in that region.

The Regional Office is modest. It is headed by a regional director who acts as liaison between the central office and the CEDEs. He attends all major meetings where his presence is required in Managua and holds frequent meetings with CEDE heads to coordinate plans and activities. The composition of his staff reflects the same coordinating function, covering the agricultural production, community development, farmer credit, and financial activities of the program.

I-A4. CEDEs

There are currently six CEDEs in operation, five in Region V and one in Region II, the latter having been established in 1977. We visited all five CEDEs in Region V (San Ramón, Matiguás, Jinotega, La Trinidad, and Condega) but not the one in Region II (Masatepe) due to lack of time.

The CEDEs comprise the basic units out of which the field men operate who deal directly with farmers, small

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firms, and community leaders. The offices are located in small cities with populations on the order of 10,000 inhabitants.

The first annual evaluation (ATAC report, page 36) projected starting three new CEDEs in 1977; one (at Masatepe) was established, another (at Wasaka) was initiated as a sub-CEDE, and the third (at Esquipulas) did not meet INVIERNO criteria for eligibility. Our opinion is that INVIERNO made the right decision in not expanding the operations more than it actually has.

I-A5. Sub-CEDEs

Four sub-CEDEs were established in 1977, being outlying branches of three CEDEs, as follows:

<u>CEDE</u>	<u>Sub-CEDE</u>
Condega	Yalí
San Ramón	Wasaka
Jinotega	Pantasma
Jinotega	Pita Del Carmen

We visited the one at Pantasma. The staff consisted of seven technicians. They lived on the premises during the week, returning to Jinotega on weekends.

The sub-CEDEs carry out similar community development and production improvement functions as the CEDEs, but with a smaller number of farmers.

The first annual evaluation (p. 36) indicated plans for establishing five sub-CEDEs in 1977, but the number was later reduced to the four mentioned.

I-A6. Community Organization

INVIERNO emphasizes community initiative and participation. This is accomplished through the selection with community participation of a community leader as a Voluntary Collaborator to serve as a contact for the INVIERNO technicians. As community interest grows and farmers enroll as participants, a local community board is formed. It is chosen by the participants from among their number in secret elections. The impetus for establishing this social structure comes from INVIERNO's Social Promoters.

There are 204 Voluntary Collaborators at present and 100 community boards have been established.

I-B. Input Component

I-B1. Finances

INVIERNO is financed through GON budgetary allocations under two concepts: a. capital account; and b. current account. The amounts to be allocated are provided in the GON agreement with AID, as a condition to the AID loan.

Under the terms of the loan, the GON is to finance the capital account over a 5-year period at the rate of C\$20 million annually. Thus for the 3-year period through 1977,

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the capital account allocation due was C\$60 million, while payments through April 1978, amounted to C\$55,631,483 (see Table 1) leaving an overdue balance of C\$4,368,517. An additional C\$20 million per year is to be paid during 1978 and 1979.

The agreement provides that "non-banking" current account expenditures are to be reimbursed by the Government of Nicaragua under its normal budgetary procedures. Payments through February 1977 totalled C\$14,808,943, which was C\$48,741 more than the total of balances due through 1976. In 1977 reimbursable expenditures amounted to C\$14,232,411, on which payments of C\$617,809 had been made as of April 1978. This shortfall is presently being actively pursued by INVIERNO and AID.

During the evaluation, we discussed this matter with Roberto Sequeira, Director General of the Budget. He visualized no policy question in regard to the payment, but cited a cash flow problem that the Government faced in maintaining operations of various ongoing programs. The origin of the problem was attributed to decreased revenues associated with exports of certain products, such as coffee and cotton. He stated that a letter was being prepared in his office setting out a schedule for early payment of the balance due.

Payments received by INVIERNO from AID through April 1978, amounting to the following, are current:

Table 1. INVIERNO: Payment by the Government of Nicaragua
(Thousands of Cordobas)

13.

Month and year	Capital account	Current account
<u>1975</u>		
June	--	1,220.8
July	--	1,085.0
August	--	1,127.6
October	--	1,501.8
November	--	2,207.4
December	1,220.8	--
Total, 1975	1,220.8	7,143.2 ^c
<u>1976</u>		
January	18,779.2 ^a	342.7 ^{a,c}
March	10,000.0	--
April	5,000.0	--
May	5,000.0	--
Total, 1976	38,779.2	342.7
<u>1977</u>		
February	--	10,954.5 ^a
March	1,000.0	--
June	1,000.0	--
July	2,000.0	--
August	500.0	--
September	1,500.0	--
October	2,500.0	--
November	500.0	--
Total, 1977	9,000.0	10,954.5
<u>1978</u>		
January	3,000.0	--
April	--	617.8 ^d
Total, 1978 ^b	3,000.0	--
GRAND TOTAL	52,000.0	19,058.2

a. Payment of balance due from prior year's account. Expenditures totalled C\$10,905.8.

b. Total through April 1978.

c. Of the total amount of C\$7,485.9 budgeted for 1975, the amount of C\$3,631.5 was capitalized according to letter No. 01343 of January 11, 1978 signed by the Minister of Finance.

d. Counterpart funds for the Small Farmer Adaptive Research Program: Expenditures totalled C\$377.5.

Source: INVIERNO, Finance Division.

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	<u>Year</u>	<u>Córdobas</u>
	1976	3,146,314
	1977	24,869,066
	1978 (through April)	4,515,511
	Total	32,530,891

Source: INVIERNO Finance Division.

Thus, through April 1978, the Government of Nicaragua payments totaled C\$71,062,235 (US\$ 10,151,747) and the AID payments were C\$32,330,891 (US\$ 4,647,270).

The planned and actual use of the funds contributed by the two governments is shown in Table 2, as of December 31, 1977. It will be noted that, while the total budget remained unchanged, some modifications were made during the year in the activity allocation of the AID budget (The GON allocations remained unchanged). The changes in the affected activities were as follows (enumerations refer to those designated in Table 2):

<u>Activity</u>	<u>Net change</u> <u>(Thousands of dollars)</u>
B-1a. Organizational and improvement	-700
B-1b. Training	-100
B-2a. Regional centers and rural assistance	+200
B-2b. Agricultural credit	+900
B-2c. Cooperative development	-200
B-5. Small rural enterprise development	-100

Table 2. INVIERNO: AID/GON Loan Agreement Budget and Financing Through December 1977^a
(Thousands of dollars)

Activity allocation	AID			GON		
	Budgeted	Financed	Balance	Budgeted	Financed	Balance
B.1 Institute creation						
a. Organization and institutional improvement	500	211	289	4,400	1,869	2,531
b. Training	900	365	535	300	--	300
c. Adaptive research	800	72	728	200	--	200
Subtotal	2,200	648	1,552	4,900	1,869	3,031
B.2 Integrated agricultural development						
a. Regional centers and rural assistance	550	443	107	2,300	765	1,535
b. Agricultural credit	4,100	2,695	1,405	3,750	3,750	--
c. Nutrition and family gardens	400	--	400	400	195	205
d. Land sale guaranty	550	--	550	550	269	281
e. Cooperative development	1,100	92	1,008	3,800	1,857	1,943
Subtotal	6,700	3,230	3,470	10,800	6,836	3,964
B.3 Access road improvement	1,300	--	1,300	1,000	--	1,000
B.4 Municipal development	900	34	866	650	318	352
B.5 Small rural enterprise development	900	124	776	1,000	489	511
B.6 Selective rural community development	--	--	--	250	122	128
Total	12,000	4,036	7,964	18,600	9,634	8,966

a. Budgeted amounts according to Revision No. 1 of the sector-loan agreement.
Source: INVIERNO Finance Division.

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These changes reflect primarily smaller than anticipated organizational costs and reallocation of these funds to other activities, especially agricultural credit.

Additional major developments apparent in Table 2, as of the end of 1977, are as follows:

- a. AID payments totaled 33 per cent of the budgeted amount; GON 52 percent.
- b. Relative to budgeted amounts, actual financing has emphasized agricultural development activities (especially credit), with payments from both sources combined equivalent to 57 percent of the total budgeted.
- c. Comparable proportions for the other activities are: roads, 0 percent; rural enterprise, 32 percent; and rural community development, 49 percent.

The aforementioned amounts refer to the financing INVIERNO had received from the two governments. Expenditures, compared with the budgeted and financed amounts, allocated by activity, are shown in Table 3. While expenditures broadly reflect financing, there are several divergencies. Most notable is that the projects for nutrition and family gardens, land sale guaranty, access roads, and rural community development had not incurred any expenses through 1977. Furthermore, expenditures for cooperative development and municipal development have been small relative to budgeted and financed amounts. In fact, these projects have not been started or are just getting underway; their status is discussed in Chapter II of this report.

Table 3. INVIERNO: Financing and Expenditures
Through December 1977

17.

(Thousands of dollars)

Activity allocation	Budgeted	Financed	Expended ^a
B.1 Institute creation			
a. Organization and institutional improvement	4,900	2,080	2,260
b. Training	1,200	361	361
c. Adaptive research	1,000	71	196
Subtotal	7,100	2,512	2,817
B.2 Integrated agricultural development			
a. Regional centers and rural assistance	2,850	1,208	2,398
b. Agricultural credit	7,850	6,445	5,790
c. Nutrition and family gardens	800	195	--
d. Land sale guaranty	1,100	269	--
e. Cooperative development	4,900	1,934	174
Subtotal	17,500	10,051	8,362
B.3 Access road improvement	2,300	--	--
B.4 Municipal development	1,550	344	26
B.5 Small rural enterprise development	1,900	613	492
B.6 Selective rural community development	250	122	--
Total	30,600	13,642	11,697

a. Expenditures calculated from accumulated drawdown of AID loan plus net expenditures chargeable to GON counterpart funds.
Source: INVIERNO Finance Division.

The observation that emerges from Table 3 is that INVIERNO's financial emphasis through 1977 has been on establishing the institutional framework in the central office and the field, and especially in getting started on the agricultural credit program. The latter activity, in fact, accounted for 50 percent of all expenditures.

INVIERNO's statement of end-of-year assets and liabilities is shown in Table 4 for 1976 and 1977. Significant points in this table are:

1. INVIERNO maintained an excellent liquid balance. Almost one half the total assets were in cash and deposits, and 90 percent were in the current account.
2. INVIERNO had relatively few debts. Current liabilities were only a minor fraction of current assets in both years.
3. INVIERNO's solvency has not been threatened by the size of its loan portfolio. This amounted to 17 percent of current assets at the end of 1976 and 24 percent at the end of 1977.
4. Losses, while substantial, have not threatened INVIERNO's equity. Through December 1977, the accumulated losses reduced the capital investment by barely 3 percent.
5. Investment in fixed assets such as furniture, vehicles, buildings, etc., has been very modest. Their residual value amounted to only slightly more than one tenth of total assets in both years.

Table 4. INVIERNO: End-of-year Balance Sheet, 1976 and 1977
(Thousands of Córdobas)

19.

Assets	1976	1977	Liabilities and equity	1976	1977
<u>Current assets</u>			<u>Current liabilities</u>		
Cash	565	2,466	Accounts payable	872	1,469
Loans outstanding	6,929	16,778	Other	3	2
Default reserve	(693)	(1,509)	TOTAL	875	1,471
Interest on loans	358	967			
Interest on deposits	933	--			
Accounts receivable:					
GON	10,906	14,232			
AID	--	1,012			
Other	7	197			
			<u>Equity</u>		
Time deposits	22,060	34,455	Capital-GON	43,632	52,631
Other investments	298	467	Obsolescence reserve	20	--
Prepaid expenses	83	137	Paid by AID	3,146	26,751
Other	90	87	Subtotal	46,798	79,382
TOTAL	41,536	69,289	Accumulated losses	(1,030)	(2,346)
<u>Fixed assets</u>	6,025	12,076	Net equity	45,768	77,036
Less depreciation	(918)	(2,858)			
TOTAL	5,107	9,218			
<u>Total assets</u>	46,643	78,507	<u>Total liabilities and equity</u>	46,643	78,507

Source: INVIERNO, Finance Division.

INVIERNO's operations are divided for accounting purposes into banking and nonbanking (social development) activities. The distinction reflects INVIERNO's dual role: to serve as a credit bank for its target clientele and to provide technical training and social promotion for rural development. The procedure for allocating income and expenses to banking and nonbanking activities has been described in previous reports and will not be discussed in detail here. (In essence, the procedure is to impute to the banking program the full time of all personnel that would be employed if INVIERNO were to have served solely as a banking institution, plus the proportion of other employee's time that is used for banking operations. The summation weighted by salaries establishes the percentages to be applied to the non-imputed cost items.)

This allocation of expenditures is important to the Government and AID, since the banking costs are funded from INVIERNO's capital account, while the nonbanking costs are reimbursable by the Government, constituting the current account payments tabulated in Table 4. The time allocations for this purpose are reviewed twice a year and changes are made when it is estimated that employees' actual participation in banking activities are different from that previously accepted. Consequently, there has been some change in the time allocations from those shown in the report of the first-year evaluation.¹ The current allocations compared with those applied at the end of 1976 are given in Table 5.

1. ATAC Report, pps. 81 and 82.

Table 5. INVIERNO: Distribution of Salary Costs Between Programs by Locations and Classes of Employees, September 1976^a and April 1978

21.

Location	Banking program		Other programs	
	1976	1978	1976	1978
<u>Central office:</u>				
	----- (Percent) -----			
General manager	100	100	0	0
Auditing	75	75	25	25
Operations management	0	30	100	70
Program and control	0	0	100	100
Finance division	100	0	0	100
Municipal development	0	0	100	100
Legal division	-	100	-	0
Administration	50	50	50	50
Data processing management	75	75	25	25
Accounting	100	90	0	10
Agricultural production (MOC)	0	0	100	100
Farm enterprise development	0	0	100	100
Marketing	0	-	100	-
Technical assistance	0	-	100	-
<u>Regional office:</u>				
Manager	100	0	0	100
Staff	0	0	100	100
<u>CEDEs:</u>				
Manager	100	100	0	0
Technical assistance	50	0	50	100
Social promoters (MOC)	0	0	100	100
Program and control	-	0	-	100
Rural administrator	0	-	100	-
CREDOMERC	75	30	25	70
Farm enterprise development	0	-	100	-
AGROMOC	0	20	100	80
Cashier	100	100	0	0
Driver	100	100	0	0
Warehouseman	0	0	100	100
Typist	75	0	25	100
Secretary	100	100	0	0
Helper	0	-	100	-
Bookkeeper	100	-	0	-
Watchman	100	100	0	0

Source: INVIERNO, Finance Department (September 1976, in ATAC report, pp. 81 and 82).

Financial operations for 1976 and 1977 are shown in Table 6. The major item of income under the banking program in both years was interest on deposits, although interest on loans increased substantially in 1977. It should be noted, however, that for the 2 years together, interest on loans amounted to C\$2,246,000 but C\$967,000 of this, or 43 percent, was outstanding at the end of 1977 (see Table 4). The principal expense item of the banking program was personnel; administrative expenses were slightly under 20 percent of total expenses in both years. The unpaid interest situation and the operating losses in banking activities are discussed later in this chapter.

The social development, or non-banking expenses (reimbursable by the Government), were three times the banking expenses in 1976 and almost the same in 1977. This reflects the emphasis that INVIERNO places on training and social promotion rather than on purely banking operations at the field level. The major staff in the field are AGROMOCs, technical assistance supervisors, social promoters, and CREDOMERCs, accounting for 61 percent of the field staff (see Table 5); these activities are classified mainly or entirely in the non-banking category, as shown in Table 5. The allocations in that table result in the following imputation of costs at the three INVIERNO levels according to a calculation cited by Gonzalez-Vega (op. cit., p. 50):

Table 6. INVIERNO: Current Accounts, 1976 and 1977

(Thousands of Córdoba)

23.

	1976	1977
<u>Banking program</u>		
Income:		
Interest on loans	525	1,721
Interest on deposits	2,099	2,936
AID payments	--	291
Other income	--	32
Total income	2,624	1,980
Operating expenses:		
Personnel expenses	2,223	4,091
Administrative expenses	664	1,204
Amortization and depreciation	68	178
Portfolio default reserve	693	815
Other expenses	6	7
Total expenses	3,654	6,295
Profit (loss)	(1,030)	(1,315)
<u>Social development program (reimbursable by GON)</u>		
Income:		
Charges to GON reimbursement fund	10,906	14,281
AID payments	--	1,726
Other income	146	476
Total income	11,052	16,483
Operating expenses:		
Personnel expenses	7,322	10,049
Administrative expenses	2,715	4,185
Amortization and depreciation	745	1,907
Other expenses	270	342
Total expenses	11,052	16,483

Source: INVIERNO, Financial Division.

Table 7. INVIERNO: Classification of Field Personnel
by Activity, Planned and Actual for 1977

24.

Activity	Planned ^a		Actual ^b	
	Number	Percent	Number	Percent
Management	13	5	7	3
Technical assistance supervisors	24	9	18	8
Social promoters	23	8	16	8
AGROMOCs	99	36	79	37
Rural administrators	12	4	9	4
CREDOMERCs	18	7	17	8
Cashiers	25	9	17	8
Secretarial	21	8	11	5
Other	37	14	40	10
TOTAL	272	100	214	100

a. ATAC report (p. 36) for CEDEs operational in 1977,
exclusive of other CEDEs planned but not established.

b. INVIERNO Department of Programming and Control.

<u>Level</u>	<u>Banking programs (Percent)</u>	<u>Other programs (Percent)</u>
Central Office	38	62
Regional Office	0	100
CEDEs	26	74
INVIERNO Weighted total	28	72

The totals correspond to the partition of the expense totals in Table 6.

INVIERNO's current chart of accounts is as follows:

Capital accounts

Cash and deposits	A-1
Cash on hand	A-2
Petty cash	A-1-2
Bank of America	A-1-3
Nicaraguan National Bank	A-1-4
Agricultural loans	A-2
Small enterprise loans	A-3
Other accounts receivable	A-4
Sundry debts receivable, Central Office	A-5
Prepayments for expenses	A-6
Interest on agricultural loans	A-7
Interest on small enterprise loans	A-7-3
Interest on receivables	A-8
Input inventory annex	A-9
Agricultural equipment inventory	A-10
Merchandise in transit	A-11
Other inventories	A-12
Other financial assets	A-13
Vehicles and equipment	A-14
Buildings under construction	A-15
Miscellaneous assets	A-16
Prepayments paid in advance	A-17
Other accumulated expenses	A-18
Sundry credits	A-19
Withholdings payable	A-20

Current Accounts

Interest on loans	A-1-PB
Interest on deposits	A-2-PB
Personnel expenses	A-4-PB
Administrative expenses	A-5-PB
Depreciation and amortization	A-6-PB
Provision for bad loans	A-7-PB
Summary of banking-program costs:	
Other income	A-1-PMDS
Sales and cost of sales	A-1-1-PMDS
Personnel expenses	A-2-PMDS
Administrative expenses	A-3-PMDS
Depreciation and amortization	A-4-PMDS
Other costs:	
INTA-INVIERNO personnel cost	A-7-PMDS
Administrative expenses	A-8-PMDS
Depreciation and amortization	A-9-PMDS

Scheduled financial report titles are as follows:

- Summary of non-banking expenses
- Comparative table of banking program expenses
- Comparative table of non-banking program expenses
- Budgetary situation for total current expenses
- Banking program budget situation
- Non-banking program budget situation
- Budget situation for individual programs

I-B2. Personnel

The trend in staff personnel is shown in Table 8. In 1977, there was an overall increase of 100 employees, equivalent to 45 percent. The structure of the increase is particularly gratifying for a field oriented institution in its formative period, since 83 of the additional employees were assigned to CEDEs and sub-CEDEs. The last column of

Table 8. INVIERNO: Personnel Changes in 1977 and Projected Changes at the Start of the Year

Location	Actual, at beginning of 1977		Proposed ^a		Actual, at end of 1977		Rate of increase (percent)
	Number	Percent	Number	Percent	Number	Percent	
Central office	92	42	(92) ^b	21	106	33	15
Regional offices	11	5	27	6	14	4	27
CEDEs and sub-CEDEs	117	53	316	73	200	63	71
TOTAL	220 ^c	100	435	100	320	100	45

a. Figures from ATAC first annual evaluation, p. 36.

b. Nominally taken as the starting number in accordance with the statement on p. 34 of the ATAC report.

c. In addition, there were 62 persons in training to be assigned to CEDEs in 1977.
Source: Gonzalez-Vega, op. cit. p. 54.

the table shows that the smallest percentage increase occurred in the central office, next smallest in the regional office, and the largest by far in the CEDEs and sub-CEDEs. These tendencies, which were foreseen in the ATAC report, suggest that the program can grow at the community level with relatively modest staff increases in the backstopping organization.

It will be noted that the actual growth was much less than the projected growth. We consider that this was a desirable outcome. As discussed in later parts of this report, a conservative approach to the expansion issue is, in our opinion, a desirable policy at this time.

The personnel assigned to actual field operations (one Regional Office, six CEDEs, and four sub-CEDEs) in 1977 was not expanded as rapidly as had been projected. Plans shown in the ATAC report projected a total of 272 employees at the 11 posts indicated; at the end of 1977, there were 214 employees on the payroll for those posts. This situation indicates a conservative policy in regard to expansion, which we consider to be a prudent decision.

The utilization of the field force by activity occurred almost precisely as planned (Table 7). The major emphasis is on technical personnel, especially AGROMOCs; they accounted for 37 percent of all employees. Management personnel represent only 3 percent of all employees and administrative personnel, 24 percent. In our opinion, this distribution of personnel clearly illustrates an emphasis on field performance. INVIERNO is not planning any changes in number or

composition of field personnel for 1978 as a whole as compared with 1977.

There are essentially three grades of agricultural technical personnel in respect to their training: agronomists (ingenieros agronomos), who are college graduates and serve as supervisors; experts (Peritos), who are high school graduates with 3 years of additional training in vocational agriculture; and technicians (Técnicos), who are graduated from elementary school and have had 5 years additional in basic and specialized high school training.

I-B3. Infrastructure

INVIERNO's installations are typically unpretentious and noticeably lacking in frills. Most of the offices consist of small rooms, usually shared by several employees.

The Managua office operates in a main building, and 2 nearby branch buildings. They were formerly one family, single story residences (the central building consists of two former residences); the rooms have been converted to small offices by installing temporary partitions. The modesty of the office space is indicated by the fact that over 100 employees are crowded into a space that once accommodated four families.

The Regional Office and the CEDEs are located on principal streets of small towns. They are, like the Managua office, rather modest installations, mainly converted from what had once been small stores with living

quarters in the rear. While the CEDEs are in part credit institutions, they do not look like banks. Rather, the impression is that of a small business village enterprise.

All the above installations have electricity and sanitary facilities. They are equipped with two-way short wave radio connections.

The sub-CEDE at Pantasma is a rustic wooden structure on the outskirts of a small community. It has neither electricity, water (a well was being dug at the time of the evaluation) nor radio connection with the other INVIERNO offices.

It was evident to us that INVIERNO has kept expenditures for office space to a minimum. On the other hand, it is well equipped with transportation (mostly heavy-duty carryalls) and office equipment, including the radio communication installations and the computer in the Managua office.

The types of equipment and their acquisition value are detailed in Table 9 as of March 31, 1978, compared with September 30, 1976. The major increases for vehicles, desks and typewriters have been at field offices. This reflects the full equipping of the five CEDEs operating in 1976 and the additional CEDE and four sub-CEDEs in 1977.

I-B4. Cooperating Institutions

INVIERNO's direct operations implemented in 1976 were:

Agricultural credit

Table 9. INVIERNO: Equipment Inventory, by Type and Location,
September 30, 1976 and March 31, 1978

(Value in thousands of Córdoba)

Equipment, quantity and value ^a	Location										Total, all locations	
	Central office		Regional office		CEDEs		INTA		ALDENIC			
	1976	1978	1976	1978	1976	1978	1976	1978	1976	1978	1976	1978
<u>Vehicles:</u>												
Quantity	13	15	8	10	70	125	--	6	--	39	91	195
Value	532	604	320	404	2,771	4,931	--	231	--	1,513	3,623	7,684
<u>Desks:</u>												
Quantity	90	100	8	13	51	76	--	6	--	--	149	195
Value	126	143	11	19	70	106	--	8	--	--	207	276
<u>Typewriters:</u>												
Quantity	24	27	3	6	15	20	--	2	--	--	42	55
Value	154	152	6	30	33	44	--	4	--	--	193	230
<u>Other equipment:</u>												
Quantity	--	--	--	--	--	--	--	--	--	--	--	--
Value	522	1,841	38	147	284	718	--	41	--	--	844	2,747
<u>Total equipment:</u>												
Value	1,334	2,741	375	601	3,157	5,798	--	284	--	1,513	4,866	10,937

a. Acquisition value.

Source: ATAC report, page 30, for 1976; INVIERNO Accounting Division for 1978.

- . Marketing (input supply and production sales)
- . Technological training
- . Motivation-Organization-Capacitation (MOC)

In 1977, the direct operations were extended to include:

- . Small enterprise
- . Family gardens

It is expected that the Land Sale Guaranty Project will be started in 1978.

In addition to its directly operated projects, INVIERNO coordinates its activities with those of other institutions and participates in their financing. The institutions involved and the status of these activities are briefly summarized below (and are discussed in more detail later in the report).

INCEI An agreement for preferred marketing of basic grains produced by INVIERNO credit participants has now lapsed. Due to relatively favorable prices, the arrangements were considered unnecessary.

INTA The adaptive research program in Region V was started in 1977 under AID/GON (INVIERNO) financing.

Ministry of Public Works An agreement for initial construction of access roads was worked out in 1977 and field operations are scheduled to start in 1978 under INVIERNO financing.

Ministry of Government Assistance in town management and project planning has recently started; financing for at least one public improvement (a slaughterhouse) is in an advanced stage of planning; funding would come from INVIERNO.

Nicaraguan Housing Bank A joint plan with INVIERNO has been developed but not finalized. Alternative procedures for small farmer housing credit are currently under consideration.

Ministry of Public Health An agreement was drafted in December 1977, but it has not been finalized. INVIERNO is cooperating in supplying transportation to M.P.H. personnel engaged in community health programs (vaccination, parasite control, fumigation, potable water, and latrines).

Ministry of Education INVIERNO recently made a preliminary study of educational needs in its target localities. This information has been sent to the Ministry of Education but no further cooperation has developed.

Nicaraguan National Bank INVIERNO is now supplying the Bank with lists of its credit participants to avoid duplicate financing.

Nicaraguan Central Bank INVIERNO operates a vegetable forwarding plant owned by NCB.

34.

I-B5. Procedural Manuals

INVIERNO operations are prescribed in a series of procedural manuals. Those issued through 1976 are listed in the first year evaluation report, pages 40-41. Additional procedural documents issued during 1977 are to be listed in INVIERNO's forthcoming Annual Report.

II. FUNCTIONS STRUCTURE

INVIERNO's physical input and accomplishment goals were set out originally in the AID Capital Assistance Paper and annual goals were established for the years 1976 through 1979 in a document entitled "Plan General de Implementacion," issued in January 1976.

Since then, INVIERNO has issued an annual operational plan, which builds on the experience of the previous year in deciding on current goals and funding. The plan also lays out a precise program of work for the various activities, such as schedules of farm meetings, technical material to be treated, etc., in each CEDE. In addition, the plan of work sets certain operational policy objectives. The relevant document for 1978 was issued in February and is entitled "Plan Operativo para 1978." Details of the plans are described below for each line project individually.

The plan of operations also sets out general operating policy objectives for 1978. These reflect changes that have been detected by INVIERNO as desirable in light of the prior years' experience. The specified policies are as follows:

1. No increase in operating costs over 1977.
2. No increase in the number of localities, unless possible with present personnel.
3. Focus on the number of localities served per team rather than number of farmer participants per AGROMOC.
4. Priority assistance to groups of farmers rather than individual farmers.
5. Increase the coverage per team.
6. Optimize vehicle use based on assignment to teams rather than to individual technicians.
7. Maximize real service time of technical personnel in localities.
8. Priority to the process of active community participation; i.e., local plans should be prepared by community members with INVIERNO help and they should constitute the basis for CEDE plans.
9. Seek effective inter-institutional coordination at the locality and CEDE levels.

The following sections of this chapter discuss the individual line projects that constitute the field work program of INVIERNO.

II-A. Technical Training

This line project consists in training farmer participants as well as INVIERNO's technical personnel in ways of increasing production and productivity. This training is designed to be efficient, continuous, and in line with the conditions that prevail in the target communities.

INVIERNO technician training is carried out through the following procedures:

- a. Training Workshops. Very short courses that last 1 to 3 days. Participants are trained in various subjects to complement their curriculum in areas that are useful to the target group of INVIERNO.
- b. Specialized Local Courses. Long or short duration, in accordance with the theme treated.
- c. Specialized courses abroad.
- d. Extensive plots. Areas cultivated solely by INVIERNO personnel to explore new crops and practices, and at the same time training the AGROMOCs in techniques.

Training for farmer participants is usually in groups, complemented by individual visits.

- a. Training plots. These belong to INVIERNO farmer participants and are cultivated by them with the technical help of the AGROMOCs, backstopped by central office specialists. An owner should have his own land and oxen. The objective is to demonstrate different types of technologies.

He has the right to the income from the crop if there is any, and if not, INVIERNO assumes the losses, provided these are due to causes not under the control of the farmer. The training plot is where the small farmer starts his acquaintance with new agricultural techniques. The location of these plots is determined by their ease of access to the inhabitants of the community.

- b. Work sessions. Meetings in the training plots for the purpose of having farmers see and work on the plots and later apply the techniques.
- c. Model farmer plots. A new idea for 1978 in which the resources of the community are used. The model farmers are those whose advanced practices have instructive value to other farmers. It is expected to establish 140 plots of this type.
- d. Community meetings. Arranged to clarify doubts and concepts, as well as to discuss procedures.
- e. Radio programs. Used to inform farmer participants on prices and market conditions as well as to stimulate and educate them in aspects of health, technology, etc.

The technical training is backstopped by INVIERNO's "technological packages" (formally known as Manuals of Production Systems) for various crops. The following procedures are used to develop the technological packages:

1. A survey is made among producers to determine the technology that they are applying and their comprehension level.

2. Background information is collected, whether produced within Nicaragua or abroad.
3. The technological package is prepared.
4. The package is adjusted according to field observation and is updated.

At the present time, there are technological packages prepared for sorghum, yuca, peanuts, henequen, castor beans, coffee, manzanilla, banana, tobacco, flax, potatoes, general horticulture, pineapple, soybeans, quequisque, chayote, vaccination and parasite control of cattle and pastures, and beekeeping.

The information contained in the technological packages is utilized in two forms depending on the prior experience of the farmer and his desires in regard to technological investments. The first of these, known as Technology A provides small production inputs, principally better preparation of the land and control of weeds and pests. As the farmer progresses and gains experience, Technology B is provided him. This is more complete and provides a greater range of modern inputs (fertilizer, better seed, financing for labor, etc.). Basically, Technologies A and B are distinct devices that the AGROMOC utilizes to introduce technology, but not distinct packages or technical information guides.

As an example of the farmer adoption of technology, the following table gives the percentage of farmers using Technology B for corn and beans in 1976 and 1977:

	<u>Percent of farmers using technology B</u>					
	Early Season		Mid Season		Late Season	
	<u>1976</u>	<u>1977</u>	<u>1976</u>	<u>1977</u>	<u>1976</u>	<u>1977</u>
Corn	25	63	19	45	3	5
Beans	75	75	31	64	7	45

These data show an appreciable increase in the proportion of participants using Technology B. However, it should be mentioned that the variation from one year to the next is due not only to training, but also to the timely availability of inputs and financing.

Planned goals and the results attained in the technical-training program for 1976 and 1977 are shown in Table 10. It will be noted that goals were considerably increased in 1977 over those of the previous year. In most elements of the training program, there was some degree of shortfall, but it is evident that overall, the INVIERNO field staff carried through a relatively ambitious training program in both years.

The training materials published through March 1978 are listed in Table 11.

INVIERNO's plan of operation for 1978 emphasizes the following policy objectives for the technical training project:

1. Stimulate gradual and continuous adoption of technology with emphasis on the following aspects: preparation and conservation of soil, use of better

Table 10. INVIERNO: Goals and Results Attained in Technical Training, 1976 and 1977

Item	1976			1977		
	Goal	Result	Percent	Goal	Result	Percent
Participants (number)	5,000	4,019	80	8,500	6,525	77
Area served (manzana) ^a	22,000	13,975	64	54,000	21,955	41
Training plots (number)	100	82	82	171	94	55
Farmer meetings (number)	2,000	2,796	140	--	4,010	--
Soil samples (number)	--	--	--	1,000	3,378	338
Radio scripts (number)	208	217	104	365	265	100
Corn yield (quintales ^b per manzana)	26	17.6	68	--	n.a.	--
Bean yield (quintales per manzana)	10	8.1	81	--	n.a.	--

Note: Overall yield data were not obtained in 1977.

n.a. = not available.

a. Manzana = approximately 0.70 of a hectare.

b. Quintale = 100 pounds.

Source: INVIERNO Evaluation Report and Department of Agricultural Production.

42. Table 11. INVIERNO: List of Technical Agricultural Production Publications

Food and Industrial Crop Production

Publication No. 1.	Paquete Tecnológico Producción del Frijol
Publication No. 2.	Paquete Tecnológico Producción de Sorgo Escobero
Publication No. 3.	Paquete Tecnológico Producción de Maíz
Publication No. 4.	Paquete Tecnológico Producción de Sorgo Granero
Publication No. 5.	Guía Técnica para Parcelas Demostrativas 1976.
Publication No. 6.	Guía Técnica para Parcelas Extensivas 1976.
Publication No. 7.	Manual de Procedimientos para Parcelas Demostrativas. 1976.
Publication No. 8.	Instructivo para llenar Registros de Parcelas Demostrativas 1976.
Publication No. 9.	Paquete Tecnológico Producción de Yuca
Publication No. 10.	Paquete Tecnológico Producción de Maní
Publication No. 11.	Paquete Tecnológico Producción del Nenequén (Penca)
Publication No. 11-A.	Guía Técnica para Parcelas Extensivas de Higuierilla
Publication No. 12.	Guía Técnica para Mantenimiento de Cafetales- (Sistema Tradicional)
Publication No. 13.	Paquete Tecnológico para Producción de Manzanilla
Publication No. 14.	Paquete Tecnológico para Producción de Plátano
Publication No. 15.	Paquete Tecnológico para Producción del Tabaco
Publication No. 16.	Paquete Tecnológico para Producción de Linaza
Publication No. 17.	Paquete Tecnológico para Producción de Trigo
Publication No. 18.	Paquete Tecnológico para Producción de Café
Publication No. 19.	Guía Técnica para la producción de Café
Publication No. 20.	Paquete Tecnológico para la Producción de Genibre

Vegetable and Fruit Production

Publication No. 1.	Paquete Tecnológico Producción de Papa
Publication No. 2.	Paquete Tecnológico Producción de Hortalizas
Publication No. 3.	Paquete Tecnológico Producción de Piña
Publication No. 4.	Guía para el Establecimiento de Huertos Familiares
Publication No. 5.	Guía Técnica para Parcelas Extensivas de Soya
Publication No. 6.	Paquete Tecnológico Producción de Quesquisque
Publication No. 7.	Paquete Tecnológico Producción de Chayote
Publication No. 8.	Paquete Tecnológico Producción de las Cucurbitáceas

Continued --

Table 11. Continued

43.

Pest Control

Bulletin No. 1.	El Control de malezas con Herbicidas
Bulletin No. 2.	El Control de Ratas de Campo
Bulletin No. 3.	Guía para la aplicación de Pesticidas
Bulletin No. 4.	Control de Babosas o Lipos
Bulleten No. 5.	Principios de control de malezas

Livestock Sanitation

Manual No. 1.	Vacunación y Deparasitación del Ganado Bovino
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Livestock Production and Nutrition

Bulletin No. 1.	Establecimiento, Utilización y Manejos de los Pastos.
Manual No. 1	Manual de Apicultura

Human Health

Miscellaneous Publication

No. 1	Manejo y Uso de Pesticidas
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Educative Materials

Publication No. 1	El Proceso de la Comunicación
Publication No. 2.	Medios Visuales
Publication No. 3.	Manual de Organización y Uso de la Biblioteca
Publication No. 4.	La Conferencia
Publication No. 5.	Use bien el Pizarrón
Publication No. 6.	El Lenguaje Oral

Technical Circulars

Circular No. 1.	Control de enfermedades de los Frijoles
Circular No. 2.	Introducción a la Comunicación

Technical Extension Material

Publication No.1	El Control de Babosa
Publication No. 2.	Cuando Regar.

seed, adequate cultural practices for the farmer's conditions, and proper use of chemicals.

2. Stimulate sequential, systematic technological training, paralleling the seasonal development of the crops through the year; the plan to be worked out together with the farmers of each community.
3. Make intensive use of audiovisual media during the training process.
4. Emphasize technological transference through the use of training plots and/or farmer plots considered optimum for the locality.
5. Provide technical assistance in the care and management of major and minor species of livestock according to their importance for these activities in the different localities.

The goals established for technical training in 1978 are shown in Table 12. The items in this table are not fully comparable with those in Table 10; however, one noticeably different item is the emphasis on model farmer plots.

II-B. Motivation-Organization- Capacitation (MOC)

This line project is aimed at stimulating local initiative at the community level. As the title infers, it involves three aspects: Motivation (awakening the community to an awareness of its improvement potential); Organization (helping the communities establish a democratic structure through which development projects can be channeled);

Table 12. INVIERNO: Technical Training Goals, 1978

Item	Unit	Goal
Training plans	No.	346
Group meetings	No.	3,432
Technician courses:	No.	44
Subjects	No.	44
Participants	No.	81
Farmer courses:	No.	
Subjects ^a	No.	76
Participants ^b	No.	9,211
Individual visits	No.	27,744
Training plots	No.	95
Extensive plots	No.	84
Model farmer plots	No.	399
Corn yield	qq./mz.	22.9
Bean yield	qq./mz.	8.6

a. Total for the number of subjects taught in each CEDE; repeated in various localities.

b. Participants usually participate in more than one course.

Source: Plan Operatino para 1978, page 21 and Tables 11 and 23.

Capacitation¹ (providing training to the community and the organizational leaders in local self-help activities).

The MOC project supports INVIERNO's legal responsibility to promote active leadership participation by the rural communities in its social and economic programs.

The MOC process is directed to both INVIERNO technicians and farmer participants as INVIERNO's strategy to attain coordinated participation of the community in addressing commonly felt problems. In the initial phase of project development, MOC methodology was directed to INVIERNO's newly-hired agriculture extension personnel, or AGROMOCs, so that they could communicate better and be more sensitive to the needs of the rural poor. The aim was to establish open dialogue, generate community interest, create an environment in which new, integrated agriculture development services could be introduced, and establish mutual confidence especially during the initial experimental phase of the project. As no community organizations prevailed in most of these areas, INVIERNO took the initiative in selecting, organizing, and training community consulting committees to provide character references on all loan applicants; and local leaders (voluntary collaborators) who functioned as community facilitators between the community and INVIERNO field technicians. In addition, informal, project-specific, community development organizations were encouraged.

1. Capacitation is an Anglicized form of the Spanish word; a good literal translation is "competence training."

A further assessment of the cultural, social, and economic development needs of these communities made it obvious to INVIERNO that a more comprehensive and self-sustaining, locally based type of organization was required. Two types of organizational models were developed: the community Junta (board) and the CEDE level multi-service cooperative.

During 1977 INVIERNO-promoted community organizations in 130 localities worked on 330 projects such as roads, latrines, vaccination, schools, and wells (Table 13), which were executed with the support of the Ministry of Public Works and the Ministry of Public Health. INVIERNO contributed logistical support in some instances.

Via this experience, INVIERNO decided that given the magnitude of community needs, limited local leadership resources, and community confusion resulting from the variety of organizations "competing" for the limited leadership in the same community, a more comprehensive community promotion strategy, cognizant of local needs and resources should be undertaken. Beginning in August 1977, INVIERNO social promoters began implementing this new organizational strategy which has now developed 120 informal community associations serving INVIERNO and non-INVIERNO rural residents, covering almost half the communities served by INVIERNO. These community associations have elected their own 5-7 member Community Boards. The Boards serve as the local focal point responsible for organizing the community; determining community needs and project priorities; coordinating all external agency activities; and implementing,

Table 13. INVIERNO: Community Development Program Activities, 1977
(Value of contribution in Córdoba)

Types of projects	Communities participating	Results attained ^a	Contributions		
			Community	INVIERNO ^b	Other agencies
Road construction and/or improvement	45	134.75 kms.	111,830	4,040	AID: 10,000 CEPAD: 5,580 Alcaldia: 3,000 M.O.P.W.: 14,550
<u>Health:</u>					
Clinics	3	1 unit	5,106	--	
Vaccination/parasite control/fumigation	28	2,762 vaccinations	2,010.56	1,070	M.O.H.: 17,580
Potable water ^c	25	12 units	17,082	480	SNEM: 6,000
Latrines and lavaderos	40	514 units	93,016.50	190	PLANSAR: 278,837.98 PMA: 300
<u>Education:</u>					
School construction and/or improvement	35	14 units	63,637	850	CARE: 3,960 Peace Corps: 12,000
Clubs and groups organization and training	119	87 units	--	--	--
<u>Family gardens</u>	13	146.75 units	15,409.5	20	
<u>Miscellaneous:</u>					
Sewing and embroidering	12	150	1,929.5		
Construction and/or improvement ^d	6	2	4,750	50	Caritas: 3,400
Sport articles and toys	3	128	4,180	--	
Electrification	1	--	2,000	50	
TOTAL	330^e		320,951.06	6,750^b	355,207.98

a. Includes only those that are already finished.

b. Includes only transportation costs; no amounts provided on promotional and technical services rendered.

c. Includes well and tank construction and any other potable water infrastructure.

d. Includes a small church, a community house, cemetery, et al.

administrating, and evaluating all community level projects. Thus far, 411 members from 66 Boards have received a four-day training program¹ designed to better prepare them during their period in office to develop socially viable and cohesive groupings capable of serving both in community action and service awareness. The initial training programs have been well received by the Boards. As they demonstrate capability to do so, INVIERNO is now transferring the consulting committee responsibilities to them, involving them more in loan collection assistance, and exploring group credit arrangements. In addition, as a means of institutionalizing feedback to INVIERNO from farmer participants, all INVIERNO "communities" were surveyed in December 1977 to determine their needs and the services INVIERNO could provide them. This grassroots strategy is now incorporated in the 1978 INVIERNO national operating plan.

It is contemplated that the Boards would be organizationally linked to the regional cooperatives, which will serve both INVIERNO and non-INVIERNO farmers of the target communities. The plan provides for trained management staff and as volume expands, for administrative and extension assistance, as well as the necessary support facilities and equipment for the cooperatives. In 1977, a series of surveys was undertaken on farm family purchasing habits, a detailed co-op feasibility study was prepared, Board-level promotion was initiated, and a CEDE was selected to initiate

1. AID/W is assisting this activity by providing a team of consultants, expert in non-formal education, to develop a more comprehensive curriculum.

the project (Matiguás). The co-op is expected to be initiated in the early part of 1978; as of this writing, INVIERNO and loan-funded consultants from Servicios Técnicos del Caribe and ACDI are conducting a final review of the project's implementation plan. The initiation of this strategy will receive close monitoring, as INVIERNO views this as a means to decrease per unit operating costs, thus making it possible to expand activities within, as well as beyond, the two regions presently served.

The first year evaluation report commented that no comprehensive methodology or implementation plan had been prepared for MOC. Since that time, INVIERNO has prepared a detailed procedures manual for this line project. The current status and other recent activities are summarized as follows:

1. 283 communities now being served by INVIERNO.
2. 204 Voluntary Collaborators have been designated.
3. 100 Community Boards elected.
4. 135 technicians related to MOC and leadership development given six training courses.
5. In 1977, MOC training courses given to 347 leaders from 56 Community Boards; plus 98 leaders from 16 Community Boards in the first 5 months of 1978 (because of INVIERNO personnel readjustment, this is about 50 percent of the number originally planned).

6. Completion of 218 community development projects in the 283 communities served by INVIERNO. In the form of local contributions, the communities generated almost 50 percent of the total project costs.
7. Conducted a detailed self-evaluation of the MOC program as basis for determining 1978 implementation plan and complementary training requirements.
8. Finalized plans for implementing cooperative development strategy.

Nevertheless, the MOC goals generally showed a considerable shortfall in the principal physical measures (Table 14). While the goals were evidently over-ambitious, the performance data show a considerable level of activity in absolute terms.

Social promotion policies emphasized in the 1978 operation plans are as follows:

1. Emphasize the formation of community Boards, the identification, follow-up and evaluation of plans carried out by them, and the organization of dependent groups such as clubs of farmers, housewives, and youths.
2. Participation of the community Boards in the preparation of plans and in coordination of activities to be developed by public, private institutions that effect localities.
3. Motivate and train the Boards in aspects relating to the formation of formal organizations, especially farm stores.

Table 14. INVIERNO: MOC Goals and Accomplishments
in Selected Activities, 1976 and 1977

Type of activity	Number of activities			Number of participants		
	Goal	Results	Percent achieved	Goal	Results	Percent achieved
<u>1976</u>						
Community development groups	--	131	--	--	3,453	--
Housewife groups	--	21	--	--	324	--
Farmer groups	--	70	--	--	4,898	--
Technician training courses	13	13	100	711	473	66
Voluntary collaborator courses	--	1	--	--	104	--
<u>1977</u>						
Community junta groups	138	75	54	772	420	54
Housewife groups	48	7	15	1,200	41	3
Technician training courses	21	11	52	1,077	268	25
Community junta courses	18	10	56	1,222	350	29
Housewife courses	--	--	--	720	41	6
Voluntary collaborator courses	2	3	150	222	204	92

Source: Informe de Evaluacion, Grupo de Estudio, January 1978, Tables 77 and 78.

4. Involve the community Boards in the process of approving loans as well as in the repayment of loans.
5. Promote the massive establishment of family gardens and training in nutrition, in accordance with the calendar defined for each CEDE.
6. In the case of those services that INVIERNO does not offer, provide assistance to the community on most effective manner of obtaining the services and undertake the coordination with the respective institutions on channeling the services to the localities.
7. Promote farmer participation in the technical training meetings and meetings of other types.

MOC-related programming for 1978 is shown in Table 15. These goals considerably surpass accomplishments in 1977; they should possibly be considered as programming maximums rather than realistic probabilities in view of the shortfalls in 1977 goals.

Community development activities involving 24 types of projects are scheduled for 1978. The 11 principal ones are listed in Table 16. The financing is shared between the community and the cooperating institutions, as detailed in the 1978 operating plan.

Table 15. INVIERNO: Programmed MOC-Related Activities, 1978

Activities	Number	Participants
Farmer groups organized ^a	269	4,787
Social promotion meetings	2,086	76,501
Motivation sessions	1,781	43,411
Capacitation courses	596	13,941
Coordination meetings	535	3,828
Evaluation sessions	751	11,082
Debt recuperation sessions	64	440
Technical personnel courses	44	479

a. Net increase of 13 over current number.

Source: Operation plan for 1978, tables 9, 22 and 23.

Table 16. INVIERNO: Principal
Community Development Project
Goals, 1978

55.

Project	Goal
Latrines	2,897 units
Road construction	61 kms.
Road improvement	187 kms.
School construction	27 units
School improvement	41 units
Well construction	52 units
Family gardens	27,000 square varas
Livestock vaccination	12,694 cattle
Fumigation	795 homes
Electrification	35 kms.
Potable water	4,514 beneficiaries

Source: Operation plan for 1978, Table 1.

II-C. Agricultural Credit

The agricultural credit project is aimed at increasing the productivity of poor farmers in selected communities. The basic criterion for community selection is the preponderance of families with incomes below the national per capita average. This, as explained in the first year evaluation report, was estimated to be the equivalent of farms not exceeding 99 mzs. This criterion has now been changed to limit additionally the area of cultivated land to 30 mzs. A further limitation applies to the size of individual production loans. At present, loans over C\$15,000.00 must be individually examined by the CEDE Manager, over C\$25,000.00 by the Regional Manager, over C\$35,000.00 the Assistant General Manager for Operations, and over C\$50,000.00 by the General Manager. The absolute maximum is C\$70,000.00.

Credit is offered to the participants in two forms:

1. Short-term production credit, approximately one year term under a 5 year line of credit.
2. Long-term credit for capital investment, on similar terms as those offered by banking institutions.

The agricultural credit process begins with the selection of the community, followed by the selection of farmers. The first contact is made by the AGROMOC through leaders in the locality in order to arrange an informational meeting with neighbors. The AGROMOC coordinates the meetings, explaining the activities that INVIERNO performs and the

manner in which these can be obtained, the credit policies, rate of interest, recovery of loans, etc.

At an early stage a community consulting group is formed in order to select persons that would help the AGROMOC in the development of activities. The consulting group consists of the designated voluntary collaborator and two other collaborators. The voluntary collaborator is a person who is disposed to cooperate in all activities that may be planned for the community and is a point of contact between the community and the AGROMOC. The development of community boards, described in the prior section of this report, is a further step for intensifying community control of the various programs, including the credit program.

Following the initial meetings, credit registration applications are filled out (these are termed a CENSO, or survey). The applicant provides pertinent information on his agricultural activities. The application is then subject to review for credit worthiness following prescribed criteria.

References on the applicant are supplied by the consulting group, by a neighbor, and by the AGROMOC. In localities where community boards have been formed, this group has replaced the consulting groups and neighbors as a source of references.

The application and the references are then sent to the central office in Managua where a decision is made through a computerized system consisting of two steps. In the first, the application is subjected to a comparative analysis to determine if 10 defined requirements are met; if not, the

application is not approved. In the second step, the data are subjected to a weighting procedure that gives a point score based on the characteristics of the applicant and his farm. Point scores are then compared with an established minimum to determine whether the farmer is or is not accepted.

Accepted applicants are registered as being eligible for financing and for signing a contract that provides a 5-year line of credit. Rejected applicants are permitted to apply in future seasons since their socioeconomic situations may change.

The 5-year line of credit procedure provide assurance to the farmer for the future, permits adapting the financing to seasonal variations and other factors that may affect him, and provides flexibility in regard to loan payments and repayments, within a maximum limit established for each participant. This procedure reduces costs both for the Institute and for the farmer, because he does not have to incur legal expenses for separate loans each crop season and each year.

The loan guarantee depends on the type of credit given. For fixed investments a lien is taken on the financed property. In the case of permanent crops (coffee, etc.), a mortgage is taken on the land. For production loans, dependence is placed primarily on the honesty of the participant, reinforced by the recommendations from the consulting group or community board and the orientation provided by t'. INVIERNO field personnel originally.

Technical training to all farmers of the communities is provided by the AGROMOC; it is aimed at increasing crop productivity through the efficient use of production inputs. CREDOMERC provides guidance to farmers on the best way of selling the products in order to increase income. (See section on marketing for further details.) The traveling cashier carries the loan funds to the communities for delivery to the participants and collects payment at the time of sale of the crop or in the agreed payment period. The cashier of the CEDE is responsible for managing the funds provided to the CEDE; he controls the traveling cashiers and keeps individual accounts on the farmer participant debts. The manager of the CEDE is responsible for the overall coordination and control of all activities carried out at the CEDE, including the agricultural credit activities.

The formal framework for defining the responsibilities of the personnel is provided by 19 manuals and instructions. These documents provide standardized procedures for granting credit, the mechanisms necessary for qualifying farmers as creditworthy, and the operative procedures for servicing and recouping the debts or handling delinquencies.

The results obtained in 1976 and 1977 loan period have been discussed in detail in the Gonzalez-Vega report. A portion of the information is repeated and updated here for purposes of the evaluation.

Overall, the agricultural loan program has been operating much below the goals established at the beginning

of the program and at the start of each year. Table 17 shows the goals set for the number of participants and loan disbursements and actual performance in 1976 and 1977. In the first year, the number of participants was approximately in line with the program, although disbursements were somewhat lower than expected, especially in comparison with INVIERNO's 1976 implementation plan. The first year evaluation projected new 1977 goals but the actual results fell far short, especially for disbursements. However, compared with 1976, the 1977 participants and disbursements showed an increase of about 50 percent.

Some of the factors in the loan performance are indicated by the data in Table 18. Authorizations refer to the amounts that farmers were authorized to borrow according to their planting plans and the technology for which they had been approved. Disbursements are the amounts actually borrowed under these authorizations. The lower part of the table, showing the disbursements as a percentage of authorizations, indicates the shortfall in the programmed goals. It will be noted that the number of loans actually disbursed (since some farmers take more than one loan during the year, the number of loans exceeds the number of participants) came reasonably close to the number programmed, 81 percent in 1976 and 72 percent in 1977. However, the amount per loan was much less than authorized, 52 percent in 1976 and 42 percent in 1977. As a consequence, the total loan disbursements fell far short of programmed amounts, especially in 1977 when C\$41 million was programmed and C\$12 million was loaned.

Table 17. INVIERNO: Agricultural Credit Project,
Programmed and Actual, 1976 and 1977

(Thousands of Córdoba)

Item	1976		1977	
	Number of participants	Disbursements	Number of participants	Disbursements
Programmed				
CAP (1975 est.) ^a	1,498	6,245	3,504	19,439
INVIERNO (1976 est.) ^b	5,000	42,000	10,000	84,000
ATAC report (1976) ^c	3,494	17,160	9,500	48,580
INVIERNO (1977 est.) ^d	--	--	--	--
Actual ^e	4,000	8,516	6,500	12,397

Sources:

- a. Capital Assistance Paper, p. 59.
 - b. Plan General de Implementación, 1976, p. 27.
 - c. ATAC First Year Evaluation, p. 55 (participant number at primera or postrera, whichever is larger) and p. 62.
 - d. Plan General de Implementación, 1977.
 - e. Departamento de Programación y Control.
- Sources: Capital Assistance Paper, Plan General de Implementación, ATAC First Year Evaluation, and Departamento de Programación y Control.

Table 18. INVIERNO: Agricultural Loan Totals,
 Authorizations and Disbursements,
 1976 and 1977

Authorizations/ disbursements	1976	1977
Authorizations		
Amount (C\$ 1,000)	19,403	41,166
Number of loans	6,974	13,188
Amount per loan (C\$)	2,782	3,122
Disbursements		
Amount (C\$ 1,000)	8,516	12,397
Number of loans	5,631	9,556
Amount per loan (C\$)	1,512	1,297
Disbursements/authorizations (percent)		
Amount	44	30
Number of loans	81	72
Amount per loan	52	42

Source: INVIERNO: Departamento de Programación y Control.

Factors in this shortfall in disbursements were: severe droughts in 1976 and 1977 which may have restrained farmers' willingness to borrow; some of the authorizations for labor, chemical inputs and land rental were found to have overestimated small farmer requirements. About 40 percent of farmers own land and therefore do not require the amounts authorized for land rental, while many farmers are able to furnish part of their labor and chemical inputs.

It will be noted from Table 18 that the average size of loan is small, amounting in 1977 to only C\$1,297 (US \$185). The most common loan size class, as shown in the following table, was between C\$1,000 and C\$3,000:

<u>Loan amount</u> <u>(Cordobas)</u>	<u>Number</u> <u>of loans</u>	<u>Percent</u>
Less than 1,000	2,713	34.0
1,00 to 2,999	3,561	44.7
3,000 to 4,999	943	11.8
5,000 to 6,999	334	4.2
7,000 to 9,999	202	2.6
10,000 and over	215	2.7
Total	7,968	100.0

Note: Accumulated through September 30, 1977.
Source: González-Vega, Table 1, op.cit.

The loans have been authorized predominantly to very small farms as shown in Table 19. Eighty-two percent of the loans were authorized to farms with less than 5 mzs. and these loans accounted for 72 percent of the authorized loan area. The average area authorized for financing per loan is also small, only 2.5 mzs.

Table 19. INVIERNO: Loan Authorizations by Farm Size, 1977

Farm size	Loans		Area		Average area per loan (manzana)
	Absolute (number)	Relative (percent)	Absolute (number)	Relative (percent)	
Less than 5 mz.	10,780	82	24,134	72	2.2
5 < 10 mz.	1,415	11	4,884	15	3.4
10 < 20 mz.	698	5	2,908	9	4.2
20 and more mz.	295	2	1,532	4	5.2
Total	13,188	100	33,458	100	2.5

Source: INVIERNO: Departamento de Programación y Control.

The picture that emerges from the foregoing data is that INVIERNO's clients are indeed small farmers and they are predominantly borrowing small amounts. The loans per participant are, in fact, much less than had been programmed originally and in the yearly plans. A large proportion of the farmers approved as INVIERNO participants do not own their own land as shown in the following tabulation:

<u>Land tenancy</u>	<u>Frequency (percent)</u>
Owned	41
Rented	48
Occupied	10
Other	1
Total	100

INVIERNO automated procedures establish maximum loan authorizations based on the crops each farmer intends to produce, the technology to be employed, investment needs, and allowances for family maintenance, investments and implements. However, CEDE Managers may increase loan authorizations up to 150 percent the original amount, if circumstances indicate this is necessary. The Regional Manager, Assistant General Manager for Operations and General Manager may also authorize further scaled increases, thus introducing some flexibility into the system.

Actual disbursements, however, depend upon farmers' requirements at the time of disbursement. These are totaled for 1977 in Table 20 for the three planting seasons. The principal production inputs disbursed were for fertilizer, oxen hire, seed, and land rent. Hired labor and pesticides

Table 20. INVIERNO: Agricultural Loan Disbursements
by Input and Planting Season, 1977

Input	Early season	Mid season	Late season	Total	Relative (percent)
- - - - (1,000 Córdoba) - - - -					
Production					
Land rent	1,182	646	177	2,005	16.2
Seed	1,085	714	382	2,181	17.2
Fertilizer	1,478	890	156	2,524	20.4
Pesticides	416	416	131	963	7.8
Hired labor	754	439	67	1,260	10.2
Oxen hire	1,243	854	128	2,225	17.9
Small implements	96	85	17	198	1.6
Subtotal	6,254	4,044	1,058	11,356	
Investment				361	2.9
Family maintenance				680	5.4
Total				12,397	100.0

Source: INVIERNO: Departamento de Programación y Control.

are next in importance while disbursements for family maintenance, investments, and small implements were of relatively minor importance.

The status of the agricultural loan program on December 31, 1976 and 1977 is summarized in Table 21. Total loans disbursed in the 2 years amounted to C\$20,915,400. With accumulated interest this came to C\$23,161,400. Payments received through December 31, 1977, C\$7,286,600. This leaves a balance of C\$15,874,800; of this amount, C\$13,525,400¹ is current, equivalent to 85 percent of the balance.

INVIERNO's collection procedure is to adjust the repayment rate to the farmer's ability to pay, which may be reduced due to unfavorable growing conditions. The line-of-credit concept is intended to carry the borrower through poor years. Shortfalls in one year would be offset by accelerated repayments during good crop years.

Farmers are required to repay production loans plus interest, approximately ten months after loans are disbursed, which permits a period of 5 to 6 months after harvest for farmers to seek the best market prices. Those farmers with below standard yields because of justifiable causes are reported by AGROMOCs to CEDE Managers and then to the Central Office where minimum payments are calculated according to the percentage of justifiable losses. A

1. Includes restructured.

Table 21. INVIERNO: Agricultural Loan Disbursements,
Repayments and December 31 Balances, 1976 and 1977

(Thousands of Córdoba)

Year	Item	Amount
1976	Loans disbursed	8,455.9*
	Interest earned	525.0
	Subtotal	8,980.9
	Payments received	1,628.7
	End-of-year balance	7,352.2
1977	Start-of-year balance	7,352.2
	Loans disbursed	12,459.5
	Interest earned	1,721.0
	Subtotal	21,523.7
	Payments received	5,657.9
	End-of-year balance:	
	Current	10,910.1
	Restructured (approximate)	2,615.3
Delinquent	2,349.4	
	Total	15,874.8

Source: INVIERNO: Departamento Programación y Control.

* Does not include amounts disbursed in January 1977,
which corresponds to the 1976 planting season.

description of the calculating procedure is given by González-Vega (op. cit. pp. 90 to 93). In this way, accounts in arrears may be determined to have justifiable causes and these balances are restructured. At the end of 1977, the restructured balances were estimated at C\$2,615,300. The remainder, C\$2,349,400 were declared delinquent (en mora). Balances so declared are charged an additional 2 percent interest, or 20 percent in total on the unpaid amounts.

The declared delinquency relative to the total of loan disbursements and interest earned over the 2 years is equivalent to 10.14 percent. This is slightly higher than the provision made for delinquent loans in the statement of account (10 percent).

A definitive evaluation of the repayment situation cannot be made at this time since a large part of the 1977 loans had not yet become due at the time of the evaluation. Furthermore, 1976 especially, and 1977 somewhat, suffered from below normal rainfall which, as explained above, is taken into consideration in determining repayment rates.

Loan goals for 1978 are given in the operative plan for that year. The following guidelines have been adopted:

1. Financing for perennial crops like coffee, chayote, plantain, bananas, and penca; and for annual crops, castor bean, soybean, flax and chilla.
2. In each locality, financing will be supplied only for crops with possibility of success in accordance with their ecological potentials; unadapted crops will not be.

financed. The guide for this will be the zonification study conducted last year by the Agricultural Production Department.

3. Identification of localities where agricultural financing will be discontinued for lack of adequate crops adapted to the ecological conditions. Financing for other INVIERNO services may be continued in such localities.
4. Promote an increase in average finance area and average loan per participant and per manzana, and also the use of more advanced technology.
5. Increase the level of loan recovery.
6. Classification of participants as recommendable and not recommendable based on their credit performance.

The physical goals are shown in Table 22. They call for a 33 percent increase in the area financed over 1977, and an 85 percent increase in the amount of financing. This implies that the loan per manzana would increase by 39 percent. The total number of loans anticipated are 17,754, but the number of farmers participating would be fewer since some of them will borrow for more than one crop and for more than one planting season. Corn and beans should continue to be the principal crops financed. Among other important crops would be potatoes, sorghum, and vegetables. Comparative data for 1977 and 1978 plans in regard to value and area of crops financed are given in Table 23.

II-D. Agricultural Input Supply

The input supply program complements the production and agricultural credit programs by supplying participant farmers

Table 22. INVIERNO: Agricultural Loan Program,
Area and Amounts, Actual for 1977 and
Planned for 1978

Item	1977 (Actual)	1978 (Planned)	Percent of increase
Area financed (thousands of manzanas)	21.2	28.2	33
Amount financed (millions of Córdobas)	12.6	23.3	85
Córdobas per manzana	594	826	39

Source: INVIERNO Plan Operativo para 1978, Table 12, and Departamento de Programación y Control.

Table 23. INVIERNO: Crop Loan Financing, Actual for 1977 and Planned for 1978

72.

Crop	Area		Financed	
	1977	1978	1977	1978
	-----Manzanas-----		-----Thousands of cordobas-----	
Corn	10,105.3	12,078	4,271.0	8,205
Beans	9,007.0	10,365	3,467.8	6,318
Corn and beans	476.0	150	190.9	150
Sorghum	601.0	2,638	343.5	1,812
Potatoes	495.0	538	1,622.0	2,561
Cabbage	320.5	372	a	572
Tomato	215.4	302	239.2	565
Peanuts	159.0	300	109.1	210
Other horticulture	288.3	605	749.7	1,173
Coffee	--	424	--	956
Others	287.0	438	164.5	776
Total	21,954.5	28,210	11,187.9	23,298

a. Included in other horticultural crops.

Source: 1977 data from Departamento de Programacion y Control; 1978 data from Plan Operativo para 1978.

with production inputs which generally are not available in the communities where INVIERNO works.

The determination of the input quantities to be utilized are made in advance of each of the three crop seasons, based on a questionnaire prepared by the AGROMOCs in the field with the farmer. Principal factors in this determination are the number of manzanas to be seeded and the technology level for which credit has been approved. The requirements of the six CEDEs are combined and public licitations issued for the purchase. The purchase contracts establish a margin of flexibility, 20 percent above or below the quantity specified in the contract, so that INVIERNO can be protected against over- or underestimating the input volume required. The supplies are usually delivered to the CEDEs by the supplying company, although delivery from the CEDEs to the communities may be made by INVIERNO personnel, particularly if the amounts are small.

Distribution of inputs to the farmers is carried out as an integral part of the credit arrangements. The participating farmers meet at a central point in the community and receive the cash which they are borrowing. The distribution of funds is made by the traveling cashier, in accordance with the agreements approved by the farmer and INVIERNO. The farmer purchases the inputs at the same location and at the same time as he receives the cash. In this way, the use of the money for the intended purpose is assured.

Input sales prices are the summation of the following items:

- a. Net price at the factory;

- b. Sales tax (1 percent for pesticides and fertilizers, 2 percent for seeds and equipment);
- c. Cost of transport to the CEDE (approximately C\$4 per qq in Region V and C\$2 per qq. in Region II);
- d. Four percent for losses;
- e. Five percent for handling costs;
- f. Transport cost from the CEDE warehouse to the locality (C\$2.5 per qq.).

The additional costs have amounted to 12 to 30 percent over the net FOB factory price. The prices are then compared with those of distributors in the departmental capital closest to the CEDEs; INVIERNO sales prices may not be less than 95 percent of distributor prices nor more than C\$5 per qq. higher.

The programmed and actual sales of agricultural inputs in 1976 and 1977 are shown in Table 24. Sales were below amounts programmed at the start of each season. It is seen that INVIERNO's programming in 1977 had been adjusted to the 1976 experience in that programmed quantities were reduced for all items except fertilizer, the principal input sold. Fertilizer was also the principal input to increase in actual sales from 1977 over 1976. The decrease in sale of seed may be due to a variety of causes including: the decision by INVIERNO not to sell bean seeds as most farmers prefer to supply their own; in some instances it was not possible to obtain seeds better suited to the different climatic conditions than those locally grown; and the discouraging effect of droughts as mentioned previously.

Table 24. INVIERNO: Sale of Agricultural Inputs to Credit Participants, Programmed and Actual, 1976 and 1977

Input	1976		1977	
	Programmed	Actual	Programmed	Actual
Seeds ^a	12,300	2,249	4,538	1,120
Fertilizers ^a	39,200	16,266	52,534	32,591
Pesticides:				
Solid ^a	8,600	1,800	4,466	2,275
Liquid ^a	19,500	600	8,164	1,026
Pumps	--	--	--	231

a. Quantity in quintales.

b. Quantity in gallons.

Source: INVIERNO Informe de Evaluación, Grupo de Estudio, and Division de Comercialización.

Pesticide sales also increased, although liquid pesticides did not make as good a showing as solid pesticides. This was believed to be due to lack of spraying equipment; as a consequence, in 1977, INVIERNO started to sell spray pumps to participants.

In 1978 program guidelines, as described in the "Plan operativo para 1978," do not indicate any major changes in policy or inputs. However, the points mentioned indicate the problems that had been experienced in the field: more timely supply of inputs to the farmer, more attention to the quality and quantity required, and more thorough instruction to the participants on applying and managing the inputs.

The sales goals for 1978 are as follows:

Improved seeds	2,049 qq.
Fertilizers	63,409 qq.
Solid pesticides	7,060 qq.
Liquid pesticides	3,925 gallons

It will be noted that these goals are well above actual sales in 1977 but less than the quantities programmed in that year except for fertilizer, the use of which doubled from 1976 to 1977.

II-E. Crop Marketing

Originally INVIERNO entered into a purchase contract with INCEI under which INCEI would act as a purchaser of last resort at a guaranteed minimum price for grains produced by INVIERNO clients. INCEI is an institution

established by the Government to support basic grain prices, regulate supplies, and meet deficiencies through imports.

However, due to dry weather, the 1976 harvest was smaller than usual and as a consequence, market prices were well above those offered by INCEI. Consequently, only 2 percent of the corn and 18 percent of the beans produced by participants were marketed to INCEI. The formal arrangements with INCEI have now been terminated since that institution would require a delivery contract, which INVIERNO is not in a position to fulfill. In 1977, INVIERNO discontinued all direct marketing of crops.

INVIERNO operates a price and marketing information service for small farmers. It has devised a reporting system for approximately 25 products, covering wholesale prices at principal sales points, farmer prices, and quantities being offered and entering the principal markets. For each market, a master file has been established on demand potential and transportation costs from various CEDE points. This information is stored in the INVIERNO computer. The price and sales data that arrive at the central office are fed into the computer, which then calculates price margins for the various markets. The information, broadcast by the INVIERNO radio program three or four times a week, provides guidance to farmers as to the most desirable current markets. The radio program, which has been functioning since the start of the current year, has been particularly useful to vegetable producers.

Another aspect of the INVIERNO marketing program is formation of group or cooperative marketing. A potato growers cooperative has been formed in Jinoteca. It now controls about 75 percent of the country's potato production. (However, 70 percent of the potatoes consumed are imported.) The cooperative was formed in December 1976, and has 65 members, handling approximately 50,000 qq. annually. Feasibility studies are now underway on the construction of a potato storage warehouse, in order to control sales and fluctuations in price, and on consumer packaging of potatoes for sale to supermarkets. Preliminary conclusions are that consumer packaging can increase the cooperative sale price by 35 percent.

Guidelines for the 1978 crop marketing project emphasize the following policies (see "Plan operativo para 1978"):

1. Promote adequate storage and preservation of the harvests through a systematic program for appropriate technical training of INVIERNO employees;
2. Intensify the timely gathering and distribution of information on prices and markets to participants in the communities;
3. Increase technical assistance in the formulation of contracts between producers, buyers, and truckers; and
4. Promote the formulation of production plans that reflect potential market demand.

Marketing goals for INVIERNO participants have been established for 1978 with separate estimates for group and

individual sales. The goals for major agricultural commodities are shown in Table 25. No data are available at this time on past marketing practices but as noted in the table INVIERNO expects group sales to be a major factor in the marketing of corn, beans, sorghum, and potatoes. Among minor commodities (goals are established for 21 in total) those expected to be marketed mainly through groups are coffee, wheat, flax, and peanuts.

II-F. Adaptive Research

The introduction of improved crop varieties, and production practices has been considered by INVIERNO to be the most available way to increase the income of farmer participants. Such farmers have traditionally used low technology practices based on unimproved seeds and little if any fertilizer. It has been assumed, based on past research and extension experience in Nicaragua, that known improved technology could considerably increase farm income. This is the basic assumption of the CAP.

It was recognized, however, that small farmers, the target group of the INVIERNO program, operate under restraints quite different from those for which generalized production recommendations have been developed. Consequently, a research program aimed at developing technologies specifically for them was adopted as an important part of the INVIERNO program. A Project for Investigations Adapted to the Small Farmer (PIAPA) was established under an agreement between INTA and INVIERNO covering a 1-year period beginning February 1, 1977, with option for renewal. The

Table 25. INVIERNO: 1978 Marketing Goals
for Selected Agricultural Commodities,
by Type of Sale

Commodity	Unit	Type of sale		
		Group	Individual	Total
Corn	1,000 qq.	89	73	162
Beans	1,000 qq.	34	39	73
Sorghum	1,000 qq.	30	12	42
Potatoes	1,000 qq.	32	21	53
Tomatoes	1,000 crates	6	80	86
Cabbage	1,000 head	84	6,123	6,207

Source: INVIERNO Plan Operativo para 1978.

project is funded with \$800,000 from AID loan funds and \$200,000 from the GON.

The research program contemplates, in general terms, two aspects:

- a. Execution of a plan of research directed at the development of technological packages for small farmers.
- b. Soil analyses, as INVIERNO requires, being part of services to participating farmers.

The 1977 operation was developed under a formalized plan. The project budget was \$92,500. PIAPA offices were established in the small city of Matagalpa in Region V. An 18-man team of Nicaraguan technicians was contracted, equipment and vehicles purchased, and a test demonstration plan approved and carried out. This research was to be done under conditions similar to those with which the small farmer has to work, particularly in respect to implements, quality of labor, etc. The following subjects were investigated in 1977:

1. Basic grain and horticultural crops;
2. Soil fertility and fertilization;
3. Cropping systems;
4. Insect control.

The initial results in the first year are summarized as follows:

1. Of the 11 varieties of white corn studied, two showed possibilities for increasing production by over 50 percent.
2. Of the 12 varieties of sorghum tested, several offered better production possibilities, especially for areas of low rainfall, such as Condega.
3. Of 25 varieties of black and red beans tested, several offer better production alternatives and five more than doubled production when compared to traditional varieties.
4. Interesting possibilities for improved tomato and cabbage production were indicated.

Under the soil testing phase of the project, INVIERNO submitted approximately 3,500 soil samples which were analyzed. It appears, however, that this information was not used in developing farmer recommendations.

INTA, in cooperation with the Centro Agronomico Tropical de Investigación y Enseñanza (CATIE) has a somewhat similar small farm research activity in Region V under a ROCAP-funded project. In view of the possibilities of cooperation, as well as duplication, a six-man CATIE team did an extensive evaluation of the PIAPA project in January 1978. Its report made recommendations regarding organizational structure, coordination, execution, training, technical assistance, soil analyses, and research procedures. The recommendations served as the basis for the redesign of the 1978 PIAPA operational plan, which was in an advanced stage of preparation when the current evaluation was made.

II-G. Family Gardens

Family gardens constitute a sub-project of the social development activity. However, as a new activity in 1977 that shows considerable promise, it is being reported separately in this evaluation. The family gardens sub-project was instituted against the background of studies, the most recent one in 1975 by the Ministry of Health in collaboration with the Institute of Nutrition of Central America and Panama (INCAP) that showed massive malnutrition in Nicaragua. The study, in addition to providing estimates of the degree of malnutrition, also pinpointed some of its causes, including low income, lack of knowledge about proper diet, related superstitions, and inadequate intra-family distribution. In rural areas, where land is readily available for small gardens, the principal constraints are lack of knowledge about the value of proper diet, lack of experience in planting vegetable gardens, and, to a lesser extent, low income and the unavailability of inputs such as fertilizer. Such constraints are precisely within the scope of INVIERNO's capabilities. In accordance with local custom, the family garden project has focused on women, with training in gardening techniques and nutrition, especially through organized community groups. The activity serves as a way to increase the direct participation of rural housewives in family and community improvement activities.

The 1977 activity was undertaken on an experimental basis to test family reaction to what is essentially a simple, easy to learn methodology. It was intended to

evaluate the results and incorporate the findings into a broader program in 1978.

In January and February 1977, INVIERNO prepared an operating plan and procedural manuals for this pilot activity. In early March, Social Promoters were assigned to work with AGROMOCs to work with groups of housewives. As the first step in this process, the technicians, utilizing a questionnaire, surveyed the nutrition problems in the CEDE. This material in turn was used at community meetings that were called to discuss the problem of under-nutrition and possible solutions available at the community level. The activity was started in seven small communities bordering on the town of San Ramón.

INVIERNO developed and applied criteria for the selection of communities, the eligibility of participants and the size of garden plots on the basis of such factors as all-year access to the community, water and land availability, age of the housewives (not over 65 years), and the presence of children of less than 15 years of age. It was also decided to restrict the size of each plot to 60 square meters. This pilot activity began in March 1977, with the participation of 41 housewives working in 37 gardens. Total area cultivated amounted to 2,220 square meters, or an average of 60 square meters per participant.

The first year experience indicated that home gardens can be stimulated by INVIERNO largely by technical assistance through the Social Promoters and AGROMOCs, with little

or no cost to INVIERNO. In the first year's program, in fact, all of the costs were carried by the participants.

In November 1977, INVIERNO conducted an evaluation of this first experience with home gardens, using a survey questionnaire supplemented by informal conversation. The evaluation revealed that the vast majority of the participants were highly pleased with the results and expected to continue the gardens in the future. The evaluation also revealed that in addition to consumption, family gardens can be an income supplement. Of the 41 participants, 22 sold some of their produce within the community; their total earnings were almost equal to the total costs of all participants.

INVIERNO's 1978 operational plans call for establishment of 27,000 square varas (a vara is approximately 1 yard) of gardens in San Ramón, Jinotega and La Trinidad. The plan is expected to benefit over 2,000 people. It will include training courses for 953 participants.

II-H. Small Business

The small business project was on a limited scale in 1977, first in the Jinotega, later the La Trinidad, CEDEs. Financing is available for three types of businesses: family businesses (for example, country stores), craft businesses (such as repair or carpentry shops), and formal legalized companies (such as cabinet shops in towns). The major part of INVIERNO's activity in 1977 was with family-type businesses.

Eligibility for loans is based on prescribed criteria. Assets cannot exceed C\$70,000 and net monthly income cannot exceed C\$4,000. In case the borrower has other income the total cannot exceed C\$6,000 per month. The interest rate is 10 percent on the full amount of the loan. If calculated on an unpaid-balance basis, the rate approximates the 18 percent charged for farm-credit loans, but varies with the length of the repayment period. For most loans the only required guarantee is a cosigner who assumes responsibility for payments in cases of default. When loans are given to purchase equipment or machinery, chattel is sometimes required. INVIERNO has drawn up a set of detailed guidelines for operating the project, including a point system for selecting applicants and accounting procedures for those selected. These guidelines are constantly updated according to experiences acquired in the execution of the project.

The project in 1977 reached an assortment of businesses, including general stores, bakeries, mechanical shops, metal shops, leather, carpentry, and brick making shops, and a potato treatment cooperative. The project includes technical assistance principally in groups, with training by individuals who have a somewhat higher degree of expertise.

The results of the first year's project are shown in Table 26. More than two thirds of the loans went to small stores, particularly rural general stores. The average loan amount was about C\$9,000, mainly for working capital to buy raw materials or stock in trade.

Table 26. INVIERNO: Small Business Loans, 1977

87.

Activity	Number of businesses	Amount (C\$1,000)		Loan utilization (%)	
		Total	Average	Investment	Working capital
Trade	200	1,794	9.0	2	98
Industry	57	470	8.2	10	90
Services	33	320	9.7	60	40
Crafts	2	3	1.5	--	100
Total	292	2,587	8.9	11	89

Source: INVIERNO Programa de Pequeña Empresa Rural, Informe de Logros, 1977.

Most of the businesses were one person operations or hired no more than one or two people; the hired personnel averaged 0.7 persons per business. A survey of the number of people in the families of the owners and hired hands showed that there was an average of 8.4 family members per worker, or a total of 2,445 persons who were benefitted directly by the project.

For 1978, operating policies call for preference to businesses in rural areas rather than in towns, and to businesses that employ a larger amount of labor. The numerical goals for 1978 are shown in Table 27 for the Jinotega and La Trinidad CEDEs only. It is expected that the small business loan program will gradually be extended to other CEDEs but INVIERNO did not consider it feasible to set specific goals for the other CEDEs at the time the operative plan was prepared. Comparing this table with Table 26, it is seen that the goal is to approximately double the program, placing somewhat less emphasis on businesses engaged in trade and more emphasis on industry, service, and craft activities. The major part of the loans would still go to towns and small cities within the CEDE areas with populations between 3,000 and 25,000 inhabitants.

II-I. Rural Access Roads

The construction of rural access roads in INVIERNO areas has been an integral concept of the program. However, pre-construction, planning, and negotiations have been lengthy and as a consequence, the actual building of roads is only now being scheduled. The Agricultural Sector Assessment completed in 1974 and subsequent planning

Table 27. INVIERNO: New Small Business Loans,
Program Goals for 1978

Activity	Urban		Rural		Total	
	No.	C\$1,000	No.	C\$1,000	No.	C\$1,000
Trade	91	810	57	345	148	1,155
Industry	50	418	32	294	82	712
Services	36	671	11	59	47	730
Crafts	17	52	15	45	32	97
Total	194	1,951	115	743	309	2,694

Source: INVIERNO Plan Operativo para 1978. Includes CEDEs of Jinotega and La Trinidad only.

documents recognize that all weather access roads constitute a major contribution to rural welfare. In addition, at the operational level, INVIERNO has established as a criterion for selecting target communities the existence of an all weather road accessible by a 4-wheel drive vehicle.

The Capital Assistance Paper estimated that 486 kilometers of road should be constructed and improved. AID would finance equipment costs and some construction costs with total financing up to \$1.3 million. Funding by the GON was put at \$1 million.

In July 1976 INVIERNO submitted the Access Road Implementation Plan to AID for approval. The Ministry of Public Works (MOP) would manage and implement the project. The plan provides that MOP will build the roads but that private contractors will also be used if this is determined to be necessary.

The implementation plan proposed that a total of 500 kilometers of roads would be constructed or improved as follows: 79 kilometers of new construction, 134 kilometers of dry weather roads improved to all weather roads, and 287 kilometers of existing all weather roads improved. Selection of the roads was based primarily on the number of people to be benefitted and the type of agricultural activity in the area.

The next step was the procurement of road building equipment. The development of plans and specifications for the equipment was protracted due to technical and policy issues. This activity took a year to complete. During this

process, the GON was actively seeking long-term financing from Japan and Spain to purchase approximately \$80 million of road building equipment from those countries. Since this equipment was purchased prior to selecting suppliers of the INVIERNO/MOP equipment, the GON decided that purchase of special equipment for the INVIERNO project was unnecessary, and that procurement was cancelled.

MOP, INVIERNO, and AID personnel have now developed a modified strategy for the access road program based on a cooperative agreement between MOP and INVIERNO, approved by AID in March 1978. It is estimated that 215 kilometers will be constructed or improved, with the majority of the work being done in communities presently served by INVIERNO. The reduction in the number of kilometers is due to increased construction costs, not to lesser need (in fact, INVIERNO estimates that the needs in Region V are for 650 kilometers).

Along with the agreement, Resolution No. 1 was drawn up and approved, calling for the construction of approximately 11 kilometers and improvement of 18 kilometers in the Matigua's area.¹ All of the work will be carried out by MOP-contracted personnel. As of this writing, the rights of way have been donated by property owners and locally available road construction materials have been donated. Also, the reconnaissance survey and study of sources of material have been completed.

1. INVIERNO and MOP reported to the evaluation team that the first phase involves 11 1/2 kilometers of road improvement rather than the 18 kilometers reported by AID.

MOP expects to start construction in the Matiguas area in May 1978 in advance of the heavy rains. It has been decided to draw up a second resolution specifying the construction of roads in the area of the La Trinidad-Esteli, this area being chosen because it has lighter rainfall during the rainy season.

MOP is putting one set of equipment into the fields initially, with capacity to build 100 kilometers per year. In July 1978, a second set of equipment with like capacity will be provided. In addition, MOP informed the evaluation team that it is setting up a separate staff for this activity and intends to complete the program of 215 kilometers by December 31, 1979, the terminal disbursement date of the loan.

AID will use the fixed amount reimbursement method in financing this activity. Predetermined amounts of payment will be established per kilometer of road constructed or improved based on detailed cost budgets that will be presented to AID for its approval.

II-J. Municipal Development

The Rural Development Sector loan included \$900,000 from AID and \$650,000 from GON in counterpart funds to assist INVIERNO in establishing a rotating loan fund for relending to Region II and V municipalities for infrastructure that would support INVIERNO's rural development focus. Types of construction considered were retail and wholesale markets, slaughterhouses, small industry parks, and activities that would support purchase and sale of agricultural

products. The program also contained technical assistance and training for the municipal governments and community leaders.

This activity was initially established within INVIERNO under the Municipal Development Department (DEMU). Activities carried out by that department in 1976 are reported in the first year evaluation. Since then, the activity has been completely restructured. The operational activities have been transferred to the Department of Municipal Development, organized in January 1977 within the Ministry of Government. INVIERNO serves as the banking institution for the investment projects.

In addition to such construction activities, DEMU is also carrying on the training and technical assistance aspects of the project as originally conceived. Its divisions and functions are as follows:

- (i) Administration.
- (ii) Legal. Review and assistance in municipal laws;
- (iii) Special studies. Preparation of investment projects;
- (iv) Technical Assistance. Training to municipal officials in administration and projects through trained personnel called "monitors";
- (v) Training. Formal training courses for municipal leaders. At the time of this evaluation, DEMU had 21 professional employees.

The principal activities in 1977 were:

1. Training of monitors at a 3-month short course in the Brazilian Institute of Municipal Administration, supplemented by further training within Nicaragua; also trips by directive personnel of DEMU to observe municipal development programs in Guatemala and Venezuela.
2. Assessed market and slaughterhouse needs of municipalities in Regions II and V.
3. Prepared feasibility studies for markets to be located at Matigua's and Nagarote; also identified the need for markets in Masaya and Diriamba.
4. Conducted training courses for officials of 10 small municipalities.
5. Implemented monitor service to provide technical assistance for municipalities.
6. Assisted 17 municipalities in completing their annual budgets.
7. Developed an internal accounting system which has been approved by the Capital Accounts Tribunal.
8. Contracted in May 1977 with the Vice Ministry of Urban Planning (VIMPU) for architectural support and technical assistance.

During 1977, efforts were continued to obtain final approval and funding and start construction of at least one market but in fact, no construction activities were begun. This situation was due to the newness of the program, particularly in regard to the numerous steps required in

design and feasibility studies, as well as the influence of local municipal elections which discouraged local officials in making decisions.

II-K. Land Sale Guaranty

The concept and plans for the land sale guaranty program were discussed in the first year evaluation. These plans have now been superseded by a national program enacted by the Nicaraguan Congress in February 1978. The legislation establishes a national land sale guaranty fund and tax reforms penalizing unused land with potential for producing crops. Regulations, operating guidelines, and conditions for the guaranty are being prepared.

Under the terms of the sector loan, the land sale guaranty program is to be financed by contributions of \$550,000 by AID and an equal amount by GON (see Table 2). However, no AID funds have been loaned since the program is not yet operational.

The loan fund guaranty law provides for establishment of the fund under the control of the Nicaraguan Central Bank. Participants in the fund are official guaranteeing institutions that are carrying out land sale guaranty projects. The fund would endorse up to 80 percent of the value of each operation carried out by these institutions. This is expected to serve as an assurance of payment to landowners who sell property to small farmers under specified conditions.

In view of uncertainty as to the date of implementation, INVIERNO has not announced a specific program for 1978 under this project.

II-L. Rural Housing

As reported in the first year evaluation, INVIERNO developed a comprehensive national plan for rural housing, as authorized in the organic law establishing INVIERNO. According to this law, INVIERNO together with the Nicaraguan Housing Bank (BAVINIC), would prepare a national rural housing program and provision for financing by BAVINIC and the national savings and loan system. The main aspects of the plan are described in the first year evaluation report. No further progress was made in 1977 in this respect.

INVIERNO is still interested in possible alternative approaches. The original plan called for having loans covering new construction, improvement, and latrines. Within the INVIERNO area, the Ministry of Public Health now operates a construction program in which INVIERNO participates under its social development activity (see Section II-B of this report).

At the present time, INVIERNO is thinking in terms of a pilot project financed with its own funds, which might later be financed from external sources. The plans for the pilot project are now in preparation.

At the beginning of 1978, an evaluation of the prepared national rural housing plan was conducted by a consulting

firm contracted by AID, Technical Services of the Caribbean. This evaluation strongly emphasized the self-help approach with materials being provided under a loan arrangement and all labor by the borrower, alone or in mutual assistance groups. INVIERNO estimates that the average cost per dwelling (new construction or improvement) would be C\$2,500 of which C\$700 would be financed by credit.

II-M. Other Activities

II-M1. Mechanization

The small farmer clients of INVIERNO normally plow their land with oxen, either their own or hired, and cultivate by hand. Both these practices are slow, laborious, and time consuming. They also limit the farmer's ability to increase his cultivated area. The INVIERNO program of supplying financing for land rental and yield improving inputs might be expected to stimulate interest in enlarging the average cultivated land area per farm, and therefore increasing the scope for mechanization.

During 1977, two activities were started on this subject. One was a study by John Balis entitled "Appropriate Mechanization for the Clients of the INVIERNO Project." This report suggests two approaches: one, the design and adoption of small tillage and related equipment that would be owned by the individual farmer; the other, the development of custom plowing with tractors. The Balis report suggests the possibility of INVIERNO financing the establishment of entrepreneurs in tractor hiring and cooperative

ownership of equipment. The report also covers certain other types of mechanization, including storage, harvesting, and irrigation.

In August 1977, INVIERNO prepared a draft proposal for financing rental machinery. The plan is being tested in sub-CEDE Pantasma as a pilot project, with one tractor plus accessories owned by INVIERNO.

II-M2. Rural Education

In 1977, INVIERNO conducted a sample survey of the rural education situation in 75 communities located in the six CEDEs. The study showed a considerable deficiency of educational facilities in these communities (see Table 28). Almost one third of the communities and one quarter of the children of school age did not have schools. Of those communities with schools, more than one third did not have teachers. The schools also lacked desks, with an average of three students per desk. Even in communities with schools, three fifths of the school age children do not attend. A few teachers were assigned to communities that did not have schools. In all, only one third of the school age children attended school. INVIERNO reviewed this situation and designated those communities which it considers to have high priority for improvement of the educational situation.

This information has been sent to the Ministry of Public Education, but a meaningful discussion with that Ministry on improving the schools in the designated communities has not taken place. Meanwhile, as mentioned in Section II-B of this report, INVIERNO social promoters are

Table 28. Educational Installations and Attendance
in INVIERNO-Served Communities,
December 31, 1977

Item	Communities		
	With schools	Without schools	Total
	----- (No.) -----		
Communities studied	49	26	75
Classrooms	57	--	57
Desks	888	--	888
Teachers	92	3	95
Schools with teachers	32	--	32
Schools without teachers	17	--	17
School-age children:			
Attend school	2,689	165	2,854
Do not attend school	4,190	1,956	6,146
Subtotal	6,879	2,121	9,000

Source: INVIERNO División de Desarrollo Social.

stimulating community initiative in building schools and has a program plan for 1978 on a small scale, mainly with contributions from the communities and a small amount of financial assistance from INVIERNO.

II-M3. Public Health

INVIERNO maintains close but informal relationships with the rural health programs of the Ministry of Public Health. That Ministry has a program known as Rural Health Services (AID Loan No. 524-U-032, dated August 17, 1976). It provides approximately \$5 million in AID loans for rural community action. The GON counterpart provides an equivalent amount. The agreement covers a 4-year period with disbursements through December 31, 1980. Actual disbursements by the end of 1977 were \$235,608. This program is concentrated in Region V particularly in the Matagalpa and Esteli areas in 1977. Like INVIERNO, Rural Health Services works through local community boards. Principal accomplishments to date include the completion of 40 community wells serving approximately 12,000 people, and more than 1,500 latrines serving over 10,000 people. It has also built a factory to manufacture a simple hand operated water pump. The 1978 program calls for activities in 100 communities with emphasis on potable water, latrines, and immunization.

Rural Health Services cooperates with INVIERNO in areas where both agencies work. The public health personnel use certain INVIERNO facilities, including short-wave radio, and transportation is furnished when feasible. INVIERNO lists these activities in its community development program objectives (see Section II-B of this report).

As an effort to further the cooperation between the two organizations, a draft coordination agreement was drawn up but has not yet been finalized. It provides for integrated community plans and a single board in localities where INVIERNO operates. These local plans would provide for physical sharing of facilities insofar as this does not interfere with the operations of the institutions. Coordination committees would be established in the CEDEs, where the integration of the separate community plans would be made. There would also be coordination committees at the regional and national levels. The draft agreement specifies operative aspects of coordination including the frequency of programming meetings. At the local level, these meetings would be held monthly or more frequently as necessary. In addition, all coordinating committees would have annual meetings. The agreement also provides for specific frequencies of progress evaluation.

The evaluation team was not informed of any basic problem in formalizing the institutional coordination. In fact, both institutions recognize the importance and value of the coordination attained so far. The fact that both programs involve AID financing has been a positive factor in the coordination.

III. EVALUATION STRUCTURE

INVIERNO's evaluation structure is complicated initially by its conceptual framework (an autonomous institution established through the cooperation of two governments and with responsibilities in which other governmental institutions are also active) and further complicated by its multifaceted operational approach to the rural welfare problem. As a consequence, INVIERNO carries out a large number of evaluation activities.

A major factor in facilitating the evaluation procedure, as well as other phases of operations, is the extensive use of the computer installation. This has been described and favorably commented on in prior reports, especially from the viewpoint of farm credit management. The computer is making it possible to store and retrieve a large amount of information, thereby permitting a greater variety of evaluations than would be possible with less advanced data technology. Another factor in facilitating the evaluation procedure is that CEDE personnel work directly in the small communities, thus providing a ready-made data collection staff for obtaining information.

Our examination of INVIERNO's large number of iterative and ad hoc evaluations suggests that, from a systems viewpoint

(see Figure 1), they fall fairly well into four types, the criterion of this classification being the particular systems component to be served. These are: (a) programming; (b) operations; (c) output; and (d) feedback.

III-A. Program Development Studies

These are studies undertaken to assist in deciding on and designing effective programs. INVIERNO has a good record in this respect; in fact, this has been an integral aspect of its establishment. The formation of INVIERNO was preceded by a study of the Rural Development Sector, followed by an AID Capital Assistance Paper. (These have been described in the first year report).

Prior to deciding on specific line project approaches, studies that contribute to better program design are prepared. DIPSA, INVIERNO, and AID have contributed material of this type. Recent DIPSA reports of this nature involve analyses of basic grain technology, and planning papers on the small business and land sale guaranty line projects. INVIERNO likewise prepares program design studies, a recent one being on rural educational needs. AID studies take the form of so-called project papers. Recent studies include those by John Balis on mechanization, the Technical Services of the Caribbean on rural housing, Hernán Chorneco on vegetable marketing, and the Academy for Educational Development on vocational agricultural education.

Prior to selecting communities for incorporation into INVIERNO's program, a locality analysis is made. This is aimed at determining whether the community fulfills the

criteria for eligibility. It contains information on general socioeconomic conditions prevailing in the community, but does not attempt to develop detailed farm income information.

A very important study started by DIPSA in 1977 with AID loan financing concerns living conditions (income, employment, and satisfaction of needs) of the Nicaraguan rural population. The first part of the study was published in June 1977, entitled "Report on the Study of Rural Communities in the Central Interior Region." This study encompassed 154 communities in Region V, using a questionnaire approach. The second phase of the study is being conducted at the family level, also using questionnaires. The survey covers a stratified sample of 350 families, selection having been based on the community survey; it is to be completed in 1978. The sample covers about two fifths of the communities in Region V, some with and some without INVIERNO programs. This study is obviously essential to all future evaluations of INVIERNO's impact on rural poverty and will be useful in devising better programs to meet that problem.

The scope of the study is indicated by the following abbreviated summary of the conclusions (repeated here because of its obvious importance to the purpose of this evaluation report):

1. The average community has 90 homes.
2. Sixty percent have some production services and/or a school.
3. Ninety percent have no health centers nor potable water.

4. Only 48 percent have all weather roads, and 25 percent of these are accessible only on horseback.
5. In 62 percent, the farmers predominantly own their own land or have usufruct rights; in 27 percent, the farmers predominantly rent land or farm on halves.
6. In 80 percent, the people leave to work part-time outside the community, principally on other farms.
7. Employment in nonagricultural activity, whether within or outside the community, is small.

III-B. Operations Component Evaluation

These are evaluations undertaken to maintain control on activities. INVIERNO operates through a goal and performance strategy. Each year and each crop season (depending on the nature of the activity) revised long- and short-term goals are established under a "logical framework" program procedure. The procedure specifies inputs, outputs, means of verification, and related factors. Monthly reports on relevant operations are fed in from the CEDEs to the central office. Administrative and management data are controlled through the computer. This process results in a large number of detailed operational reports.

At the end of the season and year, results attained are compared with the goals established for the period, and attempts are made to identify the reasons for variations.

III-C. Output Component Evaluation

These are evaluations undertaken to determine the output of the program in terms of policy goals. Since the primary goal is the welfare of the farmer, the most relevant output measure at this stage is farm income. A secondary goal is increased production, for which useful output measures would be crops, cultivated area, and yields.

The benefits, in economic or welfare terms, of some line projects are difficult to identify. This is particularly true of community social activities, such as roads, schools, and sanitation. While accomplishments for these activities are measurable in physical terms, the benefits may not be easily quantifiable or may require more sophisticated approaches.

INVIERNO has made a considerable effort to evaluate the economic benefits of its agricultural program, particularly the input-credit project.

For the 1976 crop season, estimates were made of crop-yields and production among participant farmers. Yields were estimated approximately, and this was considered to have dubious validity. Furthermore, farmers' use of recommended technology differed not only in its composition but also in its extent of application. An additional factor was climatic; 1976 was considered to be a very dry year (this was borne out by data obtained from ENALUF) by this evaluation team; the data showed that for Jinotega, in only 2 years of 10 was the annual precipitation likely to be as

little as in 1976; for Condega, this comparable estimate was 1 year in 10. As a consequence, participant yields were much lower than had been projected in INVIERNO's plans, which were predicated on complete application of technology by participants and "normal" rainfall.

INVIERNO's estimate of 1976 spring crop yields for participants in Region V was 17.6 qq. per mz. for corn and 8.1 qq. per mz. for beans. Average regional yields per manzana for all farmers and the three seasons were cited as 8.2 qq. for corn and 7.4 qq. for beans. These data appear in the 1975-76 INVIERNO annual report, on pages 61 and 62.

Another source of yield data was the listings made to determine the "Last Estimate of Payment," or PUE (described in Section II-C of this report). The averages reported by the Department of Programming and Control for the two levels of technology were as follows:

<u>Crop</u>	<u>"A"</u>	<u>"B"</u>
	<u>Without fertilizer</u>	<u>With fertilizer</u>
	-----	-----
	(qq. per mz.)	
Corn	10.2	14.8
Beans	5.3	4.5

The yields in this set of comparisons are considerably below those in the set cited above for participants; in fact, for beans the yields are even below the reported regional average. However, the two sets of data may not be comparable as to planting season. The latter yields are for the second planting season in 1976 when drought was

particularly severe. Furthermore, they are the results of field estimates made approximately one month prior to harvest.

Further sources of yield information are available from the 82 capacitation plots and 27 extensive trial plots established in 1976, but these data were not available in a form useful for comparison.

The above remarks pertain only to the question of yields and do not directly address the primary question -- farm income. INVIERNO is attempting to evaluate economic benefits in comprehensive terms through a farm accounts procedure, called "Sistema Contable de Fincas." A random sample of participant farmers has been selected in each CEDE, and INVIERNO personnel (Rural Administrators) visit the farms weekly to obtain information on the full range of economic activity, including off-farm income and farm consumption of commodities, as well as the conventional data on crops, production costs, sales, income, and family expenditures. This system is intended to determine the initial situation at the start of INVIERNO participation and thereafter to determine the socioeconomic impact resulting from the program. It is hoped also through this means to identify the strong and weak aspects of the program, in terms of economic results, and possibly to develop optimum farming models. The sample in 1977 consisted of 25 farms, stratified by four class sizes in respect to cultivable land area, in each of six CEDEs and two sub-CEDEs, for a total of 200 farms. It is expected that the sample will be reduced to 150 farms in 1978.

This is a highly ambitious program (annual cost of about C\$500,000) that has resulted in a large accumulation of data. The procedure was worked out in detail and issued as a manual in August 1976. It was first used in a training course for the Rural Administrators (one for each CEDE or sub-CEDE).

The staff has faithfully carried out the prescribed procedure for determining the overall impact of the program on farm family income, but certain shortcomings showed up early. For one thing, it became apparent that annual climatic variations greatly complicate comparisons, because the sample only includes participants, thus obviating the possibility of "participant-non participant" farm income comparisons within a given year. In addition to the climatic variations, there are expected to be changes over time in farm practices, both among participants and non-participants. DIPSA surveys, mentioned earlier in the report, constitute a potential source of comparative data, however.

Two operational factors have also intervened. It was found that the constitution of the sample changed by 75 percent between 1976 and 1977. Second, the large volume of data imposed a major logistical problem. As a consequence, completed analyses have not yet been issued for either 1976 or 1977.

The farmers involved in this accounting project are a source of data on the yield benefits of the INVIERNO technology, however, since they often have fields with different practices. The evaluation team reviewed yield records from

these farms for the 1976-77 crop year and found 36 that had more than one practice on the same farm for corn and 31 that had more than one practice for beans. In these instances, it was therefore possible to make paired comparisons for three different levels of technology: traditional, low-technology package (A) and high technology package (B). The results are shown in Table 29. The means are the weighted averages of the individual entries; while this may not be an entirely valid procedure (it would be better to have more samples and to weight them for the actual frequencies of occurrence in the five CEDEs), it is the best that can be done with the data. For the corn data, it appears that the sampled farms differed sharply in yield even with the same technology; thus, farms using the highest technology had better yields even with traditional practices. This may suggest that farmers who can achieve better yields are more likely to accept, and be approved for advanced technology. In view of this variability, the benefits can be expressed better in relative than in absolute terms, as follows for the case of corn:

<u>Comparison</u>	<u>Yield increase</u> (percent)
Technology <u>A</u> vs. traditional	22
Technology <u>B</u> vs. Technology <u>A</u>	19
Technology <u>B</u> vs. traditional:	
a. by addition	41
b. by sample (Table 29)	50

The evaluation team did not subject the yield comparisons to statistical tests of significance, which would be useful for INVIERNO to do with a larger body of data.

Table 29. INVIERNO: Corn and Bean Yields in Paired Comparisons of Technological Practices on the Same Farms, 1976-77 Season

(Quintales per manzana)

CEDE	Number of comparisons	Technological level		
		Traditional	A	B
-----Corn-----				
La Trinidad	2	2.2	4.0	--
	2	5.6	--	6.6
San Ramón	7	25.9	--	49.9
Condega	4	8.3	11.0	--
	8	14.6	--	16.8
	1	--	4.5	10.0
Jinctega	1	10.0	10.0	30.0
	6	20.4	--	23.0
	2	--	37.5	29.5
Matiguás	1	10.0	8.8	--
	1	3.0	--	4.2
	1	--	6.0	15.0
<u>Weighted mean</u>	8	7.2	8.8	--
	25	17.8	--	26.8
	5	--	19.1	22.8
-----Beans-----				
La Trinidad	1	1.0	3.1	--
	12	8.2	--	7.9
San Ramón	2	17.2	8.5	--
	7	6.5	--	10.9
Condega	4	5.5	7.8	--
	2	10.0	--	12.5
Jinotega	2	6.3	--	5.0
Matiguás	1	6.0	10.0	--
<u>Weighted mean</u>	8	7.9	7.7	--
	23	7.7	--	9.0

Source: INVIERNO Sistema de Finca Contable.

In the case of beans, the differences in the weighted means were small, and obviously inconsistent.

Similar data for 1977 were not available to the evaluation team.

In summary then, it is fair to say that INVIERNO is making a considerable effort to evaluate the economic and welfare benefits of its agricultural program in a scientific and objective manner. Thus far no conclusive results have been produced due to the short period in which the program has been in operation and the various difficulties encountered which have been described above.

The model farm programs, while being established for demonstrational purposes, have potential for serving as another source of data on the output benefits of the program.

The small business credit program is too new to permit evaluation of its impact on the communities in which it operates.

III-D. Feedback Component Evaluation

These are evaluations undertaken to reach recommendations for changes in policies and programs. INVIERNO instituted a major effort in 1977 to make such an evaluation, which has been published under the title "Informe de Evaluación" del Instituto de Bienestar Campesino; Grupo de Estudio, January 1978. The approach was to look into all aspects of INVIERNO operations from five viewpoints:

1. farmers' opinion as to the quality of the service;
2. farmers' opinion as to specific operational deficiencies;
3. INVIERNO personnel opinion of conceptual deficiencies;
4. INVIERNO personnel opinion of operational deficiencies; and
5. comparison of goals and results.

The study took 5 months of full-time work of two employees and other part-time work. The report consists of 209 pages and 89 tables. The following number of specific program recommendations were tallied by the evaluation team:

General	12
Agricultural credit	23
Marketing	17
Technological capacitation	13
MOC	11
Total	76

The recommendations were discussed in INVIERNO and many of them immediately accepted and implemented. In an internal memorandum dated February 21, 1978, 36 actions were assigned in order to implement or further consider the recommendations. As of this writing, 24 of the actions had been completed and 12 are pending.

Farmers' opinions as to the quality of INVIERNO operations are summarized in Table 30 (the classification

Table 30. INVIERNO: Farmers' Satisfaction
with Services

Service	Degree of Satisfaction				
	High	Medium High	Medium Low	Low	
<u>Agricultural credit:</u>					
Survey procedure	*				
Approval promptness					*
Timeliness			*		
Sufficiency		*			
Interest rate		*			
Average		*			
<u>Input supply:</u>					
Variety of products sold	*				
Quantities recommended	*				
Quality	*				
Price		*			
Timeliness of delivery	*				
Average	*				
<u>Production marketing:</u>					
Usefulness of price information		*			
Usefulness of transport service		*			
Confidence in the purchase system	*				
Effectiveness	*				
Average	*				
<u>Production assistance:</u>					
Frequency of meetings in training plots			*		
Utility of training plots			*		
Frequency of individual farm visits		*			
Confidence in the assistance	*				
Quality of the assistance	*				
Quality of the personnel	*				
Average	*				
<u>Radio program:</u>					
Audience coverage	*				
Seriousness		*			
Usefulness	*				
Quality	*				
Clarity	*				
Average	*				

Continued--

Table 30 (Continued)

Service	Degree of Satisfaction				
	High	Medium High	Medium Low	Low	
<u>MOC:</u>					
Training on community organization					
Assistance in designing and executing projects					
Progress in ability to analyze and resolve problems					
Average					

Source: INVIERNO: Informe de Evaluación. January 1978.

represents grading scale averages). It will be noted that in general, farmers' perceptions with respect to the program are quite high, although priority areas for action are clearly indicated. Table 31 lists specific problems which were mentioned by respondents, including farmers and INVIERNO personnel, during the course of the evaluation survey. Table 31 makes no attempt to report the frequency with which these problems were mentioned, nor to assess the degree to which the various observations listed represent respondent misconceptions. These issues are taken up in the evaluation report referred to above. The summary list is illustrative of the range of issues which were brought forth for examination through INVIERNO's evaluation procedure, clearly demonstrating its thoroughness and effectiveness. As mentioned above, it resulted in the formulation of 76 specific recommendations with respect to various aspects of the INVIERNO program.

As part of the INVIERNO evaluation, a study was made of participants that had not made any payments on their agricultural loans. The purpose was to detect factors in their credit papers and in the survey questionnaire that would be useful in rejecting potential nonpayers in the future. The study was made of a sample of 60 participants that had not paid on the loans. They were separately classified as to whether the nonpayment was justified (due to weather conditions, etc.) or not justified. Non-justifiable delinquency was higher among farmers who did not own their own land and whose point scores (a rating system used by INVIERNO to select credit recipients) were relatively low. Other factors considered were the time of residence in the locality and the size of the farm, but these did not appear to be significant. As a result of this evaluation, a modification was made in the point score system.

Table 31. INVIERNO: Detected Program Deficiencies

Line project	Evaluation level	Deficiency
Agricultural credit	Farmers	1. Lateness of delivery.
		2. Credit for land rental and labor is too small.
		3. Inadequate provision for oxen.
		4. Lack of information on payment dates.
		5. High interest rates.
	Technicians (Conceptual)	1. Inadequate criteria for selecting participants.
		2. Lack of financing for fall storage.
		3. Vague criteria for selecting new localities.
		4. Lack of livestock credit.
		5. Interest surcharge for justifiable delinquency is high.
	Technicians (Operational)	1. Production loan budgets are too low, especially for vegetables.
		2. Loan schedules (date and amount) are set without considering the opinion of the CEDE.
		3. Computer lists are late in arriving.

Continued--

Table 31 (continued)

Line project	Evaluation level	Deficiency
		4. Lack of explanation to justify interest rates.
		5. CEDE managers do not utilize extra cost provisions in calculating production budget.
		6. Loan delivery procedure is inadequate.
		7. CEDEs do not maintain a loan control for each participant.
		8. No provision for manual approval of loans in CEDEs for participants who have approved lines-of-credit.
		9. Due dates for payments are not advised to participants in writing.
Input Supply	Farmers	1. Some corn seed not viable.
		2. Some of the insecticides not effective.
		3. Late delivery of inputs.
		4. Input prices high.
	Technicians (Conceptual)	1. Price mark-up makes the inputs noncompetitive.
		2. Lack of orientation and literature on the use of inputs at time of delivery.

Continued --

Table 31 (continued)

Line project	Evaluation level	Deficiency
	Technicians (Operational)	<ol style="list-style-type: none"> 1. Products do not arrive on time and do not accord with orders. 2. Poor product quality, especially seeds. 3. Frequent price changes cause errors and the lists are late in arriving to participants. 4. Packaging makes it difficult to divide the products in the CEDEs.
Marketing	Farmers	<ol style="list-style-type: none"> 1. Inadequate advisory service for selling products. 2. Information on prices and potential buyers arrives late. 3. INVIERNO prices are too low (refers to INCEI).
	Technicians (Conceptual)	<ol style="list-style-type: none"> 1. Informational system on prices, markets, and availabilities has not functioned. 2. Lack of coordination with import policies for vegetables and potatoes, and with the INCEI grain-buying program to support prices. 3. Prohibition against CEDE assistance in marketing production for participants outside the credit program.

Continued --

Table 31 (continued)

Line project	Evaluation level	Deficiency
		4. Lack of planning on seeding areas and periods for vegetables, according to ecological requirements and zones.
		5. Lack of studies on new crops and handicraft products.
		6. Lack of flexibility in contracting transport.
	Technicians (Operational)	1. Grain moisture meters do not work.
		2. Vegetable forwarding stations lack capacity and are not well located in relation to production sites.
Agricultural production program	Farmers	1. Training plots not established.
		2. Certain practices are difficult to apply in broken land.
		3. Too few individual visits.
	Technicians (Conceptual)	1. Frequent shifts of AGROMOCs.
		2. AGROMOCs lack sufficient knowledge and experiences, especially in vegetables.
		3. Lack of studies on diversification possibilities according to ecological zones.

Continued--

Table 31 (continued)

Line project	Evaluation level	Deficiency
		4. Lack of explanation to participants on training plot results.
		5. Requirements for establishing training plots on farmers' land are too rigid.
		6. Individual visits are not programmed, and assistance rendered is not reported.
	Technicians (Operational)	1. Technological packages are deficient, out of date, too inflexible, and do not reflect field experience.
		2. Radio programs are improvised.
		3. Manuals for specialists, supervisors, and AGROMOCs are obsolete.
		4. Regional specialists do not get to the field nor answer CEDE questions.
		5. Information and literature for AGROMOCs on use of inputs are needed.
		6. Plot record sheet lacks sufficient space for all the activities, especially for vegetables.
		7. Participants are not given information on how to apply the inputs.

Continued--

Table 31 (continued)

Line project	Evaluation level	Deficiency
MOC	Farmers	1. Technical aspects of production.
		2. Home improvement.
		3. Alphabetization of adults.
		4. Community organization.
		5. Nonagriculture work.
		6. Poultry production.
		7. Vegetable production.
	Technicians (Conceptual)	1. Community problems identified, but without solutions and financing.
		2. Strategy and policy of MOC is not clear.
		3. Excessive interference by the central office in CEDE programs.
		4. Directives issued by central office without consultation.

Source: INVIERNO: Informe de Evaluación, January 1978.

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Another feedback evaluation made by INVIERNO in 1977 concerned the cause of delinquency among 853 participants that had not made any payments on 1976 loans to July 31, 1977. This study showed the following reasons for delinquency:

<u>Reason for delinquency</u>	<u>Percent</u>
Natural causes:	
Crop loss due to drought	29
Low yield due to drought	42
Excess rain	1
Uncontrollable pests	6
Death	1
Subtotal	79

PART II. ANALYTICAL EVALUATION

IV. COMPATIBILITY OF POLICIES WITH PROGRAM GOALS

IV-A. Goals and Issues

The PIO/T calls for judgments on the prospects of success in attaining the objectives for which INVIERNO was established. It recognizes that at this point, few measurable results will be available. This evaluation therefore sought to identify issues that might be decisive in the success of the program and evaluate how well they are being handled.

INVIERNO's purpose and approach are described especially clearly in two documents, the law that established the agency and the publication entitled "Philosophy, Policies and Programs" (September 1976). The latter states that the fundamental objective of INVIERNO is "to promote the social and economic progress of the rural sector, allowing its population a sustained and continuous integrated improvement, with the aim of attaining a more effective participation of this population in the economic, social, cultural and political life of the nation."

In seeking to attain this objective, INVIERNO adopted certain premises, or philosophical concepts, of the rural welfare problem from which the need for the various line

projects was deduced. The following is an attempt to summarize in a very condensed form what appear to be the main premises, drawing on various statements in the above mentioned documents, interviews, and other INVIERNO sources:

1. Welfare is a function of level of living and family income;
2. The route to an adequate income for poor farmers is providing them access to services and opportunities;
3. Welfare needs are variable in different localities, and should be met by local selection from integrated, coordinated services offered to specific geographically located communities;
4. Welfare development is a long-term process that requires continuing and expanding effort.
5. Poor farmers may lack motivation organizationally and technically to accept change;
6. The lack of community initiative, along with the lack of technical know-how, have been serious deterrents to increasing the incomes of poor farmers;
7. Extreme rural poverty can be overcome to a substantial degree by improved farm productivity complemented by selected local community services;
8. Positive demonstration by the Government of serious interest in the plight of poor farmers is significant to establishing a positive "image" (i.e., establishing credibility).

Within the framework of these premises, the evaluation team identified a number of key issues which are discussed below:

- . Are policy formulation procedures adequate?
- . To what extent have income or welfare goals been defined?
- . To what extent have program potentials been evaluated in terms of these goals?
- . To what extent has INVIERNO been able to develop an adequate methodology for defining optimum goal-oriented program mixes?
- . To what extent has INVIERNO been able to attain integrated and concentrated public inputs over a lengthy period and full acceptance of this concept by other institutions?
- . To what extent can community organization be shifted from a focus on obtaining loans to a real grassroots source of long-term planning initiative?
- . To what extent does the solution to the rural poverty problem lie within the capacity of the farm and the locality to resolve?
- . To what extent is the practical possibility of improving the income of poor farmers seriously accepted as offering major potential for national economic growth?

IV-B. Policy Formulation Procedures

INVIERNO policy formulation procedures flow from the organic act that created the institution (GACETA, Diario Oficial, ano LXXIX, No. 97, May 5, 1975), the objectives expressed in that act, and the procedures therein prescribed. Broad policies are considered by the National Rural Development Council, presided over by the Minister of Agriculture,

with participation by the heads of all relevant institutions. The Council holds meetings when important interinstitutional strategies must be established.

Questions of coordination are directed when necessary to a Committee on Institutional Coordination. There is a section for the Public Agricultural Sector and subcommittees are constituted ad-hoc to consider specific issues. Issues of duplication or assignment of responsibility have arisen especially in respect to the roles of the Nicaraguan National Bank and INVIERNO, the preparation of technological packages for basic grains, and unified community organization.

The overall direction and administration of INVIERNO is vested in a Directive Council. The law provides for participation by the heads of five relevant institutions, by the INVIERNO General Manager, and by representatives of the political parties that finished first and second in the last presidential election, as well as by a representative of the farmer and cooperative organizations. Meetings are held monthly and formal minutes are kept. The evaluation team was informed that most of the 11 designees attend all meetings. The President of the Central Bank and the Minister of Education attend when their presence is required by the agenda to be discussed.

Intra-INVIERNO policy and program coordination is managed through an Executive Committee consisting of all departmental and program heads, the regional manager, and with the participation of one CEDE manager in turn. It meets twice a month and handles issues of varying scope, from general policies to operational details. The minutes of these meetings are distributed to the CEDEs.

Project operation matters at the regional level is coordinated by a committee consisting of the regional Manager, CEDE heads, and line project leaders. Meetings are monthly; usually they are attended by the Assistant Manager for Operations and other personnel from the Central Office, who may need to clarify matters on the agenda. There is no formal representation of other rural development institutions as there is at operational meetings, but if subjects to be discussed involve other institutions, a representative may be asked to participate.

The evaluation team believes that the policy formulation structure is very well conceived. The general manager is suitably positioned to carry out the leadership function in regard to rural development. In addition, he appears to have easy access to top echelon government personnel, judging from what the evaluation team observed.

The procedural system for feedout and feedback within the INVIERNO structure seems to function well. The lack of formalized coordination with other institutions at the CEDE level could be a deterrent to local planning initiative.

IV-C. Welfare Goals

Since INVIERNO's policy is to confine efforts to poor farmers, it has determined that only those rural families whose per capita net income is lower than the national average would receive direct aid from INVIERNO (that average in 1975 amounted to C\$4,126, equivalent to \$590). "The monetary concept is also justified as an initial unit of measure, if we look at money as a means of making it possible

for the individual to obtain conveniences to better his living conditions in the home, and to acquire more effective means of earning a living..." (Philosophy, Policies and Programs, p. 8). This statement comes close to suggesting a specific welfare goal for farmers.

Since farm income data are not generally available, a farm size limit has been established as an income surrogate. This was set as a total of 99 manzanas (171 acres), or more than 30 cultivated manzanas. With respect to the 30 cultivated manzanas limit, it is the judgment of INVIERNO that this area of corn, beans or sorghum would produce just enough income to be at the limit of national average, under present technological practices, and it does not refer to high income producing crops, such as coffee and vegetables.

Unfortunately, there are no data available as yet (although DIPSA and INVIERNO are making efforts to get such information) on the relation of farm size to income. However, in 1977, about 90 percent of the farms that were granted loan authorizations were smaller than 10 manzanas. The inference is that the vast majority of farmers in the target communities are very far indeed below what at first appears to be a welfare goal. Assuming that the farm size-income relationship is valid, one is led to conclude that the income-farm size criterion cited is purely an operative device and not a realistic welfare goal. In fact, it appears that such a goal has not been established for the program and INVIERNO speaks only of "a sustained increase in the farmer's standard of living."

This concept is also left vague; how much of an increase and at what rate it is to be attained, has not yet been defined.

IV-D. Program Composition and Potential

The most visible element of the INVIERNO program to date has been the provision of credit directly to small farmers and advice on how to use it effectively. The emphasis has been on technological packages involving improved seed, fertilizer and pesticides; these may be supplemented by credit assistance for land rent, hired labor, rented oxen, farm investment, and family maintenance.

In addition to this direct farm approach, INVIERNO is also operating a small enterprise credit project, the thrust of which is to increase the incomes of the recipients and stimulate development on a broader area basis (some of the loans are in target communities, others in nearby cities or towns). The operating procedures for these approaches have been discussed in considerable detail in reference documents and in Chapter II of this report. However, from the viewpoint of policy implications, the following summary of loan disbursements in the 1977-78 season is useful:

<u>Input</u>	<u>Value</u> <u>(Thousands of cordobas)</u>	<u>Percent</u>
Farmer credit:		
Production loans:		
Fertilizer	2,524	17
Oxen hire	2,225	15
Seed	2,181	15
Land rent	2,005	13
Hired labor	1,260	9
Pesticides	936	6
Small implements	198	1
Total of production loans	11,356	76
Maintenance loans	680	5
Investment loans	361	2
Total farmer credit	12,397	83
Small business credit, 1977	2,587	17
Total credit	14,984	100

This table shows the breakdown of farmer production loans and the considerable emphasis on fertilizer, improved seed, and pesticides. INVIERNO's program also calls for other credit inputs, but as explained elsewhere, they have not yet started to function on an appreciable scale; the activities involve credit assistance to farmers for purchasing land and loans for housing and municipal development.

In addition to the credit programs, other approaches to the problem are adaptive research started in 1977 with total funding of \$1,100,000, and road building (about to be started), marketing information, community organization, community development, and farmer capacitation.

The supply of production inputs is important to the welfare of all farmers in the community and to INVIERNO's objectives, but it is now handled as part of the credit program, so that assistance in obtaining inputs goes only to farmers participating in the credit program. Means should be developed for making these inputs available to small farmers in the community irrespective of their participation in INVIERNO's credit program.

As has been noted, certain components of the INVIERNO program have lagged in terms of implementation. As presently constituted the preponderance of on-farm production credit in the overall program mix is disturbing. The value of such credit, especially when it is accompanied by the kinds of organizational, technical, and logistical support which INVIERNO provides is not being called into question, although, as has been previously noted, the benefits resulting from its provision have not been adequately documented as yet. One may question, however, whether credit for yield improving technology on very small farms (as was indicated in Table 19, the average area financed by an INVIERNO loan in 1977 was about 2.5 manzanas) can ever be as meaningful to improving farm family income as would credit for enlarging the cultivated area of these farms to some target size or for developing off-farm sources of employment within the target communities and their environs.

The evaluation of the balance between program mix and target community development needs has not been adequately addressed, although INVIERNO is making attempts in this direction. The economic analysis of alternative program mixes, as indeed, the analysis of ongoing projects such as on-farm production credit, should be conducted in terms which reflect the relative abundance and low opportunity cost of labor within the target communities. Our study of the basic documentation of the farm credit program, for example, showed no evidence that profits for the traditional technology employed by farmers were being calculated in terms that are real to the farmers, i.e., in terms of the low opportunity cost of their labor. This same observation applies to the comparisons of alternative approaches.

IV-E. Multi-Agency Approach

The participation of various public agencies has been an important policy in INVIERNO's integrated, community focused approach to rural welfare. Other institutions that we interviewed expressed understanding and sympathy with INVIERNO objectives, but in several instances this has not been translated into effective action programs. This generalization is evident from the discussions in Chapter II of individual project activity.

Financing is one problem in attaining broader institutional participation. In the case of adaptive research with INTA, this has gotten off to a good start precisely because GON/AID funding was provided. But this is not the only problem; part of it is that some other institutions have not been able so far to organize sufficiently well nor adopt a

policy as to the role they should play in this program vis-a-vis other programs. More fundamentally, there is a legitimate question of priorities, i.e., the relative importance of these different activities to the welfare of the target communities as well as the importance of such activities in target areas to total national welfare objectives.

It appeared in the evaluation that concrete policy decisions and effective coordination aimed at common objectives, were especially lacking in the fields of education, all weather roads, and housing.

There also seems to be a need for greater collaboration with other credit institutions, particularly the Nicaraguan National Bank, in the area of comprehensive regional economic development for depressed rural areas within which INVIERNO communities are located.

Inter-institutional coordination is generally better structured and more operative in Managua than in the field. Granted that field personnel have a concentrated work program to fulfill (stemming from INVIERNO's detailed and intensive job scheduling procedure), when attempting to deal with rural development in a comprehensive manner, local coordination could still be useful in devising, planning, and executing projects. The evaluation team saw little evidence of such coordination at the regional or CEDE levels.

IV-F. Community Initiative

INVIERNO recognized from the start that its success will require a large degree of community participation. The

MOC concept, including the formulation of elected community boards, has facilitated the credit and farmer capacitation activities. It also offers promise as a means of reducing cost by channeling certain activities now carried out by INVIERNO personnel to the boards.

So far the principal activity of these community organizations and the farmers has been centered on the credit program. The evaluation team sensed from the INVIERNO evaluation report (confirmed by discussions with farmers in the communities) that a broader community organization role is indeed possible, and there is an awakening appreciation by the communities to the possibility of their strengthening their own initiative. The team heard repeated suggestions by community farm groups, stimulated by the social promoters and AGROMOCs, for various innovations. The extent to which INVIERNO can encourage communities to initiate plans and assist them to activate these plans will determine whether the community boards will become a broader developmental channel than they are at present.

IV-G. Recommendations

Based on the discussions in this chapter as well as on the documentation referred to in this report, the following recommendations concerning policy are made. It will be noted that some of them impinge on more than a single policy issue, and this reflects the integrated, multifaceted structure of the concepts and objectives.

1. Strengthen the work already begun to define goals in the terms not only of physical inputs and outputs, but of family welfare and standard-of-living objectives. In essence, the INVIERNO program, while already goal oriented, needs to be more concrete as to these goals in respect to living conditions and family income. The early establishment of clear goals is essential if INVIERNO is to effectively evaluate the impact of its operations and retain the credibility of its stated objectives.
2. In the same vein, INVIERNO should strengthen its programming procedures in respect to optimum resource allocation. The evaluation of the welfare effects of ongoing projects for 1976 and 1977 should be completed; and then should be reevaluated in terms of available or planned alternatives. Comparisons in respect to costs and benefits should consider the economic value, not just the financial value, of inputs so as to more realistically reflect farmers' underutilized labor resources.
3. All eligible farmers in target communities should be encouraged to use yield increasing inputs, purchasing them through INVIERNO arrangements if they are not available locally and to benefit from other INVIERNO services, whether they are credit recipients or pay cash. A long-term INVIERNO objective should be (and, in fact, is) to improve farmers' financial independence, not to keep them tied to governmental credit.
4. The structure of the program needs to be broadened. The most urgent needs are the projects for better roads, education and land purchase. They should be implemented and also the question of adequate funding reconsidered. This, in some instances, requires better inter-institutional coordination of policies, especially for education. (Note: The comments on these three projects are

not intended to downgrade the importance of other projects, but rather to emphasize those where levels of activity to date appear to be grossly disproportionate to the needs.)

5. The ENALUF policy of not permitting irrigation in the watershed of the Apanás dam should be reconsidered. This applies not only to the Condega and parts of the Jinotega CEDEs to alleviate drought in the rainy season through supplementary irrigation, but also to all CEDEs in regard to complementary irrigation (i.e., in the dry season) so as to extend on-farm employment opportunities to the entire year. The increased income to poor farmers may well have greater social benefit to the nation than the marginal cost of the water lost to hydroelectric production (the total amount used for such irrigation would probably be relatively small). A study of this issue should include a survey of the practical possibilities for irrigation on small farms and of alternative sources of electric power.
6. INVIERNO, jointly with development institutions, should review existing government incentives and devise new ones for stimulating economic investments in regions designated as priority from the viewpoint of the rural poverty problem, especially investments that have intensive labor requirements, significant local material inputs, and/or large local multiplier effects. Such activities can usually be sited only in fair sized towns or on major roads; their welfare effect for people in outlying rural communities will therefore be a function of the adequacy of transport. The recommendation offered here is in effect to complement INVIERNO's "local community" approach with a broader regional development approach that will enlarge off-farm employment and income opportunities.

7. INVIERNO's community boards should be institutionalized as quickly as competence can be developed. Formal, legal status would be a means of developing local project planning capacity, a grassroots focus to activities, and management of some parts of such line projects as credit and input supply.
8. A general policy of coordinated and institutional field activity should be implemented where feasible by such measures as forming single community boards; and by housing cooperating institutions in adjacent offices in order to stimulate coordination of approaches, emphases, and projects.

V. COMPATIBILITY OF OPERATIONS WITH POLICIES

INVIERNO's 1977 internal evaluation developed numerous operational reforms most of which have been put into effect. Likewise, the other evaluations mentioned in Chapter III have contributed to a continuing process of improving operations. Our observation in this report is that INVIERNO operations are readily adjustable to new perceptions of needs and shortcomings.

This portion of the analysis need not go into as much detail on each operational segment as would be required had the above cited evaluations, especially the internal one, not been made. Rather, an overall opinion and certain recommendations are made or emphasized for each segment.

V-A. Input Management

This section of the report considers the extent to which operation of the management inputs described in Chapter I are compatible with policy objectives.

V-A1. Organizational

The revised structure (Figure 4) is judged adequate to INVIERNO's present functions although it will naturally require revision and modification as projects develop and/or program mix is altered.

A regional approach to the development of zones in which INVIERNO target communities are located, one in which various public and private institutions besides INVIERNO would have to be involved, would include the new objective of broadly stimulating nonagricultural, as well as agricultural, employment opportunities of designated, rural based economic areas. The criteria for area eligibility and the incentives to be offered would have to be developed at the inter-institutional level; also policy would have to be made as to the kinds of activities that would be eligible (such as mini-industrial parks at feasible locations in CEDEs, and hand-assembly operations of consumer goods either in centralized locations or villages).

The rationale for this proposal has already been discussed but it is worth reiteration here: Based on what is known or in prospect, it is not likely that on-farm technology, while extremely important, can by itself resolve the rural poverty problem as one observes it in the CEDEs.

V-A2. Financial

The evaluation team examined the INVIERNO documentation on financial controls and also the management studies previously referred to. The control and audit procedures appear to be thorough; observations at various levels of the organizational structure indicate that the procedures should be adequate to assure the use of funds for their intended purposes. Generally acceptable accounting procedures seem to be employed throughout. The concept of salary allocation to banking and social programs is sound, as is the allocation of overhead expenses in accordance with the

salary distribution. However, there are several specific issues on which we would like to comment.

a. Contracting Parties
Contributions

The GON and AID have contributed according to plan. However, at the time of this evaluation, C\$21.6 million was still due from the GON on the 1977 account (see Chapter I, Section B1 for details). The arrearages do not threaten INVIERNO's solvency but they do decrease interest income; in fact, if these payments had been received when due, INVIERNO's additional interest earnings would have about offset its book loss.

b. Institutional Solvency

Considering the financial risks in an innovative small farmer credit program where delinquency rates could be high INVIERNO's finances are being prudently managed; specifically:

1. assets have been maintained in highly liquid form (90 percent of the total assets are in current account, 50 percent in cash or time deposits);
2. the loan portfolio -- the risky part of the operation -- is only 24 percent of current assets;
3. net losses in the 2 years have reduced equity by only 3 percent; and
4. this has been achieved through earnings on deposits, which offset 67 percent of gross book losses.

c. Reserves

INVIERNO's financial management might be criticized for its prudence because over 40 percent of its equity is in deposits; in fact these deposits come to twice the book value of the loan portfolio. In our view, this management policy is wise; until the loan program proves its viability (largely a question of high service costs and farmer delinquency rates), it would be most unwise to extend these funds in loans, only to lose them. In the meantime they are earning interest to offset losses. Furthermore some of these funds will be needed for additional loan projects still to be started such as the land sale guaranty.

d. Earnings on Deposits

The deposits are placed in established Nicaraguan Banks as shown in the chart-of-accounts (see Chapter II, Section B1). Interest earned during 1976 and 1977, relative to end-of-year balances, was 8.9 percent. This rate would appear to be favorable, considering that balances were generally increasing over this period.

The evaluation team strongly endorses the above financial management policies, counsels against reducing reserve deposits (in order to rapidly expand the farm loan program as long as its viability is not established), and urges efforts by the GON to maintain current payments in order to offset operating losses that could endanger the institutions' solvency.

V-A3. Personnel

The evaluation team met with all department and division heads in Nicaragua, both individually and in groups, and with employees of the Regional office, five CEDEs and one sub-CEDE. The team also attended three farmer training courses, and met with perhaps 50 farmers separately or in small groups. Our observations indicated that the staffs at all levels were capable, knowledgeable and enthusiastic about their work. The field men related well to the farmers where their performance would be observed. Farmers in turn displayed a cordial, informal attitude toward the employees, and participated well with them in discussing the activities.

Two other personnel groups are particularly important to INVIERNO's success, DIPSA and PIAPA. The former group is very closely oriented to INVIERNO's operation, including those in the field. The PIAPA researchers would benefit from closer contact with participant farmers' problems and with CEDE field personnel. Such contact could suggest to them new and productive lines of investigation, considering that the quality of research depends, in the first place, on imaginative ideas for real problems. For this reason, and also for reasons of good experimental design, it is suggested that research plots be more widely distributed in the communities and that PIAPA personnel extend their activities in the communities as technical advisors to the INVIERNO field personnel and farmers.

Since INVIERNO communities often have few amenities, working conditions for personnel are sometimes unfavorable. The CEDE employees live in fair sized towns or small cities, but travel to the field may be difficult, especially in the

rainy season. The sub-CEDEs are distant from suitable towns, and employees stay there during the week, returning to their homes on weekends. These sub-CEDEs have more primitive living conditions, sometimes without an adequate water supply or electricity.

INVIERNO's field operations are such that only younger men are likely to maintain the necessary enthusiasm and desire to work in the communities. Furthermore, as they acquire greater personal family responsibilities, it must be expected that they will seek to transfer to other employment. Hence, fairly rapid personnel turnover is likely, and INVIERNO should expect to have to maintain an active interest in training both at CENCA and at the apprentice level within the institutions. It may be possible to reduce some of the turnover by assigning personnel to their home towns, although other factors may at times limit the practicability of this recommendation.

V-A4. Infrastructure

INVIERNO headquarters and field offices are adequate yet modest. Installations are utilitarian and without frills. It was obvious that the funds are not being spent to create a luxurious working environment or to impress the public. In fact, the appearance of the offices conforms well to the clientele that INVIERNO serves; the offices do not look like banks. Even though INVIERNO is in part a credit institution, the field offices essentially project the image of small-town governmental business offices.

Field staff is well equipped with vehicles. INVIERNO is proposing to lower costs by reducing the frequency of visits to individual farmers and by group scheduling in the use of transport.

The sub-CEDE approach seems to be a desirable procedure in lesser developed areas where few amenities exist. While somewhat tough on personnel, the simplicity is essential to a good public image.

V-A5. Inter-Institutional

INVIERNO agreements or working arrangements are adequate with INTA (adaptive research), Ministry of Public Works (access roads), and Ministry of Government (municipal development) involving transfer of funds for agreed upon activities; comments on the substantive activities appear later in this chapter.

A draft agreement for inter-institutional coordination with the Ministry of Public Health was developed in December 1977, but has not been finalized. This should be done in order that the working and cost saving arrangements are formalized.

An agreement with INCEI regarding crop sales has been allowed to lapse. In relatively short crop years like 1976 and 1977, marketing above INCEI prices has not been a problem. However, in years of abundant crops, the price situation may reverse; INVIERNO would be well advised, to protect its credit portfolio, to assure beforehand that its farm credit

recipients will be given preference by INCEI in buying basic grains since that institution has limited buying goals and financing.

Under an agreement with the Nicaraguan Central Bank, INVIERNO operates a vegetable forwarding center owned by that bank in Sebaco. INVIERNO is planning to use these facilities as an experimental vegetable packing center to study the advantages of this operation in the marketing process and make appropriate recommendations. The cost effectiveness of the operation should be reexamined, however, as should the degree to which the clientele corresponds to the INVIERNO poverty focus. INVIERNO's working arrangements with the Nicaraguan National Bank for exchange of credit recipient lists is functioning and helps avoid duplication. If our policy proposals for a broader regional approach to the rural poverty problem are accepted, the Nicaraguan National Bank (as well as other national and local institutions) would have to be involved.

Questions have been raised as to the justification for two rural credit programs operating in the same area, one by the Bank and the other by INVIERNO. This issue is discussed in the section on farm credit later in this chapter.

The evaluation team recommends that a working committee be established between INVIERNO and the Ministry of Education to develop a plan of action for meeting the urgent educational needs that have been detected in the target communities (See Chapter II, Section M2). The preliminary survey INVIERNO conducted on these needs has been transmitted

to the Ministry of Education, but no follow-up action has been taken. Our analysis of the educational project is discussed later in this report.

Institutional arrangements with ENALUF regarding rural electrification and supplementary and/or complementary irrigation should be formalized. The two institutions have not adequately considered policies of mutual interest and their implementation.

V-A6. Procedural

INVIERNO's operational procedures, based on goals and job scheduling with specific work directions, are in our opinion excellent. It is especially appropriate for a young institution that has relatively inexperienced personnel who might otherwise flounder around and accomplish little. The procedures also put primary responsibility where it belongs: with top management for program decisions aligned to policy and at the field level for execution. The computer facility is an essential tool for keeping management control on the operations.

The devices for deciding on job content are the so-called "logical framework" approach and the subject matter manuals. Our examination of the "logical framework" plans suggests that they are becoming stylized and redundant. The usefulness of preparing these charts should be reexamined to see if they can be more specifically oriented, possibly provide for job instructions in a less cumbersome form, and give more emphasis to a real evaluation of benefits.

V-A7. Recommendations

The following recommendations are made on operational changes that would make input management more compatible with policies:

1. Encourage the establishment of regional programs providing additional employment opportunities in INVIERNO operating zones.
2. Continue present prudent financial management policies.
3. PIAPA personnel should extend their research at the community level and their service as technical advisers to INVIERNO field personnel and farmers.
4. INVIERNO should seek (and may be compelled to maintain) a youthful field staff; this implies a continued active interest in CENCA and in intra-institutional apprentice and technician training.
5. Assign personnel to home towns (provided other factors do not intervene), in order to reduce turnover rates.
6. Finalize the draft agreement for inter-institutional coordination with the Ministry of Public Health.
7. Assure that INCEI will give preference to INVIERNO credit recipients to serve as a standby for years when market prices for basic grains fall below support levels.
8. Establish a working committee with the Ministry of Education to devise a plan of action to meet the urgent educational needs in the target communities.

9. Develop a coordination mechanism with ENALUF in relation to policies on rural electrification as well as supplementary and complementary irrigation.
10. Review logical framework programming procedures to make them less stylized and more relevant to goal assessment.
11. Maintain cost accounting separately by line projects in order to permit determination of financial and economic effectiveness.

V-B. Line Project Management

This section of the report considers the extent to which operations of the 15 line projects or activities described in Chapter II are compatible with policy objectives.

V-B1. Technical Training

The question examined is whether the training for technicians and farmer participants is adequate relative to the needs of the agricultural program. Several issues were detected and are described below.

a. Adequacy of Technological Packages

The agricultural credit program presupposes that the technological recommendations will be effective. Whether this is so or not has not yet been determined with certainty. The CAP document (page 143 a-c) projected that yields with improved technology would ultimately be at least triple the traditional yields for corn and sorghum, and at least double

that for beans. The INVIERNO information that has been analyzed so far is quite inadequate, but paired comparisons which were made (see p. 112) indicate only a 50 percent increase for corn and an insignificant increase for beans. However, these data were for 1976, which was a dry year, so they may not be representative of a larger number of years.

The technological packages, published as "Manuals on Production Systems," constitute an excellent device as to format and operational purpose, but their technical adequacy requires review.

b. Utility of Capacitation
Plots

The widespread use of comparative plots on farms for training, demonstrations, and test purposes is an excellent idea. It should not only be continued but the results should influence on farming practices in the community as a whole (both by farmers who are and are not credit recipients); and the scientific information they can supply to evaluate practices and benefits. In regard to the latter point, information is now available for six crop seasons over a 2-year period for basic grains. Furthermore, risk is a major factor in farming, and especially in the feasibility of using purchased inputs; this factor should also be assessed by not eliminating plots that fail when failure is due to risks that farmers have to take (weather, pests, weeds, and some human factors).

c. Relevance of Training

It was obvious to the evaluation team that the technicians have been carefully trained in how to deal with farmers. There is a schedule for farmers to meet in group sessions at each phase of the credit cycle. We witnessed two of these (not by prearrangement) and found the technical quality, presentation, and rapport most impressive. INVIERNO personnel have benefitted from a 4-week training course given by the Government of Israel, especially in regard to visual techniques.

However, it appears from the INVIERNO internal evaluation that training should be more responsive to what farmers perceive as their training needs (see Chapter III, Section D for details). While farmers scored the utility of capacitation plots in the range of medium low, in good crop years comparisons made possible by the existence of these plots should be more impressive and may prove to be an excellent means of demonstrating the effectiveness of the technological packages. In this case the farmers' perception of their utility may be quite different.

The model farmer plan, to be started in 1978, cannot be evaluated now in a useful way. However, we would suggest that the common pitfall of investing heavily in such farmers to make them demonstration models, which could require a large input of technician time and outside cost, be avoided. Their usefulness will depend on the extent to which they reflect the prevalent conditions in the community and how much they serve as a forum for group discussions on constraints.

d. Training Costs

The principal issue here is the high cost of assistance to individual farmers. INVIERNO is attempting to adjust this by group training techniques. We feel that there is a middle ground in this respect; while recognizing the urgency of the cost factor, we consider that personal contact is a key element in innovation and this is lost if too much emphasis is placed on the more impersonal group approach. A way to meet this need at moderate cost might be for field personnel to schedule visits with selected individual farmers immediately before or after group sessions.

e. Justification of Radio Programs

All evidence we obtained is that the early morning radio programs are well regarded by farmers, which is also reflected in the INVIERNO evaluation, which contains some specific suggestions.

V-B2. Motivation-Organization-Capacitation (MOC)

The question raised is how well the MOC approach is contributing to the attainment of INVIERNO policies. It deserves mention that the idea of community volunteers and boards (the basis of MOC) is not new in Nicaragua; hence, precedents have existed for their establishment by INVIERNO. What does appear new is that they are being organized by INVIERNO for integrated community planning and action rather than for single defined activities. Issues detected by the evaluation team are discussed below.

a. Development of
Capability in Community
Planning and Management

Up to this point, the boards must still be considered as being in a formative stage. The plan to give all members a 3-day training course is moving along rapidly. The course covers the basic concepts and role of boards in community development. This gets the members off on a common footing. However, the goal of the boards, to design and execute projects and to analyze and resolve problems, will take time to accomplish. The social development activities reported for 1977 and expanded plans for 1978 indicate that a significant community focus is developing, although most of these activities are still not developed through board initiatives. In general, the boards require further training and experience to be able to organize for effective community action, as will the Social Promoters and associated INVIERNO personnel (see Chapter III, Section D). However, it is to be expected that viability of the boards depends on their progress in obtaining actual community improvements rather than their theoretical training.

b. Potential for Reducing
INVIERNO Operating Costs

INVIERNO plans to use the boards in an operational function, primarily in local management of the credit and input line projects. In 1976 and 1977, the number of participants per AGROMOC was 67 and 71 respectively (see INVIERNO internal evaluation, page 169). The goal is to bring this up to 300 to 350, thereby permitting expansion of activities to more farmers and localities with the same number of

technicians. A key element in this is channeling some of the above mentioned activities into local hands, utilizing the boards for this purpose. INVIERNO expects to accomplish this over a period of years. However, to be responsible for managing the farmer credit operations, the boards will need legal status. The kinds of credit functions that are appropriate for board management and the legal basis of responsibility should be examined and scheduled.

The original INVIERNO plan and CAP documentation emphasized the development of local farmer cooperatives to operate supply and other business functions. In smaller communities, it was considered they might take the form of "farmer stores." However, communities already usually have one or more general stores, so it might be desirable to help them expand their businesses to include input supply, with sales guaranteed through the farm credit project. This type of local arrangement, whether creation of new cooperative farmer stores or utilization of existing privately owned general stores, for input supply sales and distribution should both be encouraged, dependent on local option.

c. Focus for Inter-
Institutional Involvement

The comprehensive INVIERNO approach to community development calls for participation of various public institutions. This participation has so far been spotty. Apparently, the most active arrangement is with the Ministry of Public Health; the draft agreement provides for further coordination and unified community boards for both INVIERNO and public health activities.

In order to stimulate inter-institutional involvement and community initiative (two major INVIERNO policies), arrangements should be made for non-INVIERNO institutions to familiarize themselves with, and receive training in the MOC-community board concept. Also, community social development plans should be reviewed by the other institutions to encourage their participation in both planning and execution.

V-B3. Agricultural Credit

The evaluation team considered the extent to which operations of the agricultural credit program were compatible with policies and output goals. The observations are summarized in the following six issues:

a. Reassessment of Goals

The program in 1976 was about on line relative to the number of participants, but progress in 1977 was not as much as had been expected. The following table shows the patronage anticipated in each year according to INVIERNO's General Implementation Plan, January 1976 (page 27), and the ATAC first year review (page 55), compared with actual results:

<u>Year</u>	<u>Thousands of participants anticipated</u>		
	<u>INVIERNO</u>	<u>ATAC</u>	<u>Actual</u>
1976	5.0	3.5	4.0
1977	10.0	9.5	6.5
1978	15.0	14.0	--
1979	17.0	19.0	--

The amount per loan, per farmer and per manzana also fell below INVIERNO's original expectations and actually decreased in 1977 compared with 1976 (C\$1,000):

	1976		1977	
	<u>Anticipated</u>	<u>Actual</u>	<u>Anticipated</u>	<u>Actual</u>
Amount per loan	--	1.51	--	1.30
Amount per participant	8.4	2.12	8.4	1.94
Amount per manzana	1.9	0.60	2.1	0.57

One reason for the shortfalls is that in 1976, a dry year, farmers did not achieve the benefits they had been led to expect. They were therefore somewhat reluctant to borrow as heavily in 1977. This appears clearly in the INVIERNO internal evaluation (page 93); when asked why they did not fully use the authorized loan amounts, farmers' predominant answers had to do with fear of risk, either the risk of indebtedness in general or of drought specifically. Interestingly, their answers did not question the potential pay-off from technology.

If these interpretations are valid, it is possible that given a good crop year, the loan rates may improve somewhat; but it now seems clear that this type of farmer is not likely to borrow as heavily as had been anticipated originally. This reluctance is understandable when it is noted (CAP, pages 143 a and b) that in Region V the gross value of the harvest per manzana is only around C\$500 for corn and beans, the major crops financed. If farmers could be convinced that yields will increase two or threefold with technology, the

loan rates might come closer to the anticipated levels, but there is no solid evidence for such optimism now. It is recommended that program goals for these factors be aligned closer to actual experience.

b. Farmer Credit Worthiness

The worthiness of the small Nicaraguan farmer as a credit risk can still not be judged. The considerable restructuring (i.e., refinancing) of 1976 loans and the time span between loan dates and due dates for the three crop seasons of 1977 do not permit a definitive evaluation of repayment and delinquency rates. The total loan disbursements for the 2 years amounted to \$23.6 million, which, with interest earned through December 31, 1977 came to C\$25.8 million. By that date, C\$8.2 million or 32 percent had been paid back by the farmers, 52 percent was current, 7 percent was restructured, and only 9 percent was officially delinquent. Later in 1978, when the large 1977 balances are due and disposed of, a clearer picture will emerge of payment and delinquency rates.

The issue of refinancing policy deserves mention. INVIERNO refinances only those loans whose yields are below the standard for the technological level used because of reasons beyond the farmer's control such as drought or flooding. Payment defaults which do not meet this criterion are immediately classified as delinquent. It is important that INVIERNO maintain strict criteria with respect to loan delinquency, eliminating non-payers and developing alternative means for helping farmers in this category.

The lack of liquidity prevalent among small farmers who depend heavily on their own production for subsistence is another aspect of credit worthiness which should guide INVIERNO operations. Gonzalez-Vega (op. cit.) notes this liquidity problem even among small farmers in the INVIERNO target communities whom he judges to be 70 percent market-oriented in their production.

To protect the financial viability of its credit program, the INVIERNO point rating system should eliminate farmers whose ability to repay is seriously in doubt. The result of such a policy is that many of the neediest farmers are made ineligible to receive loans. This result only emphasizes, however, the need for a program with the means, other than production credit, of bringing such farmers up to standards of eligibility. Credit for the acquisition of land, and the stimulation of off-farm employment creation are high-priority alternatives. Once the DIPSA farm level standard-of-living study becomes available, it should be possible to set objective standards for the size of cultivated area necessary to raise farmers to commercial levels in different farm types.

c. Financial Viability

So far, the INVIERNO credit program has not proved itself as being financially viable. This is seen from the relation of loan volume to costs for the 2 years (these data include a minor amount of small business loans in 1977):

		<u>1976*</u>	<u>1977</u>
Loans disbursed	(C\$ million)	8.5	15.0
Operating costs- banking	(C\$ million)	3.7	6.3
Ratio of costs to loans	(percent)	44	42

*Includes operations during 7 months beginning in May 1976.

The percentages compare with the interest rate of 18 percent charged on loans.

The cost overrun has been found, in an interesting internal INVIERNO study, to be due to the shortfall in the average size of loan and to a lesser extent, in the number of participants. This study was made by allocating 1977 costs as to whether they are fixed or variable (the latter, a function of the number of participants) and using these components to simulate outcome for various combinations. It was found that the cost per participant in 1977, based on an average of about 6,000 participants was as follows:

Variable costs	C\$228
Fixed costs	C\$767
Total per participant	C\$995

An increase in the number of participants would reduce the fixed costs per participant but not the variable costs or the income per participant (as an example, if the number of participants were to double to 12,000, fixed costs per participant would be C\$384 and total cost per participant, C\$612). An increase in the average loan size does not affect

the cost factors but does increase income per participant. A simulation made in this way results in the estimates of profit and loss shown in Table 32. The estimates indicate that with the 1977 loan level per participant of C\$1,940, the operation would not be profitable even with an increase in the number of participants to 9,000; but operations would break even with the 1977 number of participants (6,000) if the average loan were increased to C\$5,400. The latter loan level might be attainable with the land sale guaranty project added and a moderate increase in other loan categories.

This simulation procedure is a useful tool for testing the cost effectiveness of various program expansion models. However, it could be made more so by adding certain parameters available from personnel time records and participant data that are retrievable from computer storage, specifically, a distinction between new and old participants for the locality, CEDE, regional and central office cost factors. Programmed into the computer, these parameters would permit financial simulations with various combinations as regards number of participants and the several classes of field offices for both start-up (first year) costs and subsequent yearly carrying costs. The revised procedure would allow better cost effectiveness estimates for such alternatives as expanding the number of CEDEs, establishing more localities within actual CEDEs, or enrolling more participants.

The accounting data for 1977 indicate the following relationships in the per participant cost (percent):

Table 32. Simulated Profitability of the Agricultural Credit Project
as Related to the Size of Loan Balance per Participant
and the Number of Participants

Average loan balance (Thousands of Córdobas)	Profit or (loss) according to number of participants				
	<u>5,000</u>	<u>6,000</u>	<u>7,000</u>	<u>8,000</u>	<u>9,000</u>
	(Thousands of Córdobas)				
1,000	(4,617,995)	(4,666,425)	(4,714,855)	(4,763,325)	(4,811,715)
2,000	(3,717,995)	(3,568,465)	(3,454,895)	(3,323,325)	(3,191,755)
3,000	(2,818,035)	(2,506,465)	(2,194,835)	(1,883,325)	(1,571,755)
4,000	(1,918,035)	(1,426,465)	(934,895)	(443,325)	43,245
4,350	(1,603,025)	(1,048,465)	(493,895)	60,675	616,245
4,500	(1,468,035)	(836,465)	(304,895)	276,675	858,245
4,800	(1,198,035)	(562,465)	73,105	708,675	1,344,245
5,000	(1,018,035)	(346,465)	325,105	996,675	1,668,245
5,400	(658,035)	85,535	829,105	1,572,675	2,316,245
5,800	(298,035)	517,535	1,333,105	2,148,675	2,964,245
6,000	(118,035)	733,535	1,585,105	2,436,675	3,288,245
6,200	61,965	949,535	1,837,105	2,724,675	3,612,245

Source: INVIERNO, Division de Contabilidad.

	<u>Variable costs</u>	<u>Fixed costs</u>	<u>Total</u>
Central office	4	53	57
Field	20	23	43
Total	24	76	100

It is evident that the largest cost element corresponds to fixed costs in the central office. The implication is that the central office could manage a larger field program without significantly greater expenses, thereby reducing the high cost per participant. At the field level, variable costs are almost as important as fixed costs (at least for 1977 program levels); hence reducing the cost of servicing individual participants becomes a significant goal. Useful ways of doing this, as INVIERNO recognizes, include working toward group processing of credit and incorporation of community boards in the management of the credit project.

d. Interest Rates

The elasticity of credit demand as a function of interest rate would be worth further study as a means of increasing loan balances per farmer with the net effect of enabling INVIERNO to fully cover its operating costs. If demand is found to be elastic the possibility of covering costs by lowering rates exists. If, on the other hand, it is found to be inelastic, a slight increase in interest rates may be desirable.

e. Utilization of the
Loan Funds

The AID agreement provides for disbursements through December 31, 1979, at projected annual lending levels. It appears at this time that these goals will not be met, as shown by the following comparison of projected and actual agricultural loans (C\$million):

	Projected		
	CAP (pg. 59)	ATAC (pg. 62)	<u>Actual</u>
1976	6.2	17.2	8.5
1977	19.4	48.6	12.5
1978	45.6	92.5	--
1979	45.6	146.1	--

On balance, the evaluation team is not concerned with the prospective shortfall, but rather emphasizes the importance of a prudent management policy, i.e, emphasis on financial viability of the credit project and its usefulness in attaining welfare goals.

f. Alternative Loan
Institutions

The Nicaraguan National Bank (BNN) also operates a rural credit program for small farmers. The evaluation team considered it useful to take another look at the policy of INVIERNO operating the credit project directly rather than through the BNN, since an interagency comprehensive approach to rural development is an INVIERNO policy.

The INVIERNO planning documentation shows loan size objectives approximately similar to those of the BNN (page 59 of the CAP indicates a goal of C\$6,111 per participant compared with the BNN Rural Credit Program 1976 average of C\$4,416); INVIERNO's properly stated aim is to increase loan size upward from actual levels to achieve greater financial viability, as we have previously discussed.

The team briefly examined the issue of possible duplication of activity between these two institutions by discussing it with several farmers and also visiting a branch bank in Region V. We were particularly concerned with the question of possible staff duplication.

The farmers we interviewed who patronized INVIERNO were all aware of the BNN but had opted for the former because it met their needs better, specifically:

- i. INVIERNO agents arrange loans directly in the field at no cost to the borrower. The bank requires an average of two trips to town for both the husband and wife, and this is considered by such poor people as expensive.
- ii. INVIERNO delivers fertilizer, etc., to the locality. The bank sells the fertilizer in town and the borrower has to carry it, often a considerable distance.
- iii. INVIERNO agents give advice and other assistance to its clients in the field, whereas the bank is impersonal.

On the other hand, we also talked with some small farmers in the same communities who patronized the bank.

They preferred the lower interest rate charged by the bank and apparently did not mind dealing in town. Some farmers who dealt with the bank said they had applied to INVIERNO but were rejected (probably because they were too big). None mentioned the loan security requirements of the bank as a factor.

Our conclusion is that the two institutions do serve the same class of farmers but plainly there are significant differences in the services rendered. We consider that farmers should continue to have a choice as to the kind of service they prefer. Locality focus is the main feature that is different in the INVIERNO program, and because of this, we do not see significant prospects for cost saving by bank personnel handling the credit funds.

V-B4. Agricultural Input Supply

The input-supply project poses a number of operational problems that INVIERNO has identified and taken steps to resolve (see INVIERNO's internal evaluation in Chapter III, Section D). There are three policy issues in this project that should be resolved.

a. Non-Participant Eligibility

The supply project was started in order to provide its credit recipients with the inputs in communities where they were not available. However, INVIERNO's interests are community-wide, not just in its credit clientele, and it

seeks to develop farmer liquidity. Hence, in order to meet the needs of small farmers in the target group who want to buy fertilizer but finance it themselves in communities where it is not locally available, we suggest that INVIERNO sell for cash as well as credit. If cash sales are more than marginal, a procedure for placing orders and cash deposits will be needed. Pricing of inputs should be the same for both classes of clients and at profitable or competitive prices.

b. Private Trade

INVIERNO plans to gradually turn input supply over to cooperative farmer stores. However, there are usually local privately owned stores in the communities. Once commercial demand is created for input items, INVIERNO should stimulate private trade in them without discrimination between cooperatives or private store owners if they decide to stock the items. INVIERNO is now furnishing monetary loans to rural stores under its small business program, and agricultural inputs should be eligible and encouraged for such financing.

c. Pricing

While INVIERNO's price objectives are clearly defined, it has not yet been ascertained whether the sales prices, calculated to approximate those in commercial markets, cover all costs including personnel, overhead and transport to the outlying communities which INVIERNO serves. It would be desirable to carefully review all actual cost elements and take them into account in determining supply policy.

INVIERNO sales prices should leave a commercial profit that is reasonable for a low risk enterprise, and an essential inducement to local takeover of the operations, at least for major items such as fertilizer. If INVIERNO cannot compete under this criterion, an alternative being considered would be for INVIERNO to contract with suppliers in the larger towns of the region or CEDE, on a bid basis, to stimulate the development of better commercial channels locally. The small business loan program might be useful in this regard.

V-B5. Crop Marketing

INVIERNO has now changed its policy of directly entering into the marketing of basic grains through INCEI to one of assisting farmers with market information, especially on prices and buyers (without making recommendations). In this report, we have already commented on INCEI arrangements, pointing out that assurances should be obtained for INCEI priority purchasing from participants in years of low prices as a partial protection for INVIERNO production loans. Other than that, the evaluation team endorses the modified policy.

From the marketing viewpoint, INVIERNO client farmers fall mainly into two types: intensive vegetable producers and small grain producers. The former group is primarily commercial and is in a good situation to benefit from INVIERNO's market information; also, an outside study is now being made for INVIERNO on improving the marketing of these products.

The small grain farmers, which constitute the bulk of the clients, are mostly small; their sales are sporadic and

many have limited commercial orientation. INVIERNO's price information is not particularly applicable for them, but information on buyers would be useful on occasion.

INVIERNO is giving attention to the feasibility of financing grain storage facilities on a small scale (on-farm or community storage) to conserve grains against weevils and to assist farmers in taking advantage of seasonal price innovations. A further development would be cooperative marketing or pooled sales through the community boards or farmer stores. Such activities could strengthen this phase of INVIERNO activities significantly.

We see no significant policy contradictions or issues in INVIERNO's present marketing project.

V-B6. Adaptive Research (PIAPA)

This project faces a major challenge and is not at all certain of success. It is problematic that any known technology, even if profitable, is likely to increase small farmers' incomes much in absolute terms. Furthermore, there are few precedents for identifying areas of research that would be useful specifically for small farmers.

It is a worldwide experience that a constraint in rural development is the inappropriateness or unavailability of profitable technology that can be applied by small farmers. In the case of INVIERNO's long-term program viability, the continuation of that constraint impedes attaining farm income improvement aims and meeting INVIERNO's need to expand the

average size of the loans. Also, given the unfortunate experience with severe drought in the La Trinidad and Condega CEDEs, more attention needs to be given to what alternative agricultural practices, if any, can be effectively introduced into those areas. The ability for PIAPA, a new organization working in a new methodology, to produce appropriate technology for INVIERNO, is going to be a critical element in determining program success.

The evaluation team reviewed the first year's operations through visits in the field as well as by reviewing the annual report. Overall, PIAPA appears to be off to a good start; the project is well installed, and the volume and quality of output are remarkably good for an initial effort. The following observations involve three issues that relate to policy and attainment of output objectives.

a. Coordination

The plan of work is developed on subjects determined jointly with INVIERNO; hence, in this respect, coordination is good.

The INTA-CATIE project in Region V on new crop technologies (see Chapter II, Section F) has now been coordinated with PIAPA; these two projects, both involving INTA participation, should be mutually helpful and their personnel should maintain frequent contact.

The CATIE evaluation, previously referred to, proved to be a worthwhile undertaking and should be occasionally repeated.

As pointed out earlier, more PIAPA personnel exposure to CEDE and AGROMOC operations would be desirable. These contracts would contribute to identification of smaller farmer problems susceptible to research solution, fuller utilization of PIAPA expertise as advisers, comparative evaluation of research and farmer results (an important aspect in reaching technological recommendations), and improvement in adaptability test coverage.

b. Work Plan and Technical Results

The research topics were relevant to INVIERNO problems (mostly testing of crop varieties and technology levels in relation to crop yield). Considering that the project had barely gotten underway at the start of the planting season, the scope was adequate, although it will have to be broadened to include various other aspects of small farmer problems.

The experimental plans were perhaps the best that could be made under the circumstances, but should be improved in the future by more extensive coverage. The purpose of adaptability research is to arrive at general recommendations for defined zones, regions, or ecological conditions. To do this, extensive tests are required over each zone for which a recommendation is sought. Precise results for any one location are irrelevant. Experimental designs suitable for extensive tests are given in "Guia para la Ejecucion de Ensayos Extensivos en las Fincas," Inst. Interamericano de Ciencias Agricolas, Misc. Publ. No. 6, Turrialba, Costa Rica, 1956.

The designs actually used were better suited to research testing than extensive testing; they had up to four replications at a site but only four sites. They gave precise tests of significance in each site, which were unnecessary, but insufficient coverage for zonal tests of significance. In biometrical terms, extensive testing uses the various sites as the replications, since the appropriate error term for significance tests is the treatment-by-site interaction.

The first year results were suggestive but inconsistent from the viewpoint of zonal recommendations. This is illustrated by the following summary of statistical significance tests of the corn results for varieties and technology:

<u>Site</u>	<u>Varieties</u>	<u>Technology</u>	<u>Interaction</u>
San Ramón	N.S.	**	N.S.
La Trinidad	*	N.S.	N.S.
Jinoteca	N.S.	N.S.	N.S.
Matiguás	N.S.	**	N.S.

N.S. = not significant
 * = significant, $P = .95$
 ** = highly significant, $P = .99$

The lack of significance in several locations is discouraging and suggests the need for a more extensive test approach.

In addition, we consider it useful for PIAPA personnel to become involved in evaluating and analyzing the results of INVIERNO's comparative plots (capacitation and model farm plots). An essential part of adaptive research is to

determine the differences in results between research and farmer plots.

c. Adequacy

PIAPA now has a multidisciplinary staff that should be capable of expanding into more lines. In 1977, the work was focused on cultural practices for major crops. Other lines of research that the evaluation team identified as important are:

1. Land preparation: importance of deeper plowing and better weed control in connection with other technologies such as fertilizer.
2. Intermediate mechanization: appropriate implements to permit increases in farmers' cultivated land in view of the imminent land sale guaranty project and the relation between cultivated land and income per farm.
3. Soil erosion hazard of deeper, clean tillage; and erosion control methods suitable for small farmers.
4. Community specialization in new supplementary crops, especially of an industrial or semi-industrial nature (henequen is an example).
5. Supplementary irrigation needs and possibilities, in order to reduce risks in using technology.
6. Dry season irrigation potential to increase employment, income, and credit financing for inputs.
7. Technological risk analysis: production of actuarial tables for drought probability based on hydrological deficits

(starting initially with ENALUF climatological records); correlation of such deficits with yields for non-irrigated crops (see Appendix III).

8. Economic evaluation of improved practices: the analytical procedure of "simulation on type farms" should be used (rather than the less realistic procedure of pro-forma calculations per manzana); type farm base data may become available from DIPSA's farm income studies or will have to be developed.

In 1977, INVIERNO submitted 3,500 soil samples for analysis to INTA under the project. The utility of such analysis is questionable; chemical determinations are difficult to interpret without background correlative information on yields, soil type and fertilizer response. We agree with INVIERNO's actions in phasing out this service. However, we suggest that it be available only for special cases, and if individual farmers want the service, AGROMOCs should be able to advise them how to obtain it; the analyses should be made by INTA at farmers' expense.

V-B7. Family Gardens

INVIERNO's evaluation of its first year experience with family gardens pointed up several possible improvements, which can be summarized under three areas:

The employment, on a pilot basis, of a Home Economist to develop a broad range of home guidance activities for housewives, including gardens;

- . Evaluation of the nutritional needs of the participant rural families and the contribution that the gardens are making to their diets;
- . Provision for improved equipment and facilities (such as irrigation pumps, fumigators, etc.).

All three areas would seem worthwhile. The first and second might well be implemented by arrangements with the Ministry of Public Health insofar as nutrition is concerned.

We understand that equipment for family gardens is now provided through the agricultural input financing project.

V-B8. Small Rural Business

The small business project, started in 1977, must still be considered a pilot operation. The number of applicants and loans approved, and the credit volume has been gratifyingly large for one year of operation.

The financial viability of such credit for INVIERNO cannot yet be judged. If loan security is conserved and enforced, the risk of credit loss should not be great since fairly rigorous client selection standards have been applied (about 30 percent of the applicants were rejected). However, the cost factor for placing and servicing small loans could be unfavorable relative to interest rate income unless loan size can be substantially increased. From this viewpoint, the project should maintain accurate and comprehensive cost accounts, including fixed and variable cost allocation, as for the agricultural credit project.

An aspect of the loan portfolio that disturbed the evaluation team was the nature and location of the loans. INVIERNO's concept of rural enterprise includes small business in towns and cities of the CEDEs. Credit assistance to such businesses by INVIERNO is justified if it has prospects of substantial benefit in terms of new jobs or increased utilization of raw materials produced on nearby small farms; it can hardly be justified solely to increase working capital for production and sales to the benefit of the owner's income. In rural areas, however, the latter benefit appears to us to be an adequate criterion, relative to INVIERNO goals, without regard to the other two criteria cited. We consider it desirable to apply different approval criteria in these respects for rural and urban businesses.

The evaluation team considers that the scope of this project merits reconsideration. There is a need for the massive injection of job opportunities in the economically depressed areas where INVIERNO operates. For this reason, we suggested (see Chapter IV, Section G) a broad regional development approach for designated economically depressed areas, including incentives to national industries and other job creating businesses to move into such areas. We also suggested some organizational changes in this connection (see Chapter V, Section A1). In our view, the small rural business project, even including its complementary urban aspect, is likely to prove too modest by itself; it should be expanded and in coordination with other relevant institutions, take on the broader functions cited.

A related activity that merits investigation is community-based assembly of consumer goods under contract.

Examples are the so-called "cottage-industry" textile and apparel operations in India (these products, in fact, receive special customs concessions in international trade) and electronic component assembly in low wage areas. Such work is particularly suitable for women, and in some instances, as a household operation.

INVIERNO now has a study underway by Servicios Técnicos del Caribe on the subject of farmer stores; hence the evaluation team is not commenting on this subject.

V-B9. Rural Access Roads

A major issue is whether the 215 kilometers of roads can be constructed and improved under this program prior to the terminal disbursement date of the AID loan, December 31, 1979. The rainy season (May-October) is an important constraint on the ability to carry out road work year round in most areas. MOP scheduled one equipment team in the field in April and a second one in July, each with the capability of constructing 100 kilometers per year, and to move construction into the drier parts of Region V during the rainy season. MOP, INVIERNO, and AID should evaluate early in the second half of 1978 what is possible and feasible.

At that time, the participants should further consider the issue of MOP's capacity to carry out and manage the access road program. The use of private contractors should be reconsidered at the review, as should the wider institutional coordination between MOP and INVIERNO and the adequacy of MOP's internal organization to perform the service.

The evaluation team considers the access road project of prime importance to INVIERNO's goals and warranting every possible effort to accomplish. From the viewpoint of job stimulation and family income, the high multiplier effect of good roads gives this activity top priority among rural development approaches.

V-B10. Municipal Development

The project was recently carefully reviewed by an AID-sponsored consultant, Dr. Allan Austin, whose report appears in a memorandum dated April 8, 1978, to the director of DEMU. The review was clearly appropriate in view of DEMU's difficulty in placing loans and moving them into the construction phase.

The slow rate of progress in this phase of the project has tended to undermine DEMU's credibility as an institution despite other effective work it is doing with the municipalities on their problems.

DEMU has had difficulty in attracting loan fund applications from municipalities and unless this bottleneck is overcome, utilization of the fund by its terminal commitment date (December 31, 1979) is doubtful. Most of the projects now being considered are for less than \$10,000.

DEMU has adopted rather tight priorities for the construction projects, limiting these initially to municipal markets and slaughterhouses. On the other hand, the municipalities themselves have not shown much interest in

such projects. The rationale for the emphasis was the obvious relation of these activities to farmers, but it would be desirable to consider a greater range of financing activities linked more closely to expressed local needs, to their employment generating potential, and their multiplier effects on the local economy (as an example, mini-industrial parks located strategically in respect to nearby rural populations). DEMU should position itself to attract proposals and loan applications from private as well as official groups for projects endorsed by the local authorities as being of municipal and rural development interest.

Several potential problems exist in terms of DEMU's relationship with some of the organizations in its immediate institutional environment. These organizations may become bottlenecks in the implementation of DEMU's programs unless clearcut divisions of responsibility are agreed upon among INVIERNO, DEMU, the Section of Municipal Affairs of the Ministry to Government, VIMPU (Managua Urban Planning Institute) and the Account Tribunal (Controller).

Another objective is to provide the municipal development agency with a competent, relatively stable personnel base and a viable internal structure. There has been some progress in this area. DEMU has successfully recruited a group of young, aggressive, and competent staff members who have the ability to guide its various divisions through the initial stages of institutional development. Turnover of professional staff members to date has been low, and the internal organizational structure of DEMU seems reasonable and adequate for current needs. The professional and

clerical staff have attended job related training programs both within and outside Nicaragua. A reasonable training program has been projected for 1978-79.

While training has been a favorable aspect of DEMU's activities, some personnel concerns still exist. There is a need for a policy on the obligations incurred by professional staff through acceptance of DEMU-financed foreign training. The job requirements for the post of "monitors" needs to be clarified (monitors give technical assistance to municipal authorities), and development of reasonable expectations concerning their permanence within the agency is also needed. In addition, it would be useful to develop a highly visible management control system including time phased target goals for each division in the department, and to conduct semiannual internal reviews of progress, based on the agreed upon goals contained in the management control system.

DEMU is also trying to develop the capability to provide technical assistance and training to municipal officials. Some progress has been made in this area, particularly in organization of the Divisions of Training and Technical Assistance; recruitment of competent personnel; development of integrated training and technical assistance programs for 10 municipalities; provision of technical assistance in budget preparation to 17 municipalities; and data collection for feasibility studies in five municipalities.

With the completion of the ongoing cycle of training activities, DEMU should evaluate the experience and make necessary modifications to ensure that follow-up activities

are also successful. This result could be advanced by integration of training and technical assistance, utilization of visual aids and other training materials for use by the monitors, and development of training activities on a regional scale.

V-B11. Land Sale Guaranty

The land sale guaranty fund is expected to become a major aspect of INVIERNO activity. INVIERNO's internal evaluation reported that 50 percent of the farmers surveyed mentioned the need to acquire more land.

The regulations for administering the fund in INVIERNO have still to be definitively formalized. These will have to be carefully reviewed to assure they are workable. Last year's ATAC report criticized several points of an early draft on this account.

Valuation is one of the issues noted in regard to the land sale project. It must be expected that in Nicaragua, as in most other places, actual land values run higher than can be justified in terms of productivity calculations. There are two reasons for this: productivity calculations are usually done unrealistically, using pro-forma cost per unit of area; and the income equivalent of land value appreciation may be a significant factor in its true value.

As to the first point, we suggest that productivity equivalent values be calculated by the more sophisticated technique of economic simulation from type farm income data,

which automatically prices production factors (including labor) at opportunity cost. The DIPSA study on farm income levels will hopefully provide base data for such calculations. As an operating procedure for handling large numbers of applications, standardized simulation schedules can be developed for major determinants, the most important of which are farm size, farm type, and off-farm income. Such schedules would result in "justifiable farming valuations," the latter varying with the economic situation of prospective purchasers. Application of this technology would result in INVIERNO giving preference, assuming other eligibility factors are equal, to the poorer, smaller, and more under-employed applicants; such a result properly reflects INVIERNO's policy.

The factor of land value appreciation emphasizes a point of conceptual conflict. Land is a desirable means of capital accumulation and the land sale guaranty project would be attempting, in effect, to create capital investors out of small farmers who are not likely to have investment capital available. Unless a loan recipient can make a down payment equivalent to the discounted value of the appreciation, the loan itself would have to finance the marginal, investment capital portion of the purchase price, at least in part. The current value of appreciation (to be added to the justifiable farming valuation) would be determined by conventional means.

Another issue that may arise is in regard to land titling and title guaranty. Considerable land appears to be held in usufruct.

A policy in regard to farm size goals will have to be established for the project. The purpose should be to finance sufficient land to provide the farmer with the opportunity to attain a prescribed income objective. Once income objectives are established, the technique of economic simulation mentioned above is suggested for ascertaining the farm size goals.

It can be anticipated that mechanization will become a constraint on the land sale guaranty project. Conventional cultivation techniques, using slow moving oxen and primitive plows, put a limit on the area that can be prepared in timely fashion. In communities where there is sufficient arable land to justify tractors, rental could be stimulated under the small rural enterprise project (cooperative use of tractors is usually not practicable). Much of the participant farmers' land, however, is too irregular for tractors. A number of alternatives are possible and this subject could well be considered as part of the adaptive research project (see Chapter 5, Section F, Recommendations).

V-B12. Rural Housing

INVIERNO has considered the Nicaraguan Housing Bank (BAVINIC) as the appropriate cooperating institution for operating a rural housing project in its target communities. Since INVIERNO's proposal did not elicit a positive response, INVIERNO is now faced with making a decision on alternatives.

INVIERNO's original goals and plans for housing seemed to have exceeded needs. INVIERNO's internal evaluation, conducted by surveying participant farmers, revealed that

housing ranked low in priority especially as compared with water and electricity.

The plans visualize an average expenditure of C\$2,500 per dwelling, with most of it in labor to be furnished by the owner. The average loan amount would be only C\$700.

It seems that loans of this average size may not be feasible as a BAVINIC operation and in view of the possible limited interest in loans of substantial size, alternative procedures should be considered. An alternative would be to provide loans for home construction materials as part of a single package covering several uses, so as to reduce loan operating costs to INVIERNO. Also, 20-year periods are too long for such small loans; the handling costs and loss risk would be reduced with short loan periods, possibly not exceeding 5 years.

The INVIERNO plan called for specified house designs. In view of the constraints mentioned, it is suggested that the house loans be made for specified materials under prescribed criteria without requiring standardized designs. The plans could be made available to interested participants through the social promoters and public health officers.

The report prepared by Servicios Técnicos del Caribe contains a number of useful ideas that can be incorporated into a modified housing project.

V-B13. Farm Mechanization

The land sale guaranty loan project, in combination with the current loan activities, should create an increasing demand for mechanization. The nature of the demand and ways to meet it are likely to be different for the intensive vegetable farmers, mainly on good land, and the larger, less productive and hillier grain farms.

Mechanization for vegetable farms can be met largely through conventional loan financing, individually or cooperatively. Small size garden-type tractors may be useful to some of them. The grain farms are mostly not on land suitable for tractors, although a few are (e.g., Matiguás and Pantasma). A constraint to their mechanization is low yield, and without mechanization their ability to enlarge cultivated area is limited to what oxen can do.

The question of adaptable mechanization for INVIERNO participation was examined by John Balis. Further evaluation of this issue and relevant recommendations appear in other parts of this report, particularly Chapter II, Section M-2 and Chapter V, Sections B-4, 5, 6, and 8.

V-B14. Rural Education

See discussion of this topic and of the Ministry of Public Education in Chapters II, IV, and V.

V-B15. Public Health

See discussion of this topic and the Ministry of Public Health in Chapters II, IV, and V.

V-B16. Recommendations

1. Improve crop yield evaluation procedures (data from capacitation plots and model farms) so as to obtain more reliable estimates of the effectiveness of the recommended technologies and adjust technological packages to reflect these findings.
2. Comparative yield data from capacitation plots and other sources should not be eliminated in the case of crop failure if the failure was due to risk with which farmers normally have to contend (reduced yields due to weather, pests, weeds, and some human factors).
3. Technical training should be reviewed to assure that it is fully responsive to what farmers perceive as their needs.
4. Group farmer training is endorsed as an effective tool for cross-fertilization of ideas and for reducing costs; however, personal "first-name" contact is a key to local innovation and should be continued.
5. Community boards require training in designing and executing projects, and in analyzing and resolving problems -- this is a need expressed by the boards. However, theoretical training should be avoided; rather emphasis should be put on actual projects geared to community's expanding capabilities.

6. Develop a pilot plan for scheduling community board operation of credit programs including a schedule for transference of functions and the appropriate legal status at each stage.
7. Absorption of INVIERNO input-supply functions by either cooperative farmer stores or private general stores should be encouraged as a step toward local control of the program, and the choice should be a local option, possibly as expressed through the community boards.
8. Inter-institutional involvement and focus on the concept of a unified community board for comprehensive social development should be encouraged by training courses on the MOC approach for employees of their institutions. Additionally by the participation of these employees in preparation or review of community-based plans.
9. Adjust loan rate goals to bring them closer to actual experience as regards amount per participant, manzana, and loan.
10. Continue a strict and conservative policy in regard to refinancing loans and in crop estimating for PUE loan repayment scheduling.
11. Utilize the DIPSA farm level study on living conditions, when available, to establish objective standards for the minimum cultivated area necessary to raise farmers' incomes to commercial levels or to defined income goals.
12. From the viewpoint of cost effectiveness in the agricultural credit program, emphasis should be given to new activities that increase the loan amounts of established clients as well as bringing in new clients at established localities.

13. The simulation procedure for agricultural credit programming, based on per participant costs, should be refined to permit estimating the cost effectiveness of various alternatives such as expanding the number of participants, opening new localities, or establishing more CEDEs.
14. Examine the elasticity of credit demand as a function of interest rate.
15. Inputs should be sold to small farmers for cash as well as credit, through INVIERNO, in communities where they are not commercially available. Prices should be equivalent to commercial levels and if INVIERNO costs cannot meet this criterion, competitive bid contracting with nearby suppliers should be considered, including assistance to such suppliers from the small business project.
16. The issue of the effectiveness of ordinary fertilizer and varieties should be quickly researched and brought to a conclusion; it is anomalous that INVIERNO is providing credit for these technologies while PIAPA is still trying to determine their effectiveness.
17. PIAPA's field experiments should use extensive test designs, which are more appropriate for reaching zonal recommendations than the ones used; also they should be involved in evaluating and analyzing INVIERNO's comparative plots since it is essential that the differences in result between research and farmer plots, and the reason therefore, be considered in making recommendations. Additional research lines suggested are: tillage, mechanization, soil erosion, new crops susceptible of community specialization, supplementary and complementary irrigation, technological risk analysis, and economic simulation studies.

18. The routine soil analysis phase of the adaptive research project should be phased down to only special cases.
19. Develop a home economics project, on a pilot basis, focused on family gardens, nutrition, and similar housewife interests.
20. Clarify certain criteria and accounting procedures for the small rural business project. This project has a very significant employment expansion potential; to attain it fully, a broadening of scope is required.
21. The access road project should be reassessed early in the second half of 1978 to evaluate the rate of progress and to consider additional measures that may be required to assure completion of the construction program by the termination date of the AID funding.
22. Develop procedures for instituting the Austin proposals for reforms in the municipal development project. At this stage, urgent consideration should be given to criteria for expanding municipal loan project eligibility.
23. Operating regulations for the land sale guaranty project should be developed, including criteria for valuation, farm size goals, and title guaranty.
24. The rural housing project, as proposed by INVIERNO to BAVINIC, does not appear appropriate for bank management in view of the small materials component to be financed; this activity should be feasible as a sub-project for the social promoters. A scaled down approach should be started on a pilot basis until the demand can be better determined.

VI. EFFECTIVENESS ANALYSIS

VI-A. Constraints

The effectiveness of an institution like INVIERNO must be judged in the context of the constraints under which it operates. The basic project documentation describes some of these constraints, but more precise details are now coming to light in the DIPSA-sponsored study of rural living conditions in Region V. While many constraints could be identified as having some degree of influence, there are several that, in the judgment of the evaluation team, have particular significance. These are listed below with brief subjective, inferential remarks in each case as to the nature of our observation and the significance we attach to it.

1. Cultural Constraints

- a. High degree of cultural homogeneity with the rest of the population. This facilitates rapport between farmers and INVIERNO personnel.
- b. Tradition not a pervasive factor in adapting to new opportunities. Participant response is likely to be in terms of practical benefits as he assesses them.
- c. Ambitions of participant families are primarily farm-oriented. High degree of stability, interest in improving the community; little emigratory interest.

- d. Educational levels extremely low. This impedes certain approaches, but not basically deterrent since intelligence and communicativeness are good.
- e. Poverty and a significant degree of subsistence farming predominate. These factors are constraints on risk capacity and liquidity.

2. Environmental Constraints

- a. Much of the land is hilly; this, with consequent high rates of runoff and erosion, severely limits potential for advanced technology and high yield. However, some localities do not have this constraint.
- b. Annual precipitation highly variable; western part of the region is a marginal drought area.
- c. Five month dry season; limits productivity except for low proportion of farms with irrigation.

3. Economic Constraints

- a. Small farm size. Technology can only be marginally effective for raising income above poverty levels, since benefits can only be small in absolute terms.
- b. Seasonal unemployment caused by long dry season.
- c. Poor accessibility. Reduces intra-community economic activity and access to outside employment.

4. Program Constraints

- a. Technological base limited. Little solid research guidance available; effectiveness of fertilizer and varieties (basic INVIERNO recommendations) only now being adequately researched.
- b. Program has had only 2 years of experience with a highly innovative approach.

VI-B. Effectiveness in Attaining Primary Welfare Goals

This question is examined from the viewpoint of three criteria: income, living standards, and social organization.

1. Income Goals

INVIERNO has so far not been able to adequately measure its income impact on communities, although it is undertaking this partially through an accounting system on sample farms. Neither has it established income goals. Both are shortcomings that require more attention.

2. Living Standard Goals

INVIERNO's activities in improving living conditions can be numerically documented, especially for activities of a construction nature. Goals are well defined for some activities, especially those subject to AID programming requirements (e.g., roads). Goals are vague or not yet established for others.

3. Social Organization Goals

The formation of community boards for each of the communities is a measurable activity; progress has been good, although not completed. The ultimate role of these boards in community development is still unclear, which impedes the setting of definitive goals. INVIERNO is well advised to follow an experimental approach in this respect for the next year or two, establishing limited goals in pilot communities until general activity patterns emerge.

VI-C. Effectiveness in Attaining Secondary Welfare Goals

Three major secondary goals are crop yield benefits, greater employment opportunities, and effective farmer outreach.

1. Yield Benefits

The crop yield benefit goals appear for principal crops in the CAP (pages 143a to c) and, as revised from time to time, in the crop manuals (technological packages). Yield data are available for 1976, but they are far below the goals; this may be due to drought. Comparable data for 1977 are not available at this writing.

There is room for doubt on the validity of the yield goals. Better research data are needed as to the yields that can reasonably be anticipated from actual farms that comprise INVIERNO clientele, with and without irrigation. It is

likely that target yield projections three or so times those obtained with traditional practices, are unrealistic. (The PIAPA data for 1977 comparing "local varieties-minimum technology" with "best variety-maximum technology" at four locations showed increased yield of only 51 percent for corn.) Better information is also required on INVIERNO participants' actual yields with traditional practices, since these constitute the base from which the goals are established. (CAP bases its projection of benefit on traditional practice yields in Region V of 9.1 qq. per mz. for corn and 4.6 qq. per mz. for beans, whereas the Office of Census 6-year averages for the three Departments of Region V are 12.7 qq. per mz. for corn and 10.0 qq. per mz. for beans.)

2. Greater Employment Opportunities

This is one of the objectives of the INVIERNO program. However, base data on unemployment and underemployment in target communities are not available. The DIPSA study on living conditions in Region V will hopefully supply such information. In view of the long dry season and prevalence of small farms, a large amount of unemployment and underemployment can be assumed, but the exact amount has not been determined. The only INVIERNO project that reports on employment benefits is that for small business development, estimating 1.7 new jobs created per loan in 1977, equivalent to over 4,000 jobs in total. In the future, these data should be obtained separately for rural and urban loans; likewise employment stimulation by other

projects should be authenticated, especially for the agricultural sector.

3. Small Farmer Outreach

The credit, MOC, and community activities are successful in reaching a large portion of the farmers in the target communities; farmer participation and feedback are good. In Region V, about two thirds of the farmers in serviced communities are in the agricultural credit portfolio.

VI-D. Effectiveness in Attaining Institutional Goals

1. Financial Management

INVIERNO rates high in solvency and financial fluidity. It has been operating at a loss, but the total loss is barely 3 percent of the capital investment and does not threaten equity. The cost effectiveness of the agricultural credit program is low, expenses being about three times the interest rate. Credit delinquency rate could not be determined adequately because the 1977 loans were still in the current balance; definitive delinquency was about the 10 percent rate originally projected, and about 2 percent was in refinanced loans.

2. AID and Counterpart Fund Utilization

Utilization rates are below projections. Several projects are not yet started or are just getting underway

(particularly roads, municipal development, land sale guaranty, and small enterprise); hence fund utilization is expected to increase substantially in 1978. The agricultural credit project is still below projected amounts, but the volume is ample to test the viability of this type of small farmer assistance.

3. Management and Operations

Overall, we would say that management and operations are effective and in accordance with agreed-upon policies. AID personnel, especially the Rural Development and Program Evaluation offices, closely follow all phases of the program. For details of specific strong points and weaknesses, see Chapter V, Section B.

4. Evaluation Capacity

INVIERNO has demonstrated good ability in evaluating physical performance and in realigning procedures in accordance with recommendations made by outside consultants hired through AID. An excellent internal evaluation was made in 1977 to obtain program feedback guidance from farmers and staff. The above recommendations, as well as those made in the first year evaluation, received prompt attention.

The organizational set-up for evaluating effects of the program on farm income and production is adequate. However, the procedures used have been cumbersome and expensive. We suggest that the alternative be investigated of

a less repetitive and less precise survey procedure, including not only farmers who are credit participants but also other strata of farmers, so as to evaluate total community welfare progress. However, until the less detailed procedure is satisfactorily installed, it would be prudent to continue the present full accounting system.

IV-E. Effectiveness in Attaining National Goals

1. Expansion Potential

INVIERNO has standby plans for expansion. Tentatively, six additional CEDEs have been selected, three of which are located in the so-called "agricultural frontier" a zone somewhat to the east and south of present CEDE locations. A basic criterion for selection is the adequacy of rainfall, with a minimum of 1,400 mm. annually. Other criteria in selecting new CEDEs are a predominance of small farmers and adequate roads. The six CEDEs have a population of about 33,000 families and 20,000 farmers, approximately half the corresponding number in the present CEDEs.

Expansion into additional communities within present CEDEs is limited by the lack of all weather roads. It is estimated that only 15 new locations could presently be reached.

We recommend that short-term expansion plans be predicated on: a. establishing unequivocally the production and income effectiveness of the agricultural production

recommendations; b. assuring the financial viability of the agricultural credit project; c. deciding the optimum allocation of financial resources in terms of cost effectiveness (banking costs/loan interest income) as a function of the number of participants, communities, and CEDEs; and d. initiating the land sale guaranty and access road projects. These conditions would be in addition to currently institutionalized criteria. We would expect that the above four points could be fulfilled by the end of 1978, although this depends somewhat on weather conditions.

Meanwhile, CEDEs should continue to enroll more qualified participants within existing communities and insofar as may be prudent, seek to increase the average loan amount. There are fairly low risk measures that can reduce the participant cost rate and bring INVIERNO's banking operations closer to book break-even point, in view of the high fixed-rate cost of the central offices. However, we do not consider that at this pilot stage of INVIERNO's development, break-even need be a high priority goal.

2. Alternatives

The question has been raised as to possible alternatives to the INVIERNO approach. The evaluation team considers it entirely too soon to address this issue substantively. The INVIERNO approach is, in our opinion, extremely well conceived; it reflects many years of experience in rural development for poor farmers. The weakest part of the effort

is doubt as to the income effectiveness of the recommended agricultural production technology. Whether this doubt will be resolved by a year of good rains or by successful adaptive research efforts remains to be seen.

At this time, we would not counsel any fundamental change in the present program. However, we do suggest, as a complement to the essentially on-farm focus of the present approach, the development of an off-farm, regional approach aimed at attaining substantial increases in employment opportunities within INVIERNO operating zones.

VI-F. Performance Tabulation

Table 33 is a comparison of goals (original and as subsequently revised) with performance for selected indicators, as tabulated by INVIERNO.

VI-G. Recommendations

The following recommendations emerge from this review of the effectiveness of INVIERNO:

1. Establish welfare goals, and means to monitor them, for farmers and communities.
2. Review DIPSA study of rural living conditions, anticipated to be ready in the latter part of 1978, to determine if additional base data are required to evaluate welfare of the rural population and to establish procedures for approximate measuring of changes under the program.

Table 33. INVIERNO: Comparison of Goals and Performance for Selected Indicators

Indicator	Original goals ^a				Revised goals		Performance	
	1976	1977	1978	1979	1977	1978	1976	1977
<u>Structure (number)</u>								
Regional offices	1	1	2	2	2 ^b	1	1	1
CEDEs	6	11	16	19	8 ^b	6	5	6
Sub-CEDEs	--	--	--	--	5 ^b	4	--	4
Communities	--	--	--	--	--	--	178	283
<u>Personnel (number)</u>								
Central office	94	104	106	107	--	--	92	106
Regional office	11	22	22	22	--	--	11	14
CEDEs and sub-CEDEs	144	274	386	446	--	--	117	200
Total	249	400	514	575	--	--	220	320
<u>Expenditures and investments^c</u> (millions of dollars)								
Central office	1,142	1,322	1,403	1,433	--	--	1,243	1,893
Regional office	163	287	248	284	--	--	247	294
CEDEs and sub-CEDEs	1,597	2,617	3,928	4,218	--	--	1,200	2,176
Total	2,902	4,226	5,579	5,935	--	--	2,690	4,363
<u>Personnel training (number)</u>								
Training courses	12	19	21	22	21	44 ^d	13	16
Participants	619	1,007	1,007	1,087	1,057	479 ^d	473	314
<u>Agricultural credit</u>								
Participants in portfolio December 31 (thousands)	5	10	15	17	--	--	--	8.2
Participants financed (thousands)	5	10	15	17	--	--	4.0	6.5
Area financed (thousands Mz.)	22	40	60	80	54	28	14	22
Financing (millions of dollars)	6	12	14.4	18	5.4	3.3	1.2	1.8
Area financed per participant (Mz.)	4.4	4.0	4.0	4.7	--	--	3.5	3.4
Financing per participant (dollars)	1,200	1,200	1,000	1,000	--	--	303	277
Financing per Mz. (dollars)	273	300	250	225	100	118	86	82
Financing of gardens (millions of dollars)	0.2	1.3	2.1	3.6	--	--	--	--

Continued--

Table 33 (continued)

Indicator	Original goals ^a				Revised goals		Performance	
	1976	1977	1978	1979	1977	1978	1976	1977
<u>Cooperatives^e</u>								
Operative (number)	--	1	3	5	--	1	--	1
Members (thousands)	--	2	6	10	--	--	--	0.1
Production (million qq)	--	0.2	0.7	1.2	--	--	--	0.02
New financing (millions of dollars)	0.1	1.3	2.5	2.6	--	1.6	--	0.05
<u>Inputs purchased</u>								
Pesticides, dry (thousands qq)	9	17	26	29	--	7.1	2.1	2.3
Pesticides, liquid (thousands of gallons)	20	39	58	66	--	3.9	0.7	1.1
Fertilizers (thousands qq)	39	78	118	133	--	63.4	15.3	32.6
Seeds (thousands qq)	12	24	37	42	--	2.0	2.3	11.2
<u>Farmer training (number)</u>								
Courses	--	--	--	--		456 ^f	--	--
Participants	--	--	--	--		15,272 ^f	--	--
<u>Community activities</u>								
Housewife education groups (number)	30	120	140	170	20	57	21	13
Community development groups (number)	90	120	124	170	102	130	131	86
Potable water wells (number)	5	5	5	5	23	52	1	11
Educational centers ^g (number)	12	10	10	6	34	68	9	12
Latrines (number)	150	1,200	1,200	3,000	1,099	2,897	655	513
<u>Small business</u>								
Authorized financing (hundreds of million dollars)	100	200	600	--	--	309	--	292
Credit placement (hundreds of million dollars)	100	200	640	600	--	389	--	370

a. INVIERNO plan de implementación detallada para 1976. April 1976.

b. The first year. An evaluation of AID loan 524-T-031.

c. Performance investments include fixed term certificates of deposit.

Source: Accounting Division.

d. Training goals for technical personnel in INVIERNO plan operativo para 1978, page 36.

e. Performance data from Rural Business Development Program.

f. INVIERNO plan de implementación para 1977.

g. Revised goals and performance data include the number of schools improved.

Source: INVIERNO Department of Programming and Control.

3. Assess yield benefits more accurately; modify yield goals to bring them in line with the real possibilities for small farmers (yields actually obtainable on such farms with traditional and recommended technology in seasons when precipitation is not limiting).
4. Evaluate feasibility of technology in terms of actuarial risk.
5. Develop a continuing procedure for determining employment impact for all pertinent projects.
6. Reevaluate outcome of the agricultural credit project about mid-year 1978 for 1976 and 1977 portfolios by crop season.
7. Assess loan fund utilization prospects about mid-year 1978.
8. Continue periodic INVIERNO internal evaluations and the liberal use of outside consultants in specific problem areas.
9. Base expansion plans on cost effectiveness analysis and agricultural credit experience; review about end of 1978.

APPENDIX I

LOAN AGREEMENT SUMMARY

<u>Implementation Actions</u>	<u>GON RESPONSE</u>		<u>USAID's IMPLEMENTATION LETTER RESPONSE</u>		
I. CONDITIONS PRECEDENT	Date Submitted	Status	Dates	No.	Content
3.01 <u>CP to Initial Disbursement for Technical Assistance</u>	December through January 25, 1976	Approved	Nov. 18, 1976	1	Instruction for completion of initial CPS
a) legal opinion; b) GON representative; c) preliminary time-phased implementation plan for program events; d and e) plans for obtaining technical advisors for DIPSA and INVIERNO; and f) preliminary land term measures.			Jan. 21, 1976	2	Disbursement and procurement procedures
3.02 <u>CP for MAG Special Studies, Training Activities, and Commodities</u>	January 25, 1976	Approved	Jan. 27, 1976	3	Approval of 3.01
a) legal establishment of new officers and allocation of sufficient funds and personnel;			Feb. 5, 1976	4	Approval of 3.02
b) 1st. year MAG restructuring plan; c) establishment of salary for contracting quality technicians; d) assurance of transfer of UNASEC to MAG.			March 11, 1976	5	Approve request for extension of 3.04 and 3.06 from March 25 to July 25.
3.03 <u>CP for INVIERNO Training Activities</u>	March 26, 1976	Approved	April 26, 1976	6	Approval of Section 3.03
			June 7, 1976	7	Approval of Section 3.05

	a) plan and budget for the training of INVIERNO staff;			Aug. 18, 1976	8	Elimination of AID approval of all contracts less than \$5,000.
	b) plan and budget for the training of Campesino leaders; and					
	c) evidence of qualified training personnel.			Aug. 25, 1976	9	Approval of Sections 3.04 and 3.06
3.04	<u>CP for Small Farmer Research Activities</u>	July 29, 1976	Approved	Aug. 30, 1976	10	Extend completion of evaluation from September 1 to September 30.
	a) overall plans budget and organizational arrangements for implementing project research; and					
	b) evidence of qualified people.					
3.05	<u>CP for Integrated Agricultural Development Project</u>	May 10, 1976	Approved	Oct. 6, 1976	11	Extended terminal dates for CPS 3.07, 3.08, 3.09 and 3.10 due to the necessity of requesting a loan authorization change in AID/W. Also extended the terminal date for 3.12.
	a) detailed implantation Plan 12 project to include i.) regional Plan for delivery of integrated services; ii.) local level technical assistance and promotion activities;					
	iii.) agricultural credit policies and procedures;					
	iv.) policies and procedures for providing land sale guarantees; v.) criteria for developing an underutilized land tax and its implantations;					
	vi.) criteria for landlord-tenant new arrangements and plan for implementing regulations; vii.) plans and procedures for establishing small			Oct. 20, 1976	12	Accepted justification for the selection of road construction equipment to be purchased with loan funds.

	farmer marketing and service organization and develop independent farmer-owned cooperatives; viii.) evidence of sufficient budgetary resources through 1976;					
	b) operating procedures, organizational structure, annual budgets for INVIERNO;					
	c) interim measures to protect small farmer tenants until final landlord-tenant arrangements have been enacted;			Nov. 17, 1976	13	Waived requirement of attaching AID marking to loan financed vehicles due to potential danger to INVIERNO field staff.
	d) adequate salary and personnel to maintain quality personnel;					
	e) hiring sufficient qualified personnel to initiate field operations and					
	f) evaluation plan for all project elements.					
3.06	<u>CP for Disbursements for Access Road Betterment</u>	July 29, 1976	Approved	Dec. 6, 1976	14	Approval of CP 3.12.
	a) Ministry of Public Works and INVIERNO agreement whereby MOP implements road betterment project; b) organizational and staffing arrangements for MOP; c) implementation plan; d) GON additional \$1 million contribution which in 1976 will earmark \$200,000 to MOP.			Feb. 7, 1977	15	Approved training activities and amended Annex A.
				Feb. 8, 1977	16	Approval of CPs 3.07 and 3.08.
				Feb. 8, 1977	17	Approval of CPs 3.09 and 3.10.
3.07	<u>CP for Technical Assistance and Training for Rural Municipal Development Project</u>	May 19 - a and d and June 9 - b and c.	Approved	May 19, 1977	18	Discuss cooperating relationships between INVIERNO, INTA and Min. OF Government.

	a) establishment of a separate Rural Municipal Development Unit in INVIERNO; b) establishment of Executive Council for Rural Municipal Development Project; c) coordinating agreement between Ministry of Government and INVIERNO; and d) plan for use of technical assistance and training funds.			May 24, 1977	19	Amended Annex A for the <u>Home Garden and Nutrition Improvement Program</u> .
3.08	<u>CP to disbursement for Rural Municipal Project Credit Funds</u>	Sept. 25, 1976	Approved			
	a) Regulation and procedures for funds sub loans to include capitalization plan, policies governing Fund, project eligibility and sub-lending criteria and model sub-loan contract.			June 14, 1977	20	Amended Annex A for <u>Training</u> under the INVIERNO component.
3.09	<u>CP for Technical Assistance for Rural Enterprise Development Fund</u>	Jan. 14, 1977	Approved			
	a) agreement between BNN and INVIERNO; and b) BNN's arrangement with INVIERNO to obtain long-term advisory services.			June 21, 1977	21	Revised the budget in Annex A.
3.10	<u>CP for All other disbursements for Rural Small Enterprises Development Project</u>	Jan. 14, 1977	Approved	Oct. 18, 1977	22	Formally divided loan funds between INVIERNO and DEMU for the Municipal Development Program.
	a) BNN and INVIERNO organizational and staffing plan for implementing Project; b) policies and regulations for im-					

	plementation of Rural Small Enterprises Credit Fund;			Oct. 18, 1977	23	Approval of Section 5.04 (covenant).
	c) that GON provide for fund capitalization.			Oct. 27, 1977	24	Extend terminal date for 3.12 (Evaluations).
3.11	<u>CP to all Disbursements subsequent to December 31, 1977.</u>	Pending				
	a) GON enacted and implanted land tax promoting sale and/or rental of under-utilized land to "campesinos"; b) GON enacted and implanted new arrangements for regulating landlord-tenant relations; and c) an updated report on Nicaraguan land tenure conditions.			Nov. 2, 1977	25	Clarified the translation in Letter No. 22.
3.12	<u>CP to All Commitments of Funds Subsequent to September 1, 1976 and each year thereafter.</u>	December 6, 1976 Pending for 2nd year	Approved	Nov. 8, 1977	26	Approves CP 3.12(c).
	a) MAG, INVIERNO and AID have conducted evaluation; b) above parties have programmed next years activities; and c) above parties reviewed progress in developing underutilized land tax and new arrangements for regulating landlord-tenant relationships.			Jan. 18, 1978	27	Extend terminal date for CP 3.11.
				Jan. 30, 1978	28	Reprogram funds within the Municipal Development Program.
				March 13, 1978	29	Establishes operating procedures for the Access Road Program.
11.	SPECIAL COVENANTS					

Section 5.01. Land Tenure: DIPSA is actively working with all the institutions in the Public Agriculture Sector that have responsibility for improving the accessibility of land to small farmers. Specifically,

efforts are being taken to reorganize the Agrarian Institute (IAN) and make it more effective in the area of land titling. The multi-institutional land sale guarantee program is under the direction of DIPSA. USAID is monitoring progress in this area through conditions precedent 3.11 and 3.12.

Section 5.02. Funding. Preliminary evidence demonstrates that the GON, through the Central Bank, intends to make the land sale guarantee program a significant aspect of its integrated rural development strategy.

Section 5.03. Ministry of Agriculture. The Ministry of Agriculture has been divested of all operational responsibilities; all transfers of resources to autonomous agencies in the sector are approved by the Ministry.

Section 5.04. Interest Rate Study. Study received on October 4, 1977, and approved by Implementation Letter No. 23 on October 18, 1977.

Section 5.05. Budgetary Support. GON is in the process of contracting a team of technical advisors to assist the Ministry of Agriculture in developing a more realistic "civil service" system for its employees.

Section 5.06. Small Farm Credit. The Mission has evaluated BNN lending levels for 1975 and 1976 and finds the levels adequate given the fluctuations in economic activity.

Section 5.07. Borrower Support. Counterpart budget for INVIERNO has been more generous than what was stipulated in Annex A. The Mission is monitoring closely the continued support for the program.

Section 5.08. Annual Review. The second annual review was completed in May 1978. The next one is scheduled for February-March, 1979.

APPENDIX II.

Actuarial Evaluation of Risk

INVIERNO planning documentation has emphasized increases in average yield and income as measures of agricultural credit program feasibility. For a credit program, however, such averages are interesting but not definitive. The reason is that low yields may reduce repayments below loan balances, but high yields do not increase repayments above the balances. Since shortfalls are not compensated by overpayments, averages are deceptive; even if the credit program is highly profitable for farmers on the average, it may not be so for some. Program feasibility depends then, on the proportion of farmers who fail to reach income levels that permit credit repayment. The risk of failure, for this purpose, should be calculated in actuarial terms.

This appendix outlines an appropriate methodology for the actuarial evaluation of risk. The data shown were obtained from the Condega CEDE, but should be considered here only as illustrative of the procedure.

Step 1. Production Cost

The cost of production is estimated for each crop and technology level. INVIERNO now does this by using pro-forma cost per manzana, but a better technique would be by simulation based on actual type-farm economic data (a recommendation in this respect appears in section V-B-6). With the data at hand, the Condega CEDE manager gave the following values for production cost, expressed in C\$ per mz.:

<u>Crop</u>	<u>Technology A</u>	<u>Technology B</u>
corn	720	1125
beans	535	1125

Step 2. Breakeven Point Yields

The costs are converted to yield equivalents using per unit farm values. INVIERNO uses sale prices for this purpose, but opportunity price would be more accurate. The CEDE manager gave the following yields at the breakeven points, measured in qq. per mz.:

<u>Crop</u>	<u>Technology A</u>	<u>Technology B</u>
Corn	15	25
Beans	6	10

Step 3. Actuarial Probability
of Failure

The frequency of failure was determined by comparing the breakeven point yields with actual yields in 1977 on a sample of 140 farms that had received credit for either of the two technologies. The following results were obtained:

<u>Farms</u>	<u>Technology A</u>		<u>Technology B</u>	
	<u>Corn</u>	<u>Beans</u>	<u>Corn</u>	<u>Beans</u>
No. above breakeven point	31	11	15	1
No. not above breakeven point	13	38	9	22
Total	44	49	24	23
Percent of failure	30	78	38	96

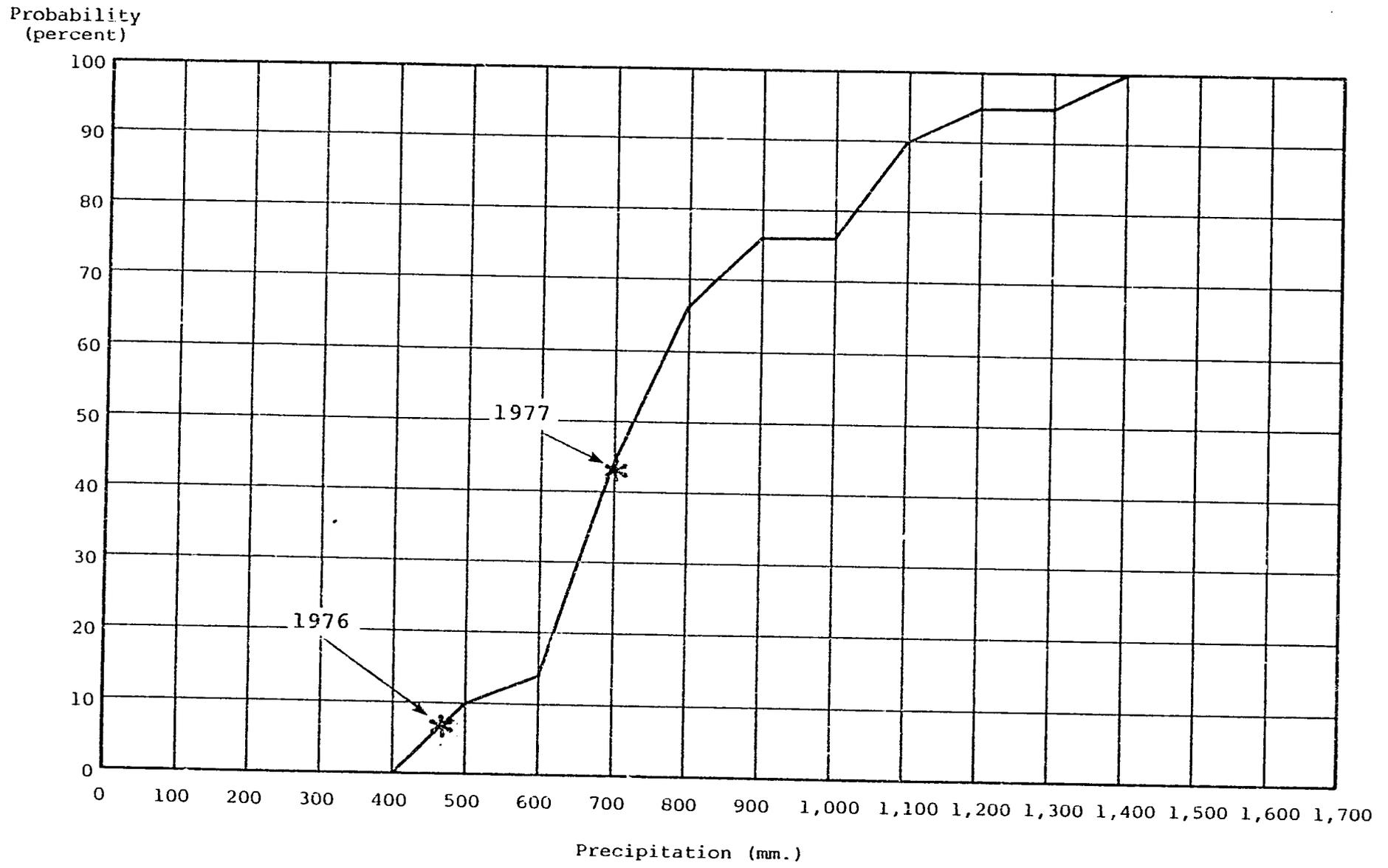
The interpretation of these results would be that the risk of technology was about 1 in 3 for corn, with Technology A being somewhat less risky than Technology B. For beans, the risk of failure was very high, 3 out of 4 for Technology A and almost universally so for Technology B.

Step 4. Climatic Interpretation
of Actuarial Probabilities

The major cause of failure beyond the farmers control in this CEDE is the amount of precipitation. Through the courtesy of ENALUF, the evaluation team obtained monthly rainfall data for the period 1956-77. The probabilities

calculated from these data are shown in Figure 5, along with precipitation in 1976 and 1977, being the 2 years of CEDE operation. It is seen that 1977 had a 43 percent probability, i.e., in 43 percent of the years, precipitation was less than the 1977 amount. A further step in the risk evaluation would be to calculate the frequency of failure by technologies and crops in the six seasons (three each in 1976 and 1977), and correlate these with the corresponding seasonal precipitation data so as to determine the risk probabilities as a function of precipitation frequencies.

Figure 5. Annual Precipitation Probability, CONDEGA, 1976-77



Source: ENALUF.

APPENDIX III. GLOSSARY

- AGROMOC: INVIERNO job title. An agronomist with additional training in communications and social sciences. Primary liaison with community and its population on agricultural technology.
- Apante: Third, or late season crop period; October to December.
- BAVINIC: Banco de la Vivienda de Nicaragua; Nicaraguan housing bank.
- BNN: Banco Nacional de Nicaragua.
- CAP: AID Capital Assistance Paper.
- CEDE: Centro de Desarrollo or Development Center. Corresponds to Regional Assistance Center in CAP.
- CENCA: Centro de Capacitacion. Training Center for the Public Agricultural Center, in Ministry of Agriculture.
- Client: Any low income rural person who may be assisted by INVIERNO. Usually a small farmer or a rural worker and his family.
- Colaborador voluntario: Voluntary collaborator, a farmer selected as initial point of contact for INVIERNO personnel.
- Community: A defined locality that serves as the ultimate population and geographic unit of INVIERNO activities.
- Córdoba: Nicaraguan unit of currency, C\$7.00=\$1.00.
- CREDOMERC: INVIERNO job title. Responsible for selling inputs to farmer and assisting him in marketing his produce.

- DGP: Direccion General de Presupuesto. GON Budget Office.
- DIPSA: Direccion de Planificacion del Sector Agropecuario. MAG planning, programming and budgeting arm.
- ENALUF: Empresa Nicaraguense de Energia, Luz, y Fuerza, the national electric company.
- GON: Government of Nicaragua.
- IBN: Instituto de Bienestar Campesino, the Institute of Rural Welfare. The full name of INVIERNO.
- INCEI: Instituto Nicaraguense de Comercializacion Exterior e Interior. Semi-autonomous agency responsible for price stabilization and storage of agricultural products.
- INTA: Instituto Nicaraguense de Tecnologia Agropecuaria. Semi-autonomous agency established to absorb MAG research, extension, and education activities.
- INVIERNO: Instituto de Bienestar Campesino. Semi-autonomous agency responsible for the national rural welfare program focused on poor farmers.
- Junta comunitaria: Community board consisting of elected farmers; serves as the local focus of INVIERNO's developmental efforts.
- Locality: Rural community. Corresponds to Regional Development Assistance Group (RDAG) in CAP.
- MAG: Ministerio de Agricultura y Ganaderia.
- MOC: Motivacion-Organizacion-Capacitacion. The function of effective communication and training in community organization and development. Also an activity in the INVIERNO program.
- Mora: Designation for delinquent farm loans.
- Participant farmer: A farmer enrolled in INVIERNO's credit program. See socio.
- PAS: Public Agricultural Sector. Public sector agencies whose activities are directed at agricultural and rural development.

Postrera: Second, or mid season crop period; July to September.

Primera: First, or early season crop period; April to June.

Promotor Social: INVIERNO job title. Primary community development/MOC professional. Usually a Licenciado en Ciencias Sociales.

PUE: Pago Ultimo Estimado or last estimated payment. A procedure for recalculating farmers' loan payment schedule by taking into consideration climatic conditions.

qq: Quintales, 100 pounds each.

Socio: A participant farmer. INVIERNO distinguishes between participants approved for the credit portfolio (socios en cartera), those with authorized loans for a particular crop season (prestamos autorizados) and those to whom loans are actually disbursed (prestamos autorizados).

VIMPU: Vice Ministry for Urban Planning.