

PD-ABD-825

103329

EVALUATION OF THE AGRICULTURE SECTOR

REORIENTATION PROJECT

(518-0091)

CONDUCTED UNDER CONTRACT WITH ABT ASSOCIATES, INC

AND THE AGRICULTURAL POLICY ANALYSIS PROJECT

(APAP II)

March, 1989

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## EXECUTIVE SUMMARY

The agricultural sector reorientation project was an ambitious effort to respond to the GOE's desire to impact agricultural policies with a market orientation and to include the voice of the private sector in framing policy choices

The project responded by completing a large research agenda designed to demonstrate the value of research to serve policy analysts who in turn serve decision makers. With few exceptions, this demonstrational strategy has had a minimal impact.

The project also initiated a long run process of establishing administrative structures, opening some minds to the value of, extensiveness and complexity of policy issues, began to build a necessary body of policy research in Ecuador, introduced and began to prepare a corps of policy analysts, and began to upgrade, organize and computerize the essential information system.

Two administrative structures, the PAU and IDEA, are in place. Both are administratively weak, the PAU faces structural change, and both require more adequate plans of work. The policy analysts in the PAU are learning the analytical process, need training and technical assistance. Some output is resulting but these outputs are heavily dependent on technical assistance for policy content. The functions of the PAU are not well understood in the MOA and the unit lacks identity and credibility.

IDEA has begun to inform the private sector on broad agricultural issues. Their process of studies, seminars, executive summaries and dissemination is creditable. There is not a sharp policy focus on the studies that have been completed and disseminated.

Some highlights of the policy research relate to the work on macroeconomics, on enhanced qualities of the studies on price policies, on real costing in the commodity studies and on the structure and anticipation of issues in the commodity market.

The in-service training activities of the policy component have been adequate. On the other hand, the long term degree training component design was inadequate to the task and has not been fully implemented.

The major policy recommendations include a stronger focus on macroeconomics with an agreement with the Central Bank, a continuation of the PAU on sector policies and sharpening of the mandate for IDEA. With patience, administrative strengthening, a much more collaborative mode and an increased training effort, a corps of policy analysts and policy researchers could become a reality.

The project is supporting development and/or enhancement of four major activities designed to form the nucleus of a national agricultural information system to serve the needs of policy analysts and formulators, and decision makers in the public and private sectors. The activities--market news service, crop and livestock reporting, agroclimatic impact assessment, and computer capability and facilities--are in varying stages of development. The agroclimatic impact activity is most advanced and the computer activity the least, although all have made significant progress. Activity outputs to date are approximately as anticipated in the project design.

Progress in integrating these activities into a national agricultural information system has been very limited to date, however, and the institutionalization process has lagged seriously. The activities--that constitute basic elements of the information system--have now developed to a stage that the project should focus sharply on system-building and institutionalization.

Areas of priority for the information component during the remainder of the project include coordination, training, quality improvement, dissemination, and institutionalization. It is recommended that support to the information component be continued with project assistance refocused to concentrate on these priority areas. No new activities should be undertaken during this period. An extension should be considered if justified by the degree of progress made toward developing and institutionalizing the information system.

Types of assistance required to support the refocused effort will include additional long and short term technical assistance, some hardware and software to supplement or replace items already purchased that are not suitable for the use for which they are intended, and a modest resource pool to support innovative activities related to information dissemination, needs assessments, and planning activities.

It is concluded that the project has made a reasonably good start, but that much more coordination and collaboration in design and implementation are needed. The information component is ready to move toward institutionalization, but the policy component has not yet reached that stage.

## IA POLITICAL AND ECONOMIC SETTING

In 1984, the Febres-Cordero government began to implement its market oriented agricultural policies that had been a major part of the parties platform. Actions were taken on liberalizing exchange rates and selected prices as well as reducing trade restrictions.

About the same time the report of U S Presidential Commission to Ecuador strongly supported actions to broadly improve the terms of trade for agriculture. Implied in such a broad recommendation was an offer for substantive assistance in agricultural policy analysis. The Febres Cordero government responded quickly by requesting assistance in agricultural policy and agricultural productivity.

The actions on agricultural policy assistance were an early on recognition of the lack of capacity within the MOA. There was very limited capacity to formulate policy alternatives, to trace the impacts of options and further to assess or monitor the intended results.

There was an urgency about addressing agricultural policy and production issues due to the state of the Ecuadorian economy. Throughout the early 1980s there were low rates of overall growth and the low rates of growth in the agricultural sector was a major contributor.

For a period before 1975, the agricultural sector was growing at annual rates substantially above the rapid rates of population growth. However, from 1975 to 1982 agricultural sector growth rates were low, stagnant and in some years negative. Throughout this period agricultural growth rates were below population growth rates.

Some of these discouraging indicators were due to the global recession, declining oil prices and increasing burdens of debt. In addition internal factors associated with interventionists policies for agriculture and an enormous growth of public and para-statal enterprises contributed to the stagnant state of the agricultural sector.

Fortunately, with a set of actions initiated in 1982, the agricultural sector began to respond beginning in 1984. The major actions included continuing flexibility in exchange rate policy, domestic interest rate policy and selected moves towards letting the market establish many price levels. The period 1984 to 1987 experienced annual agricultural growth rates that far exceeded population growth rates. In fact, the agricultural sector had become the major source of growth in Ecuador. At the same time various agricultural sub-sectors notably for Sierra food crops, continued low levels of performance.

In spite of some success in agriculture the overall economy of Ecuador during the 1980s achieved average annual growth rates of less than half the average growth rates of 4% experienced during the 1970s. These are serious problems of declining incomes, unemployment, large fiscal deficits, increasing levels of poverty and low levels of non-agricultural output.

These continuing economic problems were negatively impacted by low world oil prices and a severe earthquake in early 1987. Furthermore, a poor selection of fiscal policies were initiated in 1987 to resolve the fiscal deficit, declining resources and generally poor economic performance. Rapid monetary expansion has led to high inflation rates, devaluation of the sucre and continuing low rates of growth.

As a new government took office in mid- 1988, the economic scene was dominated by increasing fiscal deficits, inflation, unemployment rates, etc. Clearly, there were great uncertainties on how the new government would deal with these issues. Rather unexpectedly, the Borja administration initiated a large devaluation, continues a monthly devaluation, has reduced government spending, has removed some protective tariffs and eliminated some subsidies.

Equally significant, the Borja government like the Febres Cordero administration, is seeking knowledge of policy actions to further stimulate the agricultural sector. There are some possibilities that actions will be taken to turn away from an import substitution/industrialization strategy towards an agricultural led strategy. Such a shift can be measured by actions taken on overvalued exchange rates, reduction in protective tariffs, elimination of import tax exemptions, reductions in subsidies and reductions in agricultural export taxes as well as the elimination of property taxes as incentives to industrial promotions. These possible actions, along with price increases in oil and diesel fuels, less intervention in food prices, targeted food subsidies along with other reforms gives reason for some optimism.

Clearly, the need continues for a capacity to formulate agricultural policy alternatives, to identify the impact of options and to monitor intended results.

## IB SALIENT PROJECT CHARACTERISTICS

Like most development projects, but particularly agricultural policy analysis projects, this one was overly ambitious. The desire to respond quickly, given scarce human talent and a very inadequate data system, across many micro and macro policies issues was a near impossible task. After years of neglect over substantive agricultural policy concerns and a basic growth strategy that favored industrial import substitution, the key signal should have been that no quick fixes were possible. This is particularly so when one recognizes that sensitive policy issues are the domain of indigenous decisions makers and their support staffs.

The project has seven major activities with perhaps ten times as many sub-components. In addition, a sector assessment has proceeded as a within AID activity but very closely linked to agricultural policy issues.

The salient components included a quick response, depending on external technical assistance and the establishment of a policy analysis unit, a private sector effort at increasing public debate and enhancing the demand for good policy decisions, an ambitious effort to enhance and institutionalize an agricultural sector information system, and as indicated above the conduct of an extensive agricultural sector assessment.

## Immediate Response and the Policy Analysis Unit

Beginning in mid-1985, a broad set of production and marketing diagnostic type studies were commissioned and completed. Most of these studies, funded under various instruments can be classified as an intermediate response to the Presidential Agricultural task force.

Included were micro and macro studies completed by external contract professionals. These studies, reports and discussions with Ministerial decisions makers, throughout 1986 and 1987, were part of the attempt to provide immediate response. During this period the extensive research agenda focused on price and marketing policies associated with the grain and dairy industry. The research agenda also called for studies on selected inputs, including seed, fertilizers, chemicals and machinery.

The external technical assistance also focused, during 1986 and 1987, on building a research agenda relating to macro policies that impact the agricultural sector. In addition to the studies required to build the research agenda and plans of work, selected macro studies were completed on macro policies such as exchange rates and foreign trade. Another very important component in the macro area was to compile the data requisite to continuing macro economic research.

Beginning in early 1987, the agricultural policy unit in the Ministry of Agriculture (PAU) was formally structured. In house MOA personnel were reassigned to the PAU along with contract professionals. Knowing that personnel in the unit would be serving as ministerial advisors and many experienced personnel were not formally trained in economics, placed a heavy training as well as analytical requirement on contract personnel assigned to the unit.

The PAU was organized into six areas of policy analysis: macro-economics, natural resources, basic production and agricultural inputs, sierra products, coastal products, and livestock. Within each area a ministerial person had a long term counterpart assigned by the contract and was further supported by short term contract professionals.

An important requirement beyond analysis, training and serving as advisors was the building of institutional relationships. These include liaison within the ministry, an inter-institutional relationship with other governmental agencies, with private indigenous agencies and with selected international organizations.

One can picture the PAU as being initiated in early 1987 and about a year later being required to adapt to a new government. This transition resulted in changes in PAU leadership, personnel, and the continuous threat of an overall reorganization. Equally important were changes in the policy analysis agenda to serve a new administration.

#### Private Sector - Science Foundation and IDEA

As many have written and discussed, the private agricultural sector in Ecuador has not viewed its role as a substantive contributor to agricultural policy analysis, dialogue and development. Rather than some participative role in agricultural policy, the private sector has viewed its participation in a confrontational manner. With few exceptions the private sector has supported public relation activities to be heard and to achieve desired ends.

In addition, the vast majority of private agricultural sector institutions have not developed capacities to conduct agricultural economic related studies or to participate in their dissemination. Ecuador, unlike many developing countries, has not given priority to developing human capabilities in the economic area. Furthermore, the agricultural private sector is fragmented with very limited institutional linkages among chambers of agriculture, producer associations and campesino associations. Even more limited linkages are noted among these

organizations and input supplier and product supplier organizations

Clearly, there was an opportunity to stimulate agricultural policy analysis, discussion and debate within the private sector. Such a set of actions could assist the process of agricultural policy formation as well as to increase private sector capacities to demand sound policy decisions.

Given the long administrative and international agency experiences of the Science Foundation, the private sector initiative was so assigned. This component was changed and has implemented a set of research activities within the institute for developing agricultural strategies (IDEA). These activities have included contracting studies, seminarizing on results, disseminating study and seminar papers and continually attempting to raise the level of understanding of agricultural policy issues.

IDEA has also implemented the small degree training component of the project, has taken other actions to enhance private sector policy analysis capabilities (library, small research grants, etc). IDEA has established an administrative structure and staff, has sought to raise private sector financial support and just recently has been established as an independent private foundation.

#### Information System

The information system component is comprised of four activities: creation of a market news system, improvement in crop and livestock reporting, expansion and improvement of agroclimatic impact assessments, and support to the design, installation and management of computer facilities to support other project activities. These activities were to be integrated into a national agricultural information system to provide price, market, area planted, projected production and similar types of information required for policy analysis and management decisions in the agricultural sector, public and private.

The market news system, established early in the project, has installed a network of market reporting centers in principal markets, with daily dissemination of market information directly to a limited audience and through press releases, and publication of weekly bulletins and annual summaries. Although market news programs had been established earlier for limited areas, the situation at the outset of the project was such that it was necessary to start virtually anew to create this system.

Crop and livestock reporting activities were already established prior to the project, but their extent and effectiveness were

limited by major constraints such as resource limitations, lack of adequate computational facilities, and lack of integration into a coordinated information generation and dissemination system. A restructured Ministry of Agriculture (MOA) Statistics and Information Division (DEI) and the National Institute of Statistics and Census (INEC) are responsible for the work carried out under this activity, with DEI charged with responsibility for its coordination. A special agricultural statistics commission has been created to oversee the production of statistical information for the agricultural sector.

The objective of the agroclimatic impact assessment activity, well-started prior to the project, was to expand and improve the analysis and delivery of information concerning climatological conditions and their impact on crop production. A data base has been developed, a communication network of climatological stations established, and major advances made in the adaptation of crop phenological models for estimating yields of major crops. This activity is being carried out by a unit in the MOA Regionalization Office in collaboration with INAMHI, the National Meteorological Institute.

The MOA had virtually no computer facilities at the outset of the project, although some of its agencies had small obsolete and/or inadequate computer systems. For the most part, the information/data collected was tabulated, processed and filed manually. Therefore, a computer facility involving 38 micro and 3 mini computers and a set of terminals was to be developed to provide the capability for establishing a computerized data base, and processing and analysis of timely, useful data in support of all other project activities. A computer center has been established by the MOA, but is not yet operational due to late arrival of equipment and other problems. Delays in installing the mini computers have resulted in micros being used as independent systems by other activities.

In summary, an integrated, computerized information system, comprised at the outset of the activities just described, was to be designed and implemented to serve the information needs of a number of public and private sector clients, with primary focus in the policy areas. As with the policy analysis activities, it is relatively simple to specify a distinct set of enhancement activities for the information system. However, the most critical elements relate to an administrative commitment to such an information system, and the degree to which coordination of multiple activities and institutionalization of the system can be achieved.

#### Sector Assessment

The sector assessment is not a direct activity of the policy project but is a contributor to a resource base for policy

dialogue, and a user of the product of the policy project. A sector assessment was programmed as an in-house activity designed to provide the analytical base for a mission strategy.

A set of studies have been completed under the sector assessment that substantially complement the purpose of the policy project. These studies focus on sources of agricultural growth, population, a policy history, gross domestic product formation, consumption/nutrition, the roles of the public sector serving agriculture, agricultural trade and foreign donors to agriculture. In various stages of completion are other studies that focus on sectorial and macro policies, the natural resource base, marketing, irrigation, land tenure, human capital, formation and other elements of the agricultural sector of Ecuador.

Many of the completed and in-process studies have directly involved the agricultural policy project personnel. Similarly, those studies have served the project purpose and studies of the project have been utilized in the sector assessment.

These four salient activities within the project have been the driving force to advance understanding and actions on agricultural policy in Ecuador. As with most agricultural development projects, the goal was to enhance economic growth, assure a stable and low cost food supply and to improve export performance with an increased reliance on the private sector.

The project purpose was to assist in realigning agricultural sector policies and programs so as to increase reliance on markets and to promote private sector initiatives. To achieve this purpose the design required a strengthening of the MOA's capacity to identify, analyze and implement policies aimed at reducing governmental interventions, promoting private sector participation in policy dialogue and policy making as well as to improve the quality and quantity of information essential to agricultural policy formulation and implementation that focused on efficient production and marketing systems.

## IC EVALUATION METHODOLOGY

The complexity of this project reflects the reality of the poor state of conceptualization, administrative structures, organization and limited human and financial resources essential to an ordering of activities relating to enhanced agricultural policy actions in Ecuador. Except for a partial foundation of experience in collecting production and pricing information without any computerization, the project implementors were required to start from nearly a scratch position. Recognition of these starting positions is critical in the evaluation.

To facilitate the evaluation, the five man team (See APPENDIX A for curriculum vitae's) divided their efforts. One group focused on all private and public agricultural policy analysis activities while the other group (3 members) focused on the information system.

The terms of reference for the evaluation were modified to reflect the need to assess issues of conceptualizing and structuring administrative and organizational relationships over the short life span of these new institutions. Except for this change the evaluation has focused on the quality and quantity of output (publication, dissemination, utility, training, awareness, etc), the effectiveness in the timely use and products of the large human resource component of this project, on measures of a viable administrative system, on constraints to achieving planned outputs and on the difficult issues associated with indigenous resource use changes required to sustain the activities that have been structured.

The team has availed itself of many background documents including pre-project documents as well as operative project documents. A primary effort was devoted to assessing the quality of the many publications produced by the project. Another major effort has involved personal interviews (noted in Appendix B) structured to address issues of how the enhanced knowledge base has been utilized, to identify administrative and technical problems, to solicit opinions of future courses of action as well as to exchange ideas on alternatives associated with future actions.

## IIA PROJECT IMPLEMENTATION CHRONOLOGY

The agricultural sector reorientation project (ASRP) was a response by USAID/Ecuador to the government of Febres Cordero (1984) and to the U S Presidential Commission on Agriculture, that submitted those recommendations in late 1984. The Febres Cordero government was identified as a conservative market oriented administration hopeful of implementing policies to reduce government intervention.

The Presidential Commission on Ecuadorian agriculture recommended a set of actions to begin to fill the large void regarding knowledge of macro policies on the agricultural sector policy alternatives, specific commodity evaluations and among others to develop knowledge on the input and output markets. The commission also focused attention on building capacities in the public and private sectors to address agricultural policy choices.

In early 1985 the mission moved rapidly to address the requests from the GOE and recommendations of the presidential commission. Under special funding a series of studies were implemented on domestic and external markets, on a commodity market, grain price and marketing policies as well other studies. In addition preparations were initiated to program the agricultural sector reorientation project that was signed in July, 1985.

Under this ASRP, awarded to the Sigma One Corporation, Raleigh, N C, a series of actions on seven activities were initiated in 1985. The necessary conditions precedent were officially fulfilled, however the GOE did not provide the staffing and budgeting as was agreed. Short term advisors began to arrive in the fall of 1985, the allocation of complementary PL 480 was made available to the program and policy dialogue was initiated with decision makers in the MOA. The chronology of the project can be briefly described as

1. Agreements were finalized with the Science Foundation, (founded in August, 1976) to house the Agricultural Policy Institute, later changed to The Institute for Developing Strategies for Agriculture (IDEA)
2. Long term advisers in crops/livestock, policy and market news began to arrive in early 1986 and 1987
3. The policy analysis unit was organized by March, 1987
4. Within IDEA, studies were contracted with Ecuadorian consultants and seminars were initiated in early 1986

5 A new government was installed in August, 1988

6 IDEA was officially established as a foundation in  
February, 1988

## IIB SPECIAL CONDITIONS

This ambitious project could be described as a set of special conditions. It was an overwhelming response to a GOE request and the Presidential Commission.

It was well known that few agricultural economists could be found in Ecuador, there were a very limited number of indigenous consulting firms with a history of experience in agricultural policy, the MAG had very few economists nor a structure to incorporate a policy analysis unit, and that, except for policies on agricultural prices, the MAG had substituted agricultural planning activities for any serious commitment to agricultural policy analysis.

Facing such a formidable set of constraints, one could imagine the establishment of a limited set of activities to test the policy environment. Some come to mind such as a project on a water pricing and maintenance/capital recovery, a focus on macro policy implications to the agricultural sector, establishment of a human capital formation program in agricultural economics as well as some initial actions in economic studies that move slightly beyond the cost of production studies.

However, it appears from background readings that this modest strategy was never considered. Rather a large quite sophisticated demonstrational strategy was to be put in place on agricultural policy. This is in sharp contrast to most efforts in the building of a commitment to biological agricultural science such as fortifying a crop adaptation/breeding program with an emphasis on training plant breeders and plant pathologists.

The special condition for this project clearly relates to the strategy chosen given extreme scarcity of trained human resources and limited understanding as well as commitment to agricultural policy changes beyond setting prices.

To evaluate this project it is useful to state the operational definition of what constitutes agricultural policy. Agricultural policy focuses on incentives or the elimination of disincentives as related to the efficient allocation of scarce resources. The incentive or disincentive signals come from the private market, from interventions by the state (prices, regulatory policies, subsidies, fiscal and monetary actions) and from the general public in expressing their preferences for restraining or not restraining market or state conditions.

As the discipline of agricultural economics matured, a large body of research emerged on the consequences of changes in policies on resource use and distribution or on the consequences to consumers, producers, agri-business firms and government.

Also there is a growing literature on intersectorial relationships

Maturity of the discipline, also produced policy analysts. These professionals are advisors to public and private decision makers who pose questions for the analysts. An analyst reacts to a question requiring an immediate response by conceptualizing the economic issues involved, turning to the research literature, conferring with colleagues with expertise on the question as well as assembling essential descriptive and diagnostic material. The analyst then poses alternative policy actions and attempts to estimate the consequences of policy changes on consumers, producers, as well as government. If a policy change does occur the analyst is usually asked another question on actual consequences. This monitoring type responsibility requires a somewhat different data set but a process similar to the response to the original question.

Clearly, in this project there is the requirement for producing research knowledge of agricultural policy options. Equally essential in the success of this project is the capacity of policy advisors to draw on policy research knowledge. The minimum requirements for effective economic policy advisors is a knowledge of economics, awareness of the relevant policy literature, access to historical data relevant to a problem area (prices, yields, stocks, supply, use, production, etc.). This project was designed to increase the quantity and quality of agricultural policy research and to adapt and disseminate such knowledge to those who influence and decide policy choices.



TABLE 2 ORIGINAL DISTRIBUTION OF BUDGETED FUNDS BY TYPE  
OF EXPENDITURE BY YEARS FOR PERIOD  
7/31/85 TO 6/30/90

Activity	Years					TOTAL Amount	%
	1985	1986	1987	1988	1989		
(\$000)							
Training	217	105	6			328	2 8
Equipment	1,151	29				1,180	9 4
Technical Ass							
External	1,933	1,703	988	613	313	5,550	44 4
Technical Ass							
Internal	136	120	69	43	22	390	3 1
Support	1,052	1,091	746	51	315	3,714	29 7
Evaluation	-		125		125	250	2 0
Contingencies	437	293	183	107	68	1,088	8 7
TOTAL	4,926	3,341	2,117	1,273	843	12,500	

TABLE 3 STATUS OF FUNDS AS OF 12/31/88

Type	Budgeted <sup>1</sup>	Committed	Executed <sup>2</sup>	Exact	time <sup>3</sup> elapsed
(\$000)					
Loan	1,400	1,189 <sup>4</sup>	1,024	76 5	68
Grant	7,100	6,580	5,504	83 7	68
Counterpart (PL480) <sup>5</sup>	4,000	4,894	3,575	73 0	68
TOTAL	12,500	12,663	10,103	80 0	68

- 1) Includes \$540,000 budgeted for the sector assessment
- 2) Executed is against committed and doesn't include accruals
- 3) Period 7/31/85 to 12/31/88
- 4) \$150,000 more was committed but has been transformed
- 5) The counterpart includes modest direct GOE expenditure for MOA employees but is primarily PL480 which has been estimated using an average exchange rate

The counterpart data only includes PL480. There was a small GOE counterpart in-kind representing payment to regular MAG employees and support associated with the project. An estimate of the counterpart (PL480) is shown in table 4. The estimated total of \$4.9 million exceeds the original \$4.0 million estimate but may be associated with the lack of detailed exchange rate data.

TABLE 4 AN ESTIMATE OF THE STATUS OF COUNTERPART (PL480)  
FUNDS ASSOCIATED WITH THE PROJECT AS OF 12/31/1988<sup>1</sup>

Receiving Entity	Approved	Disbursed	Balance
	(\$000)		
Sigma One	2,619 2	1,787 1	831 8 <sup>2</sup>
IDEA	563 4	633 8	-70 4 <sup>3</sup>
CMS	1,091 5	795 7	295 8 <sup>4</sup>
PAU	619 5	358 7	584 7
TOTAL	4,893 6	3,575 3	1,318 3

- 1) The exchange rate data were not available when purchased so a weighted exchange rate (assuming 20% purchased in 1985, 50% in 1986 and 30% in 1987) and an average exchange rate by year was used to estimate a weighted exchange rate of 142 sucres to the dollar
- 2) This balance to be transferred to the PAU in April, 1989 to support personnel
- 3) This amount to be deducted from the IDEA endowment of 240 million sucres
- 4) For disbursement during 1989 and 1990

As of 12/31/1988, the project was 68 percent complete relative to the time frame and has financially executed 80 percent of the project (see table 5) The total funds approved and committed total an estimated \$12 7 million dollar with \$ 10 1 million executed

By major project components each has executed 80 percent of the approved funding In summary, the policy component has executed \$5 7 million against \$7 1 million approved while the information component has executed \$ 4 3 million against \$5 4 million approved

TABLE 5 STATUS OF FUNDS BY ACTIVITY AS OF 12/31/88

Activity	Grant		Loan		(PL480)		Total		
	Committed	Executed	Commit	Execut	Appro	Executed	Appr & Commit	Executed	
			(\$000)						
1 Immediate Policy Analysis	1,812	1,392					1,812	1,392	
2 Policy Analysis Unit	1,088	1,018	6	6	2,165	1,413	3,259	2,437	
3 Support of IDEA	1,017	922			563	634	1,580	1,556	
4 Sector Assessment sub-total policy	488	305					488	305	
	4,405	3,637 (83)	6	6 (96)	2,728	2,047 (75)	7,139	5,690	(80)
5 Market News	400	321	17	17					
6 Crop and Livestock Reporting	950	723							
7 Agro-Climatic	270	270	165	161					
8 Computer sub-total Inform	460	460	1,001	840	1,092	796	2,553	2,096	
	2,080	1,774 (85)	1,183	1,018 (86)	2,165 2)	1,528(71)	5,428	4,320	(80)
9 Evaluation	94	94					94	94	
TOTAL	6,579	5,504 (84)	1,189	1,024(86)	4,893	3,575(73)	12,061	10,104	(80)

1) Parentheses are % executed of approved. 2) Includes \$ 10,073,720 which could not be allocated

## IID TECHNICAL ASSISTANCE

The original project design provided for 543 person months (pm) of technical assistance including 198 pm of long term and 345 pm of short term. There were originally 90 pm of long term technical assistance and 108 pm of long term for the chief-of-party and the project coordinator. Of the latter amount 26 pm was shifted to the policy analysis and information component. Officially, the chief-of-party allocation has not been utilized.

As shown in table 6, there has been four long termers assigned to the project with two in each major component. In addition three project coordinators have been assigned to the project.

Against the original allocation of 198 (p m ) for long term technical assistance, 137 pm (69 percent) have been executed. Excluding the project coordinators, 80 percent of the programmed long term technical assistance had been executed as of 2/28/89.

The total programmed short term technical assistance (345 pm) was equally divided between the policy analysis and information system components.

The distribution of short term technical assistance is shown in table 7. For the policy analysis work a total of 165 pm were programmed and 74.5 pm or 45 percent has been executed. For the information system a total of 162 pm were programmed and 120.9 pm or 75 percent have been executed.

TABLE 6 LONG TERM TECHNICAL ASSISTANCE

Name and Title	ETA	ETD	Program- med	Total Executed 2/28/89	Remaining	
	(Dates)		(Person months)			
L Brown <sup>1</sup>	4/86	8/89	40	34	6	MOA/Inform
D Green	2/87	7/90	40	23	17	MOA/PAU
R Stewart	3/87	9/88	18	18	0	MOA/PAU
B Schulte	3/86	7/87	18	18	0	MOA/Inform
Chief of Party			22	0	22	MOA/Inform
COORDINATORS						
D Colyer	7/85	8/87	25	25	0	USAID
M Whitaker	7/87	1/88	6	6	0	USAID
J Rosholt	2/88	6/90	29	13	16	USAID
TOTAL			198	137	61	

1/ Also has served as the chief-of-party

TABLE 7 TECHNICAL ASSISTANCE PLANNED AND EXECUTED BY ACTIVITY  
OF THE 2/28/1988

Activity & Other	Planned	Executed	Balance
(Person months)			
Other			
Chief Party (LT)	22	0	22 0
Project Coord (LT)	60	44 0	16 0
Evaluation (ST)	18	4 5	13 5
sub-total	100	48 5	29 5
Activities			
1 (ST)	42	14 6	27 4
2 (LT)	58	41 0	17 0
(ST)	85	33 5	51 5
3 (ST)	38	26 4	11 6
4 (LT)	18	18 0	0
(ST)	12	16 2	4 2
5 (LT)	40	34 0	6 0
(ST)	64	43 7	20 3
6 (ST)	30	24 4	5 6
7 (ST)	56	37 6	18 4
SUB-TOTAL	443	289 4	153 6
Long term	(116)	93 0 (80%)	23 0
short term	(327)	196 4 (60%)	130 6
TOTAL	543	337 9 (62%)	205 1
Long term	198	137 0 (69%)	61 0
Short term	345	200 9 (58%)	144 1

## IIIA OUTPUTS

## A POLICY FORMULATION AND IMPLEMENTATION OUTPUTS

## 1 IMMEDIATE RESPONSE AND SHORT TERM, EXTERNAL ASSISTANCE

This section reports the outputs of the immediate policy agenda (IPA) and research by the technical assistance personnel. The critical measures of output for the IPA relate to the quality and quantity of the technical assistance response, dissemination of results and their use in shaping and encouraging policy dialogue and change. Some of the immediate policy response activity was initiated prior to the development of the contract. Also, this work continued after July, 1985 with Sigma One personnel and under sub-contracts by Economic Perspectives, Inc (EPI) and Comprehensive Marketing Systems, Inc (CMS). There were many studies on grain marketing, the commodity market, potato storage, vegetable marketing, sugar, milk, regenerative agriculture and factor markets. Some work on macro policies was also initiated under activity one.

Activities 1 and 2 of the project have in practice been effectively joined in implementation. While some of the publications relating to Activity 1 are attributed to this activity (for example seven publications for Presidential Task Force follow-up and eighteen for the Agricultural Commodities Exchange) many other publications which appear attributed to Activity 2 could also be attributed to the first activity. Examples include some of the fifteen studies for grain price and marketing and eleven for milk policy. Regardless of the specific attribution issues, these activities should be evaluated on the success of the "demonstration effect" and the sustainability of policy analysis capability within MOA when the project is concluded.

The chosen strategy was to use the demonstration effect and overwhelm the agricultural leadership with agricultural information and analysis. The strategy was only somewhat successful. The number and quality of publications demonstrated the wide range of policy issues and approaches for evaluating the consequences of agricultural policy alternatives. There were short falls on the quantity of studies related to divestiture and in the assessment of policy alternatives.

The overall quality of the research output of the technical assistance team was high. The quality of the work on the macro economic policy impacts on the agricultural sector was exceptionally good. The same comments are applicable to the work on domestic resource costs, protection coefficients and enhancing the quality of production cost studies.

Clearly some, but not nearly enough, lessons have been learned by Ecuadorian colleagues working with the technical assistance personnel. These lessons relate to conceptualizing a study, choosing and manipulating alternative methodologies, building an information base and how to focus analysis on the consequences of alternative policy actions. In most cases, however, the work was done without close cooperation of Ecuadorian colleagues. The impact of the studies on decisions, training and increased general understanding of important problems is believed to be minimal. Most studies were not widely distributed and modest efforts were made to prepare and distribute knowledge gained in a form acceptable to non-economists. The expected demonstration effect is not easy to measure but only a small number of ministerial leaders were aware of the studies. Even the small number of agricultural advisors, training to be policy analysts, were not able to comprehend the value of much of the research output.

However, this valuable body of research has served some top level advisors and decision makers. We believe it could have impacted many more concerned people in Ecuador.

Some specific highlights of the immediate and continuing research response activity are described below.

1. Studies on the commodity market contributed to the establishment of the BOLSA. Further, the studies served as a warning system on the potential issues and have provided substantial insights on the necessary conditions for success.

2. The development of a data base and subsequent studies on the impact of macroeconomic policies on the agricultural sector have and will continue as very significant contributions. Such research knowledge emphasizes the consequences of macro policies on the production incentives in the sector. This work also demonstrates the real need for macro policies that are more neutral across sectors of the Ecuadorian economy.

3. The studies on marketing, comparative advantage and price policy implications challenge Ecuadorian economists to move far beyond the classic diagnostic type studies. As part of an informational base the classic studies serve a need. But policy research must move to the evaluation of alternative policy choices on efficient resource use and distributional consequences.

## 2 STRENGTHENING MOA POLICY FORMULATION CAPACITY

This section reports on the output of the Policy Analysis Unit (PAU). For the PAU the output measures relate to the

operationalizing of an administrative structure, effectiveness of the staffing process, capacity for substantive but quick response capability, process and content of a agricultural policy studies agenda, degree that general understanding of agricultural policy is enhanced, utility of the publications in framing and changing agricultural policies, the extent and output of the in-service training, the degree of institutionalization and, among others, its impact on a change in market reliance

The "cornerstone of the project is the development of a sustained capacity in the MOA to identify, analyze, and formulate policy and program alternatives to support policy officials " The design of the policy analysis unit includes a commitment by MOA to assign 10 people, five from the private sector using PL 480 funds and five from within MOA The people assigned were to have been agricultural economists or people with policy analysis experience The PAU was to be a short term analysis unit serving as a policy advisory group rather than a research unit Intermediate outputs were to include oral reports, brief memos, analytical and detailed reports of major issues and problems

There is a PAU in the administrative structure of the MOA The project requirements to staff the unit with qualified employees and to provide financial support have been minimally acceptable The permanency of the PAU administrative structure is in doubt because of strong pressures to substitute the planning division as the prime advisor to the minister

The operational structure of the PAU digresses from the design Only three of the staff have an economic background The PAU staff has one economist among five MOA employees and the contract employees include two trained economists The director and alternate director are very qualified individuals without economic training Their responsibility to transfer economic logic and the consequences of alternate policy choices, based on a limited information system must be frustrating Three of the unit are veterinarians and the rest are agronomists Their exposure to policy analysis has been minimal before coming to the PAU Seven of the members of the unit are new, having started as a result of the new government All of the contract employees are in effect political appointments with one exception The Director of the PAU is a contract employee, who is also the economic advisor to the Minister as well as having responsibility for administration of PL 480 funds within the Ministry He is known as a friend of AID The alternative director and coordinator of the unit, is just now assuming some leadership role within the PAU Due to the gallant collaborative efforts of the long term technical assistant team, the PAU has provided some creditable responses to the questions posed by the two ministers it has served It is doubtful that the responses would have had

economic content and have drawn on previous research without the technical assistance support

There are a number of problems arising from this operational structure. The combination of ministry personnel and outside contractors creates tension because of the differences in pay. The original concept of the outside contractors was to be able to hire the expertise which would be lacking within the ministry by paying close to the market rate for their services. Instead the two ministry people who have been with the project the longest have more ability and experience in policy analysis than the contract people who are being paid significantly more. They also have to train these outside contractors. The structure of the PAU is inherently unstable because of this situation. The contractors are paid with PL 480 funds from the project and when those funds cease so do their positions. While some of the people currently holding these positions have some skills useful to the unit, the positions are essentially treated as political spoils. When the minister changes the economic advisor and the other positions will change. The ministerial people have little incentive to stay save the lack of other opportunities outside of the ministry.

Within the ministry the role of the unit is little understood because of the combination of factors. The administrative responsibilities for PL 480 and the PAU reside with the same person which confuses the two. Bureaucratic infighting has resulted as the planning division has sought control of the unit. This would not likely be of much concern to the planning division if the unit were a technical advisory group alone. The close proximity of the Sigma One office and advisors while likely unavoidable also clouds the issue. While the unit is independent and close to the minister, that proximity has not developed a strong commitment to the unit, the letter from the current minister notwithstanding.

It should be noted that the change in government has affected the PAU in several critical ways. First, the previous government seemed more willing to consider agricultural policy reorientation than appeared to be the case when the new government took office. The current situation is dynamic but a more open-minded attitude exists in some sectors of the new government. Second, the political change in leadership initiated a large turnover in politically affected personnel slots in the PAU. A total of seven members of the PAU are new to the unit since August, 1988.

The lack of economists in the unit arises from a number of likely sources. First, there are not many qualified economists in the country. There are no universities with agricultural economics programs although some focus on this subdiscipline will appear in the Catholic University's program next year. Those who

do have the appropriate skills are drawn off by better paying positions in the private sector or other public institutions such as the Central Bank

Second, there seems to have been little real effort placed in finding qualified agricultural economists or economists within the ministry or the private sector. In part this arises from the political nature of the contract positions and in part from a lack of commitment or understanding of the role of economics in policy analysis. The latter is a serious constraint in the development of policy analysis in the country and the ministry.

The operationalization of the PAU is not sustainable. Contract positions are political appointees with little regard for the qualifications needed to perform policy analysis. The combination of PL 480 and PAU responsibilities by the economic advisor confuses the technical role envisioned for the unit.

It should be mentioned at this point that the operation of the unit in Guayaquil varies significantly from Quito. The two contract members of the unit serve in effect as the planning officers for the subsecretary of the coast. While one is an economist, he seems to find little application of those skills to his duties. Again they are in effect political appointments and subject to change with a change of administration. Both, however, have acknowledged technical and organizational skills which are called upon directly by the minister and even the vice president.

The agenda for the unit has been set primarily by the design of the project and by the foreign consultants, often responding to requests from AID. Since activities 1 and 2 have been combined it is difficult to attribute some of the intermediate output of the project to one or the other. That seems to have developed from the ambitious agenda designed for outside short term consultant tasks. The large number of analyses performed by U S based consultants seems to have transpired with little direct involvement or knowledge transfer to the Ecuadorian staff of the unit. Some of the better studies such as those by Rigoberto Stewart are an exception to this conclusion. Other work on macroeconomic issues by Duty Greene and Grant Scobie provide a solid base of analysis and an initial information base to further expand understanding in cooperation with Ecuadorians. Nevertheless, there seems little carryover resulting from a demonstration effect within the unit.

One estimate of the activities of the members of the unit are as follows: 20 % of an individual's time goes to training. Another 40 % goes to longer term analysis appropriate to the area of interest of the individual within the original long term agenda set by the consultants. The final 40 % goes to fire fighting activities. Within this forty percent the demand for

this type of analysis surprisingly is evenly divided between AID and the ministry. The AID demand evolves from the nearly fifty percent demand put by AID on the time of the policy analysis advisor. Little of the demand for the unit therefore is derived from within the ministry. Visits with various subsecretaries and directors indicates little comprehension of the activities of the unit even though the original design indicated that the unit was to serve those levels also.

There is evidence that the present consultants are trying to improve the training and expertise of the members of the unit. More training is desired by the members of the unit. Nevertheless a review of the content of the EPI, Sigma One and presidential task force follow-up documents demonstrate little effort to demonstrate the techniques or value of such approaches within the unit or indeed within the ministry. The quality of the fire fighting efforts reveals little analytic base within the unit at the moment. Most of the work is descriptive or "diagnostic" and fails to include important elements of a complete analysis. To move beyond description the analysis would generally discuss the effect of a change in policies on the incentive structure faced by people affected. Efficiency and distributional issues would, of course, be important. Very little of the analysis done by either outside consultants or the members of the unit have been put in a form which could be readily understood by non-technicians or economists. The format to achieve such results could range from brief summaries of the work or in formal or informal seminars. Both would have to be either non-technical or educational in approach.

The output of the public sector activities is therefore bifurcated between publications done by expatriates for expatriates or a limited number of high government officials and descriptive or diagnostic work which has elicited no praise or generated no demand within the ministry. Macro economic analysis by the best Ecuadorian economist in the unit is not directly requested by the minister. Instead, the minister requests such information from someone outside of the unit. That person then informally gets the information from the unit's macro economist. The unit is approached for crop specific situation and outlook information as well as some price analysis.

Ultimately one needs to ask the question as to whether either the consultant publications or the PAU fire fighting efforts have affected policy choices. There is no evidence that significant policy decisions have been affected by either set of activities. While there is informal communication taking place among donor groups, between AID, the consultants and the government, and among the Ecuadorians within the ministry, there does not appear to have been any major, demonstrable impact from these efforts. Indeed, these intermediate outputs have not appreciably raised the demand for either type of analysis,

publications or fire-fighting. The efforts of the project so far are neither institutionalized or sustainable. The situation in Ecuador has not been hospitable to policy analysis.

The policy analysis and assessor transfer system is physically in place but will not adequately serve its intended purpose without technical assistance until

1 The unit is directed by an agricultural economist willing to bring economic content to an issue in the same way that the engineer and biological scientist brings content to the issue.

2 The leader of the unit is one capable of anticipating priority issues and structuring his analytical agenda to both immediate and medium term needs.

3 The leader and staff are qualified to interpret the agricultural economic policy analysis literature and to engage external consultants in increasing the economic literacy of the PAU. This would include knowledge of the network of people with expertise required to augment skills within the country.

Within the PAU, there is a felt need for acquiring economic and analytical skills. There is a serious commitment to allocating some 20 % of their time to this effort. The long term technical assistance and some contract employees are meeting this need. However, even more gallant efforts by all concerned are needed.

An array of issues continue to plague and disgruntle the PAU. The major issues are poor work plans, low salaries, limited comprehension of economic concepts and methodologies, an unorganized informational data base, the lack of forceful disciplinary leadership, continued pressure to address yesterday's questions, a recognition of involvement in an unstable institution, and an unclear perception of policy advising and policy analysis. Any policy analysis unit with severe limitations and capacities to draw on previous policy analysis research will not deliver upon request and consequently will not acquire the client support and creditability for institutionalization.

Within the PAU there are two additional constraints. One relates to a lack of understanding of what policy analysis is, who are the principal actors and what is the relationship of this unit to the planning division. Another constraint is a poor perception of the role of free markets with minimal governmental interventions.

### 3 POLICY DIALOGUE AND ANALYSIS IN THE PRIVATE SECTOR

This section reports the outputs on agricultural policy in the private sector. The critical measures of output relate to the following: 1) the establishment of an administrative structure, 2) the effectiveness of the activity in increasing private sector participation in understanding and building a demand for sound agricultural policies, 3) building indigenous capacity for research and analysis, 4) promoting research in agricultural policy and marketing, 5) disseminating the results of policy research, 6) promoting pilot or demonstrational efforts, 7) managing an external scholarship program and, 8) stimulating student interest in agricultural policy analysis.

IDEA was created as an independent institute to analyze and promote policy change. It was to sponsor policy research, increase public awareness and understanding of basic agricultural policy issues and expand private sector capabilities in agricultural policy analysis and research. It was not to have in-house staff to conduct policy studies. The original priority research areas included the terms of trade between the agricultural and industrial sectors, priorities for agricultural research, marketing and low-income household problems. It was also designed to increase public awareness with seminars and workshops.

The agenda for the agricultural policy institute (API), later changed to Instituto De Estrategias Agropecuarias (IDEA) within the Science Foundation was most ambitious. The results have been impressive, particularly when one recognizes that the Science Foundation was not widely known and was not recognized for work in agricultural policy. The proposal for the Science Foundation to contract and pay an executive director with an economic background was never implemented. The position of a full time agricultural economic advisor was replaced by assigning a single person for a series of assignments to IDEA. Administratively the board of directors has not had the control of the program usually exercised by such bodies. On this last point, the board of IDEA is new and previously the board was only advisory.

In practice the research studies and seminars held by IDEA have focused on marketing, conservation and management of fragile lands, cacao production and marketing and low income family problems. In addition, according to IDEA "it soon became evident that the most important discussions, conclusions and recommendations were to the private sector itself. In order to assist the private sector in following up on recommendations it was realized that IDEA must move into actual project development at least at the pilot or demonstration level." Sixteen project profiles were developed, four of which have received funding.

These include Formation of a Cacao Institute, credit to small farmers, community ponds and coordination committees in each of the grain marketing subsectors. IDEA has contracted for at least eighteen studies in agricultural marketing, natural resources, exportation of non-traditional crops, and others. The studies were reasonably well distributed but more importantly a seminar or workshop was held after each study was completed. In most cases the seminars were well attended by a cross-section of agricultural interests in the public and private sector. The studies were also made available to the PAU and MOA. A reasonably effective executive summary series was established for greater dissemination.

The activities of IDEA seem excessively broad. Much of the publications to date have limited policy applicability but instead describe physical conditions or perform diagnostic analysis. However, the overall quality of the work has been improving. IDEA is aware of some of the quality control problems and David Tcshirley will be assuming a quality control function. The other problem is the overly broad set of activities. All of this seems to have diluted the potential achievements of IDEA to date. The image of the effort seems unclear to those in the Ecuadorian private sector most intimately involved, the members of the board of directors. While there is no unanimity on the board there is a clear desire on the part of the members to be more active in the decision making and agenda setting of IDEA. With the severe shortage of experienced agricultural economic professionals in the private sector, the highly descriptive and diagnostic character of the studies as contrasted to research on the consequences of policy options was to be expected. Many of the mostly diagnostic studies, raised a series of policy choices but the studies were not designed to evaluate the consequences of policy changes on consumers, producers or the government. An example of such work was the wheat subsidy study which, nevertheless, has been given partial credit for influencing the government's decision to eliminate the wheat subsidy.

The subject matter with which IDEA deals may need to be further focused. This should be the dynamic result of the IDEA staff, the board of directors and consultants. This is also the process in which AID should be more active, but in a collaborative versus directorial mode. IDEA has begun work in the area of natural resources and the plans for the future in this area shows some growing awareness and direction toward policy analysis of this subject.

IDEA is funded by PL 480 funds which have been a source of irritation for MOA officials. This reflects among other things dislike of the private sector by the present government. This situation will make progress by IDEA in establishing a constructive, impartial dialogue with the public sector all the

more difficult. Since the situation generally in Ecuador is also not particularly fertile for this kind of analysis, expectations should not be overly optimistic about the speed at which development will occur. IDEA leadership has canvassed internally and externally for financial support. There are no positive results to report and the issue of private financial support will require much additional effort.

There does exist an administrative structure. The financial structure is on shaky ground but technical assistance has been a major plus in the administration of IDEA. It has become reasonably well known in Ecuador. But IDEA is not closely identified with its prime purpose, agricultural policy research because it has wandered into many areas.

Given this situation there seems to be little likelihood of significant outside financial support for IDEA activities. Should IDEA add in-house research design and implementation ability as well as improving the quality control, then support for some specific research could evolve. Additions to the small endowment currently being established by AID can develop with further facilitation and perhaps the development of an impartial, think tank reputation.

The need for design of a long term workplan targeted to address priority agricultural policy options has been suggested by many we have contacted. In many conversations concerning this project the lack of a linkage with FUNDAGRO was often expressed. There has not been linkage discussions on specialization by IDEA in economic policy while FUNDAGRO specializes in biological and physical science areas.

There are other measures of the output of IDEA such as the external scholarship program, provision for 4 PhD's and 2 M S 's was administered by IDEA. The usual announcement and committee screening procedure was not established. Further, with 68 % of the project time completed only 2 PhD candidates (one returned) and M S candidate (expected to return shortly) program have been implemented. With the severe shortage of trained agricultural economists, this should have been a priority area.

Other human capacity building elements were in the original design. Some exploratory work has been done with colleagues at the Catholic University but no program is in place. Other aspects of this element have also not been effectively implemented. For example, a committee is just now being formed to administer PL480 local research scholarships once those funds are approved.

In summary, IDEA is not firmly established administratively or financially. Some agricultural leaders believe that IDEA can successfully develop a financial development campaign. Clearly,

IDEA has begun to awaken and stimulate private sector participation in understanding and in some cases demanding sound agricultural policies. The dominant agricultural policy focus is not evident in the research and dissemination process by IDEA. Also much more must be done to interest and implement existing programs in the area of agricultural policy analysis and research.

### IIIB NATIONAL AGRICULTURAL INFORMATION SYSTEM OUTPUTS

In general, specific outputs achieved to date by three of the information component activities--market news system, crop and livestock reporting, and agroclimatic impact assessment--are approximately as projected. Development of the planned computational capability and computer center is seriously behind schedule, however, impeding progress in virtually all the other project activities.

Progress toward achieving effective coordination (both within the MOA and between the MOA and outside agencies), and integration and institutionalization of these activities into a national agricultural information system has lagged seriously.

Current project status with respect to planned outputs from information component activities is summarized below by activity, and then in terms of the total information system.

#### 1 THE MARKET NEWS SYSTEM

Projected outputs included establishment of a market news unit and users' advisory board, daily, weekly and bi-weekly market reports on 12 products by the end of the project, and development and implementation of an effective set of grades and standards for five major agricultural products.

The system has been established and a Junta de Usuarios (User's Board) formed. Market reporters have been trained and are in place in 26 major markets, collecting information on wholesale and retail prices for approximately 85 plant and 10 animal products. Daily wholesale price reports are released to the press and radio, and delivered directly to a limited number of clients, principally in the MOA. Weekly bulletins include wholesale and retail prices and prices in frontier and international markets. Annual summaries of agricultural product prices and international markets are published. Only minimal progress has been made toward development and implementation of grades and standards for major agricultural products, although more is planned for the near future. The outputs should be met by the end of the project if proper technical assistance is provided.

#### 2 CROP AND LIVESTOCK REPORTING

Outputs included creation of a Crop and Livestock Reporting Board (CLRB) and development of its capability to estimate total supply and price ranges, provision of current and prospective information on 19 crop and livestock commodities by the end of the project, modification of INEC data collection procedures to meet specific system needs and development of its area frame sampling techniques, and, development of schedules for release of information to PAU and to the public

Although no CLRB has been established, a Special Agricultural Statistics Commission (CEEA) with representation from the MOA, INEC, CONADE (National Development Council), and The Central Bank has been created and is partially operational. Its purpose is to standardize the production of agricultural sector statistical information. Current and prospective information is being gathered and reported on 33 commodities, including 17 of the 19 specified (poultry and eggs are not included, as attempts to obtain needed information were not successful)

It is difficult to match specific studies and surveys indicated in the Project Agreement with those realized to date, as modifications have been made during the course of the project and some areas are further advanced than others. Recognizing the necessity for training staff and establishing methodologies, it appears that the information to date is relevant and approximately that to be expected at this stage in the project. Progress toward modifying INEC procedures has been hampered by the necessity to review needs and possibilities within the framework of the total activity, and to clarify the relative responsibilities of INEC and the MOA for data collection and processing. A basic information network has recently been established under the coordination of DEI to give decision makers immediate access to relevant available information.

### 3 AGROCLIMATIC IMPACT ASSESSMENT

Project outputs expected from this activity included expanding the number of primary climate monitoring stations to 50, developing computerized historical and real-time climatological and meteorological data bases, incorporating operational agroclimatic indices, outputs from crop models, and climatic risk analyses, a scholarship for M S study in agrometeorology, establishing an interagency committee to assure that meteorological and agricultural data are directly applicable for operational use, and that systematic communication of information is developed, developing soil-water capacity charts and crop variety distribution maps, and carrying out special surveys for agroclimatic impact assessments.

Fifty primary climatological stations are now included in the activity's communication network (radio). A computerized data base has been developed with real-time data from the 50 stations for the period 1965-present, historical data on area, yields, and production at the provincial level, and phenological and phenometric data from field trials in eight experiment stations. Models for estimating production of six major crops have been selected, calibrated, and verified, and estimated production of two major crops was determined for 1987 and 1988. Field trials are now in progress to obtain calibration data for the models. Land use studies for traditional and non-traditional crops have been conducted in the coastal zone (in cooperation with IDEA). The projected interagency committee has not yet been established, although action has been taken with respect to the proposed committee functions.

#### 4 COMPUTER CAPABILITY AND FACILITIES

Outputs expected from this activity included,

- o Purchasing three minicomputers with 36 terminals,
- o Purchasing 38 microcomputers, including 6 for INEC,
- o Contracting with a local firm to operate and maintain the system in the MOA
- o Carrying out the design, installation, and management of computer facilities to support the other project activities

Thirty-nine microcomputers and three minicomputers have been purchased and delivered to the MOA, although a long-delayed arrival date impeded progress in both this and other activities. Microcomputer distribution has been as follows: 4, 3, and 2 to Activities 2, 4, and 6, respectively, for Activity 5, 5 to MOA and 6 to INEC, and, 1 each for Marketing Unit/Guayaquil, Marketing Unit/Quito, Planning Unit, Sigma One, Rice Program, and Cotton Program. Each microcomputer came with a printer. INAMHI received one mini with 6 terminals and a micro AT. Activity 7 received one minicomputer with 10 terminals, 12 microcomputers as well as the mini with 8 terminals planned for the Subsecretary at Guayaquil. The computer center is being developed and operated by the MOA, largely with contract personnel, rather than contracting with a local firm to operate and maintain the system. Eight studies dealing with computerization of the national agricultural information system have been completed, and eight training and seven operational manuals have been prepared. The computer center is not yet fully operational, however, and not linked into the total information system.

#### 5 INSTITUTIONALIZATION OF THE INFORMATION SYSTEM

The agroclimatic impact assessment activity is most fully developed and institutionalized. All staff are provided by the MOA or INAMHI, and coordination and cooperation between the two

institutions is excellent Coordination with other activities is inadequate, however

As indicated by the outputs reported above, the computer capability and facility activity is least well developed and institutionalized Virtually all staff (except the director) are contracted by the project, the computer system is not fully operational, its functions and relationships to other activities require review and clarification, and coordination with other activities is weak

The market news service is relatively well-established, and all reporters in the 26 reporting centers are provided by the GOE In the central unit, however, nearly all staff are contracted by the project, and coordination with other information component activities is weak

The crop and livestock reporting activity is intermediate in its development and institutionalization Six staff assigned to the Statistics and Information Division are paid with Project resources Coordination and collaboration between the Division and INEC are currently inadequate

Overall, significant progress has been made in each of the activities, but the degree of information system development and institutionalization achieved is disappointing One important factor in these deficiencies results from the failure of MOA to appoint a project director to coordinate the various project activities Major attention must be focused on these needs through the remainder of the project if it is to reach the stage that the information system will be wholly or in large part self-sustaining

### IIIC HUMAN CAPITAL FORMATION OUTPUTS

This section has two components one for policy analysis and another for human capital formation relating to the information system

#### POLICY ANALYSIS

As was indicated in the project design, there is a severe shortage of agricultural economic and economic analytical capacities in Ecuador To address this severe situation the project provided resources for six (PhD and 2 M S ) external scholarships, in-service training and for an incentive program operative in IDEA

As of this date, one PhD scholarship candidate has returned, one is expected to return in mid 1989 and one M S scholarship candidate should return shortly With less than 30 percent of

the project time remaining, it is unlikely that two additional PhD's and another M S candidate will be selected. The reasons for this 50 percent shortfall relate to the lack of candidates, some administrative foot dragging and time lost in the change of governments. The lack of candidates is closely related to low rates of public rewards for their entering the public services.

The in-service training program within the PAU in conceptualizing economic policy issues, acquiring general computer skills and specific economic analytical skills has been effective but limited in quantity. Those acquiring such skills also have alternative employment options that adequately reward the individual investments.

Fortunately, the long term technical assistance leadership also arranged for additional non-degree training. Those PAU analysts were sent to the SAS training program in Raleigh, N C. Such training was complemented by in-house training by Sigma One in Raleigh on household survey design and analytical techniques. One individual was also sent for 2 weeks to San Jose, Costa Rica for in-house training in policy analysis. Another was sent to Chile for a one week course in macro economic policies.

The incentive program on human resource capacity building implemented by IDEA was helpful but the programmed scope was inadequate given the severity of the scarcity problem.

These very modest efforts in building human capacity in agricultural policy analysis were also plagued by the retention issue. It is most likely that the few people trained will not be retained by the MOA. For such people with conceptual and analytical skills other public entities (Central Bank, CONADE, The Development Bank, etc.) as well as the private sector offers salary and employment conditions that more than double rewards from within the MOA.

#### INFORMATION SYSTEM

The project provided for one M S external scholarship in agrometeorology for Activity 6. A decision was taken early in the project to substitute five courses to be taught locally for this scholarship so as to train more personnel with the same resources. Courses were given in data base management, crop/yield models, agricultural area zoning, phenological models, and meteorological observations. Later, project personnel from INAMHI and PRONAREG were selected for two short courses overseas, one in the USA and the other in Argentina.

A workshop on sampling was conducted by Dr Leslie Kish for MOA and INEC personnel engaged in Activity 5.

The project design provided for some in-house training of Activity 7 personnel. Training in microcomputer operation and information processing and analysis has been provided to computer center personnel and personnel from the other activities. Computer center staff have also received courses on operating systems for the Data General minicomputers and data base management. The computer center has offered courses on statistical analysis (SAS), word processing (WP), spreadsheet (Lotus), data base (Dbase), and computerized information for executives.

Although training is a critical factor in human capital formation for development of the information system, it can be deduced from the above that probably only personnel from Activities 6 and 7 have received a reasonably adequate series of substantive organized training activities. Activity 6, in particular, has benefited from close on-the-job training and supervision by their consulting team.

Although courses on computer application programs have been provided to personnel from all information component activities, most personnel trained are contracted rather than MOA employees. This, plus the fact that low GOE salaries make it difficult to attract qualified people, make it likely that few of the people trained can be retained indefinitely.

These modest efforts to build staff capability have been largely technology or skill oriented. Much less attention has been given to training and orientation in the process of information system development and operation, equally important to the success of the project in developing, implementing, and institutionalizing a viable national agricultural information system.

## IVA SUMMARY

The ASRP is about 70 percent complete in its time frame with about 70 percent complete in level of effort and over 80 percent complete in the execution of committed financial resources

This summary is in two parts with one section on agricultural policy and the other on the information system

## 1 AGRICULTURAL POLICY

The policy component has made some progress on a long road towards a substantive commitment to, understanding of and the development of a process for policy change involving the public and private sector in agriculture

The major constraint towards achieving project purpose was the lack of trained and experienced agricultural economists. Given the severity of this constraint, the project design was far from adequate. Furthermore, there was a shortfall in implementing the very modest training component, which was less than 3 percent of the budget.

The project strategy to overcome this human resource constraint with a large demonstrational effort met with minimal results. Clearly, some top level GOE decision makers as well as AID leadership received benefits but the trail appears to end at that point.

Some exceptions relate to the work on the commodity markets, macroeconomic relationships, price analysis for selected commodities and, among others, the work on real cost pricing. These studies will also serve an important role in training Ecuadorians.

Future efforts in agricultural policy research should be in response to specific requests, should involve a collaborative design and implementation mode as well as an in-service training element.

The efforts at building a corps of agricultural policy analysts has begun. There is an administrative structure, presently under attack, and a small group of inexperienced professionals. There is a very incomplete knowledge of the unit within the MOA, but an increasing level of output (reports prepared for the Minister). A clear demonstration of the effectiveness of technical assistance when performed in a collaborative and in-service training mode has been developed. Hopefully, continuing efforts will be made to preserve the PAU,

to gradually increase its effectiveness and to slowly build its credibility

In the private sector a good start has been made to bring the sector into the agricultural policy arena. The process that was established of contracting studies, holding seminars and producing executive summaries was well designed. The dissemination component of the process was also well implemented.

IDEA continuing administrative, financial and program design problems. The major design issue is the lack of a clear mandate and a plan of work designed to achieve its stated mandate.

## 2 INFORMATION SYSTEM

The information component of the agricultural sector reorientation project is of sufficient importance, has made sufficient progress, and has sufficient potential for further progress in the remaining months of the project to justify its continuation and support. The mix of activities presently comprising the information component is rational, and should remain as is through the remainder of the project. No new activities or subactivities should be undertaken during this period. Too much emphasis continues to be placed on activities (production) at the expense of information system development and institutionalization.

Of the four information component activities, the agroclimatic impact assessment and computer activities are the most and least advanced, respectively.

The areas of highest priority need during the remainder of the project are coordination, training, quality improvement, information dissemination, and institutionalization. (The MOA, Sigma One personnel, and the AID Project Coordinator agree with this assessment.)

The Agricultural Information System design prepared by the MOA and Sigma One provides a preliminary blueprint for future development of a comprehensive information system, but no new activities should be initiated during the remainder of the project other than planning and preparation for the future and/or to deal with unanticipated, high priority situations.

A significant amount of technical assistance will be required to reinforce the areas in which National staff need further strengthening in order to continue development and operation of the national agricultural information system after the project is terminated.

Detailed conclusions and recommendations are presented in the section which follows

## IVB ISSUES AND RECOMMENDATIONS

This section reports on major issues and recommendations. The section has three sub-sections: policy analysis, information system and general issues. The issues are presented in the form of a question, each question is discussed and recommendations follow.

## 1 POLICY ANALYSIS

## (a) SHOULD THE DEMONSTRATIONAL POLICY ANALYSIS STRATEGY CONTINUE?

In response to a conservative market oriented Minister of Agricultural and a Presidential Commission under President Reagan, recognizing the severe scarcity of economic talent, the demonstrational strategy was a reasonable reply. It was recognized implicitly if not explicitly up-front that little or no institutionalization would result.

For some top decision makers in Ecuador, the policy dialogue objectives of AID, and for a very select group of private sector agri-business leaders, the many studies were well received. The effort was overwhelming and appears to have had a small impact on policy changes and to have had little impact on the MOA's commitment to the need for such knowledge. However, another group of benefactors includes those studying and teaching economics and agricultural economics.

## RECOMMENDATION

Policy changes are sensitive and difficult choices. If any foreign technical assistance is involved a collaborative mode is a requirement. AID should continue to provide short term policy assistance through PAU and IDEA on priority opportunities to alter policy. The requirements are formal request for assistance, collaborative project design, dissemination modes to reach non-economists, and an in-service training element to transfer necessary skills, and a sharper focus on the evaluation of policy options.

## (b) IN WHAT FORM SHOULD THE MACROECONOMIC FOCUS OF THE PROJECT BE CONTINUED?

The work in this area is one of the highlights of this project. It has awakened a few leaders to the reality that macroeconomic policies have an enormous impact on agricultural growth by creating incentives or disincentives. Hopefully, the work will continue to identify positive incentives to agriculture.

and building a knowledge base upon which more neutral macro policies are enacted

#### RECOMMENDATION

The work should be continued under a different set of agreements and performed in a more collaborative mode. It is imperative that macroeconomic research relating to agriculture be directed by experienced and well trained economists. The macroeconomic work in the PAU should be shifted to the Central Bank under a joint agreement. The person(s) shifted should work for the Central Bank colleagues focusing on macroeconomic policy impacts on agriculture and should wear another hat as the macroeconomic advisor to the Minister of Agriculture.

Another complement to this joint activity with the Central Bank, involves linkages with IDEA. One area of focus in IDEA would be intersectorial or macroeconomic in character with at least two economic professionals (one local and one long term technical assistant and some short term technical assistants). There should be linkage agreements with the Central Bank, Ministry of Finance, Ministry of Agriculture and IDEA on the macro component.

- (c) SHOULD SUPPORT CONTINUE FOR THE STRUCTURALLY UNSTABLE, POORLY STAFFED AND VIRTUALLY UNKNOWN PAU?

The PAU is relatively new. Already a serious reorganization is under discussion to include it in the planning division. Policy and planning units must collaborate but have distinct function that should be kept separate.

The PAU is staffed predominantly by non-economists, does not have well designed work plans for policy analysts and has low levels of understanding of the policy analysis process. The work in this unit is largely diagnostic or descriptive of activities in the agricultural sector. It serves to describe the status of various sub-sectors but provides little or no analysis of policy choices. The exception is when contract and MOA employees collaborate with external technical assistance. In general the work of the PAU is not widely disseminated within or external to the MOA. The unit has a very small clientele and low levels of creditability.

The PAU needs to clarify its role within MOA. The Subsecretaries and Directors need to be aware of what the unit does and what the unit can do for them. This could be done in terms of technical heads meeting with the appropriate MOA clientele groups or a structured committee. The analytic output of the unit needs to be summarized in an easily digestible form for those in the Ministry. Regular briefing reports should also be widely distributed in an easily understood format.

As originally designed the PAU was to be the main source of demand for the output of the information components. Such has not proven to be the case. In the restructuring of the technical assistance, it is suggested that the long-term technical assistance for the information activities absorb the direction of the information and advising for the microeconomic sector focused activities of the unit. This would in part direct the efforts of the information system and microeconomic policy analysis into closer coordination.

The policy agenda should build on the current base but be much more focused on microeconomic analysis and be determined within the interests of the various ministry clientele. The many short term technical assistance studies already completed by foreign consultants can serve as a research library and can form the base for further activities but those techniques will need to be taught to the unit members. Without an educational approach, heretofore mostly lacking, institutionalization will never occur. The danger in the approach which has predominated the activities of the project thus far is that suggested policy reforms will be viewed as outside interference in national concerns. While this analysis has served the purpose of dialogue with senior members of the government an institutional setting for longer term policy analysis has not been built.

#### RECOMMENDATION

With strong economic leadership, at least two-thirds of the staff trained in economics, substantial training, well designed and implemented work plans, much better dissemination, and continued donor assistance (IICA, AID, and others), the unit could become a viable entity over another five to ten years.

It is critical that the unit demonstrate a capacity beyond diagnostics. It must begin to produce policy analyses or knowledge of the consequences of alternative sector policy changes on producers, consumers and the government. The unit must focus on sector policy options. An earlier recommendation related to moving the inter-sectorial component.

We recommended that a small unit (4-5 professionals) in the MOA and equal number of contract counterparts continue along with one long term person (devoting one-third time to the PAU) and selected short term technical assistance. Continuation of external support is a large gamble but the long term pay-off could be high.

However, if the PAU is absorbed by the planning directorate the strategy should change. The project resources for the PAU sector should be shifted to further support the macroeconomic

linkage with the Central Bank as well as to fortify the sectorial policy analysis of IDEA

(d) CAN THE INSTITUTIONALIZATION OF THE PAU BE REALIZED?

The evidence on institutionalization, resulting from many USAID agricultural policy projects, is not encouraging. Most units have not remained viable when USAID funding ceases.

As indicated in the previous recommendations, if continued support for the unit is finalized it is reasonable to expect some greater institutionalization.

RECOMMENDATION

In addition to implementing the previous recommendation, there are at least three necessary conditions. These are a specific law mandating agricultural economic policy analysis and research support, an effort to equate the salary levels for such professionals with other government entities and a strong sector focus on agricultural policy analysis.

(e) HOW TO BUILD ON THE REASONABLY GOOD FOUNDATION ESTABLISHED BY IDEA?

It is widely agreed that private sector understanding and positive participation in the agricultural policy arena is a necessity. IDEA has made a creditable start but must focus its activities to become the source of independent and impartial analysis of policy issues in the macro, agricultural and natural resource areas.

Operationally there are a number of suggestions to sharpen the focus and keep the policy analytic orientation to IDEA. First the macroeconomic element of the technical assistance for the PAU should be moved to IDEA. This would provide some initial in-house capacity at policy analysis in this area as well as professional support for the sector oriented policy analysis work.

In an environment where policy analysis is little known or appreciated, the real hope for IDEA is to be an impartial source of analysis and a neutral forum for discussion between the public and the private sector. Too close an identification with the current government or with particular private interests or point of views will lead to a diminished effectiveness.

RECOMMENDATION

IDEA should receive continuing operational and endowment

support      Such support should be conditioned on a number of events      These include

- 1      The appointment of a director or sub-director with training and experience in agricultural economics from within ECUADOR
- 2      The appointment of an administrative assistant with management and development (fund raising) skills
- 3      The development of a long term workplan that is approved by the board of directors      The workplan should have the mandate to focus on agricultural policy research, its dissemination and organized discussions
- 4      The development of linkage agreements on agricultural science with FUNDAGRO and the MOA      Also there should be agreements with the Central Bank and the Ministry of Finance

As related to the workplan, we recommend there be a small macro or inter-sectorial component and a slightly larger micro or sector component      There should be a prioritizing of the sector component to concentrate on policy choices in areas such as marketing, natural resources (water resource pricing, incentive policies for reforestation, etc ), comparative advantage in exports, incentives for public and private rural industrialization (credit, tax incentives, technology transfer policies, etc ), and possibly food security with a focus on distributional issues

Hopefully, there would be support for a 3 to 4 person staff, one local macro economist and one long term technical advisor in macro policy and two local plus short term advisors for the sectorial policy analysis

IDEA should strive to produce and disseminate agricultural policy research knowledge      It should strive to be identified as a major contributor to such knowledge without being an advocate

(f) WHAT ACTIONS SHOULD BE TAKEN ON THE PAU IN GUAYAQUIL?

Presently, the Guayaquil leadership lacks an administrative structure and understanding of the functions of policy analysts      Also, it appears that the project design failed to view Guayaquil as a special condition

Under the present leadership in the MOA at Guayaquil, the preference is for a planning unit that would absorb the PAU      This is an unfortunate reality

RECOMMENDATION

If the PAU survives in Guayaquil, additional project efforts should be directed at fortifying the unit. Actions should include short term technical assistance responding to major policy issues in a collaborative policy analyst mode. Also, the changes suggested for IDEA will clearly require more collaborative efforts with policy analysts in Guayaquil.

If the PAU is absorbed by the planning unit in Guayaquil, project emphasis should be given to IDEA and to linkages of the Quito PAU with colleagues in the Central Bank. Undoubtedly, policy research by IDEA and the new linkage with the Central Bank will have a major audience on the coast.

## 2 INFORMATION SYSTEM

- (a) IS THE MIX OF ACTIVITIES THAT PRESENTLY COMPRISE THE AGRICULTURAL SECTOR REORIENTATION PROJECT INFORMATION COMPONENT APPROPRIATE?

The national agricultural information system, as defined in the Project Agreement, is designed to provide information needed for agricultural policy analysis and development, planning, and making management decisions regarding agricultural enterprises. Its parameters do not include extension-type information disseminated to farmers and rural families concerning crop and livestock production practices, health, nutrition, etc. Nor do they include macro data such as household surveys, employment surveys and similar types of information also needed by policy analysts and decision makers.

In the context of the above definition, present information component activities are appropriate. Their successful development and integration into an information system will provide a solid base and framework for development of a more comprehensive system over time.

The Agricultural Information System design prepared by the MOA and Sigma One can provide a useful blueprint for continued development of the system, provided it remains a dynamic plan that is reviewed and updated periodically to reflect experience gained and changing needs and opportunities. It must be emphasized, however, that this is a plan for the future that can be successfully implemented only if each new activity undertaken is developed and integrated into the system without exceeding the capacity of the system to implement it.

The Information System is still in its infancy, and MOA capabilities and resources--human and financial--are limited. Therefore, with rare exceptions, no new activities or subactivities (narrowly defined, and within project agreement parameters for project activities 4-6) should be undertaken until

those presently being developed have been integrated into the planned system and institutionalized

#### RECOMMENDATION

That no additional activities or subactivities be undertaken through the remainder of the project. The computer center presents a special case, and is a specific issue

- (b) HAS PROGRESS IN DEVELOPMENT OF A NATIONAL AGRICULTURAL INFORMATION SYSTEM BEEN SUFFICIENT TO JUSTIFY CONTINUED AID SUPPORT?

Although uneven, it can be seen from Section III B, National Agricultural Information System Outputs, that significant progress has been made in development of all four activities as activities. However, progress in integrating them into an information system has been very limited to date, and the institutionalization process has lagged seriously. Such a situation at this stage of the project is not unexpected.

Development and institutionalization of a multi-component information system is a complex process that requires time. The first step must be to develop selected basic components of the system to the point that they have established their own identity and viability, and can effectively interact with each other. The activities comprising the information component have now progressed to that stage, although the role and responsibilities of the computer center have still not been clearly established.

In the experience of the evaluators, significant progress in development of a system and its institutionalization typically requires at least three to five years of concerted effort with strong support from the host country government. Thus, the time frame projected in the Project Paper for institutionalization of the agricultural information system was unrealistically short in the judgment of the evaluators. Institutionalization has been further set back by failure of the GOE to meet its commitments under the Project Agreement to establish and staff required positions and allocate budgets for the several activities.

To summarize, progress to date has been more than sufficient to justify continued support to the information component. That support should be refocused, however, as discussed under Issue three below.

#### RECOMMENDATION

That support to the information component be continued through the present PACD (Project Activity Completion Date), and that an extension be considered provided that progress in

development and institutionalization of the national agricultural information system has been sufficient to justify same

- (c) IF SUPPORT IS CONTINUED, IS THERE NEED FOR A CHANGE IN FOCUS? IF SO, WHAT SHOULD BE THE AREAS OF PRIORITY EMPHASIS THROUGH THE REMAINDER OF THE PROJECT? WILL THIS REQUIRE CHANGES IN THE PROJECT AGREEMENT --ANNEX 1?

It follows from the foregoing discussion of progress to date that a significant change in focus of project support is needed for the remainder of the project. Development of each activity must continue, as none (with the possible exception of the agroclimatic impact assessments) has yet reached the stage at which it has the capability to move forward securely without assistance. However, the major project thrust should shift from activity development to information system development and institutionalization.

In reality, the recommended refocus is in many ways a return to the original project design, but with a major shift in emphasis from "activity" to "system". It may be desirable to amend the Project Agreement to reflect the strengthened system orientation.

At the present time, an excessive amount of attention continues to be focused on the activities per se. There are valid reasons for this situation, such as lack of a fulltime MOA Project Director, MOA-assigned staff and budgets, the necessity to "produce" to meet project output requirements, the confusion resulting from the decision of AID to provide technical services for Activities 1-6 through one contractor and for Activity 7 (Computer facilities) through another, and the recognized need for further assistance in developing the activities. Nevertheless, a shift in emphasis is now urgently needed.

Five areas of priority need, the first four of which feed into the fifth, have been identified on which project support should focus sharply during the remaining months of the project:

- o Coordination
- o Training
- o Quality improvement
- o Dissemination
- o Institutionalization

Lack of COORDINATION now presents one of the greatest obstacles to progress in integrating the four activities into a system. The need for more effective coordination exists among the MOA divisions involved in information component activities, between the MOA and INEC, and between the MOA and other entities.

such as the Central Bank. The project's policy component should be one of the primary users of information developed by the information system. Yet, there appears to be relatively little interaction and coordination between the two components. Although most information component activities are being developed in MOA divisions, INEC is a critically important collaborator in the crop and livestock reporting activity, as is INAMHI in the agroclimatic impact activity. Coordination between INAMHI and the MOA agroclimatic impact unit is good, but MOA/INEC coordination seriously needs strengthening.

Within the MOA, the agroclimatic impact assessment unit is located in the Regionalization Division. Other sections in that Division have extensive knowledge and information of value to this activity and vice versa of which maximum advantage should be taken. For example, information available through the Division on soils, crop characteristics and water resource potentials, and the maps they have developed should be of particular interest not only to those working in Activity 6, but also to those in Activity 5.

The computer center should support all other activities. As the Director of that center commented, they can do so effectively only if they know what other activities are doing and those in the other activities know the kinds of support the computer center can provide.

Numerous other examples of the consequences of lack of coordination and the opportunities for enhancement of the information activities and system could be cited. Yet, the team found wide consensus among those involved in the project that lack of coordination and guidance was a major problem that should be immediately highlighted and appropriate action taken to correct.

TRAINING, to this point, has been largely activity-oriented.

Primary emphasis should now shift to training and orientation in the process of developing and managing an information system, including coordination and team effort. This is not meant to imply that all specialized training should cease. On the contrary, some such training must continue. The end user courses started recently by the computer center are vitally important.

With rare exceptions, such training can be provided most effectively on the job--during which the staff in training can work daily with someone experienced in the field, gradually assuming more responsibility and leadership as his/her capability increases. All training (whether activity- or system-oriented) should stress quality improvement, knowing the information needs of users and presenting it in forms appropriate to specific user.

needs, and continuous feedback and process evaluation. Attention should also be given to orientation and training of potential users in how to access and utilize information available through the system.

This proposed shift in training priorities is consistent with the strongly recommended change in focus of project support to the information component. Among other things, its adoption will require a shift in both the nature and quantity of technical assistance needs as discussed below under Issue 4.

QUALITY IMPROVEMENT is needed in all activities to assure that the system's users receive timely, reliable, relevant and properly processed information presented in forms appropriate to their needs. Quality should receive priority over quantity during the foreseeable future. For example, no new market reporting centers should be established until the quality and scope of information emanating from the existing 26 reporting centers have met rigorous quality standards. The same principle applies to studies designed and conducted under the crop and livestock reporting activity, and calibration of phenological models to improve crop production forecasting in the agroclimatic impact study.

Also in the interest of improving quality of output, there may be occasions where some expansion is required and can be managed. As an example of this seemingly contradictory statement, more primary climate monitoring stations are needed (about 15-16 in the Sierra and 4-5 on the Coast) to take microclimates into account. As a part of this same activity, agroclimatic data should be developed by geographic zone, and some work in digitizing soils data would be desirable. The agroclimatic impact assessment group has the capacity to handle the additional workload that would result from addition of these activities.

The ultimate responsibility of the information system is to DISSEMINATE USEFUL AND RELIABLE INFORMATION to its users presented in forms appropriate to their specific needs. To accomplish this objective, the needs of those users must be known, constant feedback received to determine whether those needs are being satisfied, and user training organized to help them take fullest advantage of the information available.

The Market News Service issues a daily bulletin to approximately 22 MOA offices, the press, radio, and television. Distribution is through two channels--by messenger, and a microcomputer network. Aggregated data is presented in weekly reports distributed to 200-250 users. Recipients include those on the daily distribution list plus other MOA units, producer associations, universities, the central bank, other ministries,

the flour industry, libraries, embassy commercial offices, IDEA, radio, television, journals, and other companies. The weekly reports are distributed via messengers and the postal service. Annual reports are also published and distributed fairly broadly.

Although market news reporting is rapid and extensive, major quality improvements are urgently needed. At the present time such information is only tabulated before distribution. No analyses are made of the information, and all recipients receive the same information in the same format--presentations are not tailored to the varying needs of different user groups.

Other factors to be considered in information dissemination include the degree to which potential users are aware of the information available to them and how to access it, and the degree to which users have the capability to make use of the information in the form in which it is received. Observations and feedback received by the evaluators indicates that a large proportion of the potential users are not aware that such information is available or how to access it, and do not have the ability to analyze and use the information effectively in the form in which it is presently received.

Agroclimatic information is summarized and published every ten days. At the present time, however, these presentations suffer some of the same deficiencies described above for market news.

These examples clearly illustrate the need to focus sharply on improving the dissemination process from the quality of information generated through its processing, presentation, and distribution.

INSTITUTIONALIZATION of the information system will require a commitment by the government to support it on a continuing basis with sufficient resources (including qualified personnel) to provide stability of development and operation. Coordination, training, quality, and dissemination are also essential to both development and institutionalization of the system. It is for this reason that a change in project support focus is considered vital to the ultimate success of the project.

Activity 4, Market News Service, has achieved much since its formation, including establishment of 26 market reporting centers, and dissemination of information daily, weekly and annually. It is now time to consolidate the gains made to date. Although information is disseminated promptly, the same tabulated information is distributed to all users without analysis. The capacity of the Service to analyze prices and other market information should be developed to make the news releases and reports of greater value to the users.

Further training of market reporters is needed to improve the quality of information presently collected and to obtain information about other market characteristics. Improvement of the quality and scope of information obtained in existing centers should take precedence over increasing the number of centers.

Little progress has been made to date in establishing and reporting on the basis of grades and standards. Attention should be directed toward this need as soon as possible.

The Market News Service facilities need to be improved. For example, additional space is needed for efficient operation, and another microcomputer with printer (preferably laser) would greatly facilitate daily information processing.

Activity 5, Crop and Livestock Reporting, is coordinated through the MOA Statistics and Information Division (DEI), and regulated through a Special Commission on Agricultural Statistics. Responsibility for work carried out under this activity rests with the MOA and INEC (National Statistics & Census Institute). The DEI is charged with responsibility for development of the unified national agricultural information system (NAIS), as well as with specific crop and livestock reporting activities.

Progress in information system development and coordination by the DEI, although significant, has been impeded by lack of an MOA Project Director, several changes in DEI leadership, difficulties in coordinating activities with INEC, additional responsibilities assigned to the DEI that are unrelated to its statistical and coordination functions (e.g., handling MOA payrolls), and scarcity of resources that have resulted in too few qualified staff--six of the seven computer operators in the Division are contracted by Sigma One and paid with PL-480 funds.

In addition to ongoing studies and reporting activities, there is need during the remainder of the project to focus sharply on improving coordination and collaboration with INEC. Studies to be conducted, methodologies, dissemination of information presented in forms most appropriate for specific user groups, and potential contributions of and coordination with other agencies should be reassessed, and the division of responsibilities between DEI and INEC readjusted accordingly.

The project and DEI should direct major attention toward providing leadership in development and institutionalization of the information system, and in the types of training discussed earlier. Coordination, interaction, and information with external agencies such as the Central Bank should be cultivated and mechanisms implemented to facilitate such coordination. Internal coordination and information exchange, are of particular importance to this activity, and require much improvement.

There is need to take fuller advantage of resources and information available both within the MOA and outside. For example, the Regionalization Division has a wealth of information on soils, mapping, characterization of crops, and hydrology that would be relevant to work conducted under Activity 5.

Computer needs in DEI should be reassessed in relation to work in progress and projected, taking into consideration the probability that use of their computers for payrolls and other non-DEI work may soon be transferred to the Computer Center. INEC output is constrained by lack of adequate computer facilities, and their needs should also be reassessed.

Activity 6, Agroclimatic Impact Assessment, is the most advanced of the four activities in terms of its internal coordination and progress toward achieving its objective of expanding and improving systems for delivery and analysis of information about climatological conditions and their impact on crop productivity.

The Agroclimatic Impact Unit in the Agrarian Regionalization Division has principal MOA responsibility for this activity, with INAMHI as co-counterpart. Coordination between the two is good, and information and data flow freely between them.

Major needs during the remainder of the project include improving coordination with other project activities, completing calibration and verification, just initiated, of two additional crop yield models, and improving the strategy and form of information dissemination to facilitate its adequate utilization by the ultimate user.

In addition to its present equipment, the MOA agroclimatic impact unit is in need of a microcomputer (ps2/80 type with 2 Mb of memory) with a 1024 x 1024 high resolution monitor, a 6-8 color plotter with a minimum width of 0.7 m, and the respective graphic packages to permit computerized mapping to evaluate agroclimatic events (droughts, floods, etc.) and produce thematic maps used in agroecological zoning. Outputs from this equipment will complement development of the crop yield models.

Activity 7, Computer facilities, is the least advanced of the information component activities in terms of expected outputs. Determination of equipment needs was made largely in isolation from the ultimate users. Delivery to Ecuador of computer equipment was delayed by about two years, with the result that some, principally the minicomputers, was obsolete when received. Some software is unsuitable for use with agricultural statistics. One of the minicomputers, programmed for Guayaquil, has not yet been transferred to the Guayas Subsecretary or installed.

A computer center has been established, but is not yet fully operational. Other than the center director, all staff are temporary contract personnel. The center is designed to serve all other project activities. To date, however, there is little communication between the center and the other activities and the microcomputers have not been linked into the system.

E Andrews (September 1988) gave special emphasis to the computer facilities in this evaluation of the national agricultural information system. His assessment of both administrative and technical specification flaws is thorough, and appears to be on target in view of the present computer facility situation. Basically, the needs and demand assessments and determination of alternative computer systems were done in reverse order. An important recommendation with which the present evaluators concur is the idea of developing an agency responsible for computer time sharing support to different GOE agencies. There is a difference of judgment, however, with respect to location of the third minicomputer in Guayaquil.

In addition to the overall project needs for coordination, etc., discussed earlier, the computer center is in need of an outside advisor for a period of at least six months to assist in development of the information system data base and its use. In essence, this consultant should serve primarily as a catalyst between the computer center and other project activities, as well as with other institutions outside the MOA such as INEC, Central Bank, and CONADE.

The role and responsibilities of the computer center, and the center's relationship to other project activities and collaborating institutions need reassessment and clarification. Personnel needs then should be reassessed, and MOA staff should replace contract staff as a major step toward institutionalization.

As a first approximation, computer center responsibilities should include developing a data base for the information system, supporting all project activities by providing the necessary outputs (for further analysis) from the data base to specific users, storing all regional and national historical and national program survey data, providing electronic mail service to MOA, other related agencies, and international agencies, interactive processing and analysis to be done when microcomputers cannot be used because of the type of analysis, large data sets, etc., and providing administrative and financial accounting support to MOA.

Mini and microcomputers can be used interchangeably to do most small to medium operations. There is no particular recipe on what to do with the mini and microcomputers. It depends on the tasks and functions, and priority of each activity.

The computer center is presently working on three subsystems agreed upon with activities 4-6 and other MOA personnel agricultural production, crop programs, and auxiliary information (provides all codes for weights, measures, and technical definitions)

Staff of other MOA agencies and relevant outside institutions need orientation and training in how to utilize the computer services effectively. The end user training courses recently initiated by the computer center are a good start in this direction.

Minicomputer software received by the computer center is not suitable for use in developing and managing the type of data base required for the national agricultural information system. At present time the available programs Fortran and C are not the most appropriate to be used to access the data base because the former was developed for scientific operations mainly, and the latter is not well known to most programming personnel in Ecuador (they will need training not easy to get locally). The most desirable software for this purpose is a 4th generation program such as Oracle which has utilitarian programs that permit entry, exit and operation of the data base in less time and with less effort than the other alternative, Cobol (neither Cobol or a 4th generation program were received by the center). Cobol is a 3rd generation program used in association with SGU, the program provided to the center. Cobol is popular among the programmers and analysts of systems in Ecuador. The decision between Oracle and Cobol comes down to cost, time, and personnel. The COBOL is less expensive, but needs more programming time and, consequently, requires more personnel as well as programmer and user training. Both would be more appropriate to the programs currently available, Fortran and C.

The time is now appropriate to develop a regional data base at Guayaquil including regional and local data, and all relevant information from the various national programs. There is high interest in MOA/Guayaquil in developing such a data base, and the 18th floor of their building has been assigned for a computer center. The combination of need and interest lead to the conclusion that one minicomputer should be allocated to Guayaquil as planned.

As the first step in development of the regional center, an assessment is needed of the agricultural and related information requirements and needs for Guayas, and their compatibility with the national agricultural information system.

Once the needs have been determined, hardware and software alternatives to satisfy those needs should be identified, and the most appropriate configuration determined. Special factors relevant to computer installations in Ecuador, e.g. availability

of local service, should be considered as well as cost/benefit relationships

Although one of the minicomputers procured under the project is destined for Guayaquil, the equipment purchased is already obsolete, and the software unsuitable. Therefore, it is suggested that the possibility of exchanging this minicomputer as partial payment on a more adequate computer system be considered and researched.

The constraint on INEC's outputs imposed by inadequate computational facilities has been referred to earlier. Their full participation in and contribution to the agricultural information system are critical to the system's success. Therefore, support should be provided through the project or other means to meet at least the short term needs of the Institute.

A network of multi-user microcomputers used primarily for data entry and secondarily for data processing could provide a short term solution. With this added capacity, there should be significant improvement in producing agricultural data on time, as INEC has staff trained in this computing system. (Such a network was requested by INEC in 1987. The equipment received under the project, however, consisted of six microcomputers with an unproven technology and insufficient capacity to incorporate one round of annual surveys conducted by SEAN.)

Over the medium term, major improvement in the INEC computer facilities will be required. A preliminary analysis of their needs made by J. Davison (August 1988) should be used as the point of departure for an in depth assessment of INEC's needs, and the computer configurations that can satisfy those needs most cost effectively.

#### RECOMMENDATION

That support to the information component be modified for the remainder of the project to focus sharply on five areas of priority need--coordination, training, quality improvement, dissemination, and institutionalization.

That a fulltime MOA Project Director be appointed to coordinate all project activities, facilitate external coordination, and assume PL480 responsibilities.

That a technical group be activated and formalized to facilitate internal coordination of information component activities, that the group be comprised of the MOA Project Director, leaders of Activities 4, 5, 6, and 7, one representative each from INAMHI and INEC, and, as an ex officio

member, the Contractor project manager, and that chairmanship of the group be rotated at six month intervals

That training activities be intensified, but refocused toward the process of developing and managing an information system (it is recognized that technical training must still be continued to meet specialized needs) Orientation and training of potential users of information generated by the system receive increasing attention and support

That through the remainder of the project, greater emphasis be placed on improving the quality of information system production rather than on its quantity Increased attention be given to determination of users' information needs, and its presentation in formats appropriate to specific user groups

That mechanisms be developed and tested to provide continuous monitoring of information dissemination and that result in true communication between the information source and its users

That approximately 16 more agroclimatic stations in the Sierra and 4-5 on the Coast be integrated into the INAMHI communication (radio) network No new market reporting centers be established in the foreseeable future--until such time that the quality and scope of information collected in the existing 26 centers have met rigorous quality standards

That the Market News Service be provided with an additional computer with laser printer to facilitate daily information processing Recommendations of M Thorner (April 1988) to improve Market News Service computational programs and of D Swanson (January 1989) to improve its reporting formats be implemented as rapidly as possible The capacity of the Market News Service to analyze data and disseminate it in presentations appropriate to specific user groups be expanded The MOA replace DEI contract personnel with MOA staff to facilitate institutionalization of the Market News Service and the information system

That the Statistics and Information Division be assured continuity of leadership by the MOA, and that the MOA replace present contract personnel with MOA staff to facilitate institutionalization of the information system Also that appropriate steps be taken urgently to formalize and improve DEI-INEC coordination and collaboration, starting with a reassessment of their present and projected capabilities and crop and livestock reporting studies and activities

That present computer capabilities and projected needs be included in the above-recommended reassessment, and that, if necessary, present equipment and software be supplemented to

remove computational incompatibility as a constraint to production Microcomputer and related equipment (described above) needed by the MOA agroclimatic impact unit to supplement present equipment be provided to that unit. A task force with representation from the computer center and all of its presently recognized users be formed to review and clarify the center's role and responsibilities, and prepare guidelines concerning same for consideration and action by the MOA. Software suitable for the needs of the computer center be provided as expeditiously as possible.

That a regional data base be established in MOA/Guayas, following the process outlined in the analysis above, and that the minicomputer already procured for this purpose (or a more suitable system) be transferred to that center.

That a network of multi-user microcomputers with appropriate software be provided to INEC to replace the six microcomputers already provided under the project.

That an assessment of medium term needs for upgrading and expanding INEC's computational capability be undertaken in the near future.

(d) WHAT TYPES OF SUPPORT WILL BE MOST CRITICAL IN THE INFORMATION COMPONENT?

Acceptance of the proposed information component change in focus will require a reassessment of the nature and amount of technical assistance required during the remainder of the project. Future technical assistance should be selected and scheduled to contribute most effectively to training as defined earlier, coordination, quality improvement and dissemination. This implies that fewer technicians, but with longer assignments, will be needed. It is, of course, recognized that some highly specialized areas will require more narrowly focused assistance.

Although it was not possible to examine technical assistance needs in detail, the following is offered to illustrate the kinds needed for the refocused project (includes only technical assistance for information component)

Long term

17 pm - Continuation of project manager/information systems specialist  
12 pm - Specialist to assist Activity 5

Short term

2 pm - Grades & Standards  
4 pm - Interpreting Satellite Imagery

4 pm - Land Use Zoning & Mapping  
6 pm - Activity 7  
8 pm - Unspecified (to be determined as need is identified)

Continuation of the long term project manager/information systems specialist position is needed to maintain continuity of support to the project. The scope of work for this position should be modified, however, to allocate at least half time to project administration and management, and interaction with key MOA and other agencies involved in or impacting upon the project. The most critical qualifications for this position are understanding of and experience in information systems, the ability to interact effectively with people in diverse disciplines and at varying levels, and extensive knowledge and experience in project management.

The long term specialist to assist Activity 5 should divide his/her time approximately equally between MOA/DEI and INEC, focusing specifically on coordination, training, and information system-building in addition to providing technical assistance to both in sampling and survey methodology, organization and implementation of specific studies, and related areas. The major technical expertise of this long term specialist should be in survey design and methodology, sampling, data processing and/or related fields, but he/she should also have the ability and desire to work with host country counterparts on a co-worker basis, and should have the ability to perceive the information system as a whole, and how his/her activities fit into it. A major role of the consultant to Activity 7 will be to serve as a catalyst in improving coordination and collaboration between the computer center and other project activities. This consultant should serve as an advisor to the task force recommended for establishing guidelines for coordination and responsibilities related to the computer center and its users.

Major tasks to be accomplished by the short term technical assistance in grades & standards, interpreting satellite imagery, and land use zoning and mapping are self-evident. The areas of specialization for the unspecified short term technical assistance will depend upon the specific skills of the long term consultants and the computer specialist, and needs identified by the Information Component Technical Group.

In order to take advantage of the investment in computer hardware and software already made by the project, some additional resources will be needed to supplement or replace some items not suitable for the purposes for which they were provided. Such items are identified above for each of the information component activities.

In addition, a modest allocation of resources to support some innovative activities related to information dissemination and assessment or planning activities should pay high dividends

#### RECOMMENDATION

That technical assistance needs be reassessed and reprogrammed to conform to the needs and approach discussed above

That the MOA technical group and/or the MOA Project Director be given responsibility for programming future technical assistance, in consultation with the Contractor and USAID

That consideration be given to supplementing equipment already provided when that equipment or software does not satisfy the user's need

That a modest allocation of funds be reserved to support innovative activities related to information dissemination, needed assessments, and planning activities

## 3 GENERAL ISSUES

- (a) WHAT ACTIONS CAN BE TAKEN TO STRENGTHEN THE DISMAL STATE OF THE AGRICULTURAL ECONOMICS PROFESSION IN ECUADOR?

Ecuador unlike many developing countries has not encouraged the development of agricultural economists. The severe shortage stimulated the large "demonstrational effort", plagues the PAU, limits IDEA in contracting and is a severe restriction on the general development of agricultural policy.

## RECOMMENDATION

An immediate action would be to encourage the recently established training committee, consisting of PAU, IDEA and AID representatives, to move on implementation. The committee should consider the following options:

a A 3 to 4 month short course for PAU and IDEA personnel implemented at the Catholic University in Quito and Guayaquil. The program would consist of a focus on conceptualization, design and methodologies on selected agricultural policy options.

b The possibility should be considered of incorporating the concept of the "Año Rural" with other universities. A selected number of university students could serve as technicians to PAU and IDEA professionals.

c The participation in the new program at the Catholic University, Quito. This is an undergraduate program in economics with a specialization in agriculture. The program is to be initiated in 1990.

d The support of a feasibility study on an M.S. program in agricultural economics at one Sierra and Coastal University. The basic questions concern the demand for such an effort, location and costs. If the demand is adequate, there are many questions to be addressed on structure, content, support, linkage with research and the policy analysis unit and cost comparisons with external options in Latin America.

- (b) WHAT ADDITIONAL ASSISTANCE CAN BE PROVIDED FOR ENHANCING THE DATA BASE FOR MACROECONOMIC ANALYSES?

There are at least two on-going USAID activities that relate to this question. One is the assistance offered under this project to INEC on a future household and nutrition survey. There is another USAID project (No. 518-0050) with the Ministry of Finance. This effort assists in resolving problems in

exchange rates, public expenditures, credit and debt management  
Both activities are involved in data base improvement

There are remaining data problems associated with an outdated census, the poor quality of the data set on employment more recent data for weighing the consumer price index and among others the up-dating of technical coefficients in the input-output matrix

#### RECOMMENDATION

With an increasing interest in macroeconomic research on intersectorial relationships and particularly on the agricultural sector, an enhanced data base is important. Exploratory efforts should be made on appropriate actions that might be taken to enhance the macro data base. The analysis of policy actions impacting agriculture are dependent upon a more up-to-date and complete data base.

#### (c) WHAT ARE THE ADVANTAGES OF A ASRP DIRECTOR APPOINTED BY THE MOA?

The MOA has never appointed a project director for the ASRP. This person could have served to coordinate the information components and to link those units with the users.

The project director could also serve to produce annual plans of work and budgets for each project activity. Another function would be to build liaison and communications between project activities and MOA divisions as well as with other governmental agencies.

#### RECOMMENDATION

The need for coordination and enhanced communications is very obvious. Forceful efforts should be made to establish this position and to find the suitable candidate.

## APPENDIX A - EVALUATION TEAM

## PROJECT EVALUATION SPECIALIST (Team Leader) Dr A J Coutu

The team leader is associated with APAP II and N C State University. He has participated in agricultural policy analysis evaluations in Latin and Central America.

Dr Coutu has over 25 years of experience in Agricultural Development, including long term assignments in Peru and Washington, D C, under contracts with USAID.

As an agricultural economist, he had participated in the preparation of project identification documents, project papers, project evaluation and special study assignments with many USAID missions. He was trained at the University of Connecticut, Harvard University, Duke University and N C State University.

Dr Coutu was on leave from N C State University to USAID/ from mid 1970 to mid 1973. He was the head of a new office of agricultural sector analysis in the Technical Assistance Bureau of AID. In this office he established an administrative unit to focus on agricultural assessment methodologies, programmed a series of projects on agricultural policy analysis and implemented agricultural sector assessment and planning programs in South Korea, Thailand, Mexico and other locations.

He has taught courses in economic development, production, economics and economic principles as well as being a contributor to the development literature with a book on Peru, many papers and journal articles. He also serves as a research coordinator on the APAP II project and as the coordinator of long term agricultural service development project in Peru along with participation in agricultural science projects in Costa Rica and Uruguay.

## AGRICULTURAL POLICY ECONOMIST Dr George Johnston

The agricultural policy specialist is an independent consultant with broad research, teaching and extension service experience. He has published several books on policy analysis issues. He has participated in project identification and design and financial and economic analysis of projects in Latin America, Africa and Asia.

Dr Johnson has a PhD in Agricultural Economics from Michigan State University and a BA and MA in International Affairs specializing in Latin America from George Washington University. He served in the Peace Corps in Bolivia. He has also been an extension agent with Oregon State University. After receiving the PhD he taught for few years for Eastern Oregon.

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State College Courses included natural resource policy analysis, regional economics and public program analysis

Dr Johnson has had an affiliation with agricultural development projects on a peace corps coffee project, as an agricultural extension agent, as an economics professor, an economic evaluator of development projects and as a contributor to the agricultural policy literature

Dr Johnson has experience in program evaluations in Honduras, Nepal, Uganda and the Sudan He is also the editor of a new book, "Natural Resource and Environmental Policy Analysis Cases in Applied Economics", Westview Press, 1988

AGRICULTURAL INFORMATION SPECIALIST DR Howard E Ray

Dr Howard E Ray, retired Vice President for Agriculture of the Academy for Educational Development, has twenty-five years of experience in international agriculture His overseas experience includes approximately fifteen years of long term assignments in Brazil, India, Guatemala, and Sri Lanka in addition to numerous short term assignments in Latin America, Asia and Africa He has served as the Academy's Chief of Party for three major projects, participated in development of concept papers, PIDs and Project Papers, written project proposals, and evaluated projects

Dr Ray holds BS and MS degrees from Kansas State University and a PhD from the University of Minnesota Before entering the international arena, he gained experience in research, teaching and extension at Kansas State University, The University of Arizona, and the University of Florida Everglades Experiment Station

Highlights of Dr Ray's international career include two years in Northeast Brazil as Soil Science and Agricultural Extension Advisor, five and a half years in India as the Ford Foundation Intensive Agricultural Development Advisor and Deputy Agricultural Team Leader, about four years in Guatemala as Field Team Leader of the Basic Village Education (an experimental agricultural communication project) and Basic Rural Education (non-formal education for rural people) projects, and nearly four years in Sri Lanka as Chief of Party for the Agricultural Education Development Project More recently, he served as Project Director of the Worldwide AID/S&T Communication for Technology Transfer in Agriculture Project with field sites in Peru, Honduras, Indonesia, and Jordan

Dr Ray has written extensively in the fields of soil science, agricultural development, technology transfer, and agricultural communication One of his major writings is a three

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part monograph on incorporating communication strategies into agricultural development projects

AGRICULTURAL INFORMATION SPECIALIST Ing Jaime A Carrera

JAIME A CARRERA is an Ing Agronomo from Guatemala with expertise in the fields of Rural Development and Planning His current activities are in the areas of Technology Transfer and Training He is currently a professor at the Universidad Catolica Rafael Landivar in Guatemala teaching courses in the preparation and evaluation of projects, rural development, extension, and marketing in agriculture

He has been a consultant to DNUP/FAO, IICA, Academy for Educational Development and AID on different projects that include Technology Transfer, Rural Development and Policies in Agriculture

Ing Carrera has fourteen years of experience in programs of agriculture in Latin America including short term assignments in Bolivia, Honduras, Costa Rica, and Nicaragua He gained experience doing research on problems of the rural population and basic rural education More recently he served as a consultant in Guatemala on two projects for the U N Development Programs and FAO, respectively One as an advisor to the processing, organization and analysis of the agricultural and livestock statistics and the other as the major economic counselor in the development of strategies and policies for the agricultural sector

Ing Carrera has written in the fields of technology transfer, agricultural communication, planning of development projects, and the environmental situation of Guatemala

INFORMATION SPECIALIST Dr Julio Chang

Dr JULIO A CHANG is an Agricultural Economist from Ecuador who has nearly ten years of experience in international agriculture He spent about three years working for Standard Fruit Company, Ecuador and Honduras, as agricultural supervisor of several bananas farms and as cattle farm manager He has also served as an economic advisor to the Department of Agricultural Economics, Ministry of Agriculture, Sto Domingo, Dominican Republic, evaluating an agricultural sectoral project, helping run a quarterly geographical survey of the different crops produced at regional and national levels, and teaching personnel of the ministry the use of computer applications appropriate for the identification of relationships among sector, subsectors and farm level variables Dr Chang has also served as the Socio-Economic team leader of a Farming Systems Project for the Caribbean Agricultural Research and Development Institute (CARDI), the overall purpose of this project was the design of a

general methodology for analysis of small farm systems and to identify and provide a socio-economic evaluation of the farms multiple cropping patterns of the Windward and Leeward islands, West Indies

Dr Chang holds a degree of Agronomo from el Zamorano-Honduras and BS, MS, and PhD degrees in Agricultural Economics, Marketing and Quantitative Methods from the University of Florida. He is currently working for the Food and Resource Economics Department at the University of Florida, as an Associate Researcher

His major interests are rural development, price analysis, industrial organization and marketing oriented problems. He has also had experienced in farm management and record keeping, marketing and pricing of agricultural products, surveys of consumption and production patterns, and gained experience on several statistical packages for the quantitative analysis of data-information sets as well as in the use of software and hardware for micro, mini and main frame computers. Dr Chang has written in the fields of generic and brand advertising for agricultural products, and diagnostic and forecasting using Box and Jenkins models

## APPENDIX B PERSONS CONTACTED

Lia Aguirre	Subger Economic Studies, Central Bank
Diego del Alcazar	Director, Data Processing, INAHMI, Ministry of Agriculture
Frank, Almaguer	Mission Director, USAID
Marcelo Alvear	Comm /MAG
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Carlos Basantes	Market News Service Coordn
Carlos Bayas	Market News Service Ministry of Agriculture
Neptali Bonifaz	Director, IDEA
Loyd Brown	Sigma One
Alfredo Campuzano	Head, SEAN, INEC
Cesar Casares	PAU/MAG
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Guillermo del Pozo	Div Agrarian Region, Edafology Department
Haydee Delgado	Sigma One
Marcos Espinel	Former Minister of Agriculture
Juan Falconi	Central Bank
David Tschirley	IDEA/Sigma One
Ricardo Izurieta	Director, IDEA
Carlos Ferin	Executive Director, Cotton Program - MAG
Jaime Flores	USAID
David Franklin	Sigma One
Ralph Franklin	Sigma One
Julio Fuentes	Director, Computer Center Ministry of Agriculture
Econ Manuel Jaramillo	Dean of Economics, Catholic Univ
Diego Gandara	Director IDEA
Gustavo Gordillo	Market News Service
Duty Greene	Sigma One
William Goodwin	USAID/W
Leonel Gonzalez	IICA
Martha Lagua	Market News Service
Mario Lalama	PAU/MAG
Pablo Lozada	Head, Stat & Inf Division Ministry of Agriculture

Mario Lozano	Executive Director, Cacao Program - MAG
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Quentin West	IDEA/Sigma One
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