

V-1 - A.I.D. EVALUATION SUMMARY PART I 76779

(BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS)

IDENTIFICATION DATA

<p><b>A. REPORTING A.I.D. UNIT:</b>  <u>USAID/Ecuador</u>  <small>(Mission or AID/W Office)</small></p> <p>ES# <u>91/3</u> )</p>	<p><b>B. W.'S EVALUATION SCHEDULED IN CURRENT FY ANNUAL EVALUATION PLAN?</b>                  yes <input type="checkbox"/> slipped <input checked="" type="checkbox"/> ad hoc <input type="checkbox"/></p> <p>Eval. Plan Submission Date: FY <u>91</u> Q <u>1</u></p>	<p><b>C. EVALUATION TIMING</b>                  interim <input type="checkbox"/> final <input checked="" type="checkbox"/> ex post <input type="checkbox"/> other <input type="checkbox"/></p>												
<p><b>D. ACTIVITY OR ACTIVITIES EVALUATED</b> (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Project #</th> <th style="width: 45%;">Project/Program Title (or title &amp; date of evaluation report)</th> <th style="width: 10%;">First PROAG or equivalent (FY)</th> <th style="width: 10%;">Most recent PACO (mo/yr)</th> <th style="width: 10%;">Planned LCP Cost (000)</th> <th style="width: 10%;">Amount Coligated to Date (000)</th> </tr> </thead> <tbody> <tr> <td>518-0059</td> <td>Land Titling Project</td> <td>85</td> <td>12/91</td> <td>10,300</td> <td>5,499</td> </tr> </tbody> </table>			Project #	Project/Program Title (or title & date of evaluation report)	First PROAG or equivalent (FY)	Most recent PACO (mo/yr)	Planned LCP Cost (000)	Amount Coligated to Date (000)	518-0059	Land Titling Project	85	12/91	10,300	5,499
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518-0059	Land Titling Project	85	12/91	10,300	5,499									

ACTIONS

<p><b>E. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR</b></p> <p style="text-align: center;">Action(s) Required</p> <p>The project was terminated as a result of a lack of resources to expand program to the national level. Nevertheless, USAID will continue to fund the continuation of the pilot program with local currency through proposal to a new Foundation, PREDUR.</p>	<p>Name of officer responsible for Action</p> <p>Charles E. Costello Mission Director</p>	<p>Date Action to be Completed</p> <p>12/31/91</p>
<p>(Attach extra sheet if necessary)</p>		

APPROVALS

**F. DATE OF MISSION OR AID/W OFFICE REVIEW OF EVALUATION:** mo 04 day 25 yr 91

**G. APPROVALS OF EVALUATION SUMMARY AND ACTION DECISIONS:**

<p>Project/Program Officer</p> <p>Signature: <u>[Signature]</u>                  Typed Name: <u>Fausto Maldonado</u></p> <p>Date: <u>02/30/92</u></p>	<p>Representative of Borrower/Grantee</p> <p>Signature: <u>[Signature]</u>                  Typed Name: <u>Mar. Agustá Fernández</u></p> <p>Date: <u>92-09-04</u></p>	<p>Evaluation Officer</p> <p>Signature: <u>[Signature]</u>                  Typed Name: <u>Guido Pérez</u></p> <p>Date: <u>02/23/92</u></p>	<p>Mission or AID/W Office Director</p> <p>Signature: <u>[Signature]</u>                  Typed Name: <u>Charles E. Costello</u></p> <p>Date: <u>4/13/92</u></p>
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a.

## H. EVALUATION ABSTRACT (do not exceed the space provided)

The project aims to help the Government of Ecuador (GOE) revise, establish and reinforce institutional mechanisms to provide secure and legal land tenure. This project is the first stage pilot phase of the new National Program for Rural Cadasters and Titling (CATIR) being implemented by: The Special Institutional Commission (CEI), the Ecuadorian Institute of Agrarian Reform and Colonization (IERAC), the National Directorate for Cadasters and Avaluos (DINAC) and the Property Registrars. This evaluation was conducted by Developing Alternatives Inc. on the basis of a review of project documents, formal and informal interviews with project personnel, field visits and observations. The purpose was to assess the pilot activity and the office of the pilot project (opp) set up to implement the stage I effort.

Operational Aspects of the Pilot Plan: In terms of developing a methodology and procedures for the compilation and processing of cadastral data and application in two cantones, the outputs of the pilot project are impressive and in compliance with the terms of the project agreement.

At the operational level, cooperation and coordination of the collaborating organizations has been high. Each discrete task is relatively simple; as a result, highly specialized personnel are not required.

Benefits are difficult to quantify because they are in the realm of social infrastructure and tenure security for campesino landholders. A cadaster-based land information system is essential for effective rural credit programs, for long-term investment in rural properties, and for a capitalist land market to maximize land use.

Technically, the project is producing a high quality product, a complete inventory of all properties in the canton, including unique identifying coordinates, physical characteristics, data to calculate economic values, and ownership and use rights.

The decentralized design of the Ecuador program where work is carried out on a cantonal basis, provides immediate benefits on the local level in actualized property records, improved tax bases, and information for local development projects. Data collected on the cantonal level can later be aggregated to the provincial or national level for larger scale projects.

The evaluation team strongly recommended that the program continue and that AID collaborate with the Government of Ecuador in funding Stage II.

In recognition of the short time that the revised project has operated, the accomplishments that have been realized in terms of producers and methods, and the fact that the project is clearly working on these tasks at present, the evaluation team recommends an extension of the time for complying with these conditions.

As the technical requirements of the program decline over the course of the next year, AID should consider modifying the role of the AID advisor from an exclusive advisor on the technical project into that of the land tenure policy advisor. The revised position would help identify ways to utilize the database created by the program to confront some of the broader tenure issues facing the country, and to more closely link this project with other Mission programs.

Mapping constitutes a major cost and alternative cartographic methods could be tested to determine whether there are acceptably accurate substitutes that are less expensive.

However, since the use of local personnel needs to be expanded, the larger costs and therefore more potential savings are in the fieldwork rather than in mapping.

The data collection instruments used in the field should continue to be fine-tuned so that more accurate and useful information is collected on legal status, land tenure, land use and property values.

CATIR should try to recruit and retain women for the field teams of delineators and evaluators. It should evaluate their work to determine whether the presence of a woman improves data collection procedures specially in highland regions where migration has led to a feminization of agriculture.

Improved coordination with national, regional, and local campesino organization is needed. Real coordinating groups must be established within DINAC and IERAC. These should include mid-level administrators and technical people as well as de Directors. The coordinating groups should work closely with CATIR to improve the functioning of procedures in the various institutions. These groups should also become involved in selecting individuals to receive training.

## I. EVALUATION COSTS

1. Evaluation Team			Contract Number CA TDY Person Days	Contract Cost CA TDY Cost (US\$)	Source of Funds
Name	Affiliation				
Virginia Lambert	DAI		518-0059	US\$65.880	DA
Andrew Frank	DAI				
Billie DeWalt	DAI				
Daniel Sherrill	DAI				
Alejandro Cisneros	DAI				
Jorge Uquillas	DAI				
Ernesto López	DAI				
2. Mission/Office Professional Staff Person-Days (estimate) _____			3. Borrower/Grantee Professional Staff Person-Days (estimate) _____		

# A.I.D. EVALUATION SUMMARY PART II

## I. SUMMARY OF EVALUATION FINDINGS, CONCLUSIONS AND RECOMMENDATIONS (Try not to exceed the 3 pages provided) Address the following items:

- Purpose of activity(ies) evaluated
- Purpose of evaluation and Methodology used
- Findings and conclusions (relate to questions)
- Principal recommendations
- Lessons learned

Mission or Office: USAID/Ecuador

Date this summary prepared: 6/91

Title and Date of Full Evaluation Report: Ecuador Land Titling Evaluation Report 12/90

**Purpose of Activity:** To revise, establish and reinforce institutional mechanisms to provide secure and legal land tenure in rural Ecuador. The project will assist the National Program for Rural Cadasters and Titling (CATIR) to achieve this purpose by designing and setting up a permanent land information system in selected cantons, through the generation of complete cadastral data, the legalization of land tenure, and the improvement of property registration procedures.

**Purpose of Evaluation:** Is to assess the pilot activity and the office of the pilot project (OPP) set up to implement the stage I effort. Specifically, the evaluation should examine the operational aspects of the pilot plan; the Rural cadaster and titling system; the institutional arrangements in place to proceed to stage two of the national program.

**Methodology Used:** Formal and informal personnel interviewing supplemented with field visits and observations.

### Findings and conclusions:

**Operational Aspects of the Pilot Plan:** In terms of developing a methodology and procedures for the compilation and processing of cadastral data and application in two cantones, the outputs of the pilot project are impressive and in compliance with the terms of the project agreement.

At the operational level, cooperation and coordination of the collaborating organizations has been high. Each discrete task is relatively simple; as a result, highly specialized personnel are not required.

Administratively, the OPP has operated at an acceptable level of efficiency. The mid and senior-level personnel are qualified and experienced. An organizational manual has been developed, including the organizational chart and position descriptions and responsibilities.

Significant advances and positive achievements also characterize the activities of the OPP in the legalization aspects of the pilot effort.

Benefits are difficult to quantify because they are in the realm of social infrastructure and tenure security for campesino landholders. A cadaster-based land information system is essential for effective rural credit programs, for long-term investment in rural properties, and for a capitalist land market to maximize land use.

The high-level of collaboration in the field operations has not yet been extended to the related internal processes of IERAC and DINAC which are, at least initially, the primary users of the database. The efficiency of field collection of information for determination of legal tenure status reflects the high quality of the field questionnaire but it also suggests a certain mechanicalness in application. To be effective, the project requires a high level of accuracy and sensitivity to tenure information.

The Programming and Evaluation Unit, which is responsible for training, is the least developed unit within the OPP organizational structure and has not yet fulfilled its function.

Although CATIR has women in various positions throughout the organization, including the OPP director, only one woman is working among the 34 field investigators in Salcedo.

The support of field teams through payment of per diems is a major expense, currently covered by PL-480 funds. The per diems are an incentive for qualified field workers to participate in the project, and if the project ceases to pay the per diem, it is likely to lose trained personnel. In addition, the contracting mechanisms used in the pilot project to attract highly qualified people to key positions will not be available to an established program and remuneration will be limited to government salary levels.

### Cadastral, Titling and Registration System

Technically, the project is producing a high quality product, a complete inventory of all properties in the canton, including unique identifying coordinates, physical characteristics, data to calculate economic values, and ownership and use rights.

The project developed an automated methodology for carrying out the cadaster that could be adopted for urban areas and thus serve as a uniform methodology for the country.

The decentralized design of the Ecuador program where work is carried out on a cantonal basis, provides immediate benefits on the local level in actualized property records, improved tax bases, and information for local development projects. Data collected on the cantonal level can later be aggregated to the provincial or national level for larger scale projects.

The pilot project has provided a major impulse to reform in the operation of the cantonal property registries. The project has prepared a draft of a new property registry law and provided a force toward change.

Improvement of the registration process is indispensable for the legal cadaster created by CATIR to be maintained.

While the draft of the Property Registry Law adequately addresses the reforms needed to maintain the cantonal land information system, the draft of the National Cadastral Law is deficient in defining the institutional base, responsibilities, and methodologies of a National Cadastral Institute, the terms for eliminating duplication in collection of cadastral data, and the mechanisms for coordinating rural and urban cadastral systems.

Procedures for maintenance of the database on the cantonal level could not be observed because fieldwork is not complete in either of the pilot cantons. There is a plan on paper showing the necessary flow of information to actualize cadastral records.

### Institutional Arrangements for Stage II of the National Program

The Government of Ecuador, specially through the Vice President's Office, has demonstrated a strong and consistent support for the pilot project and has promised continued support to establish the national program.

Although the Special Interinstitutional Commission (CEI) has not realized its full potential, it represents an important concept as well as an incipient organization for the achievement of the national program, functioning as an advisory body to provide guidance and direction to the program. The CEI would be particularly important as the backbone of institutional collaboration in the absence of the Patronage of the Vice President.

The foundation for institutionalization of the national program is incomplete. The CEI and OPP were created by executive decree, a legal grounding that may or may not survive a change in administration.

The interinstitutional collaboration in the pilot stage has been managed on a personal level among key individuals in the institutions. These relationships have functioned well and moved the program forward at an impressive pace. At the same time, the base for coordination within and among the institutions is not in place for when these individuals (who are political appointees) leave.

### Recommendations:

The evaluation team strongly recommended that the program continue and that AID collaborate with the Government of Ecuador in funding Stage II.

In recognition of the short time that the project that the project has operated, the accomplishments that have been realized in terms of products and methods, and the fact that the project is clearly working on these tasks at present, the evaluation team recommends an extension of the time for complying with these conditions.

As the technical requirements of the program decline over the course of the next year, AID should consider modifying the role of the AID advisor from an exclusive advisor on the technical project into that of the land tenure policy advisor. The revised position would help identify ways to utilize the database created by the program to confront some of the broader tenure issues facing the country, and to more closely link this project with other Mission programs.

The mechanism for maintaining the cantonal database as a current and accurate record of cantonal land tenure should be implemented immediately in Salcedo, with the same attention to testing alternatives and making modifications that has characterized other aspects of the field operation.

d.

Effective maintenance of the system also requires that property holders formally inscribe property transfers. The legal analysis of the steps necessary for a farmer to transfer ownership should be pursued to simplify this process and make it less expensive.

Campesino education and training in the importance of formal inscription and the required steps should be included in the CATIR promotion campaign, and should be followed-up after the cantonal system in place through printed information and meetings and workshops with local leaders and campesino organizations.

Stage II is intended to consolidate the Program and set up the operational structure to complete the national program. This process cannot and should not begin until the program has a permanent institutional home.

The decentralized structure which has been proposed by the OPP based on regional field offices and diminished central office is appropriate. From an operational point of view, the work in each canton is discrete.

An expanded training component should be built into the program, including training for field workers, local offices and leaders and registrars.

Additional attention should be given to the criteria for prioritizing cantons for project interventions, balancing the needs and developmental benefits against the costs and political considerations.

The CEI should be strengthened so that it will take the lead in providing leadership guidance, and coordination, and act like a Board of Directors with reference to policy decisions and appointment of key administrative personnel. The CEI should have regularly scheduled monthly meetings.

CATIR should expand its contacts with other institutions who may be potential users or contributors to the database.

Stage II should include a long-term research component, directed by AID, to monitor and evaluate the CATIR program in terms of the goal and purpose of the project.

#### Photogrammetric and Cartographic Producers

Recognizing the major costs and therefore potential savings are in the fieldwork rather than in mapping, alternative cartographic methods could be tested to determine whether there are acceptably accurate substitutes that are less expensive.

The potential cost reductions in aerial photography by photographing areas larger than a canton should be a factor in ordering of cantons for intervention.

Surveyors should be required to tie into the national geodetic coordinate system.

#### Field Research

The data collection instruments used in the field should continue to be fine-tuned so that more accurate and useful information is collected on legal status, land tenure, land use and property values.

More frequent and better training, especially concerning the legal status of properties, should be given to delineators and property evaluators.

The programming, Evaluation and Training Unit needs to become as strong as other areas within the CATIR structure. This is crucial because of the need for training at all levels. Additional attention should be given to monitoring and documenting project outputs and accomplishments.

CATIR should create an advance team that establishes itself in a canton a few weeks before field research begins.

CATIR should try to recruit and retain women for the field teams of delineators and evaluators. It should evaluate their work to determine whether the presence of a woman improves data collection procedures specially in highland regions where migration has led to a feminization of agriculture.

Improved coordination with national, regional, and local campesino organization is needed.

Rural people, particularly landholders should be informed about the cadastral component of CATIR.

#### Cooperation Among Institutions

In the second stage of the project, CATIR should investigate ways in which it can work with IERAC to help streamline its titling procedures. This should include exploring ways of computerizing some of IERAC's operations.

Agreements with other agencies and institutions should be explored to determine whether aerial photographic and cartographic costs can be shared. Failing this, CATIR could charge for use of the data, just as IGM charges for maps.

Real coordinating groups must be established within DINAC and IERAC. These should include mid-level administrators and technical people as well as the Directors. The coordinating groups should work closely with CATIR to improve the functioning of procedures in the various institutions. These groups should also become involved in selecting individuals to receive training.

1. Reduction of Costs:

a) Mapping: The overall costs can be reduced under the National Program by taking aerial photography and establishing mapping control of several adjoining cantons at the same time. The earth can be further reduced if the microcomputer based cadastral mapping system is decentralized to the area, which will allow the technical personnel to work in several cantons simultaneously.

b) Per diem: Under the National Program, personnel will be assigned to regional or zonal officer to work in the cantons in the area. This will eliminate most per diem costs and reduce transportation costs.

2. The following actions have been taken following the evaluation:

a) The Draft Property Registry Law was introduced into the Ecuadorian Congress and presented to the National Congress Registrars.

b) The cadastral maintenance system was established in the two pilot cantons within the property registry offices.

c) Coordination: A high degree of coordination was established between the OPP and IERAC for the preparation and issuance of titles. The new computer based property evaluation system was turned over to DINAC. Experience in the two pilot cantons indicated that the evaluation activity should follow the completion of the cadastral operations.

3. Decentralization: Given the fact that the municipalities are responsible for urban cadasters, the location of a National Cadastral Institute is not a reality. CATIR is promoting the application of the Program with the municipalities themselves as part of the Municipal Development Program being forwarded by IDB and IDRB.

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# Ecuador Land Titling Project Evaluation

Prepared for the U.S. Agency for International Development under contract number  
PDC-5315-I-38-8101-00.

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December 1990



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## PREFACE

The Land Titling Project started in 1985, but was suspended in early 1988. After extensive redesign, it was reactivated under the Borja administration in July 1989, as a one-year pilot project. The pilot project was to be subjected to an extensive evaluation after one year to determine if it merited continued support.

Development Alternatives, Inc. (DAI) was contracted to carry out this evaluation. Fieldwork was done between October 23 and November 20, 1990. The evaluation team had six members with expertise to examine the project from the point of view of technical quality, legal foundations, and institutional viability. Team members were Alejandro Abellan, Billie DeWalt, Andrew Frank, Virginia Lambert, Ernesto Lopez, Daniel Sherrill, and Jorge Uquillas.

The team wishes to express its appreciation to A.I.D./Ecuador and the staff and board of the CATIR project for their cooperation and support. Everyone associated with the project graciously provided time for questions and access to materials, and their generous logistical support facilitated our work and made it pleasant.

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## EXECUTIVE SUMMARY

The Land Titling Project (518-0059) began in 1985 as a project to assist the Ecuadorian Institute of Agrarian Reform and Colonization (IERAC) in mounting a systematic titling effort for small farmers. The project was suspended in early 1988, but reactivated under the administration of President Borja in July 1989, as the National Program for Rural Cadasters and Titling (CATIR), administered by a newly created Special Interinstitutional Commission (CEI).

The program is to be carried out in three stages. The Agency for International Development (A.I.D.) Land Titling Project refers only to Stages I and II. The first phase, a one year pilot project, began shortly after the signing of the Agreement between A.I.D. and the Ecuadorian Government.

The CATIR program differs from the original Land Titling Project by attempting to correct the systemic cause of tenure insecurity rather than only the symptom, which is the absence of land titles. The foundation for the legalization of land tenure and titling under the new project is the generation of cadastral data through a complete inventory of all rural properties within a canton, including their physical characteristics, economic values, ownership, and use rights. The maintenance of the land information system created by the project depends on improvements in property registration procedures. To accomplish these tasks the program has incorporated not only the IERAC mandate to title land, but also the National Directorate for Cadaster and Valuation (DINAC) which is responsible for rural fiscal cadasters, and the Supreme Court of Justice which has jurisdiction over the cantonal property registries.

The tenure security to be provided by the program is both individual and systemic. Not only should it increase access to credit, irrigation, and other resources for small landholders but it should minimize conflicts and legal actions arising from land tenure, increase the confidence of credit institutions in land as collateral for loans, and facilitate the transfer of property rights in the land market.

The CATIR program is an effort to correct deficiencies in the original Land Titling Project design. The project goal, "to increase agricultural productivity, employment, and incomes in rural Ecuador through improving land tenure security," and purpose, "to revise, establish, and reinforce institutional mechanisms to provide secure and legal land tenure in rural Ecuador," are unchanged. The revised project description states, "The Project will assist the National Program for Rural Cadasters and Titling to achieve this purpose by designing and setting up a permanent land information system in selected cantons, through the generation of complete cadastral data, the legalization of land tenure, and the improvement of property registration procedures." (Annex I, A.2)

The purpose of this evaluation is assess the pilot activity and the Office of the Pilot Project (OPP) set up to implement the Stage I effort. Annex I specifies that the evaluation of the pilot stage examine:

- The operational aspects of the pilot plan;
- The rural cadaster and titling system; and
- The institutional arrangements in place to proceed to stage two of the national program.

## MAJOR FINDINGS AND CONCLUSIONS

### Operational Aspects of the Pilot Plan

The evaluation of the operational aspects of the program focused on project outputs, the procedures and instruments for carrying out the mapping and legalization activities, and the costs of the program.

#### Accomplishments

✓ In terms of developing a methodology and procedures for the compilation and processing of cadastral data and application in two cantones, the outputs of the pilot project are impressive and in compliance with the terms of the project agreement.

✓ At the operational level, cooperation and coordination of the collaborating organizations has been high. The data gathering and processing operation within each canton is complex in its entirety, but, like a machine or assembly line, each discrete task is relatively simple; As a result, highly specialized personnel are not required. Field teams are composed of employees from IERAC and DINAC, as well as others under personal services contracts, and most training has been on-the-job.

Administratively, the OPP has operated at an acceptable level of efficiency. The mid- and senior-level personnel are qualified and experienced. An organizational manual has been developed, including the organizational chart and position descriptions and responsibilities.

~ Significant advances and positive achievements also characterize the activities of the OPP in the legalization aspects of the pilot effort.

There is a general consensus that the project is important and should continue as a national program.

Absolute costs to complete the cadaster nationwide (\$30 million to \$40 million) are high, but they will be spread out over 10 to 15 years and will be amortized over the next century. System maintenance costs are low. Costs are relatively low when compared to other cadastral programs and when compared to the value of the land.

Benefits are difficult to quantify because they are in the realm of social infrastructure and tenure security for campesino landholders. A cadaster-based land information system is essential for effective rural credit programs, for long-term investment in rural properties, and for a capitalist land market to maximize land use. The enthusiasm for the program among Salcedo residents is a measure of the importance of land titling and tenure security.

#### Shortcomings

The high level of collaboration in the field operations has not yet been extended to the related internal processes of IERAC and DINAC which are, at least initially, the primary users of the database.

The efficiency of field collection of information for determination of legal tenure status reflects the high quality of the field questionnaire but it also suggests a certain mechanicalness in application. To be effective, the project requires a high level of accuracy and sensitivity to tenure information.

The cadaster component of the project does not receive enough emphasis by the promotion teams in the field.

Promotion activity has been a weak link in the field activities.

The Programming and Evaluation Unit, which is responsible for training, is the least developed unit within the OPP organizational structure and has not yet fulfilled its function as outlined in Annex II (C.3.b.).

Although CATIR has women in various positions throughout the organization, including the OPP director, only one woman is working among the 34 field investigators in Salcedo.

The support of field teams through payment of per diems is a major expense, currently covered by PL-480 funds. The per diems are an incentive for qualified field workers to participate in the project, and if the project ceases to pay the per diem, it is likely to lose trained personnel. In addition, the contracting mechanisms used in the pilot project to attract highly qualified people to key positions will not be available to an established program and remuneration will be limited to government salary levels.

### **Cadastral, Titling, and Registration System**

The evaluation of the land information system itself as opposed to the operational aspects of the project, involves questions of quality of information being collected and the structures and procedures for maintenance of the system over time.

### **Accomplishments**

Technically, the project is producing a high quality product, a complete inventory of all properties in the canton, including unique identifying coordinates, physical characteristics, data to calculate economic values, and ownership and use rights.

The project has developed an automated methodology for carrying out the cadaster that could be adopted for urban areas and thus serve as a uniform methodology for the country.

Creation of a cadastral database is a slow process because it requires contact with each property and property holder. The decentralized design of the Ecuador program where work is carried out on a cantonal basis, provides immediate benefits on the local level in actualized property records, improved tax bases, and information for local development projects. Maintenance of the system at the cantonal level is not affected by the extent of national coverage. Data collected on the cantonal level can later be aggregated to the provincial or national level for larger scale projects.

The pilot project has provided a major impulse to reform in the operation of the cantonal property registries. There is no known opposition to reform of the property registry law but efforts in this direction in the past have received little attention from the lawmakers because they have lacked a base of support. The project has prepared a draft of a new law and provided a force toward change.

Improvement of the registration process is indispensable for the legal cadaster created by CATIR to be maintained.

### **Shortcomings**

While the CATIR database is not intended as a full geographic information database, it may be expanded to this function in the future, as more institutions learn about it and adapt it to their needs. It is likely that at some point this database and others will be combined into a master database for Ecuador.

The Legal Consulting Group has not completed the tasks outlined in Annex I. While the draft of the Property Registry Law adequately addresses the reforms needed to maintain the cantonal land information system, the draft of the National Cadastral Law is deficient in defining the institutional base, responsibilities, and methodologies of a National Cadastral Institute, the terms for eliminating duplication in collection of cadastral data, and the mechanisms for coordinating rural and urban cadastral systems. Enactment of a cadastral law is essential to the institutionalization of the CATIR program. The advisory group did not examine the broad range of legal reforms that may be needed to simplify the formal land transfer and inscription processes and reduce transfer and inscription costs for the campesinos.

Procedures for maintenance of the database on the cantonal level could not be observed because fieldwork is not complete in either of the pilot cantons. There is a plan on paper showing the necessary flow of information to actualize cadastral records. The institutional arrangements defined for the pilot cantons depend on use of IERAC zonal offices, with maintenance by IERAC topographers.

### **Institutional Arrangements for Stage II of the National Program**

The pilot phase was designed to bring together the human and technical resources of several different government institutions to the common task of the CATIR program. The institutional evaluation focused not only on the operational aspects of the program such as the rational employment of the resources in these different institutions and the procedures and administrative structures developed to take advantage of these resources, but also on the steps taken to establish a permanent institutional grounding for the program like a National Cadastral Institute, and an assessment of potential financial support for such an institution at the termination of USAID support.

### **Accomplishments**

The Government of Ecuador, especially through the Vice President's Office, has demonstrated a strong and consistent support for the pilot project and has promised continued support to establish the national program (given a favorable evaluation).

Although the Special Interinstitutional Commission has not realized its full potential, it represents an important concept as well as an incipient organization for the achievement of the national program, functioning as an advisory body to provide guidance and direction to the program. The CEI would be particularly important as the backbone of institutional collaboration in the absence of the patronage of the Vice President.

### **Shortcomings**

The foundation for institutionalization of the national program is incomplete. The CEI and OPP were created by executive decree, a legal grounding that may or may not survive a change in administration.

The interinstitutional collaboration in the pilot stage has been managed on a personal level among key individuals in the institutions. These relationships have functioned well and moved the program forward at an impressive pace. At the same time, the base for coordination within and among the institutions is not in place for when these individuals (who are political appointees) leave.

## **RECOMMENDATIONS**

### **General**

#### **Stage II**

The principal purpose of this evaluation is to assist the A.I.D. Mission and the Government of Ecuador in deciding whether to continue support of CATIR and the development of a national program. The evaluation team strongly recommends that the program continue and that A.I.D. collaborate with the Government of Ecuador in funding Stage II as outlined in Annex I (1989).

#### **Conditions Precedent**

Three important tasks from the pilot stage have not yet been completed: the definition of an institution to carry the program beyond the pilot stage; the reform and simplification of registration procedures; and the establishment of mechanisms to ensure maintenance of the land information system. These tasks are included in the Project Agreement as Conditions Precedent for continuing to Stage II of the program. In recognition of the short time that the project has operated, the accomplishments that have been realized in terms of procedures and methods, and the fact that the project is clearly working on these tasks at present, the evaluation team recommends an extension of the time for complying with these conditions.

#### **Land Tenure Policy Advisor**

The evaluation also was asked to assess the viability of adding a Land Bank component and a Land Tenure Policy Advisor position to the project.

As the technical requirements of the program decline over the course of the next year, A.I.D. should consider modifying the role of the A.I.D. advisor from an exclusive advisor on the technical project into that of a land tenure policy advisor. The revised position would help identify ways to utilize the database created by the program to confront some of the broader tenure issues facing the country, and to more closely link this project with other Mission programs.

### **Priorities for 1991**

A first order of business during the next year must be to resolve the problem of institutionalization. This task must be completed before the Borja Administration leaves office.

The mechanism for maintaining the cantonal database as a current and accurate record of cantonal land tenure should be implemented immediately in Salcedo, with the same attention to testing alternatives and making modifications that has characterized other aspects of the field operation. Particular attention should be given to simplifying the process for property owners and minimizing expenses for them.

Effective maintenance of the system also requires that property holders formally inscribe property transfers. The legal analysis of the steps necessary for a farmer to transfer ownership should be completed as soon as possible, and changes in laws should be pursued to simplify this process and make it less expensive. Lawyers with strong background in agrarian law and experience in drafting legislation should be contracted.

Campesino education and training in the importance of formal inscription and the required steps should be included in the CATIR promotion campaign, and should be followed up after the cantonal system is in place through printed information and meetings and workshops with local leaders and campesino organizations.

Stage II is intended to consolidate the Program and set up the operational structure to complete the national program. This process cannot and should not begin until the program has a permanent institutional home.

- The decentralized structure which has been proposed by the OPP based on regional field offices and a diminished central office is appropriate. From an operational point of view, the work in each canton is discrete.
- In evaluating regional offices, analysis should balance potential savings in aerial photography and personnel costs (primarily per diem) and advantages of completing the country in fewer years, against additional training requirements, potential loss of qualified personnel, and additional vehicle and hardware costs. Regionalization also will be limited by the capacity of collaborating institutions like IGM and IERAC to handle the expanded workload.
- An expanded training component should be built into the program, including training for field workers, local officials and leaders, and registrars.
- Additional attention should be given to the criteria for prioritizing cantons for project interventions, balancing the needs and developmental benefits against the costs and political considerations. A greater role for the CEI and for CONADE, as the agency most directly linked to cantonal development, seems appropriate.
- The CEI should be strengthened so that it will take the lead in providing leadership, guidance, and coordination, and act like a Board of Directors with reference to policy decisions and appointment of key administrative personnel. The CEI will be especially important in attempting to mobilize the political support necessary for the changes in laws, and in securing international funds for Stage III of the program. The CEI should have regularly scheduled monthly meetings.

- CATIR should expand its contacts with other institutions who may be potential users or contributors to the database.
- Stage II should include a long-term research component, directed by A.I.D., to monitor and evaluate the CATIR program in terms of the goal and purpose of the project.

**Specific**

The evaluation team also has developed suggestions for changes and improvements in particular aspects of the program, including Photogrammetric and Cartographic Procedures, Field Research, and Cooperation Among Institutions.

## **PART ONE**

### **PROJECT HISTORY AND BACKGROUND**

#### **LAND TENURE AND AGRARIAN REFORM IN ECUADOR**

Agricultural lands are Ecuador's most valuable resource and constitute the primary source of wealth, employment, and income. Agriculture and the rural economy rest on the land tenure system, which defines the terms under which land is held and worked. In Ecuador, as elsewhere in Latin America, land tenure reform through land redistribution was a major current in rural development programs during the 1960s and early 1970s. The first agrarian reform law in Ecuador, which created the Ecuadorian Institute of Agrarian Reform and Colonization (IERAC), was passed in 1964, and sought the redistribution of large, underutilized landholdings and the eradication of debt peonage, sharecropping, and land rental. Most land redistribution occurred between 1974 and 1984.

In addition, the law stipulated that all land that is not privately owned through duly registered titles, is property of the state, and gave IERAC jurisdiction over public lands for titling and redistribution. IERAC is the only agency authorized to issue titles, and under the present agrarian reform law, as the emphasis on agrarian reform has declined, it has become primarily a land titling agency. Since its creation in 1964, IERAC has issued titles to about 200,000 rural properties.

#### **THE A.I.D. LAND TITLING PROJECT**

Properly registered land titles are the basis for protecting and guaranteeing the rights in land. In spite of IERAC's efforts in land titling over the past 20 years, case studies continue to show a high proportion of rural properties without titles (for example, Boldt 1988), especially among smallholders and communal landholders. The A.I.D. Land Titling Project (518-0059) began in 1985 as a project to assist IERAC in mounting a systematic titling effort for small farmers. The goal of the project was "to increase agricultural productivity, employment, and incomes in rural Ecuador through improving land tenure security."

For an individual owner, a title should provide security of tenure and an incentive for long-term capital investments to increase agricultural productivity of the land, and for sound land management practices to conserve the land for heirs. More importantly, a secure title allows access to resources like agricultural credit and irrigation water, which are not available without proof of ownership. A 1987 survey (Boldt, 1988) in Salcedo and Guaranda found overall a lower use of credit by campesinos with untitled land (35 percent in 1987) than by campesinos with titled land (65 percent), and farmers with titles were more likely to use formal sources of credit like the National Development Bank (BNF) than informal sources. A 1980 evaluation of beneficiaries of Costa Rica's land titling program (Seligson 1982) found a 44 percent increase in credit use among farmers after receiving title to their land, and the longer the title was held, the more likely the farmer was to obtain credit.

On the other hand, the security provided by a land title derives from the basic land system which gives legitimacy to that title, and in Ecuador, the experience in attempting to implement the original Land Titling Project showed the inadequacy of this underlying system. Many of the properties without currently registered titles had titles at one time but no effort had been made to keep these titles up-to-date after inheritances or land sales occurred. In other cases, titles granted by IERAC had not been registered (which is required to establish ownership), or land which had never entered the formal land system was traded with informal and oral contracts. Local land market studies have shown that landholders did not register their properties because of the complicated and expensive process to do so, and because in many cases, the advantages of formal registration compared to the security provided by the traditional transfer processes, were not apparent (Ramon 1989; Coronel 1989; Roberts 1989; Forster 1989).

The land system in Ecuador cannot provide tenure security because it lacks a means of providing clear and unambiguous identification of properties (a cadaster), a clear identification of property owners, and a means of verifying ownership through the property registry. The system as it exists today evolved from a partially implemented German title system which was introduced in the mid-1800s to meet the needs of urban properties and the large rural "haciendas". As the haciendas were divided, and smallholdings began to multiply, the system began to break down. Today, because the property registries are decentralized at the cantonal level, some registries have instituted new measures to maintain order in the land system and others have not. As a result of the chaos in the system, Ecuador does not have the basic information about land ownership and land use to support the rural tax system, rural credit institutions, land management and land use planning, and a capitalist land market.

In its initial design, the Land Titling Project focused on accelerating the titling of "new" lands by IERAC. Major design errors and oversights in the mapping and legal aspects of the project resulted in serious delays in project implementation efforts, which in turn led to prolonged attempts to change crucial elements while carrying out field activities in Cayambe and Pedro Moncayo. Although about 7000 properties were investigated and delineated in the field during 1987, the project was suspended in early 1988 due to internal administrative and organization problems within IERAC.

### RE-WRITE OF THE PROJECT

In September 1988, the Mission presented a position paper to the new administration of President Borja for reactivating the project. The paper called for a new design to take account of the errors in the original design and to incorporate a coalition of institutions in addition to IERAC. The Vice President expressed particular interest in the project and created a commission to work with the Mission on project redesign. An agreement between A.I.D. and the government to initiate a new National Program for Rural Cadasters and Titling (CATIR) under the auspices of the Vice President was signed in July 1989. The agreement created the Special Interinstitutional Commission (CEI) to administer the program.

The program, as described in the revised Annex I which accompanied the agreement, is to be carried out in three stages. The A.I.D. Land Titling Project refers only to Stages I and II. The first phase, a one year pilot project, began shortly after the signing of the agreement. Continued A.I.D. support for the program under Stage II, which will apply the activities and procedures developed during the first year in a significant portion of the country, was made contingent on the successful completion of the pilot stage. The Ecuadorian government will seek non-A.I.D. sources of funding for Stage III, which will carry the program to the remaining cantons.

The CATIR program differs from the original Land Titling Project by attempting to correct the systemic cause of tenure insecurity rather than only the symptom, which is the absence of titles. It includes three basic components: cadaster; legalization through titling; and, registration. Under the redesign, the foundation for the legalization of land tenure is the generation of cadastral data through an inventory of all rural properties in a canton, including their physical characteristics, economic values, ownership, and use rights. For legalization, the project collects, processes, and stores the information needed to determine where titles do not exist and what action should be taken to legally inscribe a property. Land titles are issued at the culmination of this process. The maintenance of the land information system created by the project depends on improvements in property registration procedures. To accomplish these tasks the program has incorporated not only the IERAC mandate to title land, but also the National Directorate for Cadaster and Valuation (DINAC) which is responsible for rural fiscal cadasters, and the Supreme Court of Justice which has jurisdiction over the cantonal property registries.

The tenure security to be provided by the program is both individual and systemic. Not only should it increase access to credit, irrigation, and other resources for small landholders but it should minimize conflicts and legal actions arising from land tenure, increase the confidence of credit institutions in land as collateral for loans, and facilitate the transfer of property rights in the land market.

The CATIR program is an effort to correct deficiencies in the original Land Titling Project design. The project goal, "to increase agricultural productivity, employment, and incomes in rural Ecuador through improving land tenure security," and purpose, "to revise, establish, and reinforce institutional mechanisms to provide secure and legal land tenure in rural Ecuador," are unchanged. The revised project description states, "The Project will assist the National Program for Rural Cadasters and Titling to achieve this purpose by designing and setting up a permanent land information system in selected cantons, through the generation of complete cadastral data, the legalization of land tenure, and the improvement of property registration procedures." (Annex I, A.2)

In addition to the cadaster, titling, and registration activities, the original and revised project included a small research component to carry out case studies of local rural land markets. The studies were to assess the necessity and feasibility of designing a land financing or land bank component for the project to provide campesinos with necessary resources to rationalize their use of the land once they held titles and the reforms in the cadaster and registration systems were in place to support a formal land market. The six case studies were completed by the University of Wisconsin Land Tenure Center and presented to the Mission in April 1990 (Roberts, Ramon, Forster, Thurner, Coronel, Guerrero and Villavicencio.) They documented the existence of a dual land market: a formal market which includes most of the large landholdings operates with the national legal structure and properties are inscribed in the property registry; and, a traditional or customary market, particularly for "minifundia," in which transfers are made without permission of IERAC, payment of taxes, or legal inscription. Security in the traditional market depends on knowing the local people involved.

While the revised project design expands the project beyond the scope of the original Land Titling Project it is important to recognize the boundaries of the current project in dealing with land tenure issues and problems. Through the elaboration of the cadaster, improvement of property registration procedures, and land titling, the program establishes the legal and information framework for dealing with other issues like boundary disputes, lack of land access, abandoned or underutilized properties, and the proliferation of "minifundia". The information base also enhances the capacity for land use planning and natural resource management, and for rural property tax collection. The program itself does not deal with any of these issues, however. This point was reiterated by a campesino leader, speaking at the ceremony in Salcedo to hand out the first land titles generated as a result of the program operations in that canton. He first spoke of the positive accomplishments of the CATIR in the canton and of the importance of land

titles. He then added, however, that this was only a first step. Land titles may be useful to acquiring credit if credit funds are available; land titles give security of tenure to those farming without it, but the CATIR program can do nothing to resolve the tenure conflict which one of the local indigenous communities has with a neighboring large landowner.

The evaluation team was asked to comment on expanding the scope of the project to include a land market component and a land tenure policy advisor. The value of the land information system created by the program lies in the way it is used. As the technical demands of the project diminish, additional attention should be given to the links between this program and other rural development activities like credit programs, land markets, and environmental activities, and the uses of this information to resolve some of the broader land tenure issues, which have become increasingly visible during the last year.

In addition, information is needed about the impact of the program at the individual and community levels. The original project design included a longitudinal research design to monitor project effects that was dropped during the pilot stage. The Annex speaks of the necessity of re-instituting it if the program continues to Stage II. This type of research will be important to potential future funding sources for Stage III of the national program and to provide a base for comparison of this program to cadasters elsewhere for countries faced with similar problems.

The research should document the relationship between project activities and tenure security and the relationship of individual and systemic tenure security to agricultural production, economic and social well-being, land stewardship, and rural development. It will be important to disaggregate impacts by gender. The evaluation team observed a potentially significant impact of the program on women. A high proportion of those approaching the field teams to record tenure information are women and women were well represented among those receiving titles in Salcedo. The assistance in tenure legalization may be particularly important for women because they are more likely than men to be marginalized from the formal registration system.

## **CURRENT SITUATION AND THE EVALUATION SCOPE OF WORK**

The pilot stage began in August 1989 with the signing of the presidential decree to create the CEI. In September, the CEI created the Office of the Pilot Project (OPP) to implement the pilot stage of the program. The objectives of the pilot stage (Annex I, A.3.1) were to:

- Design the procedures to carry out the national program and implement them in two cantons;
- Coordinate the activities of the institutions involved in the national land system;
- Evaluate and propose modifications in the legal procedures for transferring and registering rural properties; and
- Establish procedures for maintenance of the new cadastral/registration system.

Annex I (B.7) calls for a "global evaluation ... at the end of the pilot stage to determine whether to proceed to stage two of the project. The CEI will coordinate with A.I.D. for this evaluation, which will focus on the purpose and activities of the pilot stage only." Specifically, the evaluation should examine:

- The operational aspects of the pilot plan;
- The rural cadaster and titling system; and
- The institutional arrangements in place to proceed to stage two of the national program.

Both A.I.D. and the government of Ecuador through the Office of the Vice President have stressed the importance of the evaluation. The pilot stage was designed as a measure of the feasibility and cost of developing a canton-based permanent land information system, before a major commitment was made to the long-term nationwide effort. To accomplish these tasks the program had to incorporate not only the Ecuadorian Institute for Agrarian Reform and Colonization (IERAC) mandate to title land, but also the National Directorate for Cadaster and Valuation (DINAC) which is responsible for rural fiscal cadasters, and the Supreme Court of Justice which has jurisdiction over the cantonal property registries. The procedures for gathering, processing, and maintaining the information had to meet the needs of all of the institutions as well as the objectives of the national program itself.

This evaluation was carried out in late October and November 1990, by a six-member team composed of technical, legal, and social/institutional analysts. The team attempted to examine all of the basic components of the project. All members of the Special Interinstitutional Council were interviewed as well as the director of DINAC, who previously served on the CEI, and the Vice President, who has been the principal patron of the project. In the OPP, formal and informal interviews with project personnel and with the directors of most of the operational units were supplemented with observation of office activity and review of project documents. Visits were made to field offices in Salcedo and Baquerizo Moreno, including interviews with office personnel and trips to the field with fieldworkers. Finally, to assess the context of the project, interviews were held with public officials, representatives of campesino organizations, and community leaders and individuals campesinos in Salcedo, and the team attended the titling ceremony there.

The report is organized around the three topics called for in the Annex, and concludes with a series of recommendations concerning broad aspects of the program as well as specific components.

**PART TWO**

**EVALUATION OF THE OPERATIONAL ASPECTS  
OF THE PILOT PLAN**

**DESCRIPTION OF THE PROCESS**

The overall responsibility for implementation of the pilot stage activities was assigned to the CEI, with representatives from the Ecuadorian Government, the Vice-Presidency, DINAC, IERAC, the Supreme Court, and the National Development Council (CONADE). The CEI created the Office of the Pilot Project (OPP) to supervise the activities and administer the funds in the pilot stage. The OPP rented an office and began contracting personnel in September 1989.

In addition to the central office in Quito, the OPP established a field office in Canton Salcedo, one of two cantons selected for developing the land information system during the pilot project, in April 1990. The second cantonal field office, in Canton Baquerizo Moreno, was opened on November 5, 1990. While key unit chiefs in the Quito office have been contracted by CATIR, the rest of the personnel in Quito and the entire field staff are being loaned to the OPP from other institutions, primarily IERAC and DINAC.

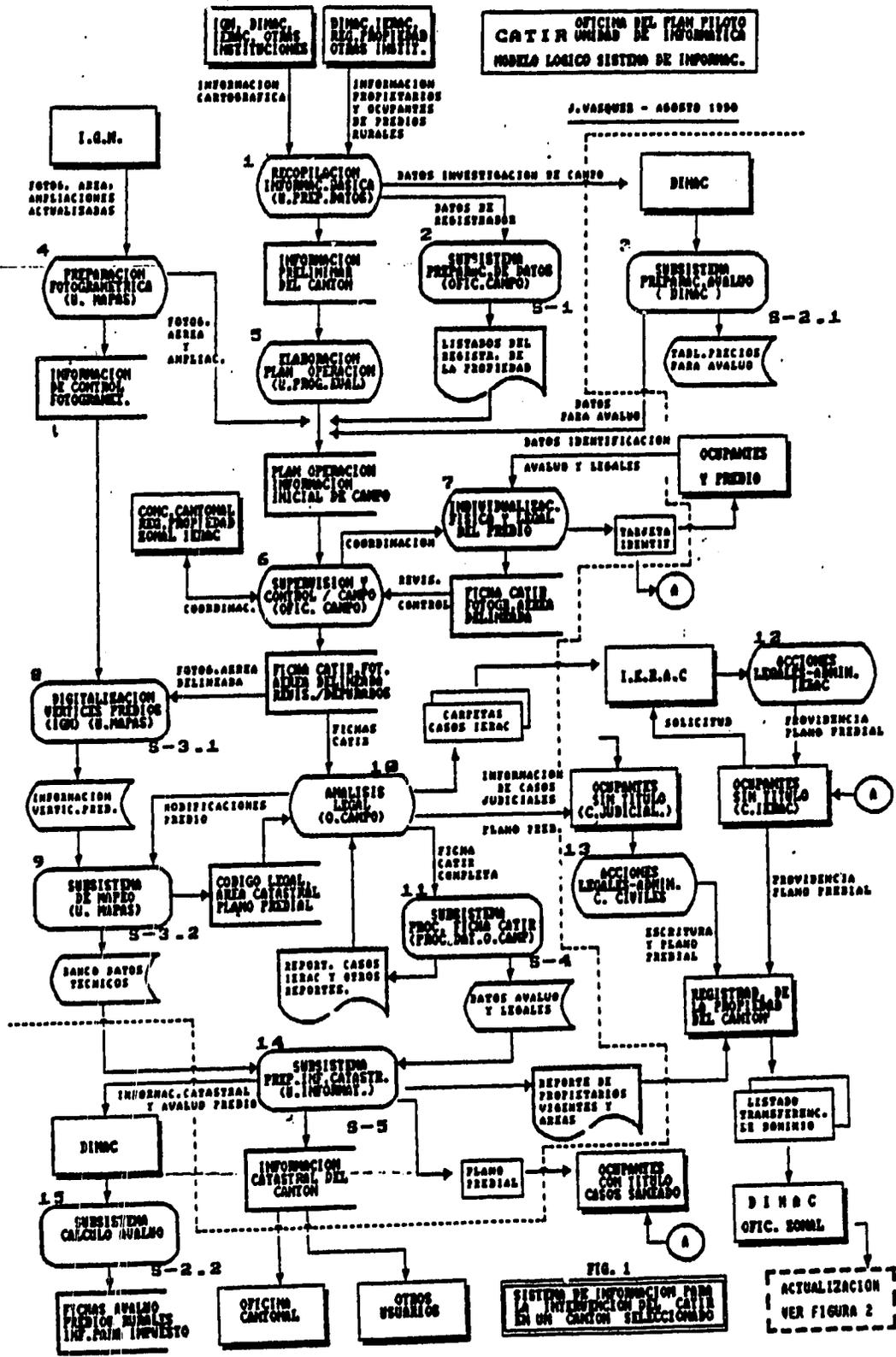
The operational task during the pilot stage was to develop the procedures to gather, process, and maintain the land information system, and carry out the entire task in one canton in the Sierra and a second on the coast. The central office has been responsible for administration, design of data gathering instruments and information systems, coordination among institutions, and gathering of reference data prior to field work. The field office is the focus of the primary mapping, legalization, and registration activities and the location of the majority of the project personnel.

The operational aspect of the program within each canton is complex in its entirety (see flow chart in Figure 1), but, like a machine or assembly line, each discrete task is relatively simple. CATIR divides its information system and project activities in the canton in two parts (Informe Tecnico - 27 septiembre 1990), (1) the acquisition and organization of parcel information, and (2) the administration and maintenance of the information. The collection of parcel information is about 60 percent complete in Canton Salcedo and is just beginning in Baquerizo Moreno. As a result, the evaluation team could observe only the first set of activities. The plan for the maintenance of the information in Canton Salcedo is described below and illustrated in the flow chart in Figure 2. The validity of the land information base for Salcedo depends on the implementation of this scheme before the fieldwork is completed.

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FIGURE 1

OPERATIONAL ASPECT OF THE PROGRAM WITHIN EACH CANTON



Ⓐ OBSERVACION: PARA LA ENTREGA-RECEPCION DEL PLANO PRECIAL SE REQUIERE DE LA PRESENTACION DE LA TARJETA DE IDENTIFICACION PROVISIONAL DEL PRECIO.

## **Acquisition and Organization of Information**

### **Preparation of Information**

Before fieldwork begins in a canton, all existing information which will assist in the mapping, legalization, and valuation is collected from other institutions, including IERAC, the Military Geographic Institute (IGM), the Ecuadorian Water Resources Institute (INERHI), and DINAC. Information includes existing topographic maps, cadastral lists, soils maps, property value listings, political boundaries and the limits of state-controlled lands like reserves or right-of-ways, and records of agrarian reform parcelization and adjudication. It also includes preparation of the price tables and parameters for property valuation.

All inscriptions in the cantonal property registry during the past 40<sup>1</sup> years are copied and entered in a computer database. Alphabetical lists of transactions by buyer and seller are prepared, to be used by the field investigators in verifying ownership. In Salcedo, CATIR later used this database to prepare annual alphabetical indices by buyer and seller for the registrar. The registrar estimates that these indices will reduce the time he spends in verifying antecedent inscriptions by about 70 percent. These indices, which are an immediate benefit of the project in the canton, will be prepared for each canton of the project.

The third step prior to the fieldwork is the preparation of aerial photography and mapping control points. The aerial photography which serves as the base for the parcel delineation is contracted out to the Military Geographic Institute (IGM), the only organization authorized to fly aerial photography in Ecuador.

The pilot cantons have very different physical characteristics that affect the requirements, quality, and cost of the photography. Canton Salcedo is approximately 540 km<sup>2</sup> in area and varies in elevation from approximately 3000 to 4000 meters. The canton has an elongated east-west extension and is broken by a series of ridges and valleys. The coastal canton, Baquerizo Moreno (Jujan), which has about 225 km<sup>2</sup> of area, is relatively flat, subject to flooding, and usually cloud-covered. In Salcedo, the flight lines had to be made along areas of more or less equal elevation to maintain consistent scale. Since ridges and valleys run north and south, the flight lines also were north and south. The number of flight lines in the north-south direction is 14, while if an east-west direction could have been used, the number of flight lines would have been four, and the cost would have been reduced accordingly.

Before aerial photography was taken in Salcedo, existing geodetic control from IGM was utilized to the extent possible. Where additional control was needed, densification of control was undertaken using the Global Positioning System (GPS). Since GPS coordinates are in a different datum (WGS84 instead of La Canoa), adjustments had to be made. After the aerial photography was flown, additional control for photoidentifiable points was established by traditional surveying methods from the existing monumentation. The densified control network forms the locational framework for the series of stereomodels assembled in IGM. Since locations on the photo could be related to the control network through the photoidentifiable points, the photos can be used to calculate Universal Transverse Mercator (UTM) coordinates for the points identified in the fieldwork as parcel boundaries. The referencing of the photo to UTM coordinates was done through aerotriangulation. (See map in Annex C.)

The aerial photography for Baquerizo Moreno has not been flown yet because of cloud cover and ground fog. The field teams have begun delineation and investigation there using (1) 1985 aerial photographs from IGM and (2) IERAC plot maps developed for agrarian reform activities in the early 1980s. According to the field teams, when the new aerial photographs are available the parcel delineations will be transferred to them, but it is unclear whether the teams will have to return to the field in order to maintain the same degree of precision and control developed in Canton Salcedo.

OPP staff report that, in general their relationship with IGM has been quite good in spite of initial disagreements in contracting and the high price charged for the aerial photography and for the preparation of point files (see below). Initial delays in the field work in Salcedo were in part due to delays in IGM preparation of the aerial photography, and the project technical advisor reports that a high proportion of the maps that were delivered were of poor quality. The factors causing the poor pictures apparently have been corrected by IGM.

The data preparation phase has been completed for both pilot cantons, with the exception of the aerial photography for Canton Baquerizo Moreno. The preparatory work before going to the field gives little attention to the social and cultural characteristics of the canton. This type of information is important in preparing an effective promotion campaign and in devising strategies to defuse potentially conflictive situations or rejection of the CATIR field teams. There are no sociologists or anthropologists on the staff of the OPP.

#### Collection and Processing of Parcel Information

Parcel information is collected by field teams made up of a delineator (usually from DINAC) and an investigator (from IERAC) that visit each property to delineate parcel boundaries and document the tenure situation of the property holder. Each team is presently completing about seven parcels per day.

By walking the boundaries of the parcel with the owner or possessor, the delineator uses the enlarged aerial photographs (photo scale 1:20,000 and enlargement scale 1:5,000) to locate and record the parcel corners and boundaries, and assign it a provisional cadastral number ("codigo catastral de campo"). He scribes fine points to indicate the outline of the parcels. If the size of the parcel is too fine for the scale, the delineator draws a sketch map at a larger scale.

Using the CATIR questionnaire (see Annex C), the investigator collects information on the land tenure status of the parcel for the legal analysis, and data used in property valuation. The work schedule of the teams is designed to have project personnel in the field continuously. In Salcedo, for example, there are 17 two-person teams. Group A is composed of eight teams who work for 15 days in the field followed by six days off. The work schedule for the nine teams in Group B insures that teams are present when Group A is resting. A promoter was assigned to each group to precede the teams into an area and provide information about the project to local leaders and the general public.

When the field team completes the delineation and investigation of a property, the person interviewed is given a card with the provisional cadastral number (see Annex C). This number also is recorded on the questionnaire and is used in a series of card files to track the case through the stages of processing the questionnaire and the maps. Each group of field teams is backed up by two supervisors who check the questionnaires and the delineations for completeness of information, and by two lawyers who determine the legal disposition of each property (that is, whether it is properly registered, requires adjudication by IERAC, or requires action in the civil courts.)

When the photos with the parcel boundaries marked with pin holes are turned over to the field office by the delineators, stereomodels are formed and they are sent to IGM for stereodigitization. The stereodigitization results in an ASCII file of point coordinates which is returned to CATIR for entry into an Intergraph design file, to form the parcel polygons. The digitization from IGM has been a bottleneck in the process so far. Although CATIR has mapped about 10,000 parcels, IGM has only digitized about 1200. Most of the plot diagrams for the IERAC titles which were handed out by the Salcedo office on November 11, 1990, were prepared by hand because of delays at IGM.

In the field office, the questionnaires are first reviewed by the supervisors, then passed on to the legal office and then to the proper department (1) for archiving as a legal property, (2) for preparation of the case for processing by IERAC, or (3) for review by a lawyer who has been contracted by CATIR to advise campesinos on how to resolve civil cases.

Preparation of cadastral information and turning it over to the individuals and institutions who will use it:

Two individuals from the IERAC zonal office in Latacunga are working temporarily in the Salcedo field office to prepare the documents for IERAC titling and take them directly to Quito for the IERAC Director's signature. In a period of a few weeks they complete a process which normally takes about two years. Special rates to cover the cost of the preparation of the case have been set by IERAC for the CATIR cases.

Civil cases are handled by a lawyer on contract to CATIR. Most cases in this category involve inheritances where a registered title exists in the name of a parent or grandparent. The lawyer advises campesinos on the necessary steps to actualize the titles.

For properties which are covered by a current registered title, CATIR prepares a certified plot diagram including the legal cadastral code of the property, which is given to the owner upon presentation of the card from the field investigation.

The database created by the program has two parts, the coordinate component, which allows the parcel to be spatially referenced, and the attribute component, which contains the legal and descriptive information about the parcel. The attributes data are linked to the stereodigitized points produced by the IGM through the property number assigned to each of the files. Programs have been written so that a map of each property can be produced (using Intergraph) along with a listing of those individuals owning adjoining parcels (using DBASE). The resulting page of information that contains this information and the legal cadastral code will form the basis of the new property registration system and of the cadaster files. Both will be updated on the basis of subsequent land transfers. A copy of such a page is found in Annex C.

The information from the property valuations and the delineations of properties has been entered into a computer file using DBASE programs. Data entry is facilitated by a series of menus created by the OPP staff. These decrease the number of errors during data entry because computer operators are less likely to enter data in the wrong fields. Unlike many projects of this kind, the data entry is not lagging significantly behind the data collection.

The OPP has collected the data and written several simple computer programs to calculate the value of rural properties. Theoretically, property valuations could be made as soon as the data have been entered. This facility has not been used by DINAC yet, however, due both to the conflict between DINAC and the CATIR management, and to a lack of computer capacity and training in DINAC.

CATIR will turn over the complete data set to DINAC when the canton is complete. The OPP has sent a computer to DINAC for processing the data and two individuals from DINAC are being trained in its use.

After all of the parcels in the canton have been delineated and properly registered, CATIR will move from that canton to begin the same process in another. The data files for that canton will be recorded on diskettes that can be updated using menu driven programs on a microcomputer. Maintenance of the cadaster files will be based on the interaction between the local cadaster office, where this microcomputer is housed and the cantonal property registry.

### **Field Outputs**

In Salcedo, by October 1990, the delineation and investigation had been completed for nearly 10,000 parcels, representing approximately 60 percent of the 540 km<sup>2</sup> of the canton. The legal staff had made a legal determination for 88 percent of these parcels. More than 6600 had been found to be properly titled and inscribed in the property registry, about 2,000 cases were prepared for IERAC adjudication and issuance of titles, and the remainder require civil action. The first 150 titles resulting from project activity were issued on November 11, 1990.

The mapping unit reported that, by early September, in addition to the preparation of the aerial photographs for the field teams, it also had prepared 155 parcel plans by hand to speed the IERAC titling processes for these cases, it had stereodigitized the 3800 points corresponding to two photogrammetric models, and it had configured 211 parcels with the information stored in the Intergraph file to be interfaced with the Dbase attribute file.

### **Administration and Maintenance of the Information**

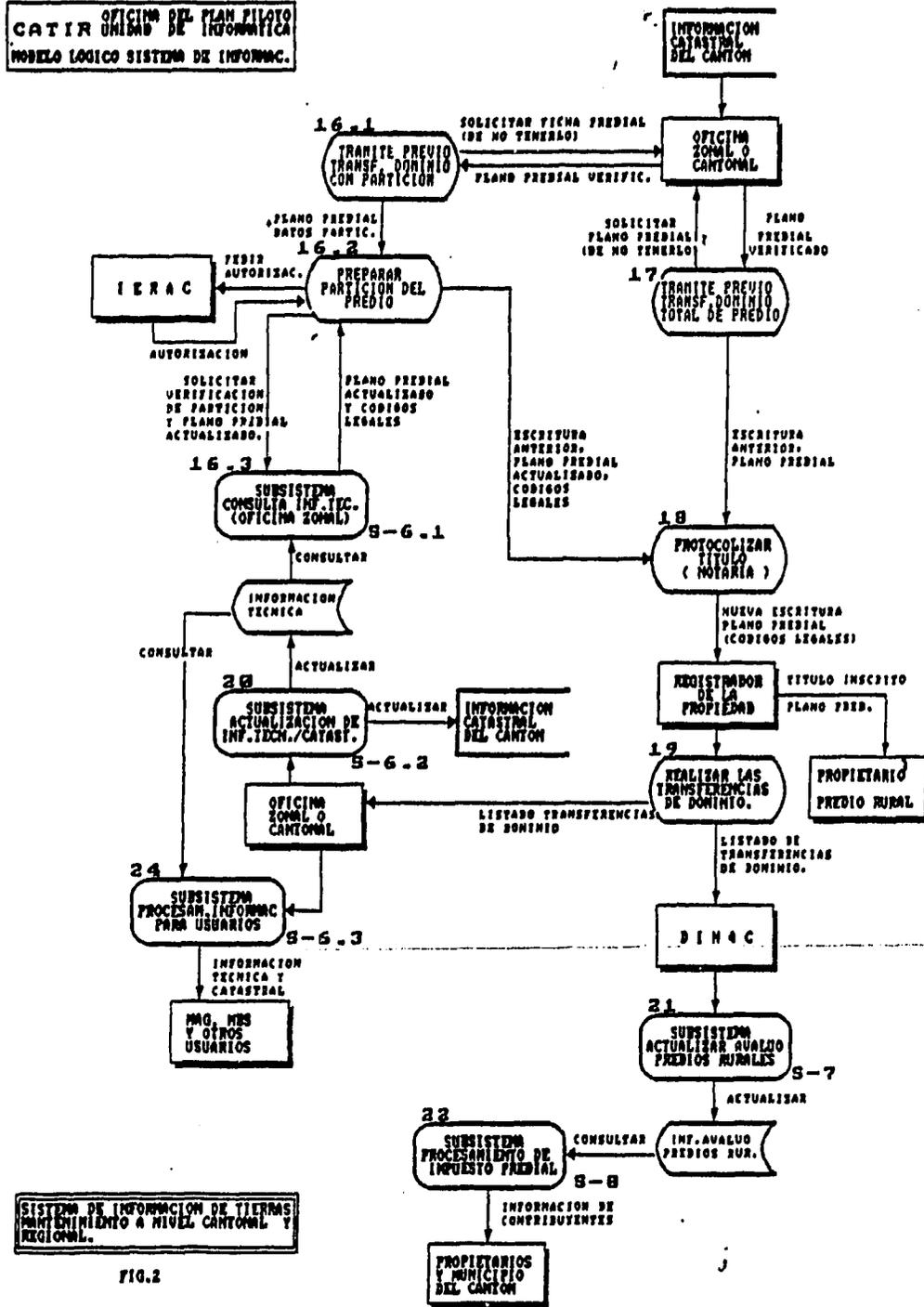
The benefits of the CATIR program depend not only on the quality of the database but also on the mechanisms for keeping this database up-to-date. On paper, the OPP has spelled out the necessary steps in information exchange for this maintenance to occur (Figure 2). There is also an institutional component to the maintenance problem. Putting the information flow into effect will require the establishment of a local office, serving one or more cantons, to manage the cantonal cadaster. For the national program, maintenance of the system requires legal changes to insure that the links between the property registries and the cadaster offices are in place, and that an institution exists to monitor the maintenance of the system for the country as a whole and on a canton by-canton basis.

#### **Information Flow (Figure 2)**

At the termination of the CATIR intervention in a canton, each property owner should have not only a registered title for the property but also a validated parcel map which includes the legal cadastral code. The local cadaster office can prepare these maps for owners who do not have them, using the database left behind by CATIR.

When a land transfer occurs, if the size of the parcel is unchanged, the new owner simply secures a notarized contract ("escritura") and takes it and the validated parcel map to the registrar for inscription. If the transfer involves a division of the property, the owner is required first to seek the approval of IERAC, then define the partition on the parcel map and have that validated by the local cadastral office

FIGURE 2  
INFORMATION FLOW CHART



which will provide the new legal codes for the subdivided parcels. With the new parcel maps and codes supplied by the cadaster office, the new owners will proceed, with the plans and contracts to have the transfer inscribed in the registry.

Each month the registrar will send a list of all property transfers to the local cadaster office. That office will use this information to update the database. The format for this list and the menu driven software for the updating have been prepared by CATIR. The local cadaster office will notify DINAC of changes on a monthly basis in order to keep the tax rolls up-to-date.

The cadaster database is stored on diskettes which will be updated on the microcomputer supplied to each local office. One person will be required to manage the office and to be trained in the use of the microcomputer and the database. Highly skilled personnel are not needed at the local level.

The project has been designed to simplify the maintenance of the coordinate data and the parcel maps. The parcel map distributed to each owner contains enough geometric information (boundary lines, distances and bearings) for the measurements necessary for subdivision to be carried out mostly with tape along the boundary lines (if the full length of the line is taped, no reduction to the horizontal is necessary as an equal distribution of error is sufficient). This task can be done by local surveyors without specific qualifications and for minimal cost (current cost for such work is about s/ 5,000 for a small subdivision). In simple cases, the owner may be able to make adequate measurements without a surveyor. Given that three-dimensional coordinates are available for the boundary points, field measurements can be verified through a cross check in the office.

#### **Institutional Arrangements**

To a large extent, the institutional arrangements for information maintenance are independent of the technical requirements. The OPP has decided that the local CATIR office for the Canton Salcedo will be in the IERAC zonal office in Latacunga, and that the database will be maintained by the IERAC surveyors. The office for Baquerizo Moreno will be in the IERAC zonal office in Milagro. According to the project director this decision was based on the availability of a well-equipped and secure government office which can be used by CATIR free of charge, willingness of IERAC to expand the job descriptions of the zonal surveyors who already have some training in these functions at no cost to the project, and the feasibility of using this office to cover more than one canton. In addition, project personnel argue that because owners have to go to IERAC for approval for property divisions, placing the CATIR office at IERAC, does not add another step or additional travel and expense to the transfer process.

Other institutional arrangements also are being discussed. One possibility is the establishment of cantonal cadaster offices under the jurisdiction of the municipality. The municipalities ultimately will be the principal users of the database, for taxes as well as for planning, and have the most direct interest in maintaining it. The location of the database there would help to strengthen the municipal government and its role in local revenue collection. A municipal cadaster would presumably handle the urban cadaster as well. On the other hand, the placement of the CATIR office at IERAC tends to reinforce its control over the property transfer process. A cantonal office also would simplify the transfer process for the property owner since it would be located in the same place as the cantonal property registry. Because municipal offices and trained personnel are not presently available, this arrangement would imply more initial expense for CATIR.

Another possibility is to utilize the regional offices being established by DINAC. Using these offices would offer the same advantages as IERAC in terms of costs and personnel, and would simplify the flow of information for updating the tax rolls from CATIR to DINAC. It also would be possible for some local CATIR offices to be in DINAC installations while others were in IERAC, and the establishment of local offices in IERAC and DINAC now does not preclude the later establishment of municipal offices.

The institutional arrangements for the maintenance and monitoring of the system on the national level require legal changes in the National Cadaster Law and the Property Registry Law. These arrangements are discussed below.

### **OPP Management and Administration**

The OPP is organized and managed hierarchically, with established procedures for personnel management and office operation. An organizational manual has been developed, including the organizational chart and position descriptions and responsibilities (Manual Organico Funcional, OPP-CATIR). Most personnel, especially support staff like secretaries and drivers, have been loaned to the project from IERAC.

Fourteen professionals have been contracted directly by CATIR for key senior level positions. The contracting mechanism used to hire these individuals, allowing CATIR to pay them at a rate similar to what they could command in the private sector, is the contract for a specific piece of work or product. This mechanism has been approved by the government personnel administration for the pilot project, but if CATIR continues a more permanent mechanism will have to be used. The inability to offer salaries comparable to the private sector may result in the loss of certain key personnel.

Both in the central office and in the field the evaluators observed a high level of enthusiasm for the project and the individual tasks. The project has had an extremely high retention of personnel with almost no turnover. Concerning the role of women in the OPP, although CATIR has women in various positions throughout the organization, including the OPP director, only one woman is working among the 34 field investigators in Salcedo. Having more women on field teams might be worthwhile given the potentially significant impact of the program on rural women.

During the pilot stage, CATIR has been closely identified with two key individuals, the OPP director and the A.I.D. technical advisor. Both have been central to the redesign of the project and to the coordination among institutions. The vision, organizing ability, political skills, and technical expertise of these individuals have been essential to getting the program started, but the administrative and operational structures which have been put into place should make it possible for the program to continue without them. The hierarchy within the OPP has allowed individuals in several supervisory positions to have an overview of the entire operation and the potential to assume the role of director. The current director openly discusses the fact that she plans to leave the organization within the next year and is training people within the organization to succeed her. The A.I.D. technical advisor also plans to leave the program in the next year. The technical processes which he helped design are now in place and the primary challenge for the program in the near future is organizational rather than technical.

Although the CATIR program does not require large numbers of highly skilled personnel to carry out the day to day operations, the skills of the administrative personnel are important since the project is very decentralized and broken down into discrete tasks. Additional advanced training may be required to ensure that these key positions can continue to be filled by qualified individuals.

## Conclusions

In terms of developing a methodology and procedures for the compilation and processing of cadastral data and application in two cantones, the outputs of the pilot project are impressive and in compliance with the terms of the project agreement. The data gathering and processing in the canton is an efficient, assembly-line type operation with a series of simplified tasks that do not require highly skilled personnel. At the same time, this type of operation does require skilled management and administration. Administratively, the OPP has operated at an acceptable level of efficiency as well. The mid- and senior-level personnel are qualified and experienced, and an organizational manual is in place.

Several potential problems also were noted, however. The information flows for the maintenance system are untested, and the institutional arrangements proposed for local level maintenance, with a strong dependence on IERAC, were questioned by the evaluation team. Reforms are needed in the internal processes of IERAC and DINAC to support the work of CATIR. Additional training of field investigators in the legal aspects of land tenure seems to be indicated. In addition, the team cited the possibility of including more women on the field teams and of gathering socio-economic and cultural information as part of the background data collected prior to fieldwork as potential improvements in the project.

## THE LEGALIZATION PROCESS

### Observations

The OPP has prepared a Cadaster, Titling, and Registry Questionnaire ("Ficha de Catastro — titulación — registro") (see Annex C), the primary purpose of which is collection of data needed to determine rural land tenure patterns and the problems of land owners with respect to property rights and legal status. The data collection will allow (1) IERAC to title lands included in its patrimony, (2) owners to resolve their property problems, (3) possessors to legalize their tenure, and (4) the state to have a reliable cadaster to support the property registries and the municipalities, which will use them to increase revenues.

The OPP has also prepared several documents, CATIR Guidelines, and Guidelines for Legal Research on Property, to assist fieldworkers in using the questionnaire. Before the fieldwork began in Canton Salcedo, the OPP gave some training to the field investigators.

As of September 4, 1990, 9527 properties had been investigated, and the figure had grown to nearly 10,000 by the end of October. Prior to fieldwork, based on information in the property registry and DINAC files, the OPP estimated that Salcedo had about 10,000 properties. They now estimate as many as 18,000. Of the properties investigated, legal analysis had been completed for 8416. These included:

- 5686 cases "saneados" - No specific definition has been found for the term, but from personal interviews one can conclude that the "clean" property has a title which has been duly inscribed and the owner makes direct use of the land;
- 1197 cases of untitled properties, lands belonging to the state and subject to IERAC adjudication;

- 19 cases of sharecropping or other illegal tenure forms ("precarismo"). (The OPP has not identified cases where land is under-utilized).
- 1426 cases with tenure problems that require action by the civil courts.

By the end of October, the "clean" properties had increased to 6695 and state-owned properties to 1428. Approximately 609 cases were detected which had been acquired through "oral purchase". In order to obtain legal title, these purchases require IERAC authorization. Under the CATIR program, IERAC is granting authorization automatically to all purchases and partitions which occurred at least two years ago, so that owners can initiate the titling process. The OPP had found 962 cases of properties acquired through inheritance, with 318 lacking a final legal settlement. Only 50 properties were abandoned and the cases of precarious tenure had increased to 20.

The OPP also estimates that approximately one percent of the total properties sampled have unresolvable legal problems. These tend to be properties which have gone through several undocumented inheritances.

In Canton Salcedo, the OPP has found no property with titles held by firms or associations ("propiedad de personas juridicas"), although next month they will cover the areas including lands collectively owned by Indian communities and by agricultural cooperatives.

The OPP has a lawyer on contract in Salcedo to provide legal advice for properties requiring civil action. She reports an average of 15 visits to the office during normal work days and approximately 50 on market days.

### Legal Analysis

The field questionnaire is a good document with broad coverage which reflects the work of professionals with knowledge of land tenure matters and field experience. The guidelines are likewise appropriate, clear, and self-explanatory, although certain errors have been noted, particularly in the Guidelines for Legal Research on Properties.

The most important errors are:

In Part I of the document, Property Identification and Appraisal, A.4, it is important to specify the difference between the actual area of the property and that stated in the title document. The OPP has said that this item was omitted because it is included in another document, the measurements utilized are not 100 percent accurate, and differences found in Salcedo have not been large. The evaluators argue that it should be included so that differences can be identified and IERAC can proceed to grant titles to excess lands. This will become more important in cantons where a strong colonization process has taken place, and squatters occupy extensive strips of land. Although IERAC's intervention in these cantons has been accentuated recently, many times IERAC staff have contributed to the problems by validating squatter claims against the petition of Indian communities or very poor settlers.

Part II of the questionnaire, Land Tenure Data, which deals with the identification of group or corporate ownership is insufficient. As designed, this block cannot determine how the legal owner has access to the property or what public organization granted title of ownership, the number of people involved and whether they work directly on the land, or if all or part of a

subdivided property is being used by owners. These data are essential for a legalization process because the Agrarian Reform provides that lands can be awarded only if one or more members of the group work directly on the land. Also, the only way to determine the validity of a "persona juridica" is through the resolution or agreement that established it. It is also important to note if the group is an Indian community since they have been waived payment of land taxes.

In block A.2 and others of the questionnaire the taxpayer number (RUC) of the owner is required. There is no reason for this since the OPP is not charged with verifying whether the legal owners have paid taxes. There seems to be an erroneous belief that the RUC indicates legal ownership, which it does not.

In the Guidelines for section A.2 of Part II, instructions state that legal representation should be required of the legal owners through a document "issued by the pertinent legal organization." Researchers should be instructed that not all legal owners, in particular corporations, are required to have this document.

In the Guidelines for section A.7 of Part II, there is a statement that could impede granting of title to publicly owned lands; it reads that "Government Ministries, Military Entities" are to be treated as legal owners by private right. Ministries do not constitute legal entities and rural lands assigned to them are in the public domain and patrimony of IERAC, pursuant to the Agrarian Reform law.

The Guidelines for section B, Part II have errors that could lead to an erroneous intervention on the part of IERAC, or contribute to lack of necessary intervention. The block reads, "with respect to a title that is not in the name of the user/tenant," as part of the section titled "Data on Untitled Tenant (User)." It is difficult to determine which person works the land and who is not reflected in the property title for that piece of land. The instructions do not clarify the concept when stating that "it is the person who has possession of a property for which no ownership title has been granted," therefore assuming that the tenant is in possession of state lands. The remaining explanations included in the instructions are even more confusing because, if the lands are owned by the state, it would not be necessary to know whether the tenant maintains some kind of relationship with the owner of those lands (IERAC). The following block, "Unrelated to a title" is still more confusing. The questionnaire is probably intended to establish whether the tenant has a contractual relationship with a private owner of the land in order to identify "precarismo." If no contract relationship is found, the tenants become de facto owners pursuant to a set of criteria used by IERAC. The Agrarian Reform law gives different treatment to "precarismo" and de facto owners.

The term "protocolizacion" (B.3, B.4) is used inadequately as a synonym of "public deed." The protocol is only the contract executed by a public notary, although in a few cases protocolized documents may be construed as titles. Campesinos are totally ignorant of the aforementioned term.

In the Guidelines and in analyzing section B.5, Part I of the questionnaire, Background on Land Tenure, it asks for "renters occupying property without complying with legal formalities." This is not always true. In the case of the renter who has IERAC's authorization to occupy a property, there is no reason to establish the relationship between tenure and the legal precepts because it could lead to dislodging campesinos legally farming the land.

When commenting on section B.6, the Guidelines give a misconception of possession. It is acceptable that the term "possessor" is the person or persons who cultivate the land without having domain over it, as it is used by IERAC, but there is a contradiction in the term "occupant", which should be among those with "precarious" tenure.

Block B.7 is incomplete because it is only open to "renters" while there are diverse forms of "precarious" tenure ("partidario", "finquero", planter, "yanapero", "arrimado") not necessarily linked to rental. The appropriate term is "precarista."

Considerable effort has gone into collection of field data, but the high number of properties investigated suggests a certain mechanicalness in using the questionnaire. It is not known whether training of field staff in legal matters has been sufficient, but the majority of the staff had no previous experience in field investigation, and are not professionals. Lack of training and confusion in the questionnaire and Guidelines about tenancy and "precarious" tenure could explain the very low number of cases of "precarismo", compared to the results expected based on other studies in the Sierra.

The OPP has said that the rigidity in the questionnaire is intended to avoid the distortion of facts by the field workers. But this rigidity is not in the questionnaire per se but in the inability of the fieldworkers to deal with complex cases. Their tendency is to fill out the pertinent blocks with the most common reply and to avoid the wealth of information which could be acquired with additional questioning.

The low percentage of property acquired through inheritance and, of those, the number which have unsolvable problems, also is surprising in view of previous projections.

The work of the OPP considerably shortens the time required for land titling, eliminates the intervention of intermediaries working between the farmers and the IERAC offices, lowers the costs incurred by the beneficiaries, and eliminates most possibilities of bribes, which are common in land titling. But 50 percent of the time consumed by this transaction is still consumed by IERAC's headquarters, and the traditional administrative procedures that remain unchanged in this office. The OPP identification of properties of the state for IERAC titling is particularly useful because IERAC has been unable to make an inventory of properties under its patrimony or to act on cases of possession, arguing that it is necessary to follow a conscientious procedure to do so.

IERAC's decision to authorize all property subdivisions for CATIR is important, although it cannot continue indefinitely without an adequate legal frame. It may indicate a tacit acceptance that IERAC regulation of property transfers and divisions is detrimental not only because it impedes the flow of land markets by discouraging access to land by campesinos but also because it does not avoid the proliferation of "minifundia." In effect, the campesino, in the face of the difficulties posed by these regulations, turns to paralegal means of transfer, generating de facto "minifundia" without legal support.

## Conclusion

The purpose of this analysis was to examine the mechanisms developed by CATIR for land titling and property legalization. The questionnaire used in the field is well-designed and complete and the flow of work in the field office assures that the legal analysis is essentially current with the collection of data from the field. Several corrections are suggested for the questionnaire. The most important concern properties held by groups or corporations ("personas juridicas") rather than individuals.

The training in legal analysis for the relatively inexperienced fieldworkers seems to be inadequate and contributes to the inability of CATIR to ferret out information needed for enforcement of the Agrarian Reform Law. IERAC's blanket approval of unregistered property sub-divisions is an important support for the legalization process but its antiquated titling procedures remain a major block.

### INSTITUTIONAL ORGANIZATION

CATIR was charged with the responsibility for developing cooperation and coordination among institutions in the OPP, with respect to the field work, the processing of information, mapping, titling, and registration. This section summarizes the contributions of personnel from each of the institutions, with an emphasis on how well each has fulfilled its role in the operational activities of CATIR.

#### DINAC

As specified in Annex I of the Project Agreement, DINAC was responsible for assigning staff to the OPP, providing supplementary data, and for establishing a value for the properties as required by CATIR.

DINAC has cooperated well in assigning staff to CATIR. According to documents provided by CATIR, as of November 1, 1990, there were 25 individuals from DINAC working on the project. According to administrators in DINAC, this represents approximately 10% of the total personnel of the institution. Most of these individuals were working in Salcedo or Baquerizo Moreno as part of the teams assigned to determine limits and the values of rural properties. The individual in charge of promotion activities in Salcedo is provided by DINAC. A *Licenciado* is head of the Legal Analysis Section in Salcedo and two engineers are responsible for the supervision of field teams in Salcedo and Jujan.

In addition, two professionals have been assigned to CATIR and fill important positions within the organization. One was the former Technical Subdirector of DINAC and is now head of the Data Unit, responsible for the procedures developed to classify and value land, collection and processing of data, and the carrying out of the cadaster in Jujan and Salcedo. An economist is in charge of the Programming and Evaluation Unit (which also includes training).

All evidence indicates that there is a very successful integration of DINAC people at the operational level. Those working in the field have achieved successful working relationships with their counterparts from IERAC. Those with technical training have become important parts of the administrative and technical apparatus of the project. Among all of these individuals there seems to be a substantial amount of esprit de corps and a pride in what CATIR is trying to accomplish.

The evidence also suggests that DINAC has cooperated in providing needed information for the project. DINAC participated in preparation of the field questionnaire and in providing the information on how rural properties are evaluated.

It is in the area of valuation of rural properties that there has been a lack of coordination and cooperation between CATIR and DINAC. CATIR has developed a personal computer program to calculate the value of rural properties based on the information from the interview schedules. Documentation on the computer programs was sent to DINAC. CATIR offered to work with DINAC

to make the programs suitable for the use of both institutions (letter of 16 August from Fernández to López). The Director of DINAC responded with a letter reminding CATIR that only DINAC could do such valuations and, rather than offering to work collaboratively on the programs, asked that they be sent to his office so they could be evaluated. Thus, although the information needed to make such valuations has been effectively collected by the field teams in Salcedo, property evaluations have yet to be made for a single property. Recently, CATIR transferred a computer to DINAC for analysis of the data and DINAC has two individuals at the OPP to be trained in its use.

It was reported to us that the first Executive Director of CATIR was an individual proposed by DINAC. From all reports, this individual was never able to manage and direct the project successfully and eventually resigned. This was a partial source of the friction between CATIR and administrative personnel in DINAC (see below).

## **IERAC**

As specified in Annex I, IERAC is responsible for assigning staff to OPP, providing supplementary data, granting titles and performing other sorts of interventions. IERAC has collaborated extraordinarily well with CATIR.

IERAC has assigned a large number of personnel to CATIR. As of November 1, 1990, there were 52 IERAC personnel listed as working with the OPP. Although this is a numerically larger number than provided by DINAC, it is a smaller percentage (only about 2 percent) of the estimated 2700 employees in IERAC. Most of the individuals assigned to CATIR are secretaries, drivers, and interviewers for the field surveys.

Several IERAC people fill important functions within the organizational hierarchy of the OPP. An engineer who was head of the Department of Programs and Evaluation has now been made head of the field office in Baquerizo Moreno (Jujan). The head of the field office in Salcedo is also provided by IERAC. Other important positions filled by IERAC people are the head of promotion in Jujan, the head of the technical section in Salcedo, and the head of the legal analysis section in Jujan.

IERAC seems to have been very cooperative in providing supplementary data to CATIR. There are no indications that any information requested has been denied. In addition, because the prior project PROLETIERRA was housed in IERAC, vehicles and equipment have had to be transferred to CATIR. Although there were initial problems and resistance to this process, the current Director of IERAC has been quite cooperative in this process.

IERAC is responsible for adjudicating those cases in which there are no titles for land. One of the primary purposes of establishing the pilot program was to try to expedite the processing of these cases. Work in Salcedo began around May 1, 1990 but the first 150 titles were not delivered to recipients until November 11. The delivery of these titles was postponed twice. Farmers in some of the communities in Salcedo already have characterized the CATIR people as "lying" because titles were not delivered, as promised, during the civic celebration days of Salcedo.

While there has been close collaboration between CATIR and IERAC, the latter institution has yet to demonstrate that it can establish procedures to speed up the processing of land titling cases. The Director of IERAC reported to the evaluation team that his institution has a backlog of cases of about five years. Given this, the work with CATIR/OPP may be going much faster than can be expected. IERAC has a very antiquated system for dealing with the cases that it processes. One of the means by which the

OPP could help speed up procedures would be to assign some personnel to conduct training courses and to help IERAC modernize its methods, especially in using computers to store and process information.

Perhaps more serious than the slow procedures is that CATIR and IERAC do not seem willing to vigorously confront cases that do not conform to existing agrarian reform legislation. So long as people have titles to their land, the field teams do not pursue who is actually using the land. While the methods being followed do facilitate the completion of the cadaster, they seem to run counter to the goals of Ecuadorian agrarian reform legislation.

### Supreme Court of Justice

The court, through its representative on the CEI, was to make all necessary arrangements with the Cantonal Property Registrars and Notary Publics to process all documents generated by the project. In addition, it was also supposed to help reduce notary and registry fees for the program, and provide assistance for preparation of documents required for registry transactions.

The title registration process is in many ways the ultimate outcome of the project and it is clear that procedures need to be established to insure that property registrations will take place and that the rural titling and cadastral system will be maintained. The property registrar of Quito has been the representative of the Supreme Court on the CEI and has been quite willing to help modernize the system. Because much attention was needed by CATIR to begin field work in Salcedo and Baquerizo Moreno, less attention has been paid to establishing the methods to change the regulations or laws concerning property registration. This process does appear to be under way and there do not seem to be any areas of disagreement about what needs to be done.

The property registrars in Salcedo and Yaguachi (where titles from the newly formed cantón of Baquerizo Moreno are still registered) have cooperated fully with the project. They have allowed the property transfer registers in their archives to be used by CATIR to list property transfers during the past 40 years.

The Property Registrar in Salcedo, however, was still unclear about how his system would have to be modified to keep the cadastral and titling system current and the implications of CATIR work for the future functioning of his office. Although he has been to one workshop organized by CATIR to discuss the problem, he commented that both the old system and the new system would have to exist side by side at least for the foreseeable future.

The Property Registrar in Yaguachi has also cooperated fully with project personnel. He has agreed to make any changes necessary to his registration procedures to comply with the goals of the OPP. In addition, he indicated that he would work hard to help establish new regulations that would spread these procedures to other registrars in other parts of the country.

Thus, needed cooperation by the Supreme Court system and its designated representative and local authority seem to be working well. Better communication, however, is needed between CATIR and the local property registrars who will be responsible for maintaining the system.

### **Military Geographic Institute (Instituto Geografico Militar, IGM)**

Under terms of the agreement, the IGM was to be used to obtain new aerial photography and provide available photographic and mapping materials as well as control data. The contracts with the IGM are the most well-developed of any established by CATIR. This is because CATIR must purchase the services of the IGM for all photography, control data, stereodigitization, and other services rendered.

The collaboration of IGM, although expensive, seems to be working. When weather conditions are right, IGM should be able to do aerial photographs to the specifications required by the project. Supposedly, technical problems that affected aerial photography in Salcedo have been corrected. The IGM also establishes controls and provides stereomodels. In Salcedo, significant delays at IGM in stereodigitization are hindering the progress of CATIR.

### **National Development Council (Consejo Nacional de Desarrollo, CONADE)**

The other major institution that has been represented within CATIR is CONADE. Responsible for planning activities for the Government of Ecuador, CONADE develops the data bases to be used in these activities and works with municipalities to help them plan and develop their own resources. For both reasons, rural cadasters are of interest to CONADE.

Thus far, the major operational resource provided to CATIR is in the form of an experienced professional who has been the Planning Director in CONADE. His role within the OPP is advisor in planning and administration. In addition to serving as a liaison between the two organizations, he is also assisting CATIR in developing the laws and regulations needed to insure the maintenance of the system. He is also helping to organize the Programming and Evaluation Unit, a portion of the administrative organization within the OPP that everyone agrees has not yet fulfilled its function.

### **Other Institutions**

Annex I specified that the OPP should coordinate, make agreements or negotiate contracts, as required with other public institutions. Among the institutions listed were the Ministries of Agriculture and Livestock (MAG), National Defense (MDN), Public Works and Communication (MOP), and Social Welfare (MBS), the Ecuadorian Institute of Water Resources (INERHI), and the Special Commission for Internal Boundaries of the Republic (CELAR).

CATIR and the CEI have not established formal agreements with any of these agencies. The lack of such agreements, however, does not seem to have hindered the operational aspects of the project to this point. When the OPP needs information or assistance from one of these institutions, it has been able to obtain it.

### **Conclusions**

The OPP has done an outstanding job of developing procedures for the fieldwork, and in the processing of information, mapping, titling, and registration. In general, there has been a high level of collaboration among the agencies at the operational level. DINAC and the OPP have not collaborated well in improving procedures for the valuation of rural properties, and the process that IERAC uses to title land needs to be speeded up to avoid being a bottleneck for future CATIR activities. Although

costly, the OPP and IGM are working well together to process the information collected although the recent experience with stereodigitization in Salcedo suggests another potential bottleneck in future activities.

## **PUBLIC ACCEPTANCE AND SUPPORT FOR THE CATIR PROGRAM**

### **Conceptual framework**

A program whose goal is to increase agricultural investment and productivity among rural farm families, and to improve their income levels has to give priority, in its initial phases, to the degree of acceptance found among different sectors of society, particularly in the project sites. Public understanding, acceptance, and support are vital at the beginning of a pilot project and continue to be important throughout the life of a project, particularly when the sources of outside support dry up and it has to be financed by national resources. In addition, the commitment of workers to the project and their comprehension of its objectives and methodology has to be taken into account because it is related not only to their work efficiency but also to their remaining in the project.

The idea of CATIR has been promoted among different sectors of the Ecuadorian society. Even though diffusion has been limited, there are various groups of people whose knowledge and attitude about the program need to be assessed in order to determine the effectiveness of promotion efforts, the perceived value of the project, and the potential support it can muster if it is to achieve long-term feasibility.

### **Methodology**

The main techniques used for the analysis of the degree of public acceptance and support of the program were interviews with key informants representing the most important social groups involved directly or indirectly in the program. Of particular importance were the intended beneficiaries, first the campesinos whose land tenure is to be legalized and who in the future might be subject to taxation, and second, an array of institutions that will benefit from the new cadastral and registration procedures being developed. Special efforts also were made to elicit information from project personnel both at the central office and at the field offices in Salcedo and Baquerizo Moreno. Additional insight was gained from direct observation of field personnel at work. Finally, program documents were thoroughly studied to complement information gathered in the field.

In order to facilitate the collection of field data, a short interview guide was prepared, based on the terms of reference of the evaluation. Individuals, representatives of campesino organizations and officials of local public institutions were interviewed about the following topics:

- Degree of knowledge about the CATIR program;
- Sources of information;
- Contacts made by program personnel;
- Attitudes about the program;

- Perceived advantages and disadvantages of CATIR;
- Problems that need to be solved by land titling activities/time and cost of legalizing landholdings;
- Problems that need to be solved by cadastral and registration activities; and
- Capacity of existing institutions and procedures to solve the above problems.

Project personnel, particularly field staff, were interviewed according to the following themes:

- Promotional activities carried out among campesinos;
- Understanding and evaluation of the field methods used;
- Degree of commitment shown by the personnel, reasons for it;
- Training given by the project;
- Employment retention, reasons for it; and
- Work conditions/work incentives.

## Results

### Promotion of The Program

Up to the end of October there were two people in charge of promotion in Canton Salcedo, although, due to the work schedules adopted, normally there was only one person working at a time. The promoter had a car and a driver at his service. The car was equipped with an amplifier system and loudspeakers.

CATIR promotion activities focus exclusively on the land titling component of the project, disregarding the cadastral component. This is due to the fact that many people in rural areas already know the association of cadasters with property taxes.

The general strategy of promotion activities in CATIR is to make contact with local authorities, with change agents of institutions working in rural areas, and with formal and informal leaders of campesino organizations. Promotion is carried out in an intensive and direct fashion. The purpose is to inform and persuade campesinos to participate in the project. The techniques used include announcements with loudspeakers, repeating key slogans to attract attention, dialogue with community leaders and other interested people, and the organization of formal and informal meetings in order to provide selected bits of information about the project, sometimes with visual aids such as maps and posters. Samples of slogans include: "Stop spending in paperwork for titling, CATIR helps you in your own village." "Land titling means protection of your efforts and CATIR can help you today to obtain your titles."

Some measurements of the promotion effort in Salcedo, provided by CATIR, are summarized below:

- Rapid reconnaissance and announcement of project activities and benefits using the loudspeaker system, and direct dialogue with people: 100 percent of areas under intervention;
- Meetings with leaders of campesino organizations: Casa Campesina, Santa Ana de Mullizuindil, Mulalillo, Antonio J. Holguin, Cusubamba, and others;
- Meetings with communities: 70 percent coverage;
- Visits to campesinos in five parishes of the canton: 400 (CATIR estimates that coverage in Mullinquindil is 100 percent, San Miguel 75 percent, Panzaleo 90 percent, Holguin 90 percent, and Mulalillo 40 percent);
- Radio broadcasts: only one in Radio "Nuevos Exitos" in Salcedo;
- Follow-up actions to contact people who have to pay for demarcation and titling of their land and to inform them about the requirements for land titling and property transfers: not quantified.

#### **Acceptance among Campesino Individuals and Organizations**

CATIR claims that the degree of acceptance among campesinos reaches the 70 percent level. However, it also points out that the communities of Cumbijin, Toaylin, El Galpon, Sacha and Bramadero have shown resistance to the project so far. Efforts will continue to be made to work with interested individuals, hoping that in the future there will be total cooperation.

Separate interviews with leaders of the Union de Organizaciones Campesinas (UNOCAM), Casa Campesina and the presidents of Comuna Santa Isabel, Comuna El Galpon, and Comuna Cumbijin indicate that promotion efforts have indeed reached them. The Casa Campesina and their grassroots organizations had been informed earlier while UNOCAM only recently. They learned about CATIR both through formally organized meetings and through direct personal contact with the promoters and other project field staff. The most important promotional event, from their perspective, was the training workshop for campesino leaders organized by CATIR and IERAC in the headquarters of the Casa Campesina, where they learned about issues such as irrigation water rights and land legalization.

The leaders contacted had a clear grasp of the project's objectives, particularly about the land titling effort. Some understood also that updating the inventory of land in Salcedo might mean some future taxation. They considered that CATIR was beneficial for smallholders in that it was going to give them title to their land, with great savings in terms of costs and time, particularly in lawyers' fees. (Cost savings for individual campesinos vary greatly depending on the type of transaction and the corresponding complexity of the legalization process. For the simplest cases of adjudication of land without previous title, CATIR's help can save landholders costs of more than 50,000 sucres. For the more complex cases involving parcelization of land for property transfer purposes, savings reach hundreds of thousands of sucres and several months in time.) In a few cases, leaders included possible access to credit as an advantage. In general, they were supportive of the project, but they also had some criticisms both about the content and procedures.

The first objection concerned CATIR's lack of detailed information about the cadastral activity and the consequences that it will have in terms of taxing rural property and recovering debts that in some cases had accumulated for several years. People in the communities reported that they had been told by others or had suspected that one of the objectives of the project was to impose taxes on them. For this reason many people were unwilling to cooperate, even if it meant not receiving title to their land.

The second objection had to do with the promotion strategy. Campesino leaders stated that they had not received sufficient information or advance notice about intended visits by CATIR personnel. In sum, they complained of lack of coordination. As an illustration, in Comuna El Galpon, some people said that the promotion team arrived on a Saturday at noon, when they were involved in communal "minga" work. Apparently, when efforts to organize a meeting failed, CATIR staff left and did not come back.

Finally, some informants in Salcedo stated that initially CATIR had offered to give title to 700 landholdings in a short time and at no cost to the farmer, but, he added, none of this has happened thus far. Several months had passed since the offer was made and people had been told later that there were some costs involved. Rumor is that an average title will cost them over 30,000 sucres.

Field observations and conversations with common people in the communities visited indicated that there was great interest in the land legalization activities of CATIR. As soon as they heard the loudspeakers or saw the cars of the project, people came out of their houses or interrupted their work and approached CATIR staff with their inquiries about the procedures to get new titles or to update old ones. Nevertheless, suspicions and fear about paying taxes as a consequence of the land inventory were widespread.

These fears concerning taxation were especially prevalent in those communities where CATIR was not permitted to work. Our interviews with leaders in those communities, however, found that they were generally favorable toward the project. They noted the benefits of establishing clear title to land. In El Galpon, for example, the community is currently in a legal battle with a neighboring "hacienda" over some communal lands. The community claims to own these but the owner of the hacienda has been selling off individual parcels.

The other important benefit noted by community leaders is that having clear title will make them eligible for credit. People with title already have credit in some of these communities. Those without title have been excluded from this benefit.

At the end of the workshop with campesino leaders, carried out on September 24-25, 1990, CATIR asked the participants to fill out an evaluation form. Of the four questions asked, two are important for our assessment of the degree of acceptance and support CATIR has among rural people in Salcedo. The first asks which lectures were most important. The great majority of respondents (28 of 38) mentioned the presentations about agrarian reform and the procedures for obtaining legal title to possessions as well as the requirements for transferring title from one person to another as the most important topics covered. The presentations about irrigation water rights and soil conservation followed in descending order of importance.

The second question of relevance for this evaluation asked the leaders' opinion about CATIR. Responses were generally favorable to the project (25 of 38). People state that CATIR is an "institution" that is going to benefit Indians and peasants in general, that the project is helping them acquire new knowledge and, particularly, legalize their titles to the land. One of the most significant statements is the following:

"...estas oficinas estan bien, respaldando al campesino (para que) abran los ojos...y no vivan bajo el mando de los blancos. (Asi) se terminara el lucro de los abogados (que) por hacer unas minimas consultas un alto percio."

Yet, among positive comments, there are also a couple of people who advise CATIR to keep its promises to campesinos.

### Acceptance among Local Officials and Institutional Representatives

Local officials (Vice-president of the cantonal council of Salcedo, notary public, property registrar) had varying degrees of knowledge and, though supportive overall, tended to qualify their approval of CATIR. The greatest degree of acceptance and support had been given by the property registrars, as shown by the fact that, from the beginning of the project, they had opened their files to CATIR investigators. The Salcedo Registrar benefitted from the project in that the number of properties being registered, and thus the revenues for his office, had augmented considerably during the last few months. Normally he registers about 1000 properties per year, but through October 1990, he had inscribed nearly 1500 titles. Besides, his work was facilitated by the new index provided by the project.

The Baquerizo Moreno Registrar expressed his unconditional support for the project and stated that the Judge in the Superior Court to whom he reports had congratulated him on his decision to cooperate. He added that the work of CATIR would be a great contribution to all registrars and that it would help them "come out of the dark."

The Notary Public of Salcedo also expressed agreement with CATIR activities. He additionally pointed out that the campesinos were grateful to the project for the legalization of titles and that the best propaganda for CATIR will be the actual delivery of official titles on November 11, 1990.

The Vice-President of the Salcedo cantonal council said that she personally had known about CATIR because of her private professional work as a lawyer, but that, as far as she knew, October 28 was the first time that her office was formally informed about the project. She considered the creation of CATIR to have been a good decision by President Borja. Thanks to the project, she said, the canton will be able to increase its income through tax collection and improve the salaries of its personnel. She favored the linking of the rural and urban cadasters under the jurisdiction of the municipality as a means of making the cantons more financially independent. The aerial photography and land inventory of the rural/agricultural zone will also serve them for planning purposes. Finally, she did not agree with the anticipated granting of titles to "minifundio" holdings, which CATIR was coordinating with IERAC, saying that the parcelization of land was a violation of the Agrarian Reform Law. Instead of benefiting the people who work the land, it would favor town people with influence such as drivers, carpenters, and office workers. She supported the collaboration of IERAC with CATIR and thought that, once the project work ended in Salcedo, the maintenance of the rural cadaster should be done by DINAC and, in the future, it perhaps could be done jointly by the cantonal council and the Registrar.

There had been some opposition to CATIR by the lawyers of Salcedo (about eight in total). They accused CATIR of taking away some of their revenues; specifically, they were against the project's writing of contracts for transfer of titles ("minutas"). Local lawyers were bypassed, thus saving peasants lawyers' fees of between 20 and 30 thousand sucres. To avoid conflict, CATIR decided to stop preparing the documents and instead, to advise them to go to the town lawyers for help.

### Training of Field Personnel

According to the list of training events prepared by CATIR (see appendix C) there have been four courses organized by the project for its field staff. These courses were mostly about technical matters, including the use of field equipment, the use of aerial photography and other field research techniques, utilization of the Harvard Project Management Program, and the use of the CATIR questionnaire. An additional course on administration and maintenance of rural cadastral information was offered to high level officials at IERAC, DINAC, CATIR, the Registrar of Salcedo and municipal authorities of Salcedo and Baquerizo Moreno. Finally, another course, to which two officials from the Financial Unit of CATIR were invited, was sponsored by the Contraloria General del Estado and dealt with modern governmental control methods.

Direct observations and interviews with field staff indicate that most training is informal or in-service. New recruits, particularly those who have personal services contracts and have not worked previously either in IERAC or DINAC, learn from older staff in the normal working process. Administrative or field staff spend from a few days to a couple of weeks as observers.

Some informants reported that most of their training was obtained either in IERAC or DINAC before they entered this project. CATIR had added little to their knowledge. High officials of IERAC and DINAC corroborated this assertion and, in one case, even doubted whether people from one institution had learned new things from those belonging to the other. DINAC officials pointed out that, despite the great importance attributed to the computerized systems methodology being developed by CATIR, none of their employees had been trained in it. They added that people from the municipalities should also be trained by CATIR so that they learn to maintain and update the information they will eventually receive from the project.

CATIR's Director of Information Systems, in contrast, said that those with the most knowledge about the functioning of the data collection and analysis system are four persons under personal services contract and one official of IERAC assigned to the project. He added that DINAC had not taken up CATIR's offers to give special courses on programming to its staff and that two persons who were assigned to his department did not have enough basic knowledge to take advantage of the training given by the project.

DINAC has strong doubts about the training activities of CATIR, arguing that CATIR has not programmed adequate training for its staff. They believe that the project should have started a well organized and systematic training process in order to gradually create in Ecuador a capacity to set up and maintain a computerized cadastral system. Different educational institutions should already be involved in short and medium term programs about topics such as cartography, territorial administration, rural/urban planning, and laws regarding titling and cadasters.

The evaluation team found no evidence of training about the socio-political aspects of land reform nor about sociological and anthropological matters that would be necessary to know in order to work with campesino populations in Ecuador. Even though most of the field research has to do with the social and legal aspects of land tenure, no formal training events have been implemented in research methodology in these areas.

CATIR has an excellent record of employment retention. Except for a few changes at top levels, the majority of administrative and field staff have remained in the project since they were assigned by their institutions or contracted by CATIR. Project directors maintain that employment retention and the dedication of CATIR personnel to their jobs are attributable to intrinsic qualities of the project itself, such

as its objectives, its work methodology, and the dynamics it has achieved. Employees, in turn, express job satisfaction, particularly the ability to work in the field. But they also openly admit that per diem and subsistence payments are important incentives.

The economic situation of the majority of working people in Ecuador has deteriorated so much in the last few years that wages are insufficient to cover the basic needs of their families and there is a constant need to complement wages with other sources of income. In the case of CATIR, per diems represent more than twice the amount of the regular monthly salary for people whose original appointment is other provinces than that where fieldwork is taking place. (An agronomist, for instance, earns a monthly salary of about 60,000 sucres, and for 20 days working in the field outside his province, receives close to 160,000 as total per diem.) While per diem, by definition, is supposed to cover living expenses while away from their province of residence, people are forced to spend as little as they can in order to save money and thus complement their income. Therefore, it is definitely one of the factors contributing to the retention of CATIR personnel.

### Conclusions

Public acceptance and support are essential for a project requiring the collaboration of many institutions and whose work is directed to rural inhabitants. To gain such approval, CATIR works at a high political level directly through its Interinstitutional Commission and Executive Director. In each of the two field sites, it has programmed a series of promotional activities.

As a matter of strategy, promotion starts by contacting local authorities and leaders of campesino organizations, who are informed about the project and are asked to cooperate. The next steps generally are reconnaissance of the region and afterwards public announcements with loudspeakers of key slogans summarizing the project and invitations to people to participate. The promotion process focuses almost exclusively on the legalization of land tenure, playing down the cadastral component. The strategy tends to sidestep federations or regional peasant organizations such as UNOCAM and Casa Campesina of Salcedo, in favor of community or grassroots organizations. The argument used to explain this strategy is that the federations are politicized and do not necessarily represent the bases.

The main promotion technique used is direct contact or dialogue with the rural people through informal meetings with individuals and organizations. There is little or no use of radio programs or printed means of mass communications. The high dependence on personal contacts exerts a heavy pressure on the time and ability of only one person, who is obliged to cover areas and population that are fairly large, as is the case of Canton Salcedo.

Preparations for CATIR's work in Baquerizo Moreno involved research in the Office of the Registrar in Canton Yaguachi (which still holds the records of its former parish Baquerizo Moreno), but apparently it did not include any substantial study of the socioeconomic and cultural characteristic of its population.

Campesino acceptance of CATIR in Salcedo is very high. The land titling component has been very well received by most of the landholders. They see the benefit of legalizing and/or updating their tenure status at very low costs and limited time; some people also welcome the possibility of selling or buying land whose area and tenancy had been cleared, and of eventually obtaining credit for agricultural production on the basis of their title to the land. Nevertheless, there has been some opposition and resistance to the project, particularly among people who associate it with the creation of a more accurate cadastral system and thus fear taxation.

Acceptance of CATIR among different public sector institutions is also significant. The Vice Presidency, IERAC, and DINAC have provided critical support to the project in its pilot stage. The work methodologies developed by CATIR have a high probability of being adopted by other institutions, once some institutional prejudices are overcome. In the field, the greatest source of support for CATIR comes from the property registrars and, to a lesser extent, from the municipalities. There is practically no opposition to the project.

Although CATIR has made important efforts to train its employees, there are some important areas of knowledge that have not been covered. They have to do with research methodology and work with rural social organizations.

People working for CATIR are highly motivated partly because they like their job helping campesinos and the dynamism the project has achieved but also because there are significant economic incentives, mainly in the form of per diem and subsistence. If the latter are altered in the future, there is some danger of reduced employment retention.

## COSTS AND BENEFITS

### Costs

In addition to developing the methods and procedures for carrying out the program, the pilot stage was intended to provide a realistic measure of the cost of the national program. In the tables which follow actual costs for the work in Salcedo are used, projected to December 1990 and assuming that all 18,000 parcels have been completed. Costs are given in US dollars, calculated at the current exchange rate of 850 sucres to one dollar.

Costs can be divided between cost of the mapping operation and cost of the fieldwork and legal data collection. Costs essentially dependent on the size of the area and costs which depend on the number of parcels are also shown separately. In general, fieldwork costs are more affected by the number of parcels than by the total area covered.

In order to use the Salcedo data to estimate a cost per hectare and a cost per parcel that can be extended to other cantons, the personnel and per diem costs should be reduced by a total of \$110,000 because field teams which currently have two members (one delineator and one investigator) had five members during the first five months of the fieldwork in Salcedo. (\$110,000 is the difference in salary and per diem for 18 person/months instead of 33 person/months.)

TABLE 1  
COSTS FOR CANTON SALCEDO (1990)

<u>Mapping</u>	<u>US Dollars</u>
(dependent on area) aerial photography	15,325
photo enlargements	1,530
geodetic control (GPS and surveying)	28,685
aerotriangulation	5,260
Sub-total	50,800
(dependent on # parcels)	
stereodigitalization	27,500 (240 sucres/point; 5.5 points/parcel)
Sub-total	78,300
 <u>Fieldwork</u>	
(dependent on # parcels)	
data processing equipment for 6 months	4,600
other office equipment	5,500
15 vehicles (6 months of use and repair)	27,000
personnel contracted by CATIR (primarily for mapping unit)	17,600
personnel from IERAC and DINAC	116,500
per diem	127,000
supplies	5,300
Sub-total	303,500
<b>TOTAL</b>	<b>\$381,800</b>

Using a total cost figure of \$271,800 for Salcedo:

average cost per hectare:  $\$271,800/53,800 \text{ has.} = \$5.05$   
 average cost per parcel:  $\$271,800/18,000 \text{ parcels} = \$15.10$

A more suggestive measure to estimate costs for other cantons may be obtained by dividing the costs dependent on area by the total area, and those dependent on number of parcels by total parcels, and adding them.

$\text{costs/area} \times \text{area} + \text{costs/parcel} \times \# \text{ parcels} = \text{total cost}$

Using the Salcedo data:

$\text{cost/area} = \$50,800/53,800 \text{ has.} = \$0.94/\text{ha}$   
 $\text{cost/parcel} = \$221,000/18,000 \text{ parcels} = \$12.27/\text{parcel}$

These figures could be used, for example to predict the total cost for the work in Baquerizo Moreno at:  
 $16,000 \text{ has.} \times \$0.94 + 2000 \text{ parcels} \times \$12.27 = \$39,580$

If they were extended to estimate the cost of the program for all of Ecuador, except the Oriente (where conditions are so different that the estimates are not meaningful):

$$128,569 \text{ km}^2 \times \$100 = \$12,856,900$$

$$2,500,000 \text{ parcels} \times \$12.27 = \$30,675,000$$

for a total cost of \$43,531,900.

These cost figures do not include administrative overhead in the central office. Currently, the cost for the central office is about \$6000 per month. If Stage II is implemented under a decentralized arrangement with six or seven regional offices and a sharply reduced central office, costs for the central office will be lower, but there will be additional start-up costs for the regional offices in data processing equipment, other equipment, and vehicles.

An important consideration in opening regional offices as opposed to the temporary field office found in Salcedo is the potential savings in per diem payments to field teams. Because per diem is such a significant part of the expense for Salcedo (about one-third), reduction of per diem by 80 percent could reduce the cost/parcel (based on operational cost/number parcels) to \$9.00/parcel and total costs for the national program to about \$36 million, or about \$2.5 million/year for a 15 year program. (Calculations assume that per diem costs are about one-third of operational costs.)

Further reductions in the national program may be realized by cutting the costs for large long-term contracts with IGM and GPS, but it is important to emphasize that most of the cost of the program is in the fieldwork rather than in the cost of mapping. Savings realized by reducing the degree of geodetic control or precision of measurement would have much less effect on the long-term cost of the program than savings realized in the field operation. The cost of the GPS is expected to go down worldwide in the future because the large infrastructure costs including the satellite tracking system are in place.

In addition to per diem costs, significant reductions might be realized by increasing the efficiency of the field teams and by cutting expenditures for vehicle purchase, maintenance, and drivers. The director of the OPP has argued that most of the operational costs are already being expended by the government through the activities of IERAC and DINAC, and CATIR is not generating new costs because it is using IERAC and DINAC personnel and resources. This argument will be strengthened further if the duplication which still exists in the activities of DINAC, IERAC, and CATIR is eliminated. The new costs associated with CATIR are essentially mapping and coordination costs.

A total cost figure for completing the CATIR program nationally over a 15 year period is probably between \$30 and \$40 million, or between \$2 and \$2.7 million/year.

### Benefits

Several factors should be considered in evaluating whether this cost is justified. The creation of a reliable land information system is a form of insurance for the property holder to document and guarantee his/her rights in land. The cost of the cadaster could be balanced against the cost of the land. In Salcedo, land is currently selling at about \$1000 per hectare. Secondly, the costs per hectare and per parcel for the program in Ecuador compare favorably to programs in Honduras, and Thailand.

The costs of the program also should be balanced against the benefits for individual property holders, for the cantons, and for the country as a whole. These benefits are not easily quantified. Studies of the effects on individual farmers of having legal titles to the land they farm (see Feder and others 1988; Seligson 1982; Stanfield 1990) suggest that because farmers with titles have more security of tenure they make more long-term investments and are better stewards of their land. The titles also give them access to credit and other resources that require land titles as collateral. As a result, their production and incomes are higher than for farmers who farm land without titles. These benefits are long-term and require the presence of auxiliary services like available credit in order to be realized. The less tangible benefit of tenure security for the small landholder, in terms of peace of mind, security of ownership in order to pass land on to children, and resolution of tenure conflicts is attested to by the support of Salcedo campesinos for the CATIR program.

The legalization portion of the CATIR program sets the conditions for IERAC to issue titles to all campesinos farming the land as possessors and to actualize titles for those who are farming land they have inherited. Because the CATIR teams go directly to the properties, collect all the information needed for IERAC to process a title, prepare the parcel diagram, and take the complete file to the IERAC central offices for processing, campesinos receiving titles through this program have savings in transaction costs of between 40,000 and 50,000 sucres (\$48 to \$58) for the simplest cases, and savings may reach hundreds of thousands of sucres and several months of time for more complex cases involving parcelization of land. The IERAC decision to give blanket approval to all subdivisions through inheritance or sales which had occurred at least two years ago, without going through the lengthy and costly solicitation process also has cut costs for civil cases uncovered by CATIR.

In Ecuador, tenure security in the land system as a whole is as important a benefit as individual tenure security. Having a land information and registration system which assures that the title held and inscribed by an owner is valid for an identifiable piece of property is the foundation for rural credit programs based on the use of land as collateral, for longterm investment in rural properties, and for a capitalist land market. An official of a campesino organization in Salcedo said, "The CATIR program is good because it insures that the seller knows what he's selling and the buyer knows what he's buying."

The database created by CATIR can and should be utilized by other institutions as well, who can cut their information acquisition costs accordingly. Examples of potential institutional users are INERHI for irrigation systems, MOP for highway construction, MAG for agricultural planning, and agencies concerned with natural resources management. During the pilot stage of the project CATIR has not advertised or sought out other users because it did not have a product to show off. This outreach should be a priority during the second stage.

Finally, there is a general consensus among government officials and particularly those involved in rural development projects (CONADE, FONAPRE, IERAC) that the rural cadaster and legalization will have to be done at some point for development planning and implementation as well as generation of tax resources. The CATIR program as implemented by the OPP has developed a methodology and has managed to coordinate the efforts of several government agencies to carry it out. The comparison of the costs per hectare (\$1.00) and the costs per parcel (\$12.00) indicate that it is less expensive to do this program now than it will be ten years hence, when the number of properties will have increased even more because of the continual sub-division through inheritance and sales. During Stage II, areas of rapid growth should be given priority for CATIR intervention. Further, making this investment now should be balanced against the cost of maintaining the system. The maintenance costs of the CATIR program are low, basically including a microcomputer for each local office, which will serve one or more cantons, and a person to maintain the data file. In the long run, the maintenance costs can be covered by user fees.

## **PART THREE**

# **EVALUATION OF THE CADASTRAL, TITLING, AND REGISTRATION SYSTEM**

## **THE CADASTRAL SYSTEM**

The second component of the evaluation is the examination of the land information system itself as opposed to the operational aspects of the project. The legal cadaster created by the project should be an accurate database, capable of being maintained indefinitely, and providing the foundation for a land information system. Although not addressed in the project description, the data could serve as the basis for a geographic information system (GIS). One of the questions asked in evaluating system quality is whether the potential for converting to a GIS has been adequately considered in the technical design of the database.

The database has two components: a coordinate component and an attribute component. The coordinate component allows objects (in this case parcels) to be spatially referenced, or located within a consistent spatial framework. The spatial framework is the Universal Transverse Mercator (UTM) grid system used in Ecuador. Objects located with UTM coordinates can be manipulated by a number of spatial operators including drawing the objects at a given scale, overlaying with other information, and spatial searches. The attribute component allows definition of the objects referenced spatially. Parcel attributes can include, among others, the names of owners, the area, and the boundaries. Attributes organized into tables or files with defined rows and columns can be manipulated by a number of other operators such as queries or related to information in other tables.

The attribute portion of the database has received most of the design attention and consequently there is a strong design in place which seems to be followed. Additional quality control procedures, such as consistency, codefind, and frequency tests, could be designed to improve attribute accuracy. The use of Dbase files, with menus to facilitate data entry is in place and documented. In terms of the design of the coordinate portion and the links between it and the attribute database, there is a lack of documentation but awareness of the problem.

Evaluators raised several questions about the coordinate portion of the database. The technology used, photogrammetry, is relatively expensive, but it is a tested technology which already exists in Ecuador, and the cost estimates show that mapping expenses are a minor part of total project costs. Several alternatives to the present method may be possible.

One alternative is a method similar to that used by DINAC. DINAC uses existing aerial photography and has the field teams draw parcel boundaries onto the photo. With the photo as a guide, boundary information is passed onto an existing cartographic base which is referenced to the UTM coordinate system. In DINAC, the information goes no further; the next step for CATIR would be to digitize this information. Enlargements of smaller scale basemaps could also be used in this fashion. Depending on the scale of the cartographic base, this method will not be as accurate as CATIR's existing method but would be less expensive.

A second alternative is to use existing data from other sources, including parcel boundaries from DINAC or the surveying instructions (calls) from IERAC. Other data sources should be tested thoroughly before going into production. Surveying instructions in particular have to have a tie to the national coordinate system. Coordinate geometry (GOGO) programs exist which allow database creation directly from survey calls but this method is generally six to twenty times as expensive as conventional digitizing of plotted boundaries.

A third alternative is to program CATIR's activities to coincide with data collection for other projects. As additional photo missions are flown or additional control is added for other projects, CATIR could take advantage of these data at a reduced cost. Data from other projects would have to meet CATIR specifications.

A related question is the amount of precision merited by the database, because higher levels of precision cost more. On the one hand, the creation of a highly precise coordinate database may not be necessary when everyone knows the definition of the boundary lines through the location of bushes or trees. What may be needed instead is the description of the corners in the database which would utilize a less rigorous coordinate definition. On the other hand, precision not only affects costs but also maintenance and longevity. Maintenance of the coordinate database is based on integration of new field measurements into the established geometric frame. If this frame is unreliable, the new measurements will be inconsistent with the frame, maintenance will be slow and expensive, and eventually completely new data collection will be necessary. The European experience suggests that high initial precision may produce a geometric frame that can be used for 100 years, while less precise initial measurements reduce this to 20 to 30 years. A second criterion for evaluating level of precision is the land value. Assuming a land value of \$1000 per hectare in Salcedo (reported values vary from one to four million sucres) and an average parcel size of one hectare, an error in boundary position of one meter would affect the parcel area by one percent, or \$10.00. Degree of precision required and, therefore, the methods required vary with land values and tenure patterns. What is appropriate for the "minifundia" of Salcedo may not necessarily be appropriate for the large holdings on the coast.

For coordinate data, the project is using a data model from Intergraph. The relatively inexpensive (\$3000) microstation software allows linking of graphic elements to the Dbase III+ software. While it may be inadequate for later use in a GIS, it includes at least points, lines, polygons, and tables (the Dbase files) and is adequate for the legal cadaster. Its use at this point does not preclude conversion to another software when it becomes necessary. Different software systems should be evaluated not only in terms of cost, but also in terms of support available, local representation, simplicity and utility of the data model, and availability of production tools.

Finally, the database being created at CATIR will be followed by other database creation efforts in other governmental organizations. At some point in the future, this database and others will be combined into a master database for Ecuador. There will be many problems of inconsistency in the master database because there will be different source materials used, different database specifications, and different designs. Inconsistencies can only be eliminated through editing the separate component databases, a process that can be very expensive. The alternative is to create a design (the database specifications) which include all the desired information in one database before database creation. Creating the database according to one consistent specification will save time and money in the long run.

## PROPERTY TRANSFER PROCESSES AND LEGAL REFORMS

Utilization and maintenance of the new land information system requires legal changes to integrate the cadaster into the Ecuadorian property registration system. This system, which has its roots in the German title (as opposed to British deed) system was introduced from Chile in the mid-1800s. The German system required a cadastral survey to describe all landholdings and a civil registry to positively identify landowners. Landholdings were registered by number, inscription was compulsory, and the State guaranteed the record against third party claims. When the system was introduced to Ecuador, neither the land cadaster nor the civil registry existed, but for a time the system functioned well because the rural land system consisted of large landholdings, whose exact boundary descriptions were not important, and they were owned by a few well known families.

The registration system began to breakdown when the large properties were sub-divided, first through inheritances and divorces, and later through private sales and the agrarian reform. To accommodate the change, the "title" system was administered like a deed system, in which, in lieu of a cadastral survey, each property is identified through adjoining properties and metes and bounds descriptions of property boundaries. Properties are registered chronologically, and proof of ownership is dependent on establishment of a root of title.

The mixture of the two systems has resulted in a situation in which neither is functioning adequately to guarantee property rights. An adequate registry requires positive identification of the property owners, positive identification of the property, and a means of linking the two and determining prior ownership of the parcel. Further, because the registry is decentralized on a cantonal basis, and in each canton it is run as a private business by a court appointed registrar, the changes have not evolved in a uniform way across the country.

A registry law in 1966 attempted to formalize the deed aspects of property registration, while retaining the cantonal registry structure which makes it accessible to the rural population. Mandatory inscription also was retained. Because no regulations were approved for the new law, each registrar continues to act independently in deciding how to implement it. Under the existing system it is not possible to determine a root of title or exact boundaries, nor is it possible to take the registry record as an accurate recording of land tenure in the canton. Many property transfers, particularly inheritances but also sales, are never recorded. The resulting chaos reduces the credibility and utility of all titles.

According to Annex I, two steps were to be taken to modify the legal aspects of the new system. First, the CEI was to "coordinate with the Supreme Court and with DINAC to revise the property registry law and to promote passage of the new Rural Cadaster Law" (B.2). Second, "the CEI will contract a group of Ecuadorian experts in agrarian and registration laws to review the drafts of these laws and to examine other laws and regulations related to land tenure and land use ... and propose additional modifications to regulations or laws that affect the relationship of the national program to the agrarian reform and other property laws, and which will simplify and expedite titling and registration." (B.5) The condition precedent for that followed from these activities was that the legal group should have completed its work, the CEI should have reviewed its proposals and taken steps to implement them (B.5).

CATIR identified two types of legal problems with the functioning of the property registry: (1) difficulties in the legal process to transfer ownership; and, (2) problems related to the organization of registration of ownership and other rights to land. Simplification of the legal process is absolutely necessary to assure sustainability of the new land information system. Improvement of the registration process is indispensable in order for the updated records to be properly used and maintained. CATIR

decided to deal with the second set of issues first, recognizing that the first set of issues would need attention soon. In June 1990, two legal advisors were contracted to draft a new registry law and to advise and assist in drafting of the national cadaster law. They have completed their assignment and their results were presented at the CEI meeting in October 1990. Their contract ended on October 31, 1990.

### **Property Registry Law**

The proposed registry law which they drafted, with input from an expatriate technical advisor, seeks as few changes as possible in the current law to achieve the necessary reforms. The most important change is the requirement that the registrar demand a copy of the certified parcel plan prepared by CATIR in order to inscribe a property transfer. This requirement will insure the link between the registry and the cadaster and is the key to maintenance of the new system. In addition, the draft law calls for the essential elements to gradually change the registration system to that of the "folio real," with registration by parcel rather than chronologically or by individual. The new system would involve a full inventory of all parcels in the canton, a unique identifier for all parcels, to be used in all transactions, and inscription of abstracts and archiving of full supporting documents. Importantly, the draft law maintains the decentralized cantonal registries, but allows one registrar to cover several small cantons.

In general, the evaluators found the draft law to be adequate for registry reform although it is not particularly well written, and tends to include specifications which would be covered more appropriately in accompanying regulations. The draft was submitted to the Property Registrars' Association (Colegio de Registradores de la Propiedad) for comment in late October 1990. At the same time, when activities in the national congress seemed to indicate that it would be very difficult to pass any legislation in the near future, the lawyers prepared a set of regulations for the 1966 registry law to cover the most necessary reforms until a new law could be passed. The regulations could be put into effect by the President immediately without congressional action.

On November 16, 1990, the leadership of the Property Registrars' Association met to discuss the reforms and decided to push a new law rather than merely regulations for the existing law. They are revising the draft law and discussing it with other registrars. They feel that they can get the new law through the national congress in January 1991. There is no known opposition to the law.

In addition to the changes included in the draft law several other points could be considered for registry reform:

- Each registrar is appointed by the Supreme Court to carry out a public service, but the registry is run as a private for profit enterprise and the registrar must cover all expenses (hire personnel, rent an office, purchase furniture). Alternatives to the system should be considered to ensure that this service is available to everyone and that the same quality of record is maintained in all cantons.
- A number of legal documents, such as divorce decrees, unrelated to property can be registered in the Property Registry. It might be appropriate to charge the civil registry with these tasks.
- The functions and responsibilities of the notary in property transfers could be changed to include making a legal analysis of the property being transferred, including tax and cadaster records and title search. If the notaries role were expanded, the lawyer who now prepares the contract which is notarized would become unnecessary.

## **National Cadaster Law**

There is no law regulating cadasters, and as a result, there is a total absence of uniform methodologies and efficient procedures to develop local cadasters. Municipalities are responsible for urban cadasters; since 1966, DINAC has been responsible for rural cadasters. DINAC's mandate is backed only by a Tax Assessment Regulation rather than a law, and in general, DINAC has been unable to meet its responsibilities because of lack of human, technical and financial resources. In addition, IERAC performs land titling activities with no coordination with DINAC. DINAC is not even sent copies of IERAC records. As a result, high priority should be attached to developing mechanisms and an adequate organizational structure, like a National Cadastral Institute, to prepare an organized data bank which would be available to appropriate institutions. All of the institutions involved in cadaster-related activities are aware of the need for reform in this chaotic system, and cite the potential for CATIR to be a source of reliable data and provide the needed coordination.

A proposed National Cadaster Law was drafted by DINAC in 1989. It sought to create a National Cadaster Institute under the Ministry of Finance (where DINAC is presently located), but having a high degree of autonomy. The CATIR legal advisory group reviewed the draft law and developed some changes. The overall assessment of the draft by the evaluation team is negative.

The draft law includes little about the responsibilities of the new institute but it does call for coordination of the work of DINAC with the municipalities. There is insufficient reason given for the creation of the new institute or for its attachment to the Ministry of Finance. No mention is made of coordination of the new institute with IERAC. Most of the material included in the draft law would more appropriately be covered in the regulations.

It is unclear whether the draft law will be presented to congress in the near future or if it will pass. Most members of the CEI interviewed by the evaluation team seem to think it will not move. A broad national cadaster law is necessary to coordinate the activities of the diverse institutions. It should include physical, legal and fiscal cadasters in both urban and rural areas. Coordination also would imply insuring that the operations and programs are coordinated and that the data collected are exchanged to avoid duplication. It would be appropriate for CATIR to take the lead in drafting this type of law based on its experience through the pilot stage of the project. It could be suggested that the CATIR structure and program be transformed into the national-cadaster-institute.

## **Property Transfer Processes**

The other major legal task of the pilot stage of the project was to examine the processes involved in property transfers and registrations and identify legal changes needed to simplify these processes and cut the costs for campesinos. Difficulties in the legal transfer process deter campesinos from registering changes in ownership and cause them to rely instead on oral contracts or other types of customary transfers. CATIR decided to defer this task until after the draft registry and cadaster laws were prepared. The lawyers contracted to draft the laws do not have the expertise necessary for this task.

One of the main roadblocks for campesinos in inheritance and sales cases is the requirement that IERAC review and approve all subdivisions. In lieu of immediate legal changes, in Salcedo, IERAC has authorized CATIR to grant blanket approval to all subdivisions which have been in effect for at least two years. This action removes an important impediment to acquiring current land titles in inheritance cases. It is significant that CATIR has uncovered 609 cases of this type in Salcedo so far but last year IERAC

only authorized 3200 sales of land (not all of which involved partitions) in the whole country. These figures suggest that few owners go to IERAC to legalize their sales.

This approval is an important concession of IERAC for CATIR but it cannot be continued indefinitely without a legal basé. It will be necessary to revise the agrarian reform laws and the civil registration laws so that, on the one hand, the authorization of IERAC to approve land transfers and subdivisions is eliminated, and on the other, the contradictions between the two sets of laws, particularly in reference to inheritance are eliminated. These types of changes are indispensable for the maintenance of the legal cadaster created by CATIR. If property owners continue to ignore the formal system, within a short time the cadaster will not reflect the reality of land tenure in the canton.

### CONCLUSION

The cadaster-based land information system has been planned carefully and the software for recording and updating the system are adequate to present needs. Additional attention should be given to the technical requirements and advantages of immediate and long-term coordination with other agencies collecting and using land-based data in Ecuador.

The reforms needed to establish a firm institutional and legal foundation for the national program have not developed to the point anticipated in Annex I for the pilot stage, or to the point needed to insure sustainability and maintenance of the new system. Now that the operational and technical aspects of the program are in place, the requirements of the framework to maintain the operation are clear and legal reforms should move forward.

## PART FOUR

### EVALUATION OF INSTITUTIONAL ARRANGEMENTS

#### CONCEPTUAL FRAMEWORK

The institutional analysis component of this evaluation assesses the continuing viability and sustainability of the work undertaken by CATIR. CATIR was designed to be a pilot project to bring together the human and technical resources of several different institutions. Therefore, we were especially interested in determining 1) the efforts being made to facilitate the rational employment of the resources in these different institutions; 2) the operational and administrative structures developed to take advantage of these resources; 3) how these efforts might lead to a National Cadastral Institute or a similar operation within one of the existing institutions; and 4) if continuing financial support of such an institution could be expected from either the Ecuadorian government or international donors once USAID support ended.

#### METHODOLOGY

The institutional analysis was based on three types of social scientific methods: examination of project documents and related literature; direct observation; and, rapid institutional assessment procedures.

One important source of documentation that was not made available to the evaluation team was the minutes ("actas") of the CEI. These were requested from the project director. After she consulted with project lawyers, she decided that these minutes were not public records and were only for the use of the members of the CEI. Copies of the agenda for meetings of the CEI were made available to the evaluation group. We did not consider these to be an acceptable substitute for the minutes. We also requested that the team leader be allowed to attend the meeting of the CEI that occurred on October 31. After a period of discussion among the members of the CEI, she was denied permission to attend. Thus, we were unable to assess directly the procedures and functioning of the CEI as a group.

Direct observation of operational and administrative procedures was made by at least one, and usually several members of the evaluation group. Field procedures, portions of the data entry process, and legal assistance rendered by CATIR staff were observed during field visits to Salcedo (October 26-28) and Baquerizo Moreno (November 6). Mapping, photogrammetric, other data entry, and data analysis procedures were observed in CATIR offices throughout the evaluation period and during a visit to the IGM on October 29.

The final method used was rapid institutional assessment. This procedure uses the methodology developed for rapid rural appraisal, but applies it to institutional analysis. The essential elements of the rapid institutional assessment method are the following. First, the vast majority of the data gathering was accomplished in informal interviews with members of the CEI, the Vice President, and important administrative personnel in various government agencies. Second, these interviews were done by the

interdisciplinary group that comprised the evaluation team. Specialists from the technical, legal, social and institutional areas on the evaluation team were able to pose their questions to those being interviewed. This insured that the data needs and interests of each member of the team were covered in interviews. Third, the group had a very large number of meetings during the evaluation period to discuss the data gathered during the interviews and the kinds of questions that remained to be answered. Finally, follow-up interviews with key individuals were carried out by one or a few members of the evaluation group. These focused on topics of particular concern to the group as a whole.

The essential elements of the rapid institutional assessment methodology are to have the most qualified individuals asking questions about their own areas of concern, to establish continual feedback among the group of evaluators, and to insure that there is an iterative process established between the data being gathered in interviews and the questions posed in subsequent interviews.

## INSTITUTIONAL COMPONENT OF PROJECT ADMINISTRATION

### Special Interinstitutional Commission (CEI)

Annex I specified that the National Program for Rural Cadasters and Land Titling be implemented through a Special Interinstitutional Commission (CEI) established in the Office of the Vice-President. The responsibilities of the CEI were to oversee, coordinate, and establish the OPP and the pilot stage activities.

The commission was established under Executive Decree No. 794 on the 4th of August, 1989, published in the *Registro Oficial*, Suplemento No. 248 on August 7, 1989. Composition of the CEI was to include a representative of the Vice-President who was to chair the commission, the national director of DINAC, the Executive Director of IERAC, a representative of the Supreme Court of Justice and a representative of CONADE. During the first two stages of the project, a project coordinator from USAID also was included. The decree was very specific concerning the organization of the OPP-CATIR, the responsibilities of the representatives of each institution on the CEI, and the expected contributions of each of the organizations involved.

The first meeting of the CEI was held on September 4, 1989. Only the Vice President's office, DINAC, the Supreme Court of Justice, and the USAID representative were present. Four meetings were held in September when the project office was being established. IERAC was represented at some of these meetings but a representative from CONADE was not. The CEI took an active role in hiring personnel, especially the Executive Director, and approving procedures for the OPP, giving approval to equipment purchase and other administrative details.

The CEI met at least 15 times between September 1989 and March of 1990. During this period, the CEI was carrying out its responsibilities of coordinating and overseeing the project. Perhaps the only major problem with the commission during this period was that a representative from CONADE was never appointed. Thus, the agency that was responsible for planning within the government, an agency that could have provided a much-needed overview of where the OPP-CATIR could fit within the overall needs of the nation, was not part of the deliberations and the direction of the project.

Important changes occurred in the OPP and in the CEI in early 1990. Executive Decree No. 1263 of the 19th of February, 1990 (published in the *Registro Oficial* No. 382 of February 21, 1990) modified the structure of the CEI. The main change was to specify that the Minister of Finance and

Public Credit and the Minister of Agriculture and Livestock (MAG) would name representatives to the Commission. While the Director of IERAC was named by the MAG, the Minister of Finance replaced the Director of DINAC with another individual. This change was made in response to personal conflicts within the CEI between the Director of DINAC and the chair. The executive director of the OPP resigned in April and was replaced by the chair of the Commission. It should be noted that during the formative period of the OPP, the chair of the CEI had the highest salary in the CATIR organization and was quite involved in day-to-day activities. The Vice-President designated the head of the Fondo Nacional de Preinversiones (FONAPRE) to chair the CEI.

There were two major effects of these changes. First, the conflicts between DINAC and the chair of the CEI (and later executive director of the OPP) caused an estrangement between the two institutions, which has led to a lack of cooperation and coordination at the administrative level, especially as it affects the development of appropriate laws and regulations and advances toward the establishment of a National Cadastral Institute. Second, the CEI is now much less involved in the normal operations of the OPP. During the period between April 17, 1990 and October 1990, there was only one meeting (in July) of the Commission. This schedule does not comply with the monthly meetings specified in Section B.2 of Annex 1. More importantly, the CEI has not been involved in establishing goals, overseeing the operations of the OPP, and in coordinating among the institutions.

Several of the members of the CEI complained about its functioning. They complained about the irregularity of meetings, the short notice given before the meetings that are held, and at least one member noted that the group was too concerned with collegial relations than with substance. This same member felt that the CEI should become much more involved in providing a direction for the OPP and helping it to achieve its objectives more smoothly and swiftly.

## DINAC

Annex 1 (B.2) also specifies that the CEI is to assist in the creation of coordinating groups within DINAC and IERAC for implementing program activities that fall within their jurisdiction. When we asked about such coordinating groups in our meetings with personnel from DINAC, we were told that the Director, his legal advisor, and his administrative advisor constituted such a group.

The evaluation team was not convinced that DINAC was complying with the spirit of what was intended in Annex 1. It did not seem that the coordinating group actually met on a regular basis, and given the strained relations between administrators in DINAC and the OPP, the coordinating group was more likely to be working to hinder the OPP rather than to assist it. Finally, and perhaps most importantly, none of the technical people assigned by DINAC to the OPP were involved. It is difficult for us to believe that true coordination could occur unless there were a mix of administrators and technical people as part of the coordinating group.

DINAC has developed its own draft of a revised Rural Cadastral Law. Although it has kept the OPP informed about developments in this area and the OPP legal advisory group has reviewed the draft law, it is quite clear that the two institutions are not working closely to develop the National Cadastral Institute that is to replace DINAC (Annex 1, B.5).

In addition, DINAC has yet to begin using any of the data collected by the OPP to actually assign values to property. The evaluation team views this as an important product of the OPP. Sustainability of the proposed National Cadastral Institute is likely only if the government can use the information generated as a means of improving its tax base. The OPP and DINAC should be working

together to set up a system by which property valuation can occur quickly and efficiently. The computer program developed by OPP is a step in this direction.

There are no written agreements that have been reached between the OPP and DINAC. Although many of the areas of coordination and collaboration between the two institutions are specified in Annex 1 and in the Vice President's charge to the CEI, written agreements specifying areas of joint effort may be one means of breaking the impasse that now exists.

## **IERAC**

During the pilot phase of the project, IERAC has provided the greatest amount of support for CATIR. This backing has been in the form of providing personnel, reaching agreements concerning the transfer of vehicles and equipment, assisting in establishing means of coordinating the titling aspect of the project, and in providing vocal support on the CEI for project initiatives. The close cooperation has been aided by the personal friendship between the director of IERAC and the current director of CATIR.

Coordinating groups have never been established within IERAC. The Director of the institution stated flatly that employees do what he says and therefore he is the coordinating group. While we do not doubt that this is the case, it is quite clear that IERAC procedures could be streamlined to assist both the OPP and IERAC to accomplish their goals. A coordinating group of administrators and technical people might help to accomplish this.

Several agreements have been signed between IERAC and the OPP. Most concern transferring or sharing of equipment, however, and have little to do with improving the cooperation and collaboration between the institutions.

All of the evidence suggests that there has been close interaction between the OPP and IERAC, but reaching more formal agreements concerning the expectations of both institutions is important for program sustainability. These would specify the form and number of adjudication cases that IERAC might expect, how long it would take to process these cases, and the kinds of methods that might be established to streamline procedures in terms of cost and time.

## **IGM**

Formal agreements have been signed between the OPP and IGM. These stipulate quite clearly the expectations of both parties and contain specific language concerning costs. By all accounts the relationship has gone quite well from the perspective of the CATIR director. However, lower level officials maintain that there have been serious delays in IGM's provision of photography and charts of the land plots delineated by CATIR.

## **Other institutions**

The OPP has not signed formal agreements with any other institution. Although there is no evidence that this has yet hindered progress, CATIR might profit from more such agreements. CONADE, for example, could be very helpful in providing guidance and assistance in dealing with the municipalities in the country.

## **Government of Ecuador Commitment**

During the evaluation group's meetings with government officials at both the local and national level, we were impressed with the level of respect for the work that the OPP has accomplished and the general agreement about the need for such work.

Local officials (property registrars, notaries, municipal officers) were supportive of the project for several reasons. First, there is agreement that the property registration system must be overhauled, including legalization and registration of all properties and a means to establish proof of title. Second, municipal officials were unanimous in their support for a system that would be able to establish values for all properties. At present, many people who no longer own land receive tax bills and a relatively small percentage of landholdings are actually on the tax rolls. The system being used by the OPP, if DINAC cooperation were assured, would result in more revenues being generated for local government projects. These local officials would like to see the CATIR cadaster expanded to include urban areas as well. Third, local officials indicated that the cadaster would also be useful to them for planning purposes. They would have a better idea about land use patterns, kinds of livestock owned, types of housing, and extent of services.

The evaluation group felt that CATIR should work more closely with the National Property Registrars Association and the National Association of Municipalities. These groups can be influential in persuading national level officials about the utility of and funding for rural (and urban) cadastres.

National officials in DINAC, IERAC, and the Supreme Court of Justice were all enthusiastic supporters of the project. The latter institution would like to see the property registration system modernized, and that OPP activities are key to this goal. IERAC supports the project because it helps them expedite tenure investigation. Their procedures are cumbersome and slow, but with OPP assistance they will be able to establish and issue more land titles.

Despite the problems with DINAC, officials there were emphatic in their desire to see the project continue, to improve the rural cadastral system to keep track of rural property values. They reported that they have 800,000 property value records in the CONADE computer that they cannot use because of lack of data processing skills. DINAC stressed the need for more training under the project. In the second stage, if CATIR were to continue under their auspices, it would enable them to expand the size and importance of their institution.

The individual with perhaps the clearest vision of the need for CATIR and a National Cadastral Institute was the representative of CONADE on the CEI. He noted the various cadastral systems being used in the country and the need to establish a uniform methodology, and emphasized that the national information network contemplated by CONADE should be based on cadastral data at the level of the municipalities. Municipalities are very strong entities in the country and have a vested interest (revenue generation) in doing urban and rural cadasters. He cited several examples (Ibarra, a few small municipalities in Loja) of how local governments had substantially increased their tax bases by carrying out cadastral surveys of their own. His view was that CATIR must propose a methodology that can be applied throughout the country by an institution like a National Cadastral Institute that is semi-autonomous and works closely with municipalities.

The most powerful source of support for CATIR at present is the Vice President's office. He met with the evaluation group and stressed the importance of this project for the development of Ecuador. He emphasized the farmer's need for clear title to land as a prerequisite for obtaining credit. In his view, if the evaluation team were positive about the project, the Government of Ecuador would continue to

support it even if USAID cut off its support. His impression was that a future government would be likely to commit funds to the project.

The Vice-President felt that CATIR should be independent of other organizations like DINAC and IERAC, and suggested that it should continue as an Executing Unit ("Unidad Ejecutora"). This type of unit was a popular mode of operation during the Febres Cordero government but most were eliminated after Borja's election. Although allowing CATIR to function as an Executing Unit might allow short-term flexibility, the evaluation group believes that this status does not provide an adequate legal base for long-term stability.

## CONCLUSIONS

The CEI is a necessary organization for providing guidance and direction to CATIR. It should meet at least once a month. Because of the lack of frequency with which it has met in recent months, it has lost its role in directing the operations of the OPP. The most important individuals and institutions to establish the OPP were involved in the CEI originally, but not at present. DINAC's removal from the council has hindered coordination and cooperation at the administrative level, and in the preparation of the Rural Cadastral Law and the National Cadastral Institute. It also is unfortunate that the representative of CONADE was not included in the early deliberations of the CEI.

The lack of the proposed coordinating groups within IERAC and DINAC, and of formal agreements with other institutions may hinder future collaboration of other organizations with CATIR. They could be important supports to the institutionalization process.

CATIR has support at both the local and national levels of government in Ecuador. Almost everyone with whom we talked stated that such an organization was needed to carry out cadastral activities in the country.

## INSTITUTIONALIZATION

The OPP has been occupied with the process of starting the pilot project. Among other problems, this effort involved substantial bureaucratic struggles. For example, some items of equipment that arrived in Ecuadorian customs in 1987, for the original IERAC Land Titling Project (PROLETIERRA) could not be extracted by the OPP until April 1990. The OPP also had to assemble and train field teams, arrange for the photogrammetric analysis, and develop field methods and analytical procedures.

CATIR has only recently begun to take measures to address the key issues of institutionalization. The evaluation group believes that Annex 1 contains the basic outlines of the needed actions to sustain the activities of CATIR in the next stages of its existence, and should be given top priority as the program moved to the second stage.

Key in this process are legislative changes. It is important to institutionalize the operations of CATIR during the present government. The support of the Vice-President gives the organization an advantage that is unlikely to be repeated in subsequent governments. CATIR should take the lead in getting the Rural Cadastral Law and the revised Property Registration Law into the legislative process as quickly as possible.

A National Cadastral Institute should be established to absorb cadastral activities now found in other institutions such as DINAC, with the responsibility for urban as well as rural cadasters. Such an institute should have as much autonomy as possible, allowing it to work with local governments to establish a fair and equitable system for registering titles and taxing properties. Since the titling portion of CATIR activities will disappear with time, the system should be linked to rural cadasters for the purpose of taxation for maintenance.

The revised Property Registration Law is likely to generate less opposition than the National Cadaster Law but changes requiring inclusion of parcel maps and cadastral numbers in property transfer documents, and developing procedures for coordination between cantonal property registries and cadaster offices are essential to insure the long-term viability of the system.

## **PART FIVE**

### **RECOMMENDATIONS**

#### **SUMMARY AND CONCLUSIONS**

The creation of a cadaster-based land information system in Ecuador is given high priority by government officials on both the cantonal and the national level. The social and infrastructural benefits of the program are clear. In the pilot canton, the program has found public acceptance and support. Although the absolute cost is high, amortized over the next century, and recognizing that this type of systematization will have to be done at some point if the rural areas of Ecuador are to progress, the costs are probably justifiable.

CATIR, through the OPP, has established and tested the activities and procedures that can be utilized in implementing a national cadaster-based land information system. Given the bureaucratic struggles, the conflicts within the CEI, the necessity to establish a new administrative structure, recruit qualified personnel, and incorporate workers from other institutions, what the OPP has accomplished in the past year is impressive. The methodological and operational base for carrying out the national program, on a canton by canton basis, is in place. The breakdown of the complex database creation project into discrete, relatively simple tasks requiring minimal training, with controls for information flows and quality, makes it quite likely that the methods and operations can be successfully replicated across cantons.

The OPP and the CEI only recently began to deal with the question of institutionalization. To a large extent, it was necessary to first develop the operational structure and the procedures and methodologies to insure that the task could be done prior to designing the institutional and legal framework. Institutionalization must be the key issue for the next six months to a year. Successful implementation of the program on a national basis requires that the institutional foundation be in place before the end of the current administration.

The time also has come for putting mechanisms in place for maintenance of the system both on the cantonal level and as a national program. In the canton, this process will involve establishing a local office and training someone to update the database as property transfers occur, and educating both the local officials (especially the property registrar) and the property owners about the system, its advantages, and how it works. On the national level, system maintenance will be included in the institutionalization program and will depend on establishing an entity like a National Cadaster Institute to oversee the entire spectrum of cadaster activities in the country and provide technical assistance to local CATIR offices and municipalities. It also necessarily will involve attention to additional advanced training in cadaster-related areas so that the personnel will be available to manage the institute.

During the pilot stage, CATIR has been closely identified with two key individuals, the OPP director and the A.I.D. technical advisor. While the vision, organizing ability, political skills, and technical expertise of these individuals have been essential to getting the program started, the administrative and operational structures which have been put into place should make it possible for the program to continue without them. On the other hand, the maintenance and institutionalization tasks

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included as part of the pilot stage of the program have not been completed, and would benefit from the continued guidance of these individuals during the next year.

## **GENERAL RECOMMENDATIONS**

### **Stage II**

The principal purpose of this evaluation is to assist the A.I.D. Mission and the Government of Ecuador in deciding whether to continue support of CATIR and the development of a national program. The evaluation team strongly recommends that the program continue and that A.I.D. collaborate with the Government of Ecuador in funding Stage II as outlined in Annex I (1989).

There is a strong technical and public consensus that the chaos in the rural land information and registration system should be corrected in order for rural Ecuador to progress. CATIR has developed and tested a step-by-step canton-by-canton method for carrying it out, characterized by integration of personnel from various institutions, a quality product, efficiency in operation, and cost effectiveness. It would be a loss to Ecuador to abandon this framework at this point.

### **Conditions Precedent**

Three important tasks from the pilot stage have not yet been completed: the definition of an institution to carry the program beyond the pilot stage; the reform and simplification of registration procedures; and the establishment of mechanisms to ensure maintenance of the land information system. These tasks are included in the Project Agreement as Conditions Precedent for continuing to Stage II of the program. In recognition of the short time that the project has operated, the accomplishments that have been realized in terms of procedures and methods, and the fact that the project is clearly working on these tasks at present, the evaluation team recommends an extension of the time for complying with these conditions.

### **Land Tenure Policy Advisor**

The evaluation also was asked to assess the viability of adding a Land Bank component and a Land Tenure Policy Advisor position to the project.

The cadaster-based land information system creates the essential infrastructure for a formal, capitalist land market and credit apparatus by improving the tenure security of individuals and in the system as a whole. It does not in and of itself improve land access for campesinos. Likewise, CATIR is not intended to be an agrarian reform program but the program is being carried out in close collaboration with IERAC and is collecting information which could be valuable in identifying and resolving broader tenure and agrarian reform related issues.

As the technical requirements of the program decline over the course of the next year, A.I.D. should consider modifying the role of the A.I.D. advisor from an exclusive advisor on the technical project into that of a land tenure policy advisor. The revised position would help identify ways to utilize the database created by the program to confront some of the broader tenure issues facing the country, and to more closely link this project with other Mission programs. The advisor

should use the research on local land markets carried out during the pilot stage to propose programs like a land bank so that campesinos can realize the benefits of land titles and tenure security in improved access to land, credit and other resources.

### **PRIORITIES FOR 1991**

1. A first order of business during the next year must be to resolve the problem of institutionalization. This task must be completed before the Borja Administration leaves office.

- The institution to implement the national program over the next 10 to 15 years should have a firm legal base, which is not dependent on executive favor. CATIR should not be subordinated to the mandate of other existing institutions.
- Successful institutionalization should include an assured budgetary mechanism to contribute to completion and maintenance of the national system.
- The institutionalization process should include provisions for long-term training of key personnel in cadaster and land information systems.
- Legislative changes are needed in the form of the Property Registry Law and the National Cadastral Law.

The National Cadastral Law should eliminate duplication of efforts in cadastral systems by creating an institution that would absorb the cadastral activities now found in other institutions like DINAC, either through direct responsibility or through oversight and technical assistance for urban as well as rural cadasters, and for physical, legal, and fiscal cadasters. The institute should be autonomous and work closely with local governments, in an effort to strengthen the role of municipalities in revenue generation. It should have responsibility for long-term maintenance of the CATIR land information system.

The revised Property Registry Law should insure mechanisms to link property inscriptions to the cadaster database at the cantonal level.

An adequate property registry should clearly identify the persons involved in transactions, clearly identify each parcel with a unique identifier (based on the basis of a complete inventory of all parcels), and organize the registry so that the prior history of the parcel can be determined. (The "folio real" is the best option.)

The registry should continue to be maintained by an official at the level of the canton. Training courses and technical assistance should be provided by the CATIR to help registrars adapt to the new system being established. CATIR should have an agreement and work closely with the Consorcio de Municipalidades del Ecuador and the Property Registrars association to implement this.

CATIR should explore ways by which the change in the registration records could begin to be implemented immediately in all parts of the country.

2. The mechanism for maintaining the cantonal database as a current and accurate record of cantonal land tenure should be implemented immediately in Salcedo, with the same attention to testing alternatives and making modifications that has characterized other aspects of the field operation. Particular attention should be given to simplifying the process for property owners and minimizing expenses for them.

3. Effective maintenance of the system also requires that property holders formally inscribe property transfers. The legal analysis of the steps necessary for a farmer to transfer ownership should be completed as soon as possible, and changes in laws should be pursued to simplify this process and make it less expensive. Lawyers with strong background in agrarian law and experience in drafting legislation should be contracted.

Campesino education and training in the importance of formal inscription and the required steps should be included in the CATIR promotion campaign, and should be followed up after the cantonal system is in place through printed information and meetings and workshops with local leaders and campesino organizations.

4. Stage II is intended to consolidate the Program and set up the operational structure to complete the national program. This process cannot and should not begin until the program has a permanent institutional home.

- The decentralized structure which has been proposed by the OPP based on regional field offices and a diminished central office is appropriate. From an operational point of view, the work in each canton is discrete.
- In evaluating regional offices, analysis should balance potential savings in aerial photography and personnel costs (primarily per diem) and advantages of completing the country in fewer years, against additional training requirements, potential loss of qualified personnel, and additional vehicle and hardware costs. Regionalization also will be limited by the capacity of collaborating institutions like IGM and IERAC to handle the expanded workload.
- An expanded training component should be built into the program, including training for field workers, local officials and leaders, and registrars.
- Additional attention should be given to the criteria for prioritizing cantons for project interventions, balancing the needs and developmental benefits against the costs and political considerations. A greater role for the CEI and for CONADE, as the agency most directly linked to cantonal development, seems appropriate.
- The CEI should be strengthened so that it will take the lead in providing leadership, guidance, and coordination, and act like a Board of Directors with reference to policy decisions and appointment of key administrative personnel. The CEI will be especially important in attempting to mobilize the political support necessary for the changes in laws, and in securing international funds for Stage III of the program. The CEI should have regularly scheduled monthly meetings.
- CATIR should expand its contacts with other institutions who may be potential users or contributors to the database.

- Stage II should include a long-term research component, directed by A.I.D., to monitor and evaluate the CATIR program in terms of the goal and purpose of the project.

### **SPECIFIC RECOMMENDATIONS**

The evaluation team also has developed suggestions for changes and improvements in particular aspects of the program.

#### **Photogrammetric and Cartographic Procedures**

Recognizing that the major costs and therefore potential savings are in the fieldwork rather than in mapping, alternative cartographic methods could be tested to determine whether there are acceptably accurate substitutes that are less expensive. These can be tested in Baquerizo Moreno or a sub-sample of data from Salcedo could be reanalyzed to measure costs using alternative methods.

The potential cost reductions in aerial photography by photographing areas larger than a canton should be a factor in ordering of cantons for intervention.

Surveyors should be required to tie into a uniform national coordinate system. CATIR should pursue contacts with other potential institutional users of the land information system so that additional data requirements can be taken account of in database design, and so that all land-based data systems are using the same set of points.

#### **Field Research**

The data collection instruments used in the field should continue to be fine-tuned so that more accurate and useful information is collected on legal status, land tenure, land use, and property values.

More frequent and better training, especially concerning the legal status of properties, should be given to delineators and property evaluators.

The Programming, Evaluation and Training Unit needs to become as strong as other areas within the CATIR structure. This is crucial because of the need for training at all levels. Additional attention should be given to monitoring and documenting project outputs and accomplishments. The impact of the program on individuals (disaggregated by gender) and on other institutions is of particular importance in long-term calculation of costs and benefits, and in solicitation for international funds.

Technical training is needed so that, if one of the established professionals in an area leaves the project, there will be others who can take his/her place.

CATIR should create an advance team that establishes itself in a canton a few weeks before field research begins. This team, headed by an anthropologist or sociologist, should study the land

tenure situation and potential areas of conflict in the region and design CATIR's promotion strategy accordingly. This team should be attached to the reorganized Programming, Evaluation and Training Unit.

CATIR should try to recruit and retain women for the field teams of delineators and evaluators. It should evaluate their work to determine whether the presence of a woman improves data collection procedures especially in highland regions where migration has led to a feminization of agriculture.

Improved coordination with national, regional, and local campesino organizations is needed.

Rural people, particularly landholders should be informed about the cadastral component of CATIR.

### **Cooperation Among Institutions**

In the second stage of the project, CATIR should investigate ways in which it can work with IERAC to help streamline its titling procedures. This should include exploring ways of computerizing some of IERAC's operations.

Continued efforts should be made to insure that CATIR data and software are used by DINAC for property valuations.

Agreements with other agencies and institutions should be explored to determine whether aerial photographic and cartographic costs can be shared. Failing this, CATIR could charge for use of the data, just as IGM charges for maps.

Real coordinating groups must be established within DINAC and IERAC. These should include mid-level administrators and technical people as well as the Directors. The coordinating groups should work closely with CATIR to improve the functioning of procedures in the various institutions. These groups should also become involved in selecting individuals to receive training.

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**ANNEX A**  
**GLOSSARY**

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## ANNEX A

## GLOSSARY

canton	municipio, municipality, county
Casa Campesina	umbrella organization for local campesino organizations in Salcedo
CATIR	Programa Nacional de Catastro y Titulacion Rural - national program which is the subject of this evaluation
CEI	Comision Especial Interinstitucional - Special Interinstitutional Commission, board of directors of CATIR
CONADE	Consejo Nacional de Desarrollo - National Development Council, under the Office of the Vice-President
DINAC	Direcion Nacional de Avaluo y Catastro - National Directorate for Valuation and Cadaster, part of the Ministry of Finance, responsible for rural cadasters
FONAPRE	Fondo Nacional de Preinversion - National Preinvestment Fund - office responsible for dispersing national and international development funds to municipalities
GPS	Global Positioning System
hacienda	large landed estate
IERAC	Instituto Ecuatoriano de Reforma Agraria y Colonizacion, government agrarian reform agency, responsible for land titling
IGM	Instituto Geografico Militar - Military Geographic Institute - government mapping agency
INERHI	Instituto Ecuatoriano de Recursos Hidraulicos - Ecuadorian Water Resources Institute
inscription	property registration
Jujan	the name of the "county seat" for Canton Baquerizo Moreno often used in referring to this canton

<b>minga</b>	each member of the community contributes a certain amount of time to work teams for community projects
<b>minifundio</b>	small, sub-subsistence rural agricultural parcel
<b>MOP</b>	Ministerio de Obras Publicas - Ministry of Public Works
<b>OPP</b>	Oficina del Plan Piloto - office created to implement the pilot phase of CATIR
<b>persona juridica</b>	legal status of a group like a corporation, a community, or a cooperative
<b>PROLETIERRA</b>	original Land Titling Project in IERAC
<b>sucre s</b>	/850 = US\$1.00, November 1990
<b>UNOCAM</b>	Union de Organizaciones Campesinas - Union of Campesino Organizations, active in Canton Salcedo
<b>UTM</b>	Universal Transverse Mercator - the grid system used as the framework to locate land parcels or other geographic units in space.
<b>Yaguachi</b>	Canton Baquerizo Moreno was a parish in this canton until recently and the property registry for Baquerizo Moreno is still maintained in Yaguachi

**ANNEX B**  
**PERSONS CONSULTED**

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**ANNEX B**

**PERSONS CONSULTED**

**IN QUITO:**

Ing. Maria Augusta Fernandez, Executive Director, CATIR-OPP  
Jack Rosholt, A.I.D. advisor to CATIR  
Dr. Telmo Andrade, Property Registrar for Quito, member of CEI  
Ing. Eduardo Molina, Manager of FONAPRE, President of the CEI  
Ing. Pablo Lopez, Executive Director of DINAC  
Ing. Galo Moreno, Technical Director of DINAC  
Dr. Romulo Garcia, Sub-secretary of Ministry of Finance, member of CEI  
Dr. Angel Crespo, CONADE, member of CEI  
Ing. Luis Parodi, Vice President of Ecuador  
Dr. Luis Luna, Executive Director of IERAC  
Lcdo. Marco Navarette, CONADE, advisor to CATIR-OPP  
Ing. Carlos Egas, Deputy Director of the CATIR-OPP  
Ing. Carlos Pateno, advisor to the Office of the Vice President  
Dr. Eduardo Maldonado, OPP-CATIR, and secretary of the CEI  
Ing. Jhonny Garcia, CATIR-OPP  
Ing. Ivan Ortega, IGM and CATIR-OPP  
Dr. Fausto Lovato, CATIR-OPP  
Dr. Torres, legal advisor, CATIR-OPP  
Dr. Cisneros, legal advisor, CATIR-OPP  
Ing. Jorge Vasquez, CATIR-OPP  
Ing. Jorge Vasquez, CATIR-OPP

**IN SALCEDO:**

Lcdo. Oswaldo Navas, Property Registrar  
Ing. Jorge Haro, CATIR-OPP  
Ing. Bolanos, CATIR-OPP  
Ing. Milto Jaramillo, CATIR-OPP  
Ing. Alberto Rosero, CATIR-OPP  
Agr. Miguel Angulo, CATIR-OPP  
Sr. Miguel Palomo, Presidente de la Comuna Sta. Isabel, Secretario de la Union de Organizaciones  
Campesinas  
Campesinos in Taxoloma and in El Galpon  
Treasurer of the Casa Campesina  
Dra. Mercedes Gallardo, CATIR-OPP  
Dra. Fanny Leon Cordero, Vice President of the cantonal council  
Notary Public  
Sr. Cesar Placencia, Comuna El Galpon  
Sr. Greforio Tercero, President of the Comuna El Galpon  
Sr. Ceferino Calo, President of the Comuna Cumbijin

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**IN BAQUERIZO MORENO Y YAGUACHI:**

**Sr. Carlos Lama, President of the cantonal council**  
**Sr. Francisco Martinez, cantonal chief of valuation and cadaster**  
**Sr. Hector Castro, member of cantonal council**  
**Dr. Klever Vasquez, Property Registrar in Yaguachi**  
**ing. Efrain Flores, CATIR-OPP**

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**ANNEX C**  
**SUPPORTING DOCUMENTS**

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**ANNEX C**

**SUPPORTING DOCUMENTS**

1. Map of control points for Ecuador
2. Field questionnaire
3. Card given to property holder with temporary cadastral number
4. Parcel plan which is end product of CATIR
5. List of training events

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