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INTERCOUNTRY EVALUATION OF AGRICULTURE SECTOR PROGRAMS
Colombia
Costa Rica
Guatemala

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by

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INTRODUCTION

This volume is one part of a four-part report on evaluation studies of the agricultural "sector approach" as it has been applied in Colombia, Guatemala, and Costa Rica. The purpose of this program of studies is to provide, through comparative analyses of the experience and of the approaches and methods utilized in each of the three countries, a basis for (a) development of general policy and guidance as to the use of an agricultural sector approach in other Latin American countries, (b) possible adjustments in current programs and projects and for consideration of future programs in each of the individual countries, and (c) consideration of possible changes in procedure and methods for analysis and processing of sector loans.

The original scope of work for this evaluation study was composed of a series of AID/W and USAID/Colombia staff suggestions. It included a rather detailed list of questions covering almost all aspects of the program. Limitations of time and the purposes of the overall program of evaluation have required concentration on particular aspects of that scope of work to the detriment of other aspects of it, especially those related to administrative aspects of the program. As refined, the evaluation is designed to examine in summary form the experience to date as a guide to future program policy and sector analysis methodology.

We have sought to examine the substantive and analytical issues involved in the sector approach as applied in Colombia and the results of its application rather than to evaluate the effectiveness of particular projects or programs. We have considered our task to be one of studying

and appraising (a) the nature and content of the sector strategy; (b) the adequacy of the analysis developed to support the strategy; and (c) the likely contribution of the strategy being followed to accomplishment of its objectives and to improvement of economic and social conditions in the sector. In view of the magnitude of the effort which has been put into it in Colombia and of the importance which has been attached to it in AID generally, we have given considerable attention to the mathematical modeling approach to sector analysis. We have also considered such questions as what effect the sector approach has had on the nature of the program being carried on by the GOC and of programs being assisted by AID.

Our approach in this Colombia section of the report has been to make appraisals in terms of accomplishments or lack of accomplishments of the program in relation to its own purposes rather than attempting comparisons with programs and approaches which have been followed elsewhere. We have avoided drawing conclusions as to whether the program and analytical methods are better or worse than those used in other programs. Instead, we have attempted to reach conclusions as to strengths, accomplishments, weaknesses, and shortcomings within the context of the program's own purposes and objectives to provide a basis for considering future sector stretegy, program content, and analytical methods.

No conclusions are reached in this section as to lessons to be learned from the experience with the sector approach in Colombia which might be generally applicable to use of such an approach or to its use in particular countries other than Colombia. Neither are comparisons made with approaches and programs adopted in other countries. Those tasks are, however, a part of the entire study and comparisons made and general conclusions drawn are incorporated into an overall report.

In view of the difficulties of establishing cause and effect relationships and limitations of time and data, we have been able to obtain only a very few general impressions concerning the relationship between the sector program and such factors as production, income, and employment in the sector. It has, however, been possible to reach some conclusions with respect to the influence of the sector approach on the allocation of resources to the sector, on the institutional structure for dealing with sector problems, and on the ability of the Colombian public agencies to plan, coordinate, manage, and evaluate sector programs and projects. The nature of the task as we have understood it and the limitations of time and data have resulted in our reaching only general conclusions as to actual results as compared with specific activity targets set up in AID loan papers and loan agreements.

The sector analysis paper prepared by USAID/Colombia (which has been accepted as setting forth the basic information, analysis, and description of the sector and the sector strategy), and the recent IBRD report on Colombian agriculture describe and appraise at length the current situation. Because so much of the evaluation has been done, there is no reason to repeat much of that volume of material or effort. Therefore, we have concentrated on identifying the points which we consider to be of particular importance, identifying the issues that require attention, and suggesting policy approaches that we believe desirable.

The report contains a Summary of Principal Findings and Recommendations as Chapter 1 followed by a number of chapters dealing with particular subject areas. Each chapter (except the last two) contains at the beginning a summary of major conclusions and recommendations in the particular subject areas. Analysis and more detailed conclusions and recommendations are

contained in the body of each chapter. This method of presentation involves a certain amount of repetition but permit users to examine it in such depth as their needs and interests require.

Drafts of this report have been reviewed and commented on by USAID/Colombia and staff of the LA Bureau. To accommodate suggestions, we made such changes as we considered appropria The findings and conclusions, however, are ours.

This report is based on an examination of documents and discussion with LA Bureau, USAID/Colombia, and GOC personnel. The team spent three weeks in Colombia in March and April 1973, including three days of visits to project sites. Upon completion of the field work in Guatemala and Costa Rica, one member of the team spent an additional week in Colombia in December 1973. It should be read and interpreted in the context of this limited time for examination and observation, the time at which the study was conducted, and the last dates (primarily 1972) for which data were available.

The evaluation was conducted by a team made up of personnel from AID and the American Technical Assistance Corporation (ATAC). Team members were:

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The findings, conclusions, and recommendations reflect the collective judgment of the team and are not intended to represent the official views of the Agency for International Development, any of its constituent units, or of the Colombian government.

Chapter 1

SUMMARY OF PRINCIPAL FINDINGS AND RECOMMENDATIONS

I. MAJOR FINDINGS

In order to show the basis for our recommendations, we have set down here in summary form the principal findings which led us to those recommendations. Supporting detail is included elsewhere in the report. We have sought to relate the findings to each other and to derive from them general policy and program implications for AID, including some fix on program alternatives.

We find:

A. Colombia has progressed rapidly in the past decade in addressing agricultural development. The major accomplishments have been:

- The Government recognizes the importance of the country's agriculture problem and has organized a structure of public agencies essentially suitable for dealing with them;

- Through experience and program efforts, both the Government and external financing agencies have come to appreciate the complexity and intractability of problems in the sector;

- Government support and the operating experience of the executing agencies have brought a number of them to the point where they can effectively plan and execute programs, coordinate with each other, and evaluate and benefit by their experience. The Government of Colombia thus has reached a relatively advanced state of institutional capacity to attack its agriculture problems;

- The ministerial planning authority, and the executing agencies, are engaged in a process of planning and carrying out experimental programs on a substantial scale which should provide useful experience needed to guide future policies and programs;

- Production and export of commercial agricultural products have increased. During the six years from 1967 through 1972, value added in agricultural production increased by 30.9% in constant prices. Agriculture's share of GNP has remained constant since 1966.

B. AID's role in this process has been profound. It is clear that AID's programs can take major credit for the fact that Colombia has a whole new generation of officials trained both in the U. S. and in Colombia, competent to handle Colombia's agricultural development problems and working in an institutional framework well suited to handle the unusually varied nature of Colombia's agriculture sector. This success has been achieved through technical and capital assistance and sector loan programs which have provided the framework for the necessary continued contact and dialogue with the Colombian Government and for the development and application with the Colombians, of innovative technical and administrative concepts. Besides the outstanding improvement in the quality of personnel, of project planning, and of execution of programs, the assistance clearly has resulted in substantial increases in the magnitude of Colombian efforts in the agriculture sector.

C. The sector approach, as it has been conceived in Colombia, has resulted in more integrated thinking about the problems of agriculture and has provided a basis for the consideration of significant questions about appropriate agricultural development policies for Colombia. In these respects it has demonstrated a distinct superiority over the results obtained in agriculture under the program loan approach. With the modifications suggested below, it can serve as the base for a more integrated approach to the planning and financing of Colombian agricultural development.

More specifically, it has resulted in:

1. A more integrated and administratively effective approach to agriculture by the Government of Colombia. Major elements of such improvement are:

   - a strengthened planning organization involving a sector level planning and budgeting group in the Ministry of Agriculture and similar groups within each agency in

the sector, as well as a process by which planning and budgeting done in the constituent agencies is coordinated by the central group which in turn performs the overall planning and budgeting function;

- specific and detailed arrangements for assignment of responsibilities for program and project implementation to institutions in the sector and for coordination of their activities on individual projects;

- a process designed to achieve a full and timely flow of budgeted funds for projects;

- a procedure for reporting performance and progress; and

- establishment within the Ministry of Agriculture Planning Office of a temporary sector analysis group.

2. Through the use of sector loans, the establishment of specific requirements pertaining to budgeting, internal management, and appraisal of performance. The provisions of sector loan agreements, particularly those in the 1971 agreement, have been an important factor in these achievements.

3. Major constructive changes in the considerations entering into the negotiation of loan agreements and in the methods by which funds are made available.

4. Significant increases in the total resources allocated to agriculture.

D. AID has made a major contribution to the definition of development problems of the sector through development of a formalized methodology for sector analysis by means of input-output and linear program modeling and preparation of a most extensive Sector Analysis Document consisting of:

A descriptive review of the Colombian agricultural sector;

- Discussion of Government of Colombia sector objectives, organizations, programs, and problems; and

- A summary of the formalized methodology together with strategy suggestions based on the results of application of that methodology.

E. A further important AID achievement consists in the establishment of methods of operation with the Government of Colombia, and within AID, which avoid many of the rigidities and contradictions of previous methods

of operation, and which provide both Colombia and AID with a more direct and effective means of dealing with the substantive aspects of sector problems and the provision of assistance to the sector.

F. The advances described have not yet succeeded in obtaining needed increases in overall agricultural production, productivity, and income, although the production and income of some individual farmers have increased. The tasks of defining what specific problems in agriculture are to be addressed, how they are to be attacked, and how much can be accomplished, remain to be completed.

It has not yet been demonstrated that the type of programs Colombia is now carrying out with AID support will result in a reasonably rapid increase in the rate of either economic or social progress in the agriculture sector. There is much room for questioning whether an assistance program which concentrates primarily on the provision of credit and technical assistance to small farmers (especially marginal and sub-marginal farmers) will have significant effects on total agricultural employment, income, or production. Lack of (and lack of opportunity to acquire) a minimum adequate resource base, managerial limitations, technology constraints, limitations in input and output market systems, the necessity for other supporting and complementary programs, all serve to dampen the possibility of success of such a program. There are too many farmers to be reached, infrastructure (marketing, transportation, etc.) is too inadequate, and under present conditions essential private investment in the sector is not likely to be forthcoming. Cost-benefit obstacles may prove intractable.

In this connection, adoption of the strategy derived from model solutions in the mathematical sector analysis theoretically would employ the increase in the agricultural labor force which is projected to take place

by 1975, plus a small part of the existing unemployed rural labor supply. The model solution foresees no increase in real wages of fully employed farmers. Value-added by agricultural production would increase by 30% over a six-year period. This is no greater than the increase from 1967 through 1972. The implied policy constitutes a design to improve the lot of a number of individuals engaged in agriculture, but would not result in major increases in factor income in the sector. In this sense, the suggested strategy is interim in nature rather than one which provides a long run approach to the problems of agricultural unemployment and subsistence level incomes.

The results of exercise of the model thus imply that a successful strategy for increasing the rate of growth of production and productivity may not be possible within the constraints of the application of existing use levels of technology and within present sector structural and factor relationships.

C. While a substantial amount of work on a sector analysis has been done which provides an informed basis for making some policy decisions concerning the sector, the effort to date has not resulted in a comprehensive, integrated, and interrelated sector analysis which is adequate as a basis for choice of a global strategy or strategies or for support of particular programs for development of the sector or for integrated action in major subsectors. Part I of the 1972 AID Sector Analysis Document represents an extensive description of the sector and its problems. It is useful for drawing intuitive conclusions and is an essential element in the development of a sector analysis. However, it is not analytical in character and no attempt has been made to draw from it conclusions as to appropriate strategies or programs. The mathematical modeling effort, the results of which as of early 1972 are summarized in Part II of the Sector Analysis

Document, is analytical in nature and represents a significant analytical achievement. However, it has not yet progressed to a point where it can provide sufficient basis for adoption of a strategy for development of the sector. We conclude that the mathematical modeling analysis does not yet support adequately strategy recommendations. This conclusion is based on the findings that (a) the cumulative effect of various characteristics of the model and of simplifying assumptions involved in its construction limit it as a reflection of reality and therefore as a basis for policy decisions; (b) successful implementation of the strategy derived from exercise of the model would require adoption of supporting and supplementary programs which are not identified and the practicability and implications of which in terms of costs and probable results have not been analyzed; (c) various alternatives for dealing with the problem of the small farmer are not yet fully analyzed; and (d) the strategy derived from exercise of the model is fundamentally interim in nature since achievement of the employment and income increased indicated as possible under model solutions would still leave a significant volume of rural unemployment and, while the income of those becoming employed (or more fully employed) would increase, the productivity and income per unit of employed labor and land would not be increased, and average family income would remain very low.

Despite the limited results so far, we believe that the use of mathematical models in sector analysis offers promise of being a valuable tool for considering agriculture sector policy and program alternatives. The mathematical analysis done on the Colombian agricultural sector has demonstrated the potential valuable contribution to development of such approaches.

Many of the shortcomings of the current analysis have been recognized by the analysis team and efforts are now underway, using new data, to overcome some of them. We are convinced, however, that some fundamental

adjustments must be made in the assumptions on which the model solutions rest and in the range and types of variables which the model is able to incorporate and address before the analysis can realize its potential as a decision-making tool. We do not think that this necessity has yet been fully recognized or that efforts now underway will be sufficient to remove the deficiencies.

H. The sector analysis, if it is to serve as a guide to adoption of a sector strategy, will need to consider broader aspects of agricultural development than is possible as it is presently elaborated. Such aspects include consideration of quantities of output and the urgent need to lower prices through lowering costs for both foodstuffs and feed grain. Experience is likely to show that the size and physical characteristics of many farms will not permit the efficient production of crops providing high returns to scale.

The Colombian agriculture sector consists of the sub-marginal and "transitional"[1] farm groups, the commercial subsector, including medium size and larger farms (and some smaller farms), large farms on which areas of good land are under-utilized, and those areas of the country in which large amounts of potentially productive land are little utilized or not used at all. These groups, while they may merge into each other in some cases, differ in their characteristics and in the contribution they can make to increased income, employment, to supply of food for the population, and to export earnings. An effective sector approach thus must be designed to differentiate among all these subsectors and deal with them rather than

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[1] Those small farmers who because of attitude, managerial potential, location and resource base potential, can have reasonable expectations of becoming a part of the commercial subsector.

being directed to only one; and programs need to be varied to meet the heterogeneity of the sector. To be effective in assisting in the choice of a strategy, or strategies, the analysis must make it possible to trace the effects of alternative courses of action on both aggregate agricultural income and production and on that of specific sub-groups in the sector. Much too little is now known of the resources and their potentials to support an adequate analysis.

Further, adoption of a sector strategy must involve consideration of the practical realities of the power relationships which affect the sector.[1] This includes such matters as the bureaucratic position, status, and power base of agencies operating within the sector and their relationship to each other and to groups outside the sector. The position of the political parties and political leaders on matters of agricultural and development policy; and other institutional factors likely to have important influences in developmental and agricultural policy and strategy.

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[1]The AID Mission Director particularly emphasizes the importance of this consideration.

II. RECOMMENDATIONS FOR FUTURE AID PROGRAM POLICY

We have stated the recommendations in general terms to fit the general character of the findings.

Ultimately, AID's policy and program decisions must derive from agreement with the Colombian Government. Thus, these program policy recommendations are stated in the form of alternatives, related to the major alternatives that the Colombian Government might choose. We recommend that:

A. AID should seek agreement with the Colombian Government to give highest priority to bringing the sector analysis to the point where Colombia can formulate a development strategy, goals, policies, and programs that will demonstrably result in a substantial rate of progress toward its announced development objectives.

B. The elaboration of the sector analysis should be the subject of a detailed Sector Analysis Action Plan worked out jointly with the Colombian Government, and with participation of the Colombian entities involved, and of the appropriate external development assistance agencies. The determination of the content and time-phased work plans of this effort should have the highest priority on the grounds that the presently inadequate level of sector analysis is the greatest obstacle to more effective agriculture development programs. Major elements of such a plan should include provision for:

- Internalization of the effort within the GOC to a greater degree than now contemplated.

- Critical review of all assumptions, both implicit and explicit, in the mathematical modeling analysis, including the organization of special studies and partial analyses to shed light on the difficult issues related to assumptions.

- Redesign of the system to remove as many unverified assumptions as possible through disaggregation by area, farm size, technologies, management levels, land classes and crop groups among others. Consideration should be given to the possibility of building separate regional models that link to a national model to achieve authenticity at least for such critical factors as labor and land supply and availability.

- Carrying out comprehensive data collection and survey work to supply material for analyses, a considerable part of which effort is now underway.

- Identifying and analyzing the implications, in terms of practicality, costs and results, of any programs necessary to support and make effective the central strategy alternatives.

- Expansion of the analysis to consider additional objectives, particularly substantially improved rural income through increased factor productivity.

C. If the Colombian Government agrees with this approach and wants AID to continue its close participation in the sector analysis process, AID should supply advisors and technical consultants as required and requested, and be ready to finance a major part of the work if needed to expedite the program.

D. In this case, if the Colombian Government so desired, AID should continue a sector loan program. We suggest that the content of such a program might be as follows:

1. As the highest priority item, assistance to the development of a comprehensive sector analysis within a context of internalization and institutionalization of a continuing process, and the development of strategies, goals, policies, and programs based upon such an analysis process.

2. Support of a series of partial analyses and field tests, and of the development of policies and programs based on them,

covering complementary areas of inquiry in such fields as credit, marketing, transport, and agro-industry, which will provide directly useful planning data, as well as providing coefficients and constraint levels for use with such mathematical modeling as may prove desirable.

Included should be further analysis of and experimentation with the possibilities for increasing significantly the production of particular crops, such as feed grains and food grains on presently unutilized or under-utilized lands through the application of capital, with emphasis on modern employment generating technology.

3. Helping the GOC make changes in its present programs and policies so as to rationalize its research program, test and demonstrate more promising field experiments on a larger scale and in a more systematic and coordinated way; and encouraging reduction of resources flowing to programs that have proved too expensive per unit of accomplishment to be widely reproducible.

4. Continuation of support of: (a) assistance to small farmers through such programs as the pilot projects program; (b) assistance to the existing natural resources projects, perhaps with increased emphasis on encouraging the marketing of timber; (c) development of agro-industries; and (d) credit to farmers through Caja Agraria and the Agricultural Finance Fund rather than through INCORA.

Items 2 through 4 obviously are not based on the results of a comprehensive sector analysis, but are made as suggestions for possible content of a program to be carried in support of an ongoing analysis. They are based on our interpretation of the current sector analysis paper, discussions with Mission and GOC personnel, and observation of some current projects. Such a program would in our judgement make an important contribution in its own right to removal of constraints to development of the sector, as well as materially assist in improving the process of comprehensive sector analysis.

E. If the Colombian Government is unwilling or unable to respond with a sector analysis effort on an increased scale, AID still should continue its present participation in the sector analysis process, helping to speed

up and make the process more effective by continuing to contribute technical advice and financing for the more crucial of those improvements listed above for which the Colombian Government will accept AID support and assistance.

F. In either case, it would be reasonable to continue sector lending for two or three more years, but seeking to narrow U. S. support to a smaller range of activities, concentrating on the more important innovative Colombian programs. Colombia is near enough to the "graduation" level that AID could plan to phase out most or all of the program over the coming two to four years, with timing and amounts dependent on the opportunities, presented by Colombia's interests and policies, to demonstrate the effectiveness of the sector approach. Possibilities for further accomplishment in refining the development planning and programming process would be an important reason for continuing program support of the sector. If early cessation is indicated, it can be planned with the satisfaction of knowing that AID has helped bring Colombia to the point where it can effectively carry on with its agricultural development tasks in the future.

Chapter 2

OMPARISON OF AID PROGRAMS PRIOR TO AND FOLLOWING A SECTOR APPROACH

I. SUMMARY AND CONCLUSIONS

During the period 1961 through 1967 the AID program was dominated by economic stabilization considerations. During this period some $300,000,000 of assistance was provided in the form of program loans for the financing of essential imports. This assistance was provided in conjunction and coordination with similar assistance provided by the IBRD and IMF, the Export-Import Bank, and to a lesser degree, other countries. Balance of payments considerations determined the amount of the program loans. Provision of such assistance was conditioned upon GOC discharge of its obligations undertaken in accordance with agreements with the IBRD and the IMF. These undertakings related to such matters as exchange rate depreciation, liberalizatic of imports, stimulation of exports, increased taxation, reduced borrowings from the central bank, and similar matters related to stabilization of the economy.

Development aspects of the program during this period consisted of the use of the peso counterpart funds generated from imports financed under the program loans, pesos received from the sale of Title I PL-480 commodities, and a series of individual project loans. From 1961 - 1965, there was a significant concentration in this aspect of the program on industrial development and exports; urban regional development, primarily housing; and transportation. In 1966 and 1967 there was a continued emphasis on these sectors but agriculture began to receive significant emphasis in

these years and in fact in 1967 reached a peak of 50%[1] of total local currency allocations.

From 1961 through 1965 AID assistance to agriculture consisted of (1) a technical assistance program involving an Agricultural Planning Project, begun in 1961 and continued until the present time, designed to improve planning and management techniques in the Ministry of Agriculture and related agencies dealing with agrarian reform, agriculture credit, and natural resources development; institutional development assistance to the National University faculties of agronomy under a contract with Michigan State University; assistance in developing and carrying out an integrated program of education, research, and extension on a "land grant college" concept under a contract with the University of Nebraska; and a program of participant training, especially of college faculty members; and (2) a 1961 loan of $8 million to Caja Agraria for agricultural credit, a 1963 loan of $10 to INCORA for agricultural credit, and a loan of $4 million to the Livestock Bank for loans to be made by it. No peso funds were allocated to agriculture during this period.

In 1966 another loan of $8.5 and an allocation of $4.8 of counterpart funds were made to INCORA for agricultural credit; another loan of $8 million was made to the Livestock Bank; and ICA received $1.5 million of counterpart funds. In 1967 INCORA received $16.7 million in counterpart funds, ICA received $5.7 million, and the Ministry of Agriculture received $2.6 million, apparently in support of its planning activities. The technical assistance program continued during these years.

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[1] See table entitled "Local Currency Allocations by Sector and Year Percent of Total Annual Allocations," p. 5 of Resume of Local Currency Fund Allocations 1962-1972, U. S. AID Mission, Bogota, February 1972.

The year 1968 marked the beginning of the sector approach in Colombia, although program loans continued through 1970. A summary of the more important features of the 5 sector loans made from 1968 through 1972 follows. A more detailed description of those loans is continued in Section II of this chapter.

The 1968 Sector Loan ($15 million) was a part of a stabilization package and was in part designed to meet balance of payments problems and in part to meet agriculture sector requirements. Conditions precedent to disbursement were related to stabilization considerations but counterpart releases were for non-identified agriculture sector programs. In practice, INCORA get the great bulk with ICA and the Ministry of Agriculture receiving lesser but still significant amounts.

Papers prepared in support of the making of the loan indicate AID support of a mixed strategy for development of the sector. Arguments were advanced in support of both the commercial segment of the sector and the traditional small farmer segment. The resolution was in terms of (1) use of the loan as a basis for negotiation for GOC adoption of policy measures with respect to prices, imports, and similar matters, for the benefit of the former and the use of dollar proceeds for importation of items needed by that segment, and (2) the use of counterpart resources in support of assistance to the latter. In this connection, however, credit for "medium sized farmers" was set up as a second priority (out of 5) for use of counterpart funds. Emphasis was also laid on use of the loan to strengthen reform of sector institutions and increases in the sector budget.

Like the 1968 loan, the 1969 sector loan was also part of a stabilization package. However, the loan paper indicates that, while stabilization considerations were clearly predominant, sector considerations were coming

to be more important and a beginning was made in establishing conditions precedent to disbursement related to such considerations.

It also indicates support for all elements of the sector but begins to place more stress upon increasing the level of income of "transitional and traditional" farmers. Emphasis was also again on institutional reform and strengthening of planning and administrative capabilities of the Ministry of Agriculture and its constituent parts. INCORA continued as a major recipient of funds for supervised credit and titling activities.

The 1970 sector loan ($15 million) was also part of a stabilization package which included a program loan, the agriculture sector loan, and an education loan, all of which were negotiated together. Balance of payments considerations were predominant in the package, but considerations of agriculture sector strategy became important in connection with it and were incorporated in the loan agreement. While there were no dramatic changes in programs supported by the loan, a strategy of relating AID assistance to improving the production and productivity of small farmers was articulated which has continued until the present time as the primary thrust of AID's assistance to the sector. It was also in connection with the formulation of the 1970 loan that the recommendation was made to develop a sector analysis.

The 1971 loan ($28 million) was negotiated entirely apart from any considerations of economic stabilization and with little relation to the balance of payments. Instead it was related practically entirely to programs in the agriculture sector. Its primary purpose was stated to be "to help to meet the crucial requirements of marginal and submarginal rural dwellers..." It reemphasized the strategy adopted in the 1970 loan of directing a major portion of assistance toward small farmers and apparently

represented the full development of an AID strategy of concentrating on assistance to small farmers. It further provided for an emphasis on labor intensive crops. In practical terms, however, little change was made in agencies receiving funds or the substance of programs being financed. A significant element of the 1971 loan was the establishment of many detailed conditions precedent to disbursement relating to progress of project funding and work; internal administration, management and staffing of agencies; agreements for coordination of efforts and funding; and establishment of procedures for coordination and control of activities by the Ministry of Agriculture and constituent agencies.

The 1972 loan ($30.8 million) like the 1971 loan, was related basically to agricultural rather than balance of payment purposes, although the loan agreement does make reference to helping the balance of payment and spurring more adequate fiscal performance. Also like the 1971 loan, the 1972 loan provides for dollar purchase of pesos for support of sector programs rather than the use of counterpart proceeds from imports.

The purposes of the loan are basically unchanged from those of the 1971 loan and the emphasis on supporting assistance to small farmers is continued. Mention is made in the loan paper but not in the loan agreement of increasing emphasis on employment generation in agriculture and agricultural industry (possibly an influence of the mathematical portion of the sector analysis). Agencies and programs supported and the proportions of such support are approximately the same as in the 1971 loan, except for a new item of $4.8 million to ICA for a livestock program and importantly an item of $10.9 million to Caja Agraria for small farmer credit.

The technical assistance program was continued during the 1968-1972 period although on a declining basis. In addition to the sector loans

discussed above, a project loan of $2.1 million was made for a slaughterhouse in 1970 and a cadastral survey loan of $3.6 million more made in 1971.

Major recipients of peso funds during the 1968-1972 period were INCORA (which received by far the largest amount), Caja Agraria, ICA, the Ministry of Agriculture, and the Livestock Bank. Smaller amounts went to IDEMA, INDERENA, Caminos Vecinales, and COFIAGRO. Major program elements financed included supervised credit to small farmers as by far the largest item; titling activities; pilot projects including access roads built with farm labor; credit and technical assistance for small farmers; agricultural education and extension; sector planning and management; forestry and fisheries studies; and a small program of supervised credit for agricultural processors, wholesalers and retailers.

In summary from 1961-1967, the AID program was dominated by Colombian balance of payment problems and was an integral part of a multilaterally financed program of economic stabilization. Sector programs consisted of rather traditional type technical assistance and individual project loans, especially for supervised credit to farmers.

From 1968 through 1970 it was a mixture of economic stabilization and sector considerations with economic stabilization remaining the primary focus while the emphasis on sector considerations was increasing. By 1971 economic stabilization considerations had disappeared and sector considerations constituted the basis for the 1971 and 1972 programs.

As it began a sector approach, AID's strategy for assistance to development of the sector was ambivalent as between support of the commercial and transitional segments of the sector and support of the traditional, small farmer segment. By 1970, however, support of the latter segment had become predominant and a strategy of support of the small (and according

to the CAPs even marginal or sub-marginal) farmer has been the major focus of the program since that time. In practice, however, there has been little change in program content over the period of the sector approach. Supervised credit has been the major item of financing throughout all periods. Before and during the period of a sector approach great emphasis has been placed on reorganization of institutions within the sector and on improvement in their ability to do sector planning and to manage and administer programs and projects.

The principle underlying the adoption of the sector approach was that, having achieved the stabilization of its economy, the GOC could turn its attention to the problems of development of its various sectors. AID then could turn from its emphasis on the macro considerations involved in economic stabilization to concern for sector policies, investment, and management of programs and projects. Just as the program loan was a major instrument in a coordinated program of economic stabilization the sector loan would be a major instrument in a coordinated sector program. An integrated sector analysis would provide the basis for establishment of sector policy and strategy and the sector loan, characterized by general support of the sector and as a part of the sector investment budget with a commingling of funds as contrasted with the support of individual projects would serve as the occasion for jointly addressing and for influencing the specifics of sector strategy and policy, the level of investment in the sector, and the programs and projects to be carried out.

In practice, it does not seem to have worked out quite that way. A comprehensive sector analysis has not been prepared which can serve as a basis for an integrated approach to the sector (see chapter 4). Negotiation concerning sector loans has been a continuous process of dialogue

between AID officers and OPSA and constituent agencies of the Ministry. On occasion the Minister of Agriculture, the National Planning Office, and the Minister of Finance have been involved. This dialogue has related to the amount of GOC investment in the sector and to matters of planning, organization, management, and coordination, and to the adoption of specific programs such as the pilot projects program, a program of construction of access roads utilizing farm labor, the undertaking of a small farmer credit program by Caja Agraria, and the beginning of a program of credit to agricultural processors, wholesalers, and retailers. Needed clarifications of the law concerning issuance of land titles has also been a subject of AID concern. Although no details as to the nature of the negotiations are given, papers in support of the earlier loans suggest that questions of price support policy and the liberalization of importation of agricultural inputs were involved. This dialogue and the provision of sector loans has undoubtedly benefited the organization structure and methods of operations of institutions carrying on programs in the sector. We have been able to find no evidence, however, that negotiations, especially in connection with the later loans, have related to basic agricultural objectives, policy, or strategy. Instead, the objectives of the National Development Plan as it pertains to agriculture and the more specific approaches contained in the Ministry of Agriculture plan seem to have been accepted as given.

Accepting these objectives, AID has then adopted a program approach which emphasizes improving the lot of the small farmer, utilizing credit and technical assistance as the primary instruments. The stated purposes of sector loans have emphasized this approach, the proceeds of such loans have been attributed to support of GOC programs of that nature, and reporting of progress and accomplishment and monitoring of activities have been concerned with such programs.

AID and GOC funds going into the support of agricultural programs have increased greatly since the sector approach was adopted. This increase began, however, in 1966 before the sector approach was adopted. However, the level of assistance to agriculture has continued to increase and assistance has been on a sustained basis since the approach was adopted.

Support of supervised agricultural credit began before adoption of the sector approach with the loan of $8 million to Caja Agraria in 1961 and continued with the loan of $10 million to INCORA in 1963. Another loan and counterpart allocations were also made to INCORA in 1966 and 1967. The legislation relating to agrarian reform and land titling was passed in 1961 and INCORA has been engaged in redistribution and titling activities since its formation. The AID technical assistance programs in agricultural research, education, and extension have been affected by the sector approach only in that they are now loan rather than grant financed. Assistance to planning activities in the Ministry of Agriculture began before adoption of the sector approach but has been increased since. Some new programs have been instituted since adoption of the sector approach but are not related to the sector analysis and do not seem to be a part of an integrated sector approach. The stated purposes of the 1971 and 1972 sector loans and the programs to which their support is attributed are consistent with the conclusions of the mathematical portion of the sector analysis but the stated purposes seem to have resulted from earlier recommendations and the programs to which financing is attributed were begun before beginning that analysis.

With respect to program results the first, and probably foremost, conclusion is that the program has resulted in a distinct and strengthening of the GOC structure for financing, coordinating, implementing, and evaluating agricultural programs and projects. The second is that the amount of

investment in the sector has increased since the sector approach was undertaken. While it cannot be said with certainty that the increase resulted from the program, the probabilities are high that the program was an important factor in bringing it about.

With respect to the effects upon aggregate production, employment and income in the sector, such information as we have been able to obtain suggest a continuation of historical trends rather than any influence by the program. Individual studies, however, indicate that there have been significant increases in the income of individual small farmers reached by the credit program.

Finally, it is concluded that the experience in Colombia shows a distinct superiority of a sector loan approach over the previous program loan approach insofar as sector programs are concerned. First, the procedure for administration of sector loans make it easier to relate funding provided to distinct program activities which it is desired be undertaken. Second, while full utilization has not been made of the possibilities for use of sector loans for consideration with the GOC of questions of basic agricultural policy and programs, such loans have provided a means of and the occasion for addressing problems of planning, administering, and evaluating sector programs and of examining program content not available under the program loan approach. Finally, while much remains to be done in the way of developing and refining a comprehensive, integrated sector analysis which can be used as a basis for considering policy and program options, the experience with program lending in Colombia demonstrates a potential for development under a sector approach of methods of analysis and decision making which does not exist under a program loan approach.

II. SECTOR LOAN DESCRIPTIONS

A. 1968 Loans

The 1968 agriculture sector loan ($15 million) was a part of a package consisting of the sector loan and a program loan for a total of $73M. The sector loan thus involved a mixture of purposes including both balance of payments (the draft negotiating instructions for the sector loan indicate that "it is imperative that the levels of balance of payments assistance be increased...") and agriculture sector considerations. Apparently it was considered that the dollars provided under the loan would play a dual role of assisting the balance of payments and the agricultural sector while counterpart disbursements would be related entirely to sector considerations. No indication is given as to how the specific amount of the loan for the sector was arrived at.

Deliberations leading to the making of the loan involved some consideration of a development strategy for the sector with there being some discussion in supporting documents[1] of the needs of the commercial and medium sized farm segment of the sector as compared with those of the small, traditional, subsistence farmer segment. It was indicated that it was imperative to promote the rapid expansion of agro-industries and to promote incentives for the farmer whose holdings were larger than a subsistence farmer's, since it was in these areas that the most rapid growth could be obtained and at the least cost. On the other hand, consideration was given

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[1] See particularly Agricultural Sector Paper, Colombia-Agricultural Sector Loan, "Proposal and Recommendations for the Review of the Development Loan Committee", AID-DLC/P-664.

to the argument that social considerations and the economic plight of the small farmer could support a position that assistance should be concentrated in this segment of the sector.

Apparently the resolution was to embrace both horns of the dilemma. The strategy enunciated consisted of attempting to have the dollar proceeds of the loans used to assist in the importation of inputs which would be used by the first group and to use the loan as the basis for negotiating price and other incentives by the GOC which would benefit that group while the counterpart funds would be used primarily for support of programs of assistance to the latter segment of the sector.

Objectives of the loan were stated to be:

1. To provide, in coordination with the program loan, for the financing of imports which would benefit all elements of the sector, but particularly the commercial segment.

2. To promote policy and institutional reforms in the agriculture sector.

3. To generate local currency for high priority projects; and

4. To complement the purposes of the program loan by supporting internal agricultural reforms as a contributing factor in improvement of external balances.

Commitments to be negotiated with the GOC included:

1. Completion of an agricultural plan including credit, price support, tax, and agricultural tariff policy and specific plans for legislation for removing disincentives to private investment in the sector and plans for land reform, increased extension services, and removal of blockages in the marketing system for agricultural imports and export crops.

2. Institutional reform including provision for Ministerial coordination of sector activities.

3. Increase of the agricultural sector budget level by 20% in real terms over 1967 and a further increase in 1969; and

4. Liberalization of importation of agriculture sector inputs.

Programs to be supported with counterpart funds were to be:

1. As a first priority, penetration and access roads in areas suitable for colonization.

2. As a second priority, credit for medium sized farms.

3. The University of Nebraska technical assistance contract.

4. A marketing research project; and

5. A coffee diversification pilot project.

The loan agreement provided that the dollar proceeds were to be used to finance essential imports and technical services. Stated purposes included (1) the financing of essential imports, (2) the improvement of agriculture sector planning, (3) adoption of institutional reforms, (4) increase in public and private resources directed to agricult and (5) the use of counterpart proceeds from imports for financing agriculture development projects.

Dollar procurement was subject to all the usual AID procurement regulations. The peso proceeds of sales of dollars were required to be deposited in a counterpart account to be used for developmental purposes.

As a condition precedent to disbursement above $8 million, the Government of Colombia was required to (1) present evidence of satisfactory progress in advancing agricultural development in relation to the Plan and of the results of such efforts, (2) show that prospects were satisfactory for further development in the future, and (3) show that the undertakings relating to agriculture made to the IBRD were being performed. These undertakings related to such things as a general statement of the agricultural development plan, total budgets and expenditures and those for particular agencies, and the direction of agricultural inputs. Other undertakings in the IBRD memorandum related generally to economic stabilization including

general budgetary, credit, and exchange policy. The loan was thus related to the program loan in which economic stabilization considerations were paramount.

Three million dollars of the loan was earmarked for the extension of credit through the Institute for Industrial Development for importation of capital items and $1 million was required to be used for financing technical assistance under the University of Nebraska contract. The peso counterpart of imports was to be used for "such agriculturally related programs and projects as are within the Borrower's investment and Development Plans or consistent therewith". There was no identification of the specific projects for which these funds were to be used. INCORA was in practice the major recipient with ICA and the Ministry of Agriculture receiving lesser amounts. Supervised credit, titling, irrigation, and planning were activities which received major support.

From examination of the loan agreement, it does not appear that specific commitments were received from the GOC as were contemplated when the loan was being considered. It also does not appear that the loan was used entirely for programs as contemplated. However, the 1969 Sector Loan Paper indicates that (1) while a comprehensive plan was not developed, the Ministry of Agriculture did prepare a "coherent statement" of bases for agriculture policy which resulted in "significant action programs" (the tying of credit to the use of inputs is the only one cited); (2) a reorganization providing for a mechanism for coordination of agricultural agencies was accomplished by a Ministerial Decree; (3) price supports were being considered in relation to world prices; (4) a decree was issued providing for the redistribution of poorly operated privately owned land, and a number of new titles were issued; (5) the importation of seeds, some pesticides, and some types of

agricultural machinery was liberalized, and (6) the commitment for increases in the agricultural budget was met.

B. 1969 Loan

The 1969 agricultural sector loan ($15 million) was a part of a package consisting of the agriculture, housing, and education sector l' ns, and a program loan which totaled $65M. The underlying rationale for the loan package was the existence of a balance of payments gap. While the individual sector loans were separated from the program loan in order to try to exercise more influence on the sectors, joint negotiation of the package was considered essential in the interest of producing continued leverage on central economic policy. No indication is given as to how the specific amount for the agriculture sector was determined. This total program was negotiated through the consultative group mechanism and was coordinated with loans made by the IBRD and the Export-Import Bank and drawing rights and credits provided by the IMF.

The papers prepared in support of the loan package discuss issues in Colombian foreign exchange and import policy. They indicate that in negotiating the package it was desired to obtain Government of Colombia commitments with respect to exchange rate depreciation, submission to the legislature of tax reform legislation, increased financing of investment from revenues, reduced borrowing from the central bank, improved tax administration, and "best efforts" to obtain the passage of any required legislation.

This mixture of purpose also prevades the justification of the agriculture sector loan. In connection with the Loan Committee review it is stated that "The Mission believes that the fundamental justification for a second agriculture loan is the same as for the first--namely, that by identifying a significant amount of the overall balance of payments

support to be made available to Colombia in 1969 with GOC's performance in the agricultural sector and by insuring greater investment of resources for the sector we shall be able better to focus the GOC's attention and support better its actions on the priority problems of agriculture than we should be able to through overall Program loan undertakings."

The Sector Loan Paper says that the specific objectives of the loan and of Mission agricultural strategy are to (1) increase minor exports, and (2) raise the level of income of the sector, especially that of the transitional and traditional farmers. Agrarian reform and related programs are stated as the means for accomplishing this objective. Reference is made to social improvements included in Title IX activities. This seems to be a move away from the position with respect to commercial farmers taken in connection with consideration of the 1968 loan.

The Program Assistance Approval Document indicates that the purpose of the loan was to assist the GOC in adopting policies and taking actions with respect to further improvement in the organization of entities in the sector, intensified land reform efforts through substantial titling activities by INCORA, further improvement in policy formulation and in the planning capacity of the Ministry of Agriculture and continued preparation of analytical studies and action plans, maintenance of satisfactory sector investment levels, assurance of sector inputs adequate to improve production performance, and the achievement of an increase of agricultural exports other than coffee.

The 1969 loan agreement is similar to that for 1968 in that it provides that loan funds are to be used for financing imports and technical services and in that it sets aside amounts for IFI and the Nebraska contract. It also provides for deposit of counterpart from sale of dollars for imports and for releases as in the 1968 loan.

Conditions precedent to disbursement in the Loan Agreement parallel those in the 1968 agreement. The Loan Paper, however, provides as conditions precedent to signature that the 1969 agriculture sector investment budget must provide for a 10% increase over the planned 1968 level and the conduct of acceptable studies of the need for and the development of plans for assuring the adequate availability of fertilizer, insecticides, seeds, and similar inputs. The following were set up as conditions precedent to the first disbursement or to tranche releases.

1. Development of a reorganization and budget plan for ICA and of an operational plan for its services.

2. Existence of a satisfactory 1969 plan for titling activities by INCORA and agreement to take actions necessary to issuance of 60,000 provisional titles. (Indicated in subsequent documents as being in error and that a smaller figure should have been stated).

3. Provision of credit and other services to newly titled tenants.

4. Acquisition of professional personnel by the Ministry planning office and the formation of planning units in other entities.

5. Arrangement with DANE for improvement of collection of data.

The conduct of studies for better use of credit and promotion of exports was set up as a condition precedent to tranche releases.

Some attempt was made in the loan paper to indicate that the GOC had performed as required in connection with the 1968 loan. Mention was made of the reorganization of agricultural sector entities as being the major achievement relative to agriculture in 1968. (Not, however, as a result of the sector loan.) It was indicated, however, that not much progress was made in analyzing quantitative needs as a basis for formulating goals.

C. 1970 Loans

The 1970 sector loan ($15 million) like the 1969 loan, was

made in conjunction with a program and an education sector loan considered in the context of the Consultative Group. The justification of the loans was made in terms of an estimated 2 year balance of payments requirement on the grounds that import pressures on the balance of payments would be deferred until 1971. Documents in support of the loans also indicate that the GOC budget picture was not bad and that difficulty in getting support for the agriculture budget was not expected. No indication is given as to how the amount for the sector loan was determined.

As was the case with previous loans, the loan paper makes reference to the GOC reorganization of institutions operating within the sector and efforts to increase the planning capability of the Ministry of Agriculture; increased budget support to the sector; increases in imports of fertilizer, improved seeds, and insecticides; and intensified titling activity. There is also a discussion of improved administrative performance on the part of agriculture sector agencies.

The paper states that the key element in the GOC program to be supported by the loan is the "rationalization of policy formulation" and promoting use of resources and policies designed to further improved economic performance, particularly of capacity to export. There is, however, no direct relating of the loan to the latter item and the program to which support is attributed seem entirely unrelated to it.

The paper then goes on to indicate that the commercial segment of the sector seems to be performing reasonably well and while the loan is to support all elements of the sector, it will be used primarily to help accelerate programs to assist the small farmer. Two interesting statements are made in this connection. First, it is stated that a substantial increase in internal demand is a necessary precondition to increased agricultural production and

farm income and that the one sector most likely to turn increased income into increased demand for agricultural products is "the small farmer himself". (The basis for this rather remarkable conclusion is not indicated nor is it indicated how the "vicious circle" is to be broken.) It then goes on to say in connection with measures to increase small farmer production, particularly the provision of relatively more credit to the small farmer and relatively less to the commercial farmer, that "the effect on the sector's productive performance would not be likely to be adverse, and probably would be positive."

Like the previous agreements, the 1970 sector loan agreement provided for the financing of capital imports and the University of Nebraska contract. The purposes of the loan were stated to be to:

1. Assist in financing essential imports and technical services.
2. Assist in financing innovative and expanded programs with special emphasis on small farmers.
3. Provide for use of peso proceeds of sale of dollars for agricultural development projects and programs.

No substantive conditions precedent were contained in the agreement. This marks a departure from previous loans in which conditions precedent relating to both economic stabilization and agriculture sector considerations were established.

Programs identified for assistance included agricultural credit ($8 million), the University of Nebraska contract ($1.4 million), marketing ($1.8 million), importation of vehicles ($1.75 million), and general support of the sector budget ($3.85 million.)

The basis for the AID approach to assistance to the agricultural sector taken in the 1970 agriculture sector loan was apparently developed by the Mission and a team sent to Bogota from Washington in the fall of 1969 to assist in formulation of strategy for the 1970 loan. In November 1969,

the team recommended to the Mission Director that a small-farm strategy should be the basis for AID's agricultural program and the basis for the 1970 sector loan. It concluded that the economic and social return to such a program would be high, possibly higher than from further investment in commercial agriculture, and that (1) the U. S. would have a greater impact on Colombia's development by providing resources for small farm development than by continuing to supply funds for general budget support of the sector and in relation to policy commitments, and (2) AID should continue to support Colombian analysis of agricultural priorities but should begin to do more of its own analysis in support of a small farm strategy.

It then laid out a program of assistance involving a major emphasis on supervised credit for small farmers and the provision of lesser amounts for marketing, technical assistance, and support of the sector budget. It also points out the possibility of large returns to community built roads.

Finally, it suggested that AID should undertake a sector analysis. It did not make references to the nature of such an analysis nor suggest a mathematical modeling methodology.

The loan as signed makes reference to the small farm approach and identifies uses of the loan practically identical with those set forth in the memorandum.

D. 1971 Agriculture Sector Loan

The 1971 sector loan ($28 million) was developed and negotiated without regard to balance of payments considerations and separate from consideration of other sector loans. No program loan was made in 1971.

The loan paper states "the 1971 loan progressively will help to meet the crucial requirements of marginal and submarginal rural dwellers thereby increasing social equity, without undue preemption of the flow of

resources required to continue the rapid growth in the commercial agricultural sub-sector. However, through improved technology, supervised credit, marketing assistance, and improved farm to market roads, small farmers can enter and help broaden the domestic and export marketing of labor intensive crops. The major portion of this loan is directed toward bringing increasing numbers of the submarginal class into the economy."

The proposed allocation is as follows:

Increased Employment and Income Redistribution

Supervised Credit	$11.03
INCORA	(8.53)
Pilot areas	(1.50)
Marketing	(1.00)
Agrarian Reform	6.54
	$17.57

Continued Support Activities

MINAG Planning	$ .26
Vehicles & Equipment	
Ag. Extension on quality control	3.04
	$ 3.30

Strengthening Future Development

Natural Resources	$ 1.90
Participant Training	.30
Ag. Research	3.31
Farm to Market Roads	1.00
	$ 6.51

The loan paper states that these amounts were arrived at by "case by case examination of activities."

The loan paper then sets up performance targets such as (1) to increase annual net returns to a minimum of 21,250 small farmers by 10%, and (2) to accelerate creation of new work opportunities in rural areas

through broadening land ownership, development of natural resources, and improvement of rural infrastructure. Specific quantified operational targets are set up under each performance target. Performance targets for management improvement, research, extension, marketing, credit, quality controls, credit administration, colonization, and training are set up in terms of amounts of funds to be provided for each purpose.

The paper indicates that negotiations had been going on with National Planning Department, the Ministry of Agriculture and agencies within the sector for several months preceding the presentation of the paper. It gives no indication of the nature of such negotiations other than to say that the GOC Three Year Plan for Economic and Social Development was the basic document used in the negotiations and that the loan had been structured in accordance with the GOC stated policy for sector development. It then lists the sector objectives contained in the Plan (see chapter 5).

The loan agreement states that the purposes of the loan are to assist in (1) the dollar cost of training and vehicles related to the agricultural development program, and (2) continuing and strengthening programs started under the previous sector loans and to support new initiatives. It then lists some 12 activities to be supported, together with specific, and in some cases quantified, targets for each. Activities specified to be financed include supervised credit to small farmers through INCORA and Caja Agraria; land titling; credit and farm to market roads in pilot areas; studies in the natural resources area; increased staffing for OPSA; expansion of extension services; a supervised credit program for retailers, wholesalers, and processors of agricultural commodities; improvement of quality controls for fertilizer, seed, pesticides, and other commodities; addition to INCORA staff for credit supervision; and rural infrastructure and support.

A series of very detailed and specific conditions precedent to various stages of disbursement were set up. Each disbursement required a report of expenditures and work performed and expected to be performed, financial resources needed, and a justification of the amount of funds requested. Other conditions related to organizational procedures and financial matters, including such things as organization, staffing, and training plans for various agencies, especially OPSA; procedures for release of funds by the Ministry of Agriculture to various agencies; contributions to the program to be required from particular agencies; agreements among agencies as to the division of responsibility and funding among them on joint projects; provisions relating to the establishment, supervision, and operation of a fund to provide credit to retailers, wholesalers, and processors; establishment of standards of eligibility and charges for credit; and the selection of at least 3 areas for pilot projects.

The Borrower was required to provide warranties that it would (1) require sub-implementing agencies to use qualified contractors, (2) punctually provide its own funds and other resources for carrying out the program, (3) maintain continuing consultation with AID, and (4) provide qualified and experienced managers for projects.

The Annex to the agreement sets up targets for accomplishment and for AID contributions.

Pesos for financing activities to be were obtained by purchase with dollars rather than from the sale of dollars for imports. Releases were to be commingled with GOC Department of Agriculture funds and were a part of its investment budget.

E. 1972 Agriculture Sector Loan

The loan paper in support of the 1972 Sector Loan ($30.8 million)

states that the purpose of the loan is to (1) support new and expanded ongoing GOC initiatives which serve agricultural development objectives, and (2) maintain agricultural sector output with increasing emphasis on employment generation in agriculture and agricultural industry and with special attention to small farmers so as to bring about more equitable distribution of agricultural income. It also states that the loan will help the balance of payments and spur more adequate fiscal performance although it is in the main directed t, agricultural problems. No basis for determination of the specific amount is indicated.

The loan agreement says that the purpose of the loan is to continue and strengthen programs started under the 1968 through 1971 loans and to support new initiatives. Specific programs to be supported are listed including those listed in the 1971 loan plus expansion of the network of meteorological and stream gauging stations and research in livestock and selected crops in the Llanos.

Sub-amounts by agency were as follows:

INCORA (small farmer credit, titling, pilot areas, etc.)	$ 10.0 M
ICA (livestock)	4.8
INDERENA (forests, fisheries, national parks)	1.9
Min. of Agr. (planning, OPSA staffing)	3.1
Caja Agraria (small farmer credit)	10.9

These amounts, however, were not binding and funds could be shifted about.

In its memorandum requesting the loan the GOC stated "Under these criteria the great majority of the proceeds of the loan, not less than 70%, will be directed to programs of credit and technical assistance to small farmers..." It should be noted that these suggested programs represent a continuation of ones initiated in previous years with this type of loan.

Initial advances were specified with complete disbursement of the 1971 loan and clarification of statements of work set up as conditions precedent to such advances. Conditions precedent to subsequent disbursements were of an administrative rather than a programmatic nature.

Chapter 3

PROGRAM RESULTS

The program during the 1969-72 period has had a number of both broad and specific purposes and some quite specific activity targets. These have included obtaining increases in the amount of funds being invested in the sector; stimulating the preparation of a development plan for the sector and increasing and improving the planning activities and capabilities of the Ministry; improving the organization structure and procedures for financing, coordination, implementation and evaluation of programs and projects; liberalization of and increase in the imports of agricultural inputs; and the establishment of specific performance targets for such activities as supervised credit, titling, small farmer built roads, the conduct of specified studies, provision of technical assistance, colonization, and natural resources development. In addition, inherent in the approach of providing large sector loans has been the purpose of supporting the GOC objectives of increasing production, employment and income in the sector, and especially in the small farm subsector.

Our primary concern in this evaluation has been with questions of whether a development path has been laid out which is likely to lead the sector to a set of accomplishments or a degree of improvement adequate to meet economic and social needs. Constraints of time and the absence of a process by which data as to results are related to targets have not permitted an item by item and in-depth comparison of performance with specific activity targets. Such comparisons can be made and insights derived from them only after development and installation in the program of an

evaluation system specially designed for such a purpose. We are also most aware of the difficulties of assigning cause and effect relations as well as of the lack of reliable data with respect to sector and subsector performance.[1] As a result, we have only attempted to reach some general conclusions with respect to program results, sector performance, and whether activity targets are being met. Only very simple and unsophisticated methods of analysis have been used in reaching such conclusions and the conclusions must be interpreted in light of these facts.

I. GOVERNMENT STRUCTURE AND SECTOR INVESTMENT

First and foremost among such conclusions is that the most important result of the program has been a distinct and significant strengthening of the governmental structure for developing, coordinating, and implementing agricultural programs and projects. The organization and procedural requirements contained in loan agreements; requirements for coordination of activities and specification of the division of responsibilities among agencies on particular projects; the institution of formal procedures for control of fund flows and for project progress reporting; and similar requirements relating to loan administration appear to have been major factors in this accomplishment.

The amount of investment in the sector has increased since the undertaking of the sector approach and the requirement for increase in the GOC budget for agriculture has, in general, been met.

With respect to planning, a comprehensive plan for development of the sector as contemplated by the 1968 loan paper has not yet been prepared. At best what has been prepared, as indicated in the 1969 loan paper, is a

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[1] The SASS team, for example, has estimated that in one year the margin of error in value added data in the national accounts data was as much as 60%. Whether the magnitude and direction of error is consistent from year to year, we simply do not know.

"coherent statement of bases for agricultural policy." Since then, additions have been made to the OPSA planning staff as required by loan agreements and planning activity is increasing.

II. INTEGRATION OF SERVICES AND ACTIVITIES

An attempt was made to assess the extent to which this organizational coordination was resulting in the provision of integrated services. This was done by one member of the team on a second visit to Colombia in December 1973. After discussions with USAID staff, it was decided that visits to two of the "projectos integrados" sites would best serve to obtain the relevant information. On site observations and discussions with farmers, regional and project administrative staffs, and field personnel of the involved institutions were selected as a better source of factual information to address the questions cited than dependence upon conversations with Central Office staff in Bogota. Time constraints prevented doing both.

Field visits to two projects were recommended by USAID and subsequently made to the following:

1. The Department of Antioquia, Rio Negro integrated project, near Medellin.

2. The Department of Cundinamarca, Caqueza integrated project, near Bogota. (This project had been visited by the entire team during the first visit to Colombia.)

There are some 20 different "integrated projects" in Colombia. Obviously, in such an agriculturally diverse country as Colombia, one would not expect uniformity in the manner or extent of accomplishment in attacking problems relevant to the cited questions. Thus, the impressions gained subsequently were discussed with knowledgeable USAID professional staff and to a limited extent with technical advisors to the Evaluation Division of one of the regions as well as with central staff of the Department.

Adjustments were made in the conclusions drawn to take into account the regional and area diversities that exist. Obviously, such a procedure is not entirely satisfactory, and there may be exceptions to and variations from the conclusions included in this report. However, they are considered to be fairly reliable indicators of the actual situation.

The basic strategy for achieving integration has been to select specific pilot project areas and concentrate integrated services in those areas, rather than attempting such an effort at the national or regional levels. Such a strategy appears to be sound and practical for a pilo· effort designed to encompass the means to reach the small farmer as a "whole being," i.e., as an agricultural producer, as a consumer, as a family member, as a community member, as a physical and human being, as well as an economic being. However, one also can conjure up the spectre of subjecting the simple, honest farmer to the bombardments of a squadron of assistance providers, none of whom bother to ask what the farmer's own value system suggests as his needs. Integration of services must strike a reasonable balance between the range and intensity of services to be provided, the complementarity of these to the farmers' own value systems, and the degree to which adjustments can be made to be consistent with national societal and economic objectives.

Several institutions are involved in the integrated projects, but the major ones are ICA (Institute Colombiano Agropecuario) and Caja Agraria (Caja). Additionally, there is more or less participation by INDERENA (Natural Resources Institute), IDEMA (marketing Institute), COFIAGRO (finance), etc.

Within the integrated projects, ICA is responsible for technology development and diffusion, as well as for family or community development

type assistance. Caja Agraria is responsible for providing credit and making available basic inputs such as improved seed, insecticides, herbicides and fertilizers.

Our observations lead us to believe that a significant amount of integration is taking place with regard to the services being provided by ICA, both at the programming and implementation stages. This is accomplished by the establishment of a project coordinator for ICA, who then administers all of the ICA activities in the project area.

Project programming is carried out within the coordinator's office, as well. The coordinator does not control his own budget (except for a small petty cash fund). Budget control is primarily handled at the regional level, which does provide greater flexibility than if budget administration were totally centralized. Budget administration, nevertheless, often is a serious negative factor in terms of timely flow of funds. The basic problem lies in the system's requirement that each entity with a budget must finance its own shortages resulting from shortfalls in revenues throughout the year. Budgets are funded one month at a time up to the amount of funds available in the treasury. Thus, instead of central treasury borrowing to finance shortfalls, each entity receives only its proportional share of what is available, and either goes without the rest for the time being, or borrows to cover the deficit.

At the time of the visit to Rio Negro in December 1973, field personnel said they had not received per diem reimbursements since July. Because of lack of funds vehicle use was restricted, petty cash funds had not been replenished, etc.

In contrast to intra-ICA integration of activities, the degree of integration between Caja Agraria and ICA activities left much to be desired.

Credit funds generally were available for loans to ICA clients, but there was considerable disagreement as to amount to be loaned for given farm enterprises. ICA staff generally felt that, especially in the case of intermediate credit and working credit in the case of livestock, the Caja applied arbitrary rules which did not allow the farmer sufficient liquidity for carrying on his operations.

It appears that part of the problem lies in the fact that the Caja lends for individual activities (pigs, corn, beans, etc.) separately, rather than for the whole farm operation as one economic unit. At the same time, the Caja places an arbitrary upper limit on the total amount that a farmer can borrow, based on his total farm net worth. ICA staff felt that the Caja should be more flexible and lend on the economic capability of farm operation as a whole, as well as raise the amounts lent to conform to the capital requirements as shown in farm investment plans approved by ICA.

Further, there are difficulties in assuring adequate and timely supplies of inputs. This past year fertilizer often was not available. This, in large part, can be attributed to the worldwide fertilizer shortage. However, in Rio Negro corn and potato seed were in short supply. The problem was so serious for corn that ICA now plans to produce seed on its experimental farm in the area in order to have a more secure supply.

The present degree of integration of Caja-ICA activities appears to depend largely on individual rapport that might become established between individual Directors and staff of each agency. There are indications that this works better in the projects more remote from larger cities, suggesting that if there are no alternative uses of time possible, personnel associate more with each other and talk more about common problems.

Some efforts have been made to formalize staff discussions and interchange. Bi-monthly meetings of all major project professional and administrative staffs were organized at both projects visited. In one, those meetings are continuing; in the other the practice fell into disuse because of lack of interest. Additionally, USAID has encouraged the formation of a high level national "trouble shooting" group to take up problems as they arise, and resolve them in policy terms at the national level. As of yet, this group has not been formed.

To date, there has been no effort to carry out joint inter-institutional programming at the project level (or any other level). There is some integration of overall criteria from the common guidelines imposed by OPSA. Further, ICA does submit its annual programs to the Caja for comment. Nothing like the Costa Rican "CANcito" type joint programming effort yet has been attempted.

Some thought is being given by ICA to attempting to set up a series of seminars and/or some short-courses for Caja Agraria branch directors and office managers in order to have a common understanding of acceptable lending criteria. To date, some project level meetings have been held, but nothing else has been done.

ICA experience has shown that it must concentrate efforts even more than to date in order to be effective, given their staffing levels. Thus, in Rio Negro it plans to reduce its concentrated efforts from the total 120 Veredas (grouping, of about 60 families each) to about 36 Veredas. It has utilized and will continue to utilize as much as possible a system of working with groups--group meetings, demonstrations, etc. However, individual farm visits are considered to be necessary up to twice each month at least initially.

In Caqueza, the total amount of credit going out this year to ICA assisted farmers is expected to actually decline. This is due to efforts to do a better job of assuring efficient and productive use of that credit on the farms that are served.

As technologies for micro-climates become more reliable, some greater coverage of farmers may be possible. Also, it is expected that in 3-5 years, farmers can graduate to a less intensive assistance pattern (1-2 times a season visits to the farm, plus group meetings and demonstrations). Then ICA can move on to other groups for intensive assistance. Nevertheless, it is expected that no more than some 40,000 - 50,000 farmers can move through a "graduation" process in the 20 projects in 3-5 years. That constitutes about 7% of the existing small farmers, or about the same number as the number of new rural families established each year.

Some additional coverage can be expected from the "demonstration effect" that should take place as non-assisted farmers see what happens on the assisted farms. Further, demonstration effect might be significantly increased by modifying the Rio Negro approach of reducing from 120 to 36 Veredas. Perhaps the selection of some 10-15 key farmers in each Vereda and concentrating on them would increase the demonstration effect, i.e., improved multiplier in "intra-Vereda" efforts as compared to "inter-Vereda" efforts.

Additionally, as progress tends to intensify operations on some farms, the labor demand will increase part-time employment possibilities for some other small farmers. Also, if and as the economy of the affected region improves, more employment will be generated in rural non-farm activities; if and as price stabilization activities, market, access, etc., become effective, these impact the non-assisted farmer's income position in a positive way.

Nevertheless, it is doubtful that the expansion of this type of direct action activity (such as the integrated projects) can be sufficiently great or rapid to reach more than a limited number of small farmers. This conclusion reinforces our recommendation that alternative means of generating employment (part-time to supplement subsistance farm income contributions to the standard of living of some, and full time to transfer some off the farm and free up land to expand other small farms) be explored in a series of partial analyses. Among these, we again stress the possibilities of employment generation in the commercial agricultural sector (both established and to be established in the llanos), if a systematic process of policy and investment analysis is undertaken to determine the set of policies required for assuring a proper balance between capital investment, technology, and labor use.

III. ADEQUACY OF AVAILABLE TECHNOLOGY

Since the Colombian program heavily emphasizes the provision of credit and technical assistance to the small farmer, the existence of sets of technologies adopted and appropriate to the smaller farmer situation is critical to its success. We have not been able to make a specific appraisal of the actual situation in this regard. However, we have made some observations and gained some impressions.

There is a wide range of technology available in Colombia. A competent research staff and institutional structure exist. Technologies even may exist that are appropriate to the small farmer situation. This is not to say, however, that ICA knows which elements of known technology are appropriate and which are not, and in which area (micro-climate) they will work. Nor does ICA have a systematic process by which it generates, adapts, combines and/or tests such technologies. Nevertheless, our observations lead us to conclude that there is an apparent basic change of attitude within ICA, at least at the integrated project personnel level (both extension and research), which demonstrates an awareness of the problem. For example, in Rio Negro, a "typical" small farm has been established at the local experimental substation. A worker lives on it with his family, just as a farmer would, and he uses the same tools and methods as his "real world" counterpart. Experimentally generated changes in inputs and cultural practices and enterprises are then tested on the "model" small farm for adaptability.

Other examples of this change are:

1. A high yielding, reliable hybrid corn was not accepted by the farmers. In searching for the reason, project staff found that this was because the stalk was too weak to support pole beans that the farmer plants in association with his own. ICA has now gone back to breed in a stronger stalk.

2. It was found that with ordinary corn hybrids that require higher plant populations for optimum yields, excess shading of the associated beans by the high corn plant population caused mildew in the beans. ICA is now experimenting with hybrids and composites that set 2-3 ears of corn per stalk in order that plant populations can be kept low enough not to shade the beans.

3. In some micro-climates, it was found that none of the hybrids did very well. Technical assistance staff began teaching the farmers how to select seed from their own corn, by selecting from the stalk before harvest (selection traditionally is done after harvest) choosing from stalks with multiple ears and other favorable characteristics.

Another indication of ICA personnel (in Rio Negro) understanding of the small farmer's production economics situation relates to recognition of the importance of assisting him in planning his whole farm operation rather than only one or a few enterprises. The small farmers in this area, as in many areas of the world, grow certain things mainly for family consumption and other things mainly for sale. Within each of these categories, he may have two or three different enterprises. For example, in Rio Negro the small farmer grows corn, edible beans, and potatoes, usually in an associated cultivation. He also grows some sisal and maybe some horticultural crops. In addition, he will have a cow, and perhaps some pigs and/or chickens. The corn is mainly consumed, sisal, potatoes and beans mainly sold, and the other items are both consumed and sold.

These farmers have a wide range of enterprises to protect themselves against risk and uncertainty arising from weather and price. If the year is dry, perhaps beans do poorly and sisal does well; when the price of potatoes is low, the price of beans may be high, etc.

ICA/Rio Negro has learned the basic fact that in a low equity and liquidity situation, one must spread one's risk sufficiently not to be put out of business. The small farmer has known this for generations. It was encouraging to see that ICA personnel were moving toward assisting the farmer to intensify his whole farm operation, and recognizing the optimality of such a course when the risk and uncertainty factors are considered.

Much still is lacking in terms of an appropriate technology set. For instance, this year potato prices in Antioquia dropped to 80 pesos "la carga." Last year they were 700 pesos. This price effect appears mainly to be a combination of delayed price response by the farmers, and most farmers planting at the same time. In this area, potatoes can be planted almost the entire year, with some variation in yield, but not so great but what reasonable price premiums can offset yield drops.

The production and market areas for Antioquia potatoes are well-defined. Thus, with some reasonable continuing system of collecting the appropriate information and carrying out relevant analysis on a continuing basis, ICA could arm its personnel with capability to provide technical assistance related not only to production but also to economics. Agents could advise shifting planting dates for potatoes when price projections show low prices for a certain period; they could even recommend alternative crops for price reasons.

Much could be done at the area and regional levels (and perhaps as well at national) in stabilizing prices in this manner. ICA has not yet begun to think in these terms if our contacts were representative.

Much more also needs to be undertaken in the appropriate agricultural research areas -- such things as:

1. Cultural practices -- on steep slopes, no till systems might be appropriate.

2. Livestock production -- instead of recommending conventional high protein purchased supplement feeding for hogs, work needs to be done to determine low cost, home grown feed alternatives such as legumes, root crops, etc.

3. Introduction of new crops -- some high slope areas within Rio Negro apparently were cleared of timber and natural growth and were farmed and eroded so badly they are now abandoned to scrub brush. Poor land crops (e.g., buck wheat) and grasses, no till cultivation, and/or other alternatives should be tested to seek some way to allow the farmer to utilize these areas economically.

4. Hand tool improvements -- as a mixed farming enterprise is intensified, the farmer will find that peak labor demand periods (usually planting and harvest) are beyond the capacity of his family to handle. For certain size farms, outside labor can be hired. For others, this may not be economical if a way can be found to increase the farm family work efficiency. Perhaps the farmer could use a planting "tube" instead of bending over to place each seed. Harvesting might be made more efficient in corn by using a "husking peg" instead of only bare hands. Maybe beans could be hulled using a simple "wringer" instead of hulling each pod by hand, etc.

It is our impression that the awareness of the importance of "appropriateness" of technology is developing at the integrated project staff level, but is less apparent at regional and national levels. Nevertheless, the signs are encouraging.

USIAD should do all it can to strengthen this incipient factor, and attempt to see it implanted throughout ICA for (1) planning research priorities, (2) programming research activities, and (3) carrying out research projects.

IV. REPORTING AND EVALUATION SYSTEM

Progress is being made in installing a reporting system which provides information as to the extent to which services are reaching the farmer. However, there has not yet been installed a system which makes it possible to specifically measure progress against the performance and operational targets set up in the loan agreements. It thus has not been possible to make direct comparisons between targets and accomplishments. Such data as is available, especially that submitted to justify fund disbursements, suggests that while there have been shortfalls in the accomplishment of most of the specific targets established, especially in titling and colonization activities, substantial progress toward their accomplishment has been made.

There is no continuing evaluation process by which the program's impact on agricultural production or the individual farmer's income can be appraised. There are, however, some encouraging signs that this need is coming to be recognized at the individual project level. In both projects visited the responsible Division in the project office was in process of devising means of making appraisals of effects on farmer's incomes.

In Rio Negro, a data format has been designed to take base line data from all farmers who are ICA clients. A format also has been designed for taking continuing economic data throughout the year, by enterprise, which then can be analyzed and compared with the base line data. Unfortunately, responsible staff are not thinking in terms of including a control group,

i.e., farmers not in the ICA technical assistance program and not receiving Caja credit, and farmers that are receiving only one or the other.

In Caqueza, a type of "farm record book" has been developed which is being kept for about 200 farmers. Data now exists for a crop season. We were told that some farmers receiving Caja credit but not ICA technical assistance are included. However, it appears that no farmers without both credit and technical assistance were included. The data were not available to examine. It apparently has not yet been tabulated or analyzed.

USAID should encourage these efforts (there may be others at the project level) to evaluate income effects of the services provided. It would appear advisable to develop a basically uniform system for data collection and processing for all the projects in order that cross comparisons can be made.

USAID might encourage the central ICA office to direct attention here. Without such income information, evaluation has little relevance in formulating future policy and program changes.

V. FARMER PRODUCTION AND INCOME

In the absence of a system of evaluation and with few case studies specifically directed at the questions it has not been possible for us to reach definitive conclusions as to production, income, or employment effects of the program.

In an attempt to gain some impressions of possible program effects we questioned various persons engaged in the program and examined three studies of the effects of credit.[1] It was the opinion of all those questioned that the provision of credit was in fact increasing the production and income of small farmers receiving it.

The study of the INCORA supervised credit program reports on and analyzes the results of a joint INCORA-IBRD study of 1967, and two INCORA USAID studies. The first involved a comparison of the situation of a random sample of 1300 borrowers in 26 projects in the year prior to entry into the program and their situation one year after. The AID-INCORA study is based on examination of farm record data from a sample of farmers in 8 projects for 1969-70 and 4 projects in 1970-71. In examining this report we recognize that the period covered by the studies partially predated the sector

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[1] "The INCORA Supervised Credit Program," by James Schwinden and Gerald Feaster, USDA, and "Small Farmer Credit Activities of the Colombian Agricultural Bank," by Ronald L. Tinnermier, Colorado State University, contained in Small Farmer Credit in Colombia, AID Spring Review of Small Farmer Credit, Volume V, Feb. 1973, No. SR 105, and "Supervised Credit: Its Impact on Profits, Production, Factor Use, Technical Change and Efficiency of Resource Allocation in Corn Production in Colombian Agriculture," by Morris Whitaker, James Riordan, and Thomas Walker, Analytical Working Document #8, March 1973, AID Colombia Sector Analysis Working Document Series.

loans. However, since loans were made to INCORA for small farmer credit before the sector loan approach was adopted, it was hoped that the studies might be suggestive of results from small farmer credit under the sector loans.

The following results are shown by the INCORA-IBRD study:[1]

	Credit Received	Gross Income	Net Income
Before entering program	3,600	9,400	1,500
After one year participation	13,510	18,210	4,110
After 2 years participation	9,320	22,180	6,210

The report of that study is then quoted as saying "These figures show that, with intensive credit assistance, gross income of farms almost doubled in the first year and net income (after debt service) nearly triple In the following year credit assistance could be reduced while gross and net income continue to grow." These figures are apparently arithmetic averages and it is not possible to determine to what extent they were characteristic of the sample or were affected by extremes in it.

With respect to the results shown by the INCORA-AID studies, Schwinde and Feaster conclude that:[2]

(a) The credit provided with supervision has a strong positive effec upon employment generation;

(b) The gross value of product sold increased substantially as a result of credit; and

(c) Income distribution is favorably altered through credit effects upon employment external to the farm and by substantial increase in income, wealth, and level of living of the farmer borrowers.

Net worth of sample farmers in the 4 sample projects is shown as increasing by an average of $232, $871, $993, $1418, and average of $872 or 6.7%, 35%, 34%, 47.9% and 28.6% respectively.[3] Since the results are

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[1] Op.cit., p. 56.

[2] Op.cit., p. 58.

[3] Op.cit., Table 18, p. 63.

given only in averages, it is not possible to determine whether such results are representative of the sample or are highly conditioned by the existence of a few exceptional users. If, as it seems to have been the case, farmers were in the program for an average of about 3 years, net worth increased by about $300 a year on the average.

With respect to the INCORA-IBRD study no information is provided as to size of or products produced on farms included in the study. It is known, however, that the INCORA credit program at that time included substantial lending for livestock and crops not eligible for support under the sector loan. In addition, the figures given do not seem to take account of any effects of inflation and price changes. It is thus not possible to say with confidence whether that experience is suggestive of possible results of the sector loan financed small farmer credit program.

Similarly, no information is given with respect to characteristics of farms owned by or products produced by farmers receiving INCORA credit included in the AID-INCORA study. Some such information is provided for the other 4 projects which "compares borrowers in the sample in relation to all borrowers in the project." Livestock production ranged from 10% to 34% of total loans made in the 4 projects and averaged 21% for all 4 projects as a whole. One of the projects (the one in which the change in net worth is greatest) was basically an irrigation project. Two other projects contained irrigated agriculture to some extent. All included coffee and rice, and cotton and sugar cane were important in some. The distribution by crop, however, is not given. Ten and a half percent of the farms were over 100 hectares in size, 36% contained 10 hectares or less, and 14% contained 5 hectares or less. From this it may be seen that there were substantial differences in this sample in terms of products, type of farming, and size

of farm from the small, even marginal farms, basically located in the highlands, which were stated to be the target group of the credit program supported by later AID sector loans. It is thus not possible to draw from that study very definitive conclusions as to likely results of the sector loan supported program.

The study of Tinnermier is concerned with small farmer credit provided by Caja Agraria which carries on a larger program than does INCORA. Apparently for the purposes of that study a small farmer was considered to be one whose total assets were not more than $5,000 (estimated to be the equivalent of about 5-7 hectares of land). The report of this study states "No data are available on the impact of credit on production, farm income, choice of technology, employment, or on other factors."[1] After listing a number of major problems faced by small farmers (lack of land, poor quality of land, limited access to capital, limited access to services, marketing difficulties, lack of political voice, and high risk) it states "However, even though it is necessary, institutional credit is by no means a sufficient condition for small farmer development."

The study reported in Analytical Working Document #8 attempted to measure the impact of INCORA credit for working capital on a sample of small farmers (1067) providing corn and receiving INCORA credit in 1968, 1969, and 1970. Farm budgets were used for farmers after they entered the program. A linear programming model was used to determine levels of corn production, factor use, profits, and technology in the absence of INCORA credit for working capital. The difference in the current situation as shown by the budgets and the solution of the model was considered to be the impact of INCORA credit.

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[1] Op.cit., p. 57.

The report concludes that "The provision of INCORA credit has had a substantial impact on profits, production, and factor use."

The following results are shown:[1]

Difference Between Current Level and Model Results

	Current Level (a)	Previous Levels (Model Results) Liberal Estimate (b)	Conservative Estimate (c)
Production			
Total	7,409,189	5,588,337	4,807,798
Current Level Increase			
(a)-(b)	1,820,852 (32.6%)		
(a)-(c)	2,601,391 (54%)		
Profits			
Total	3,150,912	2,799,001	2,439,323
Current Level Increase			
(a)-(b)	351,911 (12.6%)		
(a)-(c)	711,589 (30.8%)		

A number of comments seem to be in order with respect to this study. The first is that it does not represent a comparison of situations after provision of credit with those prevailing before receipt of credit. The latter are calculated results obtained from exercise of the model constructed. We understand that some questions have been raised concerning such an approach. In any event one assumption which strikes us as being highly questionable is that "An X increase in every input always leads to an X increase in production in each technology class."[2] Our experience and observation is that without demonstration one cannot assume a proportional (or in some cases any) increase in production from a particular input. Second there is no definition of a "small farmer" and no indication of whether the size and characteristics of farms included in the sample are typical of the

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[1] Constructed from Tables 3 and 5, AWD #8, pp. 13 and 15.

[2] AWD #8, p. 9.

types of farms to which credit is stated as being intended to be directed under the sector loan. Finally, while the percentage increases shown in total income of the sample is impressive, a somewhat different picture emerges when one examines the results in terms of the absolute amount of increase for the individual farmer and of the period of time involved. With 1067 farmers included in the sample, the average increase per farmer is about 330 pesos on the "liberal estimate" basis and about 670 pesos on a "convervative estimate" basis. This amounts to under $14, and $28, respectively, at the current exchange rate. At the then current exchange rates it might have been in the order of $20 and $40. It is not clear from the report just what the period of time is over which the results are calculated to occur. However, 3 years of results are included in the sample. If the above figures for individual farmer income results are divided by 3 the results in terms of annual results become very small indeed: In fact they become so small as to raise the question of whether they are large enough to justify either the risk to the farmer or the cost to the government. We are not able to determine from the report the extent to which the studies show results over a single year.

On the basis of the foregoing we conclude that (1) such evidence as we were able to find suggests that the provision of small farmer credit under the sector loans <u>may</u> result in an increase in the production and the income of small farmers; (2) the evidence is of such a nature, however, as to make a definitive conclusion impossible and to undermine confidence in even a tentative conclusion; (3) some evidence suggests that the absolute amount of income increase per farmer may be very small; and (4) data are not available as to the effect upon the income of the total group of small farmers or as to differences in effect upon particular classes of members of the group.

VI. AGGREGATE PRODUCTION AND INCOME

Data limitations, especially with respect to reliability, severely restrict the ability to reach conclusions as to what has happened in terms of changes in total production, income, and employment in the sector. Uncertainty as to cause and effect relationships would invalidate any conclusions as to the influence of AID's program on these factors. However, it is possible to gain some impressions of how the sector as a whole has performed in these respects.

Considerable data exists with respect to agricultural production in Colombia. However, there is no regular and systematic method of reporting and recording of agricultural production and all reports are based on estimates. Conclusions based on such reports thus are open to considerable question.

The data presented below may be useful, however, in giving an impression of production trends.

According to USDA reports, agriculture's share of GNP in Colombia declined from 29.9% in 1960 to 26.4% in 1966.[1] Since that time it has remained stable. When it is considered that GNP increased by more than 42% from 1966 to 1972 and that historically in most countries agriculture has been a declining factor in GNP, this represents a rather major accomplishment by Colombian agriculture.

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[1]See Foreign Agricultural Service, Colombia Annual Situation Report, American Embassy, Bogota, January 25, 1973, Table 6, p. 34.

Table 1 shows the picture in terms of gross value added. From this table it may be seen that gross value added by crops increased by 8.7% from 1961 to 1964, 9.4% from 1964 to 1967, and 12.3% from 1967 to 1970. Value added by total agricultural production increased by 9.64% during the 1961 to 1964 period, 8.6% from 1964 to 1967, 14.9% from 1967 to 1970, 10.5% from 1968 to 1971, and 9.1% from 1969 to 1972. During the 6 year period, 1966-1972, it increased by 30.9%. This figure is significant in that exercise of the model developed in the sector analysis shows that adoption of the strategy recommended in the Sector Analysis Document would result in a 30% increase in value added over a 6 year period.

Table 1

Gross Value Added Agricultural Production

in Constant (1958) Prices

Year	All Crops[1]	% Increase	Total Production[2]	% Increase
1961	4790	3.9	7808	3.9
1962	4932	2.9	8063	3.3
1963	4826	-2.1	8107	0.6
1964	5208	7.9	8564	5.6
1965	5154	-0.1	8560	-
1966	5375	4.2	8847	3.4
1967	5696	6.0-	9301	5.1
1968	6103	8.8	9933	6.8
1969	6142	-	10250	3.2
1970	6398	4.0	10691	4.3
1971	Not available		10984	2.7
1972	" "		11582	5.4

[1] See footnote one for Table 3.

[2] Sources: National Accounts and GNP Preliminary Estimates for 1971 and 1972.

Table 2 presents the picture in terms of the physical volume of production.

Table 2

Indices of Physical Volume

of Agricultural Production 1961-1970[1]

(1958 Base)

Year	All Crops	% Change	Total Production	% Change
1961	107.7	3.3+	109.6	3.7+
1962	111.7	3.7	113.6	3.6
1963	108.6	-2.8	113.7	-
1964	117.5	8.2	120.3	5.8
1965	116.4	-0.9	120.5	-
1966	121.7	4.5	124.9	3.7
1967	130.2	7.0	133.8	7.1
1968	140.7	7.0	143.0	6.9
1969	142.4	1.2	147.4	3.1
1970	148.9	4.5+	154.9	5.1

This table shows an increase of 9.1% in total agricultural production for 1961 through 1964, 10.8% from 1964 through 1967 and of 14.3% from 1967 through 1970. The index of production of all crops is shown as increasing by 9.7%, 11.2% and 13.6% during the same periods.

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[1] From The Development of Colombia Agriculture, IBRD, February 1973. Source: Banco de la Republica.

A similar result is shown in terms of gross value of production, Table 3.

Table 3

Gross Value of Agricultural Production

in Constant (1958) Prices[1]

(million pesos)

Year	All Crops	% Change	Total Production	% Change
1961	5159	3.4	8817	3.7 over 1960
1962	5351	3.7	9141	3.6+
1963	5221	-2.4	9154	-
1964	5629	7.8	9678	5.7
1965	5575	-1.0-	9695	-
1966	5830	4.6	10046	3.8
1967	6238	7.0	10768	7.2
1968	6740	8.0	11502	6.8
1969	6821	1.2	11859	3.1
1970	7130	4.5	12460	3.4

[1]From The Development of Colombia Agriculture, IBRD, February 1973.
Source: Banco de la Republica.

As indicated in Table 4 below, the index of total agricultural production per capita declined from 1962 to 1966 and remained relatively stable from 1967 through 1972. On a per capita basis, the index of food production has remained relatively unchanged over the ten years after 1962.

Table 4[1]

Indices of Total and Per Capita Agricultural Production and Total and Per Capita Food Production, 1962 - 1972

(1961-65 = 100)

Year	Per Capita Agricultural Production	Total Food Production	Per Capita Food Production
1962	102	100	103
1963	99	97	97
1964	99	104	101
1965	100	107	101
1966	97	109	99
1967	97	112	99
1968	98	118	101
1969	99	120	99
1970	96	124	100
1971 (Preliminary)	95	126	102
1972	97	135	102

From these data, it would appear that both the production of all crops and total agricultural production have increased somewhat more rapidly since 1967 than in earlier years. However, population increases of approximately 3.2% per year have resulted in a situation in which Colombia's ability to meet its domestic requirements for agricultural production has increased very little if at all.

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[1]Data abstracted from Indices of Agricultural Production 1962-1972, ERS, USDA, and AID/W, March 1973.

Approaching the problem more directly, examination of data with respect to the period 1968-72 inclusive, shows that most of the increases in agricultural production have been in the commercial crops involving the use of more modern technology, i.e., cotton, rice, sorghum, soybeans, and sugar. Following 1967, in addition to those crops, there seems to have been some increase in the production of potatoes and a large increase in the production of yucca. The increase in the latter probably results from a large experimental project in the coastal area. Among the minor crops, flowers (which are produced with advanced technology on commercial farms) is the only one for which the average annual rate of growth was higher in the 1965-70 period than in the period 1960-70; all others were lower in the 1965-70 period. This means that the rate of increase was higher in the 1960-65 period than in the 1965-70 period. When the fact of increases in commercial crops is taken into account, it seems clear that there has been little if any increase in the production of other crops on small farms using less technologically advanced methods. The significance of this is that it is precisely this latter type of production on which the sector strategy supported by AID's program has become progressively more concentrated.

We have been unable to locate any time series data on agricultural employment. We are thus unable to reach any conclusions on this subject.

Similarly we have no data on what share of sector income is going to the small farmer subsector. However, two sets of data are suggestive in this connection. First, as pointed out above, such increases in production as have occurred have been in those commodities commonly produced on commercial farms and involving the use of more advanced production methods. This would suggest that any increases in income have also gone to that segment of the

sector. Second, the few examinations which have been made indicated that the income of farmers receiving supervised credit has increased. Further data presented in the AID Sector Analysis Paper[1] indicate that the small farm (under 5 hectares) contribution to sector income is so small and the number of such farms is so large that it would be necessary for the program to reach a very large number of farmers and to result in very large increases in the income of such farmers for total sector income to be affected appreciably.

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[1]See Table 2.2, p. 15, Part I, and Table II-1, p. 156, Part II of the AID Sector Analysis Paper, February 1972.

Chapter 4

THE AID AGRICULTURE SECTOR ANALYSIS*

I. SUMMARY OF FINDINGS AND RECOMMENDATIONS

1. Probably the most important conclusion to be drawn from the Colombian analysis work to date is that although sector analysis work is complex, hindered by many shortcomings, and endangered by many pitfalls, it offers great potential for understanding development problems and finding and testing alternative solutions, if conceived as a continuing and dynamic process that constantly builds upon itself.

2. Work should continue on attempting to derive from the information in the 1972 Sector Analysis Document, Part One, a set of conclusions as to preferred strategies, goals, and some of the more significant policy and investment implications. This could be done on a chapter by chapter basis and then summarized into an overall sector strategy. The present work of the Mission along these lines is commendable, but we fear that the magnitude of the undertaking is greater than the available personnel and time resources presently being allocated. A further activity should involve the integration of Part I of the Document with the results of the quantitative analysis as appropriately modified and reoriented.

3. Subject to the comments and qualifications expressed below, the quantitative analysis which has been undertaken should be continued and should be supported with considerably increased resources. We estimated an annual requirement of something of the magnitude of $400,000-$600,000 annually to be able to adequately refine this analysis over the 1973-1975 period.

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*A document called the 1972 Agricultural Sector Basic Document - 1972 ASBD (and its 1971 predecessor) has been presented to us as representing the Sector Analysis and as constituting the basis for the sector strategy and 1971 and 1972 Sector Loans to Colombia.

4. The entire effort to date provides an improved base for making policy decisions concerning the sector. However, it has not yet resulted in a comprehensive, integrated, and interrelated sector analysis adequate to serve as a basis for the adoption of a global strategy or strategies or for the support of particular programs for the development of the agriculture sector, or for integrated action in major subsectors. Part I of the 1972 Sector Analysis Document presents an extensive description of the sector and its problems which is useful for drawing tentative conclusions and planning further work. While this is an essential element in the development of a sector analysis, it is not analytical in character and does not attempt to reach conclusions as to appropriate strategies or programs. Part II of the Sector Analysis Document represents partial results of the mathematical modeling effort as of early 1972 and contains strategy recommendations based on exercising the models. It goes into unprecedented analytical depth and represents a very significant accomplishment. However, this work had not yet progressed to a point where it could provide a sufficient basis for adoption of a strategy for development of the sector. Finally, there is little indication that the sector analysis activity has achieved more than nominal linkages among (1) the judgmental and descriptive review in Part I of the Sector Analysis Document, (2) the analysis and strategy recommendations based on interpretation of the mathematical modelling output to March 1972 in Part II, and (3) the GOC development strategy as set out in the 1971-74 Development Plan and interpreted in Part III of the Sector Analysis Document.

5. The mathematical modeling effort, nevertheless, has produced valuable results, the most important of which are the following:

a. The results of the analysis to date have provided direction and focus for positive and beneficial debate concerning the development

problems of Colombian agriculture. It has demonstrated that for any solution or set of solutions, there are trade-offs between the different objectives sought and that to quantify these trade-offs is essential to rational policy selection and program design.

b. A highly important contribution is the demonstration of the potentially very high direct, and especially indirect, employment generation effects that can be realized from stimulation of employment generating production and productivity increases in the agricultural sector.

c. The treatment of questions related to income and income distribution are especially revealing in terms of the potential relative impacts on these objectives of the different activities in the sector, as well as in comparison with activities in other sectors.

d. The data file compiled in the process of the work is a valuable asset, not only for future quantitative general equilibrium analysis, but for a vast array of supporting partial analyses so important to realistic sector analysis efforts. A continuing process of updating, correcting, verifying and rejection, should eventually lead to a data bank with greatly expanded analytical possibilities.

e. The construction of the large I/O transactions matrix has demonstrated the feasibility of disaggregating the sector using this technique, in order to show relationships between specific activities that become comprehensible in a planning, programming and implementation context. Further, the unique treatmeat of the household sector, as endogenous to the system, appears to make the matrix a potentially more useful tool in a planning context in developing countries.

f. The process of combining the I/O technique with LP applications should remove a considerable amount of start-up costs for analysis in other

countries where it may become feasible to apply these methodologies.

6. The conclusion that the mathematical modeling analysis has not yet progressed sufficiently to support strategy recommendations results from findings that (a) the cumulative effect of various characteristics of the model and of simplifying assumptions involved in its construction limit the accuracy of its reflection of reality; (b) successful implementation of the strategy derived from exercise of the model would require adoption of supporting and supplementary programs which are not identified and the practicality and implications of which in terms of costs and probably results have not been analyzed; (c) various alternatives for dealing with the problem of the small farmer are not yet fully analyzed; and (d) the strategy derived from exercise of the model is fundamentally interim in nature since attainment of the employment and income levels indicated as possible under model solutions would still leave a significant volume of rural unemployment and, while the income of those becoming employed (or more fully employed) would increase, the productivity and income per unit of employed labor and land would not be increased, and average family income would remain very low.

7. The experience gained in the modeling work so far should contribute to the potentially more effective effort now being initiated with a new data base and improved collaborative arrangements. We urgently recommend, however, that if the analysis is to be continued, as we suggest, the magnitude and complexity of the undertakings be recognized for what it is and that:

a. A broader scope be adopted to include a series of partial analyses that support the central integrating analysis;

b. A wider range of professional talent be brought to bear.

c. A revised time and sequence schedule be developed and adopted, allowing time for data collection and partial and subsidiary analyses;

d. Internalization and commitment within the GOC to a degree greater than now contemplated be a prime supporting objective; and

e. The focus of the work be shifted to Colombia except for purely "state of the art" development work. Such "localization" should go beyond that which we understand to be the present plan.

8. This approach will require the following sequence of events on the part of the Mission and the LA Bureau:

a. Decision renewing the commitment to the sector analysis concept as an effective tool for improving decisions on development strategy, and for identifying and placing priorities on required policies and investments for an accelerated and equitable development of the sector.

b. Decision accepting the added time, administrative burden, and personnel and financial requirements implied in the commitment decision.

c. A technical professional rethinking of the present sector analysis plan, program work schedule, and costs and formulation of a Sector Analysis Action Plan which sets forth the substantive content and rationale for the analysis. The existing SASS team, the OPSA sector analysis group, and certain key USAID, LA Bureau, and GOC professionals, are critical members of any group involved in such a rethinking process. A basic concern in organizing the effort should be to insure that the contributions and concerns of all these parties are taken into account.

d. The technical professional group also must include persons experienced in alternative methodologies and partial analysis relevant to integrating model requirements, and agricultural technicians acquainted with Colombian agriculture. To the extent possible, these should be Colombians. The rethinking process itself must be explicit and systematic if it is to be effective. The LA Bureau may want also to set up a special multi-office

review committee system as a device for marshalling the necessary expertise and seasoned judgment.[1]

e. The analysis team should use a procedure of casting the GOC plan objectives into testable hypotheses as the first step in redesigning the future sector analysis work. They should give special attention to the realism involved in the formulation of hypotheses and assumptions, and how results are to be interpreted in view of simplifying assumptions.

f. Once the technical professional rethinking is complete, a commitment to satisfying the identified staffing and cost requirements must be made by the Mission, GOC, and LA (AID/W).

9. In the absence of such a sequence of events and commitments of all parties, we recommend that the Mission and the LA Bureau accelerate as much as possible the transfer to OPSA of knowledge gained to date (application of methodological techniques, mathematical and programming applications) and, in the absence of future GOC strengthening of its commitment, plan to gradually reduce AID resources for sector analysis in Colombia, scheduling complete withdrawal from the sector analysis activity by the end of 1975.

10. Assuming the institutional commitments previously recommended are forthcoming, and a technical "rethinking" undertaken, the following elements should be included in the analysis agenda:

a. Critical review of all assumptions, both implicit and explicit, including organization of studies and partial analyses to shed light on difficult issues related to assumptions; redesign of the system to remove as many unverified assumptions as possible through disaggregation by region,

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[1] We believe that an "in-house" group, such as the LA/DR/SASS team, should be just as subject to periodic comprehensive review as would an equivalent contract team working under AID procedures, especially in an undertaking as experimental in nature as quantitative sector analysis.

farm size, technologies, management levels, land classes and crop groups, among others. Consideration should be given to the possibility of building separate regional models that link to a national model to achieve disaggregation authenticity, at least for critical factors such as labor and land supply and availability.

b. Carrying out of comprehensive data collection and survey work to supply material for analyses, a considerable part of which effort now is underway.

c. Distinguishing rural labor supply as much as possible by region, skill level, owner family, non-family and landless.

d. Undertaking a series of partial analyses simultaneously with the sector level of quantitative work. These include:

(1) Small farm analysis, especially labor use and agronomic practices in a "whole farm" sense to get at the questions of level of land utilization. Also this group must be disaggregated in order to distinguish between the characteristics of small--(a) commercial, (b) transitional, (c) subsistence, and/or (d) part-time farmers.

(2) Analysis of land and climate characteristics and crop requirements (some work of this type is contemplated).

(3) Examination of credit (and equity capital) policy implications for reallocation by use and size of farm, and supply constraints and facilitators.

(4) Consideration of "technological dualism" (large farm-small farm technological differences) and its implications <u>vis-a-vis</u> foodstuffs, feedstuffs, export products, income

distribution, capital and credit allocations, prices.

(5) Analysis of marketing - farm gate demand constraints, market access characteristics for different crops, different farmers, and different inputs.

(6) Consideration of farmer propensities to accept risk and change, and his trade-offs (related to (1) above).

(7) Price analysis.

Work on the model (as we have been briefed on current plans) should be directed toward more critical examination of assumptions, testing by partial analysis, or system redesign, as well as by field testing and verification.

11. The operations aspects of the sector analysis effort should be localized in Colombia, going further in this direction than is now contemplated. U. S. technicians involved should be stationed in Colombia. Some types of theoretical and testing work related to mathematical and programming requirements in the model might be carried out in the U. S., if the specialized experts required cannot be induced to work in Colombia.

II. DISCUSSION AND CRITIQUE OF THE SECTOR ANALYSIS EFFORT

At the outset, a distinction must be made between (1) the USAID Sector Analysis Document[1] and the activities that went into its creation, and (2) the sector analysis activities associated with generation of the input/output and linear programming models, and the interpretation of output from these models. The latter set of activities presently comprise an important component of the former, but they are not yet co-extensive.

A brief historical resume will be helpful in relating the two sets of activities. In 1970, the Mission made a decision to attempt to integrate existing knowledge about the agricultural sector into a "Sector Analysis Document" to be used as the basis for planning AID assistance to Colombia for development of the agricultural sector. At the request of the Mission, a four-man AID/LA team arrived on the Colombian scene in Feburary 1971 to assist the Mission to advance its "Sector Analysis".

This LA team worked with Mission staff for varying periods (one to four weeks each). The results of the AID/LA input were: (1) a 34-page outline, and (2) a section on employment in the constraints analysis of the 1971 ASBD.[2]

From this beginning, the Mission went on to create an ASBD that was reproduced in May 1971. Although the 1971 ASBD mainly is descriptive rather than analytical in character, it represents a necessary and useful first

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[1] Hereafter referred to as ASBD (Agricultural Sector Basic Document) for brevity.

[2] See page 26 of the Document.

approximation at drawing coherent intuitive conclusions, based upon the review of several years of experience, studies, surveys, partial analyses, etc., that had been accumulating and awaiting such an integrated undertaking.[1]

This undertaking, in addition to serving as the technical underpinning for AID assistance to the GOC in the agricultural sector, also revealed to the Mission and the LA Bureau at the outset that further quantitative investigation would be needed if development assistance strategies and goals were to be selected with a reasonable degree of objective confidence and measured as to their impacts on sector development, national economic development, and "people" development.

In pursuit of these insights, it was decided (while the LA team still was in Colombia in February 1971) that a collaborative Mission-LA Bureau effort would be mounted to attempt to quantify some of the critical relationships involved in the development process.

The research effort between the Mission and the LA Bureau got underway in March 1971.[2] The stated initial hypothesis that: "There is sufficient homogeneity in the sector to permit the overall analysis" was quickly rejected on the basis of "early results of the primary investigation"[3] and the research proceeded along lines aimed at disaggregation of the sector in a meaningful way.

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[1]Part One of the 1972 ASBD is a refined version of this document. Since we briefly review that later document below, we have considered it unnecessary to comment on the content of the 1971 ASBD.

[2]Although the 1972 ASBD states that the effort was collaborative from the outset with the GOC as well, we conclude that the GOC was involved only to the extent of DANE reproducing data documents at Mission cost. This is not to say that relevant GOC officials were not apprised of the undertaking and did not support it, but a distinction should be made between passive "collaboration" and active involvement of GOC personnel and resources in the analytical effort.

[3]General Working Document #2, May 1971.

A. THE 1972 SECTOR ANALYSIS DOCUMENT

As work proceeded on the quantitative analysis throughout 1971 and into 1972, a parallel Mission activity involved revising the original 1971 ASBD, incorporating into it interpretations of the results of the quantitative analysis as these became available.[1]

The documentary results of these parallel efforts were embodied in the 1972 ASBD. That document consists of a total of 289 pages divided into three parts. Part One is a revision of the original 1971 ASBD, continuing to be a descriptive review of the sector based on existing experience, studies, data, etc. Part Two is an explanation and interpretation of the results of the quantitative analysis to March 1972. Part Three is a Mission Summary of the GOC agricultural development planning, implementation, evaluation, and financing system, GOC development strategy, and a 1970-74 budget plan for the agriculture sector by participant entities and source of funding.

Keeping in mind the complexity of the problems, the overall effort to date represents significant technical progress and work accomplishment. In fact, with the relatively limited U. S. professional resources that went into the effort between March 1971 and March 1972, and the absence of GOC personnel involvement, an outstanding amount of information was brought together and an impressive amount of data banking, model design, and manipulation

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[1] In addition, a Working Document Series was initiated by the LA Bureau sector analysis staff (hereafter referred to as SASS, the LA symbolic designation of their sector analysis staff), which served as an excellent vehicle for recording progress and apprising interested parties of the quantitative analysis activities. However, these were not official AID, USAID or LA position papers, and each such document which we examined carried disclaimers to this effect. Because of this, the evaluation team looked upon the 1972 ASBD as the official AID statement, and the Working Document Series papers as background material.

through programming and computer runs were accomplished.

The three parts of the 1972 ASBD show, however, that the sector analysis activity had not progressed to the point of achieving integration of or establishing sufficient linkages among (1) the descriptive review in Part One; (2) the analysis and strategy recommendations based on interpretation of quantitative analysis output to March 1972 in Part Two; and (3) the GOC development strategy as set out in the 1971-74 Development Plan and interpreted in Part Three.

As a result, the document does not approach the crucial task of formulating the broader alternative development program strategies that might fulfill the enuciated but non-specific or non-quantified aims of Colombia's agriculture development policy. The first section, in general, is not pointed to conclusions from which policy possibilities might be inferred. While the modeling work makes some contribution toward this process, we would judge it to be primarily a test of some variants of one possible general strategy, rather than a basis or mechanism for defining and selecting from the whole range of possibilities. The third part provides little information about specification or quantification of goals of the Colombian operating agencies.

Moreover, in terms of strategy, the Part One discussion generally focuses on matters related to improved factor use efficiency in agricultural production and related marketing, including the use of improved technology on small farms and the provision of credit to small farmers to facilitate that use.

The Part Two discussion, in contract, focuses on demonstrating quantitatively that the preferable strategy is to increase production and the employment of labor and land in the sector while maintaining employed factor

unit productivity pretty much at existing levels and utilizing the levels of crop technology currently being used by the average farmer. Additional credit is found to be needed, but only to bring existing unused factors into production.

It thus appears that Parts I and II comprise two basically opposed strategies for sector development, even though they both appear to select additional credit allocations as a basic strategy tool. Unexplained apparent internal inconsistencies of the type described detract from the value of an obviously considerable effort to clarify and understand the sector and alternative strategies for its more rapid development.

B. THE SECTOR ASSESSMENT

For convenience in distinguishing between our discussion of Part One and Part Two of the 1972 ASBD, we shall hereafter refer to the former as "the sector assessment" and the latter as "the quantitative sector analysis", or "the analysis" as may be indicated by the context.

The assessment has collected and arranged by subject matter, a considerable amount of information about the sector. Separate chapters discuss the general agricultural setting and its specific components. These include:

- Production characteristics
- Land development and land tenure
- Infrastructure
- Marketing
- Production credit
- Research, extension and training
- Renewable natural resources
- GOC agricultural institutions

Several of the more serious apparent development problems are identified. Unfortunately, except for the section on renewable natural resources, the assessment does not proceed to draw conclusions nor suggest a strategy or a set of strategies for attacking the problems or issues raised.

Thus, rather than being an analysis, the assessment can be characterized as a description of the sector and an identification of several problems related to its development. The work is yet to progress to the point of linking this body of knowledge in a logical way to a strategy, and consequent policy and investment alternatives or proposals for balanced and equitable sector development. Neither does it seek to draw from the mathematical modeling effort, either in terms of information, significance of the modeling results, or reasoning to conclusions and operational proposals, either with respect to general or specific questions and issues.

In the revision presently underway for the 1973 submission, the Mission is attempting to develop links to policy and investment alternatives. We do not see, however, that sufficient provision is being made to systemize this process nor to provide for the necessary linkages with the mathematical modeling effort. We consider that the magnitude of these tasks is such that they cannot be accomplished adequately without a sustained effort over a considerably longer period of time and with staff not now included in staffing plans. As more and more useful quantitative results become available from the analytical process and from additional data gathering, research and experimentation, these need to be incorporated into the formulations of plan strategy, goals, policy, and investment alternatives. As the strategy formulation builds up, it needs to feed back demands for further analysis from the models, further data collection, and subsidiary and supporting studies and tests.

C. THE QUANTITATIVE SECTOR ANALYSIS[1]

The analysis to date undoubtedly has made an outstanding contribution to the sector analysis approach, and to an understanding of one approach to the application of quantitative analytical techniques to a sector analysis process. As might be expected in such a pioneering effort, there are shortcomings and imperfections, but these should not be construed as demonstrating unfeasibility in the application of quantitative techniques to sector analysis, nor as an excuse for abandoning objectivity in carrying out a most challenging enterprise: that of finding means for accelerating the process of economic and social development in the developing countries of the world.

Rather, such shortcomings and imperfections in an otherwise laudable piece of work, serve to demonstrate: (1) the continuing nature of the analysis process in the sector approach; (2) the complexities inherent in the agricultural sector of an economy; and (3) the urgent need to commit further resources in a coordinated manner to the development of sector analysis techniques and their applications to LDC conditions, which additive efforts can lead more quickly to a mature and tested set of quantitative procedures for analyzing development policy and designing and selecting investment alternatives.

The job of an analyst is not easy. The choices are many and the decisions difficult. He is called on to make superhuman judgment, and worst of all, once the decision is made, it is built into a process that cannot easily make way for a change of mind.

We understand and appreciate these difficulties as we "second guess" the team on their choices, decisions, and assumptions. We recognize that hindsight is a much more advantageous position than foresight. At the same

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[1]This section discusses the work of the joint USAID-LA/DR team. This team has included staff from both USAID/Colombia and LA/DR/SASS. In this section, we will refer to their work as the "Analysis" and to the group as the "Team".

time, in view of the great importance of this pioneering analytical undertaking, we feel that we must point out our reactions in the hope that they will assist future work to be more responsive to development program needs. The result is that considerable space in this report is devoted to evaluation of the work to date and to recommendations for modifications in the future. We see this as a tribute to the significance of the work that has been done and a mark of our support for its continuation.

1. Objectives Addressed by the Analysis

The SASS team used GOC sector development plan objectives as a point of departure in its examination of structural characteristics that could be systematically related to the plan's goals. The team named five GOC objectives as follows:[1]

- To increase productive employment;
- To increase income and its distribution;
- To raise productivity of agricultural resources;
- To increase production in the agricultural sector; and
- To stimulate exports and substitute for imports where advantageous.

The objectives listed by the team are said to be the major ones in that plan. A review of the plan shows other objectives to be (a) the equitable distribution of resources, as well as income; (b) improvement of marketing; (c) campesino training and promotion of their organization; and (d) adequate utilization and conservation of renewable natural resources. Of these, the single objective given greatest emphasis by the plan is that

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[1] 1972 ASBD, p. 154. The referenced source refers to these as Objectives, instead of goals. They are not quantified in the plan. See 1971-74 "Plan de Desarrollo" Part III - Agriculture, pp. 18-22.

of equitable distribution of resources.[1] We understand that there was discussion of using these other objectives but that they were rejected for varying reasons.

In the actual model analysis, trade-offs among and the effects of maximizing employment, value added, and private profits within the existing small farm agriculture structure were appraised. The effects of each strategy upon factor productivity and income distribution (the latter in a quite preliminary way) were examined. However, strategies of increasing factor productivity or changing income or land distribution were not analyzed as alternatives. We understand that analysis will be made of the effects of a strategy for increasing factor productivity as additional data become available.

2. Methodologies Utilized

At the outset of the effort to develop a quantitative analysis, it was decided to utilize input/output and linear programming techniques. The first step was the construction of an input/output (I/O) transactions matrix. It is disaggregated to 72 different production activities, 61 separate agricultural processing activities and 112 additional sub-sectors of the rest of the economy. The linear programming technique is then used to integrate the input/output system thus created with: (a) the specified objectives; (b) the levels of resources available; and (c) the demand limits on each of the outputs, all within the frame of a series of other constraints and assumptions, which will be discussed below. Thus, linear programming is used as a maximizing technique to relate the various input/output coefficients derived from the I/O matrix to the specified available limits of various resources going into agricultural production to particular objectives.

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[1] See the referenced plan document, pp. 5-7, 18, 22 & 28-31. These pages clarify that the plan is referring primarily to the land resource.

The results are intended to indicate how much of each specified available resource is used and what happens to other objectives when a given objective is maximized (how much value added there will be, for example, if employment is maximized). By varying the objectives to be maximized and varying different resource availability levels, the expectation is to build a picture of what would happen to different objectives if the Government were to adopt policies or make investments that changed resource availability mixes.

This, in summary, is the general outline of the theoretical construct of the model used in the SASS analysis. In our review, we could find no compelling reason to disagree with the methodological techniques selected and incorporated into the models, nor with their programmatic frameworks as such.[1] In fact, we are convinced that the basic techniques can be applied in such a way as to reflect realistically the interrelationships of factors in the Colombia agricultural sector and the impacts of applications of alternative development strategies. For further detail on the strengths and weaknesses of input/output and linear programming techniques for employment and related analysis in Colombia, and for a more detailed description of the analysis models, reference is made to Preliminary Methodology Paper #7, Donald V. Coes, Dept. of Economics, Princeton University, 2/24/72, of the SASS Working Document Series.

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[1] No member of the Evaluation Team considers himself to be qualified to judge the efficacy of either the mathematical or the programming applications techniques within the models, and we have accepted them as valid. We recommend that a specialized panel be appointed to look into the highly technical question of the mathematical and programming applications aspects of the analysis as well as alternative basic methodological approaches. We also suggest that the panel consider the question of the applicability of the methodology to the operationally relevant decisions which must be made by program planners and administrators.

3. The Analysis Process

It is not our purpose here to give a detailed account of the analysis process and results. Ample descriptions exist in the 1972 ASBD (Part Two) and in several papers in the analysis Working Document Series. We shall only briefly discuss its major elements.

The SASS team derived figures for agricultural labor force and employment (in 1968) that show an average annual unemployment and underemployment rate of 29.75%.[1] They show a series of tables developed by DANE[2] in 1971, that specify a range of unemployment from 1.9% (open male unemployment) to a projected high of 26%, assuming a maximum labor supply with a 5.4% GDP unformed growth rate.[3] The analysis team based its estimate of available labor supply on data from the 1970-73 GOC plan, and of labor requirements by crop on INCORA data.

Land was divided into five soil classes with six groups of agriculture activities.[4] These constitute the land constraints in the model. Total land area apt for cultivation and pasture was put at 30,137,000 hectares.[5]

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[1] 1972 ASBD, Table II-25, p. 182.

[2] Colombian National Statistics Office.

[3] 1972 ASBD, pp. 171-173. The team used what they considered to be conservative estimates for days worked per month per man (20 days) and they feel that their labor requirements estimates are conservative. Nevertheless, their figures result in much higher unemployment rates in 1968 (29.75%) than any of the DANE estimates.

[4] Jungle lands were treated as a separate class.

[5] See Analytical Working Document #4, Richard E. Sutter, April 1972, p. 9, cuadro 5.

The distribution is as follows:

Class I & LL	3,330,000 has.
Class III	4,797,000 has.
Class IV	6,337,000 has.
Class V	15,673,000 has.

Ministry of Agriculture and Caja Agraria sources relied upon by the agricultural attache[1] put land in agricultural uses in 1972 at 27,000,000 has. of which 3,800,000 has. are in crops, 2,600,000 has. in fallow, and 20,600,000 in natural and unimproved pasture.

In effect, it was assumed that all Class I through III land could support annual crops and all I through IV land, permanent crops.[2] As can be seen, this adds up to a total of 8,127,000 has. available in the model for annual crops, while Ministry of Agriculture figures for 1972 show a total of only 5,054,000 has. in use including all fallow land[3] and the agricultural attache figures show a total of 6,400,000 has. in such use.

Further the analysis assumption makes an additional 6,337,000 has. of Class IV land available for permnent crops making as assumed total availability of land for annual and permanent crops of more than 14,400,000 hectares. This means an estimate in the model of land apt for annual and permanent crops 2.25-2.8 times the amount of land now in such crops and in fallow; that is to say that 55%-65% of the land that could be in crops is unutilized or in unimproved pasture.

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[1]See Colombia: Annual Situation Report, No. CO-3022, Foreign Agricultural Service, 25 Jan 73, Table 8, p. 36. See also Ministerio de Agricultura, Programas Agricolas, OPSA, Dec. 72, 2.1.1, p. 14: which shows 27.4 million hectares available for potential crops and livestock use of which 5.0 million hectares are in annual and permanent crops and fallow.

[2]See Analytical Working Document #4, pp. 8-10, cuadros 4,5,6 & 7 and accompanying text.

[3]See Ministerio de Agricultura, Programas Agricolas, cuadro No. 10, between pp. 14 & 15.

Eight objective functions were used:

- Total employment, derived from coefficients for each activity.
- Value added derived from the I/O transactions model, including wages, salaries, interest, rents and profit.
- Private profits, defined as including the latter three items in the value added function.
- Five weighted income functions were used to analyze income distribution.

Constraints were estimated (in addition to those estimates already discussed for labor and land) for working capital and markets. In the case of working capital, coefficients for each activity were estimated from the I/O model by summarizing the cost of purchased inputs and labor used. This was not reduced by the amount of unpaid family labor, nor was multiple use of land and capital during the calendar year considered.

For internal consumption, the market constraint was estimated for each product, using 1968 consumption as the base year and projecting annual increases in demand based on projected population increases, income elasticities of demand, and projected rates of real per capita income increases.

Export markets were estimated based on available export market demand and price information, and Colombian costs of production for the particular crop.

4. Results and SASS Strategy Recommendations

Exercise of the model for objectives of maximizing employment, value added, and private profit, respectively, shows that the value added maximization objective generates nearly as much employment as the employment maximization objective but with much less negative impact on private profits. Based on these runs the SASS team concluded that a strategy of maximizing value added was the preferred option. Discussions in the ASBD of results in

terms of land and labor utilized are in terms of an employment maximization strategy. Results of the analysis showed the needs of the two strategies in terms of demands for those factors not to be significantly different.

The strategy recommendations as summarized in the ASBD is: "In a very general sense the strategy which we suggest, and which is closely related to our focus on small farms, is that expanded resources, both traditional and modern inputs, be made available to small farms to expand the production of certain commodities at roughly the levels of crop technology currently being used by the average farmer in Colombia. It is recognized that "technology" is really a series of technologies. Changes in some of these technologies (marketing for example) might be very important to meet market requirements and have less adverse effect on employment generation than some others. In view of the importance of the employment and income generation objectives and of the desire to increase exports, however, the strategy of holding the (average) level of technology constant should be maintained until the agricultural sector reaches reasonably full employment of its resources (labor, land, markets)."[1]

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[1] 1972 ABSD, p. 159. Analytical Working Document #2 of April 1972, gives more indicators of some alternative interpretations for strategy and strategy combinations than does this official document recommendation. It is not clear why the team decided to opt for this somewhat exclusive and definitive recommendation in view of the caveats implied in the discussion in AWD #2. We have been advised that later results of model runs have been interpreted and a modified set of strategy recommendations will be made later. It is expected that these later recommendations could obviate some of our present criticisms. Some question exists as to what is meant by "holding the (average) level of technology constant". As best we have been able to determine from discussions with team members, what is meant is that existing technologies now in use for production of particular crops are held constant but that by changes in the crop mix, changes in average levels of technology applied may occur as a result of differences in the levels of technology now applied to the production of the various crops.

This strategy is to be accomplished partly by bringing additional land into production and partly by shifting the product mix in favor of more labor intensive products. Potential crop area utilization levels would increase by 1975 (over 1968) from an estimated 3,893,000 has. to 5,300,000 hectares, and livestock area utilization from 28,464,000 has. to 37,534,000 has. Land would be allocated to particular products, starting with the most labor intensive, producing to the level of constraints (demand, land class, etc.) imposed on it and working on down the list toward the least labor intensive products until 100% of the crop land is fully utilized, while at the same time increasing the amount of land utilized for livestock. Extra livestock land apparently comes from presently unoccupied virgin jungle and prairies.

This program would change the percent of employment of the total agricultural labor force from 70.1% to 79.7%, increase total value added by 30%, decrease value added per man-day worked by 1% and decrease value added per hectare used by 2%. Total value added from total agricultural land area would increase by the same percentage as total value added (30%), and value added over total labor force would rise 12%.[1] The real wages of the labor force (that is wages per unit of time worked) would not increase. Wage incomes would increase as those defined as underemployed become more fully employed.

D. CRITIQUE

1. Observations on Contributions of the Quantitative Analysis

Within the constraints imposed on the team by lack of essential data and the scope of the studies, we consider their effort to constitute an outstanding contribution to the "state of the art" of sector analysis, and

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[1] 1972 ASBD, p. 170.

additionally, an unusually valuable contribution to the dialogue concerning analysis of agricultural development alternatives in Colombia.

More specifically, the construction of the large I/O transactions matrix has demonstrated the feasibility of disaggregating the sector using this technique, in order to show relationships between specific activities and make them comprehensible in a planning, programming and implementation context. Further, the unique treatment of the household sector, as endogenous to the system, appears to make the matrix a potentially more useful tool in a planning context in developing countries.

Additionally, the process of combining the I/O technique with LP application should remove a considerable amount of start-up costs for analysis in other countries where it may become feasible to apply these methodologies.

The data file compiled in the process of the work is a valuable asset, not only for future quantitative general aquilibrium analysis in Colombia, but for a vast array of supporting partial analyses so important to realistic sector analysis efforts. A continuing process of updating, correcting, verifying, and rejection would eventually lead to a data bank to support virtually unlimited analytical possibilities.

The results of the analysis to data have provided direction and focus for positive and beneficial debate concerning the development problems of Colombian agriculture. It has demonstrated that for any solution or set of solutions there are trade-offs between the different objectives sought and there are benefits to quantifying these trade-offs.

A highly important contribution is the demonstration of the potentially very high direct, and especially indirect, employment generation effects that can be realized from stimulation of employment generating production

in the agricultural sector. It indicates that some of the past disappointing performance of agricultural programs may be more the result of improper selection of programs rather than any inherent lack of multiplier linkages to the rest of the economy.

The treatment of questions related to income and income distribution are especially revealing in terms of the relative impacts on these factors of the different activities in the sector, as well as in comparison with activities in other sectors. Unfortunately, the analysis has not progressed yet to the point where it can adequately treat income redistribution impacts of other possible policy choices for use of productive resources. Further elaboration of this part of the model would be especially worthwhile.

2. Deficiencies in Quantitative Analysis

Having pointed out the obviously valuable contributions made by the analysis to date, we turn next to a critique of some of the "problems" of using the model not related to methodological techniques of modeling. In this critique our comments will be of two types: (1) those related to the data basis and assumptions involved in the construction of the model and used in the model runs, and their possible effect upon the meaning of the results; and (2) those related to the adequacy of the analytical basis for the strategy recommendations. In many instances these considerations overlap and are interrelated and such a distinction is difficult, if not impossible to make. Since such a distinction is helpful in making clear our viewpoint and our suggestions for future analytical activity, we will make the attempt whenever possible, while taking a topical approach as we format.

Treatment of Labor and Land Constraints

Earlier discussion pointed up the divergences that exist in data on

labor requirements and labor availability and on the supply of agricultural land. The data developed by the team on these factors gave a larger unemployed labor pool than any of the estimates from other sources, and larger amounts of under and unutilized crop land in farms. It further matched crop groups to land classes in liberal ways.

The results of the analysis are highly sensitive to the resulting possible data bias, because:

(1) To achieve the total agricultural labor absorption shown by the results (maximizing the employment objective), employment virtually was 100% for the month of August. If a more conservative total agricultural labor pool had been accepted in the original data (or a more liberal labor requirement or both), it would have resulted in a reduced overall absorption of agricultural labor because of a labor shortage in the peak month.

(2) To reach the levels of production of labor intensive crops to employ the labor shown by the results of the model run, it was necessary for the area under crops to be increased from 3,893,000 hectares to 5,300,000 hectares, a 36% increase by 1975. To reach the total levels of production and employment results would require utilization for crops and livestock of all the total agricultural land area, calculated as being 42,834,000 hectares. This is an increase in agricultural land area utilized from 32,357,000 hectares in 1972 to 42,834,000 hectares.[1]

We are not in a position to reach conclusions as to the accuracy or inaccuracy of the data with respect to the total agricultural labor force

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[1]Analytical Working Document #2, p. 51 (Table 25)

or total supply of agricultural land. In connection with the total labor supply, SASS team representatives have pointed out that they consider the figures used to be conservative in that in calculating man-days of availability a figure of only 20 working days a month and 240 working days a year was used. Whether this is adequate to compensate for any possible over estimate of the extent of unemployment, we do not know. We would point out, however, that the SASS team itself has said "..we conclude that no one has a very close idea about the size of the rural labor force."[1] We are convinced, however, that a requirement for an employment rate of 98.6% of available labor in the peak month is unrealistic. Again, whether the use of 20 working days a month and 240 days a year is adequate to compensate for this lack of realism we do not know. In reaching a conclusion, however, account must be taken of the seasonality of agricultural production activity and of the effect of weather upon the ability to utilize labor.

The question of the treatment of the problem of the location and mobility of labor is touched on below in connection with the discussion of other assumptions.

To achieve the level of land used for crops required by the model solution, 100% of fallow land in 1972[2] would be brought into continuous crop production, or land Class I-IV pasture land would have to be brought into crop production to the extent any land were allowed to fallow.

In addition to the increase in use of land for crops, land utilized for livestock would increase from 28,464,000 has. to 34,534,000.

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[1] ASBD, p. 170 and Analytical Working Document #2, p. 53.

[2] The Ministry of Agriculture estimated that a total available crop land area of 5,054,000 has. in 1972, 1,581,000 or about 30% of the total was in fallow. See Min. Agr. Programas Agricolas, OPSA, Dec. 1972.

According to the SASS team, the derivation of land availability by class is based on reliable soil mapping and is supported by independent observers. Furthermore it states:

> "Based on the analysis so far conducted, and supported by other research, it would appear that significant quantities of land are available in a physical sense in the small farm areas. Most of this land would appear to be inside the farm and hence dissimilar to the labor case where increasing labor availability would require expansion of working capital availability."[1]

Also:

> "Even though areas cultivated as a percent of total land drops significantly as farm size increases there are substantial areas in small farms which are either not used at all or are in extensive livestock production and which could be utilized for crops. An objection to this hypothesis commonly made in the U. S. is that the land in pasture is generally of such a low quality or with problems of steepness or drainage that it could not be incorporated into crops. Since the crops characteristic of small farms are not mechanized anyway, and since the crop land now in use is generally very steep, this appears to be less important in Colombia than elsewhere, although the lack of infrastructure is an important problem with similar effects. In some cases permanent crops are grown (and could be expanded) on land physically too steep for beef (though other livestock, goats, sheep, etc. could be grazed there). The land base of small farm mountain agriculture in Colombia has to be seen to be believed. Having seen the successful production of a wide variety of crops on land with more than 50% slope it is difficult to believe that there is a significant land constraint for permanent crops in the small farm areas."[2]

As in the case of the labor supply, we are not in a position to reach conclusions as to the validity of the data with respect to the total supply of land used in the model. We can only point out that legitimate questions can be raised as to their accuracy, and suggest that further verification may be needed. Aside from the question of land supply, however, the requirements of the model with respect to land actually to be used are, in our opinion, not realistic.

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[1] ASBD, p. 162 and Analytical Working Document #2.

[2] ASBD, pp. 162-163 and Analytical Working Document #2.

We are not persuaded by the argument that the removal of a labor constraint on farmers (i.e., provide them with credit so they can afford to hire labor) will cause them to bring presently fallow land into production and/or shift Class I-IV land from pasture to crop production. We would not quarrel in principle with the proposition that such could occur on some farms of certain sizes, in some regions for some fallow or pasture land. But we cannot accept that 100% of the fallow land lies fallow because of lack of working capital to hire labor or, in the alternative, that substantial amounts of pasture land are not in crops for that reason. Such a proposition runs too much afoul of what one would expect to happen in a country with a rural population density such as that in Colombia.

If one were to postulate that the small farmer lacks improvement capital to bring into production his marginal land, we might be more convinced. However, even in that case, more evidence would need to be brought to bear in order to confirm the postulate. It may be that under present cost/return relationships the small farmer finds it uneconomical to invest the capital required to bring his marginal land into more intensive production, and without such improvement, it is uneconomical to grow more intensive crops.

In any event, it appears to us that a model solution which requires the utilization of the total (100%) of the agricultural land area overstates practically and economically attainable results.

The SASS team working documents have expressed concern with the general question of the reliability of data used. For example, "An early concern (was) with the reliability and accuracy of the data directly ... Obviously the question of reliability of basic data is a vital question and at the

same time difficult to estimate directly. Careful sensitivity analysis requiring time and money will be necessary before this issue can be carefully considered."[1] We would add that careful field experimentation would be desirable to verify the practical feasibility and identify resource and administrative requirements and possible unforeseen bottlenecks of all kinds before large scale programs are launched.

Fortunately, the data problems described should be relieved considerably by the new data that is now available from the 1970 Agricultural Census, together with the data which will become available from the 1973 national sample farm and rural consumption surveys. The major contribution made by the program, and particularly the USAID member of the team, in promoting and developing questionnaires for the sample surveys, is to be commended.

Realism of Assumptions

The validity of model results is, of course, dependent upon both the degree of accuracy of the data and realism of assumptions as to conditions which must exist for the results to obtain. The two are closely related. It appears to us that, at the time strategy conclusions were drawn, some of the assumptions implicit in the model were either unrealistic or not supportable by data available. Some of the more important assumptions implicit in the model are set forth and our comments concerning them are given below.

1) Location and mobility of land and labor. The model assumes that there is sufficient labor at those places where there will be a demand for it, and at times of that demand, as required by the model solution, or that labor is sufficiently mobile to meet that demand. Whether such conditions obtain has not been

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[1] Analytical Working Document #2, pp. 21-22.

demonstrated and whether they do had not been fully analyzed at the time of the model runs. We understand that account has been taken of this question in the model by use of a figure for total labor supply which falls into the lower range of the analysis team's estimates of possible supply and in the use of a commodity approach. Questions as to the validity of calculations of total labor supply have been discussed above. All things considered, it seems to us somewhat uncertain that the existence of a larger total labor force than is required would necessarily compensate for spatial and/or mobility requirements for utilization of that supply.

The SASS team itself suggests that this question needs further investigation as indicated in the quotation relating to the need for geographic disaggregation from Analytical Working Document #6 which is given in item (2) below. Also pertinent in this regard are comments as follows by Van de Wetering[1]:

"The limits to production are provided through land and labor restrictions. There are twelve labor restrictions, one for each month. This appears reasonable only under two assumptions. Either the agricultural labor force is spatially very mobile or else all regions must have an identical activity mix, such that the separate spatial monthly demand profiles for agricultural labor are scaled down versions of the national monthly demand profile. Suttor's subsequent assumption of a large number of separate ecological zones rules out the latter.

The assumption of complete spatial mobility of the agricultural labor force will overestimate the value of the objective function, be it measured in terms of value added, employment, or some other performance variable. It also overestimates the benefits of proposed resource expansion projects."

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[1]Van de Wetering, Unpublished Paper, Iowa State University: On a presentation "Agricultural Sector Models: The Colombian Case", by Richard Suttor to the Mid-Continental Regional Science Association. Oklahoma State Univ., Stillwater, Okla., April 13-14, 1973.

(2) Access to markets and inputs. For the model result to obtain, all unutilized (or underutilized) land must have, on the average, access to the markets for the products to which it will be devoted in the model solution, and to the inputs required for the production of such products, equal to that of land used for the production of such products in the base period. This involves assumptions with respect to physical accessibility, availability of transportation, distance and costs. Further, it involves assumptions with respect to location of land on individual farms, within regions and nationally.

The validity of this assumption is not examined in the analysis. It strikes us as rather heroic. The model results must be sensitive to it since the degree to which it is invalid will constrain the model solution requirement for 100% utilization of the supply of agricultural land and the model results in terms of both employment and the probability of expanded production.

These questions regarding both the above assumptions suggest the need for further geographic disaggregation in the analysis. This necessity has been partly recognized by the analysis team in the following statement.[1]

> "Geographic Disaggregation: The initial data on agricultural production indicated significant regional differences in the composition of agricultural output, the seasonality factor, and the technology of production. It was felt that at least some regional disaggregation would be necessary in order to derive useful planning fo the sector. Consequently, 8 regions in Colombia were distinguished based on regionalization maps from "Planeacion". At this stage of the analysis, however, the regional differences are not presented due to the fact that the analysis has not reached the stage of disaggregating to the 8 regional sub-systems. It is of utmost importance that these analyses be conducted at that level in order to

[1] Analytical Working Document #2, pp. 10-

highlight the important implications of regional differences. This is particularly important with reference to the seasonality of labor demand. At least one study indicates that in the commercial cotton growing zone in the north coast, labor availability during seasonal periods is a constraint on expanded cotton production. The fact that significant labor surplus exists in neighboring regions during the same month, does not appear to have solved that specific seasonal constraint. In many different portions of the analysis one should bear in mind that these analyses, while very disaggregated by commodity sectors, household groups, and in some cases by firm size, did not include the important regional disaggregation."

(3) Productivity of land shifted to different uses. The model assumes that land to be shifted to the production of labor-intensive crops and other uses (including both land now unutilized and land being used for production of different products) in the model solution is as productive in the new use as was land utilized in the base period for purposes required by the model solution.

Such an assumption is contrary to what one would expect to be the case, especially since it has been stated in the analysis that most of the increased utilization is of land already in farms. One would expect that a farmer would utilize his more productive land first. Even if, as is argued by a SASS analyst, it is the practice in Colombia to leave considerable productive land fallow for considerable periods, it does not appear that all land suitable for crop use is regularly rotated through fallow. Further, we are not convinced that it is possible to increase the land area under crops by 36% and the land area under livestock by 32% over the base period, and to bring the agricultural land area utilized to 100% without putting into use land which is less productive, on the average, than that used in the base period.

We would also doubt that land used for other less labor-intensive crops in the base period would be likely to be as well

suited to the production of labor-intensive crops as was the land actually being used for the production of labor-intensive crops in the base period.

(4) Land conversion and development costs. The model results require that unutilized land be brought into production and that significant amounts of land now in use be shifted to other uses without development or conversion costs. This assumption is related to that discussed above relative to the productivity of land in new uses and comments made there are applicable. As indicated above it appears to us that it is likely that the land not producing in that activity is closer to the margin than land producing in that activity, if not submarginal. More than likely, a capital improvement investment would be required to move that land away from the margin, and perhaps that would be necessary before application of labor and existing use levels of technology would make profitable its incorporation into production. Even if the land to be shifted to other uses is inherently as productive as land in such uses in the base period, conversion to such use seems likely to require the incurring of costs. This implies a capital requirement for implementing the strategy which has not been considered in the analysis. Such capital improvement inputs without concommitant productivity increases might well be uneconomical.

The analysis team argues that costs of changes in land use are included in production costs to the extent that such changes occurred in the base period. They argue further that such costs were significant in the base period because of the practice of shifting land in and out of fallow. We suggest, however, that

the changes in the base period were likely to have been small in comparison with the large scale changes required by the model solution and that the bringing of all available crop land under use will require costs considerably in excess of any costs of shifting crops encountered in the base period.

(5) Managerial capacity of farmers. It is assumed that all farmers can produce a product on more land and with larger and a different mix of inputs of labor and other factors with the same efficiency as they managed smaller inputs and different combinations of the factors in the base period. We would doubt that this is the case but are not able to assess its significance to model results. Insofar as it is significant, its effect, of course, is to permit overstatement of model results. The cost of technical assistance and training to realize the necessary degree of efficiency would need to be included in the feasibility calculation.

(6) Relative price relationships. The model assumes that relative prices will remain constant. The analysis team has recognized that there is a problem of useful price analysis. The ASBD states:[1]

> "In Colombia, as in all Latin American countries, there is a lack of reasonably useful price analysis. As a result useable demand functions for many products are currently unavailable. Though this analysis suffers from a serious lack of the kind of data needed to accurately estimate demand and supply functions, attempts should continue to be made. In our analysis, we have attempted, in the absence of price elasticities of demand, to treat demand as a fixed quantity at approximately constant relative prices."

The model thus omits the possible significant effects of changing price relationships. Surely, increases in the demand for and

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[1] ASBD, p. 258.

supply of agricultural products, and shifts in the pattern of demand for inputs, as significant as those required by the model results will be accompanied by changes in price relationships occasioned by differences in supply and demand elasticities for different commodities. Considerable caution thus is needed in applying analytical results which involve an assumption that price relationships will remain constant.

Critique of Strategy Recommendations

The foregoing discussion has been concerned with the realism of certain assumptions implicit in the model. The following will be concerned with certain other assumptions, the realism of which will affect either the meaning and dependability of results in the model runs, or the strategy recommendations based on exercising the model, or both. It is also concerned with questions about the choice of objectives.

(1) Capital Investment Levels. There is an analytical assumption that private investment and credit will remain constant for all model solutions, including those in which private sector profits are lower than they would have been in 1972 under a profit maximization objective and in which the rate of increase in profits is less than for other solutions; or, alternatively, if governmental credit is added at a higher rate, it will be as productive as existing private capital and credit. Involved in this assumption is the further assumption in the runs involving less than profit maximization that farmers will, in fact, invest their own and borrowed capital in a way which will produce less profit than alternative investments.

A SASS team member, in discussions, agreed that in principle, this assumption limited the applicability of strategies based

on the model. He argued, however, that the individual farmer in general will not know the results of alternative strategies, and it may not be difficult to induce him to invest in the government preferred strategy, or if he is aware, it should be possible to induce or compel him to adopt the preferred strategy by a strict tying of government credit to commodity uses, or by price supports, subsidies, or other means.

We agree that in order to be effective, implementation of the strategy would require some such programs in support of the credit programs recommended. The strategy recommendations, however, do not consider the necessity for such supplementary and supportive programs or appraise their implications. Further, it would seem that analysis of such a strategy should include careful examination of its possible implications for capital formation in and flight from the sector.

(2) Adequacy of agricultural support systems. For the strategy recommended on the basis of model results to be effective (or from one point of view for the model results to obtain) it is necessary that the various agricultural sector support systems (input production, distribution, and marketing systems; output distribution and marketing systems; credit systems; etc.) be able to cope adequately with any dislocations inherent in supply and demand pattern shifts caused by changes in the production mix called for by the strategy (or the model solution). The adequacy of those support systems was not analyzed in the model or in the Part I assessment.

The dangers involved in this assumption become apparent when one considers the present inadequacies and inefficiencies of

input and output markets, credit systems, etc. An additional adjustment burden usually decreases efficiencies and increases slippage even more. These factors would tend to increase input prices and lack of availability, decrease farm profits and restrict farm income, make more difficult market entry, and dampen effective supply and demand levels. This tends to be more serious as one moves into the more labor-intensive, perishable commodities.

As in the case of item (1) above, we are led to the conclusion that successful implementation of the strategy would require a number of programs designed to enable the agricultural sector to support the strategy, which programs are not indicated or analyzed in either the quantitative analysis or the strategy recommendations. The costs of such programs might seriously affect the conclusions of the analysis.

(3) Consideration of objectives. With respect to the plan objective of equitable distribution of resources our understanding of the possible applications of the methodologies selected by the team would indicate that one can address the question of impacts of land redistribution, given adequate analysis of the effects of impacting variables, so that proper coefficients might be applied. If this objective could not be addressed with the methodological techniques first selected, an examination of alternative methodologies might have led to their selection -- which would have provided additional dimensions of analytical capacity.

The analytical documents examined indicate that the objective of raising the productivity of agricultural resources was one

of the five selected as the starting point for the analysis. We do not find, however, that this objective has been specifically addressed by the analysis and compared with other objectives in terms of trade-offs. Raising the productivity of agricultural resources in the sense of yields per unit of land and labor used, has not been specifically considered as an objective in the analysis nor the alternative systematically explored in developing strategy recommendations. The team recommended strategy, based on the model runs, results in a slight decrease in productivity (in terms of per unit value added), for employed land and labor.

The team states that "We conclude that the expansion of credit availability to small farmers, in selected commodities, directed at working capital for labor, animal power, chemical inputs, seeds, and land rental would have significant impacts upon the major goals (except labor productivity)."[1] In discussion, it was argued by a member of the SASS team that adoption of the recommended strategy would result in an increase in factor productivity in the sense of output per unit of the total supply of a factor whether applied or not, rather than output per unit of the factor applied. Labor productivity would thus be measured by the total output per member of the labor force whether employed or unemployed, and that this was an appropriate goal in view of the large rate of underemployment and low total income. The discussion on pages 226 and 227 of the ASBD makes reference to both

[1] Analytical Working Document #2, p. 50.

these concepts but appears to us to be somewhat ambiguous on the question of how productivity is treated in the analysis.

The analysis had not reached a stage which would permit consideration of the income distribution aspects of the GOC objectives. It is stated that, "Unfortunately, the Linear Programming analysis, which could offer considerable insight into the completeness or complementarity of income distribution and other goals, has not yet reached the stage at the time of this writing of including the direct and indirect effects."[1] It is also indicated that only slight changes in income distribution resulted when employment was maximized and that the share of the lower median group actually decreased slightly.[2] The objective of stimulating exports and import substitution have also not been treated.

The fact that these objectives were not addressed or that the model had not been developed to a degree sufficient to deal adequately with them does not, of course, necessarily bring into question the conclusions drawn from it with respect to the results of pursuing other objectives. It only raises the question of how results should be used for strategy recommendations prior to exploration of other important strategy options, and the tradeoffs among objectives.[3]

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[1] See Analytical Working Document #6, p. 130.

[2] Analytical Working Document #6, p. 141.

[3] Comments by H. Van de Wetering (op. cit.) are of interest in this connection. Pertinent comments are: "Objectives included in the model refer to production, employment, income distribution, but do not include the distribution of land ownership, or similar objectives related to a reordering of existing institutions in the agricultural sector. The ordering among above objectives is important. In Colombia, increased agricultural production might not be considered to be a policy objective prior to attaining a minimum goal in the distribution of land ownership."

Summary Comments on the Analysis Process and Program

Our final comments concern general points related to both the modeling effort and the strategy recommendations and to the approach to getting the analytical effort underway.

(1) Cumulative Effect of Simplifying Assumptions

We have treated various implicit and explicit assumptions of the model at considerable length. Some are ingenious ways of compensating for missing information and supporting analysis. All economic analysis has to use simplifications that do some violence to the complexity of reality. The problem is not so much that of tolerating the possible oversimplifications and margin of error stemming from any one of the assumptions as it is the cumulative effect of all of them combined interacting with each other on the model results. Considering such cumulative effects, we believe that the model results can represent real world relationships and possibilities only to a limited degree and that the results shown by its exercise are not dependably near enough approximations of actual results to justify major policy decisions based on them. This is not to say that the model, even in its present state, cannot provide some useful ideas for consideration in strategy, policy, and program selection. Certainly it suggests strongly the potential employment advantages of labor-intensive crops and the desirability of exploring the useability of uncultivated land. Whether or to what extent that potential can be realized through credit programs, especially when not accompanied by supporting and supplementary programs, strikes us as more problematic and in need of further analytical testing and field experimentation.

(2) Limited Scope of the Model

Even if one accepts the model results to date as a guide for a feasible program and for achievable production and employment goals, the question

remains whether the strategy proposed is an appropriate step on a longer-range development route for the country. It may be sensible to put available manpower to work now even without major improvements in resource productivity. It may also be sensible to bring an integrated package of production and productivity-stimulating goods and services to the small highland farmers in the kind of pilot area programs the GOC is now operating. It seems apparent, to us, however, that while these approaches may be necessary and desirable ways of dealing with an immediate problem, ultimately they are only interim measures. Even under the strategy recommended, the model solution shows a continuing significant volume of rural unemployment and no increases in returns to employed land and labor.

Large increases in the productivity of labor and land are required if rural people are to enjoy real incomes and levels of welfare comparable to those enjoyed by urban workers, and ultimately, stabilization and probably a decline in the size of the agricultural labor force. Because of the likely ultimate need to achieve large improvements in productivity, we believe that the planning effort, and therefore the analytical process, should take into account this larger problem in a basic way by analyzing the potential of an alternative development path and looking far enough into the future to check on the appropriateness of the direction of shorter-range programs.

(3) Heavy Reliance on Integrating Models

It appears to us that the analytical effort has relied too heavily, or at least at too early a stage, on integrating models both in terms of analytical methods used and as the basis for strategy conclusions. We believe the planning and results of the model runs would benefit from (1) critiques in terms of "experienced judgement", other data estimates, agronomic feasibility, "people" feasibility, etc.; and (2) support, at a relatively early

stage, by partial analyses (or case studies) to shed further light on some of the simplifying assumptions, data choices, coefficients, etc.

In our opinion, too much emphasis was placed on putting the model into operation and turning out results within a short time frame. If there was an externally imposed time frame, as a practical matter, the team then had no choice but to short-cut planning, data selection, verfication and simple assumptions. However, they might have pointed out more clearly the limitations of the analysis for program strategy and recommendation purposes, and indeed, might have estimated "confidence levels", "discounting" or "weighing" factors to apply in interpreting the results of the various model runs,[1] or even presented their results as "illustrative" of what a more comprehensive analysis would provide.

(4) Undertaking to do the Job Without the Resources Required to Carry It Through

We suspect that deficiencies in and shortcomings of the analysis result, at least in part, from an attempt to do more than available resources permitted. We raise the issue here in order to emphasize our belief that a much larger resource commitment to the quantitative sector analysis work over the next three years is a prerequisite to a successful accomplishment of the purposes of the model analysis and the internalization objectives. Although the exact level of required commitment cannot be estimated until completion of the professional "rethinking" process referred to elsewhere, our rough estimate would set commitment requirements at three times present levels.[2]

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[1] It is true that the frequency and nature of the cautions became more pronounced in the November, 1972 Analytical Working Document #6 than in Part Two of the 1972 ASBD, March 1972.

[2] See succeeding sections that suggest in a general way some of the elements that should be included in the future quantitative analysis work, and estimate of the level of commitment to date.

(5) Inadequate Collaborative Arrangements

While GOC agencies and personnel have been involved in the collection of data, arrangements for their collaboration did not provide for their full participation in the conceptualizing of the undertaking, the development of its scope and content, the analytical work, and the formulation of strategy recommendations. Three reasons were given for this: (1) "the exploratory methodological nature" of the first modeling phase precluded Colombian involvement in the analysis;[1] (2) delay in obtaining the broadest possible support by Colombian entities and in interagency cooperation required by such an effort, plus two changes in ministers of agriculture, prevented early involvement of Colombians and Colombian entities in the analysis;[2] and (3) there was not any reasonable point of collaborative entry into the analysis on the Colombian side because of absence of qualified staff.[3]

We suggest that the three reasons stated above imply that it was premature to launch a full scale model analysis effort at the time it was undertaken. Rather, these circumstances made it inevitable that any effort along these lines would necessarily be limited to an "in-house" exercise designed at most to improving the "state-of-the-art" and, perhaps, provide some windfall practical benefits if one were lucky enough to guess right in terms of practical choices of data and assumptions leading to choice of relevant variables and constraints.

We believe that the problem of participation and collaboration has not been limited to GOC "analytical technicians" (economists, planners, and programmers, statisticians, mathematicians), but also to agricultural

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[1] Analytical Working Document #6, Samuel R. Daines, November, 1972, pp. 2. C.

[2] Ibid.

[3] Mission explanation of lack of early collaboration.

technicians, both GOC and U. S., as well as policy-level executives who might have contributed useful experience and judgement at several stages in the process to date, especially during the early stages of formulation.

Finally, there is obvious strong complementarity between the way one approaches a Government for collaboration and the amount of collaboration realized through various entities and staff of that LDC. The process of formulation of understandable and practical, analyzable hypotheses, in concert with GOC officials and professionals, and, through and with them, with GOC policy makers, appears to be an essential vehicle for achieving and acceptable level of collaboration.

E. CONCLUSIONS AND RECOMMENDATIONS

The general conclusions which we have reached on the basis of the preceeding appraisal are that:

1. The analytical effort constitutes an outstanding contribution to development of the "state of the art" of sector analysis, has indicated important inter-sectoral relationships, and demonstrated significant characteristics and potentials of the agricultural sector, particularly with respect to employment generation. It contains the potential for development of a powerful tool for defining, analyzing, and testing alternative development strategies and programs but requires extensive re-examination, appraisal, and testing, and possibly resulting modification, before it can provide a sufficient basis for strategy selection or more than limited guidance with respect to formulation of an integrated sector development program, especially in the absence of analysis of broader strategy alternatives.

2. The strategy recommendations made in the Sector Analysis Document have provided a basis for constructive dialogue concerning agricultural development alternatives in Colombia but do not provide sufficient basis for long range sector program formulation.

The foregoing conclusion with respect to the strategy recommendation is based on the following findings:

1. The sector analysis does not provide a sufficient analytical base for support of it, even within the limits of the sector objectives addressed.

2. It is not based on a consideration of all the major objectives for the sector included in the plan.

3. Its effective implementation would require supporting and supplementing programs and actions by individuals and institutions, the necessity for which has not been indicated and the implications of which in terms of costs and probable results have not been analyzed. The strategy thus does not provide a firm guide to programs even if it were otherwise supported by the analytical effort to date.

The conclusion with respect to the sector analysis is based on:

1. The fact that the sector assessment is descriptive only and draws no conclusions as to its strategy or programmatic implications.

2. The finding that the mathematical modeling has not progressed to a point at which the results of exercise of the models can be demonstrated with a reasonable degree of confidence to be dependable as a basis for major development strategy selection. This finding derives for what we consider to be:

a. incomplete analysis of the land and labor constraints, including total supply available, spatial and mobility requirements and relationships, and the practicable degree of utilization;

b. unsupported assumptions with respect to (1) equality of land, particularly with regard to productive capacity and access to markets and inputs; (2) land development and conversion costs; (3) changes in relative prices and resulting changes in demand and supply patterns and relationships; and (4) the propensity of farmers and institutions to take the actions required

for model results to obtain with respect to changes in production patterns, increases in and changes in the mix of inputs, and the provision and investment of capital in the required amounts and directions, particularly under the conditions postulated with respect to results in terms of profits and income.

We hypothesize that the single most significant factor underlying this result was the early decision to apply the selected basic methodological approach to the creation of an integrating model framework for the sector. In that sense it appears that the implicit objective throughout has been to improve the "state of the art" of sector modeling, while the expressed objectives were oriented toward providing to decision-makers realistic, practical, and useful analytical information concerning the impacts of alternative development strategies as applied to the Colombian agricultural sector.

The analysis team in its working documents has recognized the fact that its analysis was in relatively early stages when its strategy recommendations were made. It stated in connection with a description of the analysis that "Because it was an exploratory effort, the conclusions should be considered as interim results pending the completion of a fuller analysis based on improved 1970 data."[1] Nonetheless, ASBD included a set of strategy recommendations based on exercising the model.

The SASS team has made substantial progress in realizing their implicit objective. The amount of imaginative work done in a relatively brief time is nothing short of phenomenal. We would not want it understood

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[1] Analytical Working Document #2, p. 23A.

that the limited practical applicability of the results so far is in any sense an argument against "state of the art" work in itself. Nor does it in any way support rejection of the hypothesis that the results of rigorous quantitative analysis can improve the selection of development strategies and related policy and investment decisions (using impact on development goals as the measure of "improved selection"). Rather, the experience gained should be used to support more effective effort such as is now being initiated with a new data base and improved collaborative arrangements. We strongly recommend, however, that the magnitude of the undertaking be recognized for what it is, and that (1) a broader scope be adopted to include a series of partial analyses that support a broader central systematic and integrating analysis; (2) a wider range of professional talent be brought to bear; (3) a revised time and sequence schedule be developed and adopted; (4) greater internalization and commitment within the GOC be a prime supporting objective; and (5) that the focus of the work be shifted to Colombia, except for purely "state of the art" development work.

This approach will require the following sequence of events on the part of the Mission and the LA Bureau:

1. Decision renewing the commitment to the sector analysis concept as an effective tool for improving decisions of development strategy, and for identifying and placing priorities on required policies and investments for an accelerated and equitable development of the sector.

2. Decision accepting the added time, administrative burden, and personnel and financial requirements implied in the commitment decision.

3. A technical professional rethinking of the present quantitative analysis plan, program work schedule, and costs. The existing team, the OPSA sector analysis group, and certain key USAID, LA, and GOC professionals

and executives are critical members of any group involved in such a rethinking process.

The technical professional group also must include (a) persons experienced in alternative methodologies and particular analyses relevant to integrating model requirements, and (b) agricultural technicians acquainted with Colombian agriculture. To the extent possible, these should be Colombians authoritatively representing the responsible entities. The rethinking process itself will have to be systematically carried out to be effective.

4. Once the technical professional rethinking is complete, a commitment to satisfying the identified staffing and cost requirements must be made by the Mission, GOC, and LA (AID/W).

Assuming the institutional commitments recommended above are forthcoming, and a technical "rethinking" undertaken, the following elements are considered important to include in the analysis agenda:

1. Postulation of hypotheses based on GOC development objectives.

2. Critical review of explicit and implicit assumptions. Systematic organization of studies and partial analyses to shed light on the central issues related to assumptions. Redesign systems to remove as many unrealistic assumptions as possible through disaggregation: regional, including distinguishing rural labor supply as much as possible by region, skill level, owner family, non-family, and landless; farm size, technologies, management levels, land classes, and crop groups, among others. Consideration should be given to the feasibility of building separate regional models that link to a national model to achieve disaggregation authenticity.

3. Carrying out of comprehensive data collection and survey work, as needed to supply material for analysis.

4. Undertaking a series of partial analyses simultaneously with the sector level of quantitative work. These include analysis of:

a. Small farms, especially labor use, and agronomic practices in a "whole farm" sense, to get at the questions of level of land utilization. Also this group must be disaggregated in order to distinguish between the characteristics of small -- commercial, transitional, subsistence, and/or part-time -- farmers. Large farm analysis is equally important in seeking means to bring underutilized land into efficient labor intensive production.

b. Land and climate characteristics and crop requirements.

c. Credit (and equity capital) policy implications for reallocation by use and size of farm and supply constraints and facilitators. In this regard, the model analysis showed no great capital restriction when labor was maximized, and only slightly more when value added was maximized. This is an indicator of adequate total credit to the sector under existing use levels of technology but does not indicate whether or not there are allocation problems. Other results of the analysis indicate that such allocations problems do exist for production credit. The analysis has not yet addressed itself to relative scarcity of capital and credit in agro-industry input supply, output marketing, etc. We hypothesize that credit restraints in these latter areas may be more critical than in production.

d. Technological dualism and its implications vis-a-vis foodstuffs, export products, income distribution, capital and credit allocations, prices.

e. Marketing -- farm gate demand constraints, market access characteristics for different crops, different farmers, and different inputs.

f. Farmer propensities to accept risk and change, and his tradeoffs.

g. Prices, relative returns, and profitability.

h. Transportation as a constraint to increased agricultural production, including the problem of access to markets and inputs, the organization of the transport system, private transportation operations, etc.

i. Private investment in the sector and means of stimulating increased investment in and reduction of capital flight from the sector.

The operational aspects of the sector analysis effort should be entirely in Colombia. U. S. technicians involved should be stationed in Colombia. Some types of theoretical and testing work related to mathematical and programming adjustments in the model might be carried out in the U. S. if the specialized experts required cannot be induced to work in Colombia. However, data collection and most of the analysis can be done in Colombia by Colombians.

Given a sequence of events and commitments as suggested above, we recommend that the sector analysis work be continued and strengthened. In their absence, we would recommend that the Mission and the LA Bureau accelerate as much as possible the transfer to OPSA of knowledge gained to date (application of methodological techniques, mathematical and programming applications) and, in the absence of future GOC strengthening of commitment, plan to gradually reduce AID resources for sector analysis in Colombia, scheduling complete withdrawal from the sector analysis activity by the end of 1975.

If AID's commitment to improving applications of the sector analysis approach to development decisions is sufficient to make urgent its further development, it should be related closely to one or more LDC's. We speculate that, in the absence of a sufficient forthcoming commitment from the GOC, viable alternatives for such commitments exist in other LDCs.

Annex

ESTIMATE OF RESOURCE INPUTS

In view of the importance we attach to continuation of the sector analysis and the general concern with the question of the cost of such an effort, we are including in this Annex an estimate of resource inputs to date.

Estimates of inputs, both personnel inputs and logistic support costs, have been difficult to derive: First, because all inputs were not costed as such to this undertaking; and Second, because it sometimes is difficult to allocate a person's time between sector analysis and other undertakings where there are multiple commitments. This allocative task is even more difficult for the effort leading up to Part One of the 1972 ASBD because it was done on a "part-time" basis over an extended period of time.

Nevertheless, we have considered it helpful to make rough estimates as a guide to future levels of resources required to realize an effective on-going activity.

Estimates are based on AID/W estimated costs and conversations with USAID concerning costs.

1. For the 1971 ASBD, the inputs were estimated at $67,200 (See Table 1 attached).

2. For the 1972 ASBD, there were two distinct enterprises:

a. Revision of the 1971 ASBD and generating therefrom Part One, and b. The SASS team undertaking, which generated Part Two (plus the series of working documents referred to earlier).

This period covers approximately the time from 1 April 1971 to 31 March 1972, and the estimated total cost was $228,850 (see Table 2 attached).

3. For the period from 1 April 1972 to 31 March 1973, we have estimated total costs at $246,000 (see Table 3 attached).

4. A grand total from February 1971 to March 1973 of $537,050 was estimated.

This figure represents the total cost of the 1972 ASBD, plus one year's input into further refinement for preparing a 1973 ASBD, which had been expected to be completed by the end of April 1973. The time period is about 2.25 years, of which the first quarter might be considered a sector assessment investment of roughly $70,000, and the additional two years a sector analysis undertaking at something over $200,000 annually.

We are estimating an annual requirement of something of the magnitude of two to three times that amount to be able to adequately refine this analysis over the 1973-1975 period. This estimate is in line with estimated costs for sector analyses of comparative magnitudes in other countries.

Table 1

ESTIMATION OF 1971 COSTS

1971 ASBD (.25 years)

a. AID/W

- 6.0 MM professional
- 0.5 MM non-professional

b. USAID/Colombia

- 12.0 MM professional
- 6.0 MM non-professional
- Data search required for an estimated additional 9.0 MM of which 3.0 MM was professional and 6.0 MM was sub-professional. (Peace Corps, etc.)
- GOC personnel staff time (unpaid by AID) - 2 MM
- Additional costs are estimated to be roughly $20,000 from all sources, including travel, per diem, materials, and duplicating costs, etc.

Total

21.0 MM U.S. professional	X + 1600	=	$33,600.00
6.0 MM U.S. sub-professional	X 900	=	5,400.00
2.0 MM GOC professional	X 400	=	800.00
6.5 MM non-professional	X 200	=	1,300.00
Logistic support costs		=	20,000.00
Administrative & Overhead at 10%		=	6,100.00
Total U. S.			$67,200.00

Table 2

ESTIMATION OF 1972 COSTS

1972 ASBD (1 year)

a.	AID/LA/DR/SASS		
	° 29 MM professional X 1500.00	=	$43,500.00
	° 12 MM non-professional X 400	=	4,800.00
	° Logistic support costs	=	70,000.00
b.	USDA/PASA - Census/PASA	=	68,000.00
c.	USAID/Colombia (staff & logistic)	=	20,000.00
d.	GOC	=	2,000.00
e.	Administrative & Overhead at 10%	=	20,350.00
	Total		$228,650.00

Table 3

ESTIMATION OF 1973 COSTS TO MARCH 1973

1973 ASBD (1 year)

AID/W and USAID/Colombia costs were at about the same level as the previous 12 month period, i.e., roughly $220,000. Additionally, there was an estimated 42.0 MM of GOC professional staff time, plus supporting costs (8.0 MM of secretarial and clerk, some logistic expenses), which were paid from AID loan funds.

If one uses $500 as the average monthly salary for GOC professionals in OPSA and $5000 for general support and overhead costs, the GOC/AID loan expense was $26,000.

Chapter 5

GOC PLANNING STRUCTURE AND AGRICULTURAL DEVELOPMENT PLANS

I. INSTITUTIONAL STRUCTURE

A 1968 Decree[1] reorganized the GOC planning system[2]. The National Planning Department (DNP) was given overall responsibility for development planning in terms of investment and policy objectives, goals and strategy. The Ministry of Finance is charged with fiscal control and execution of the budget.

The DNP has elaborated a national development plan which is periodically updated[3]. The DNP also elaborates a three-year investment plan, presumably consistent with the objectives, strategies and policies specified in the Development Plan. It also is responsible for reviewing (in coordination with the Finance Ministry) annual budget proposals from the Ministries and resolving internal inconsistencies in terms of total expenditure plans, and allocations within totals, to assure conformance to the three-year investment plan and the national development plan.

Under the 1968 law, the Ministries responsible for the development of different sectors established sectoral planning offices. Each implementing agency within the sector also must have a planning office which

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[1] Decree #2996.

[2] The organization of implementing agencies also was substantially altered in 1968. See Chapter 6 for a description of GOC implementing agency organization.

[3] The latest published plan available to us was for the period 1971-1974.

operates within the framework specified by the Sector Planning Office of the respective Ministry.

In the case of the agriculture sector, the Ministry of Agriculture Sector Planning Office (OPSA) is responsible for elaborating a detailed Sector Development Plan within the terms of the guidelines set out in the National Development Plan. Because of limited institutional and personnel capabilities, OPSA has yet to develop a Sector Development Plan. They expect to have the capacity to prepare a sector development plan by the end of the CY 1973.

In addition, OPSA has the responsibility for preparing the annual budget proposal for the Sector. This is to be done by coordinating and receiving from the various sector implementing agencies planning offices their program and budget proposals, and through review and adjustment formulating a sector proposal, which in turn, is submitted to the DNP for further review and adjustments in the formulation of the national annual investment budget proposal. OPSA first submitted a sector annual investment budget proposal for CY 1972.

OPSA presently has approximately 14 qualified professional staff. It is divided into four line divisions and one staff office as follows:

a. Budget Division

b. Macro-Economic Division

c. Micro-Economic Division

d. Programming Division

e. Staff Group in Sector Analysis

The Sector Analysis group is a temporary creation intended to operate until 1975 at which time its staff and activities will be incorporated into the regular line divisions.

In the last two years, OPSA, with AID sector loan funding, has been converting its professional staff from civil service appointment to contract. This is the only device within existing civil service regulations which allows a salary scale sufficient to attract qualified professionals. Employees that previously held professional and managerial positions under civil service appointment are being transferred to other offices of the Ministry of Agriculture to make way for the contracted staff. Only three regular civil service employees (at the professional/managerial level) remain in OPSA at the present time.

OPSA anticipates that Civil Service regulations will be modified within the next year or two in order to allow the present contracted staff (paid from AID loan funds) to be placed under Civil Service appointment, allowing ordinary budget resources to be used to cover these salary costs.

In the interim, the entire "investment budget" of OPSA is financed with AID loan funds, and the contracted staff are paid from that budget. The "functional budget", or operating budget, is financed from GOC ordinary resources. Sub-professional and administrative support staff continue to be financed in the functional budget, subject to existing civil service regulations.

In terms of external assistance, the 1968 Decree brought about significant changes in the relationship between GOC agencies and external donors. That Decree established that only the DNP and the Sector Planning offices of the respective Ministries could negotiate external assistance, and that all international cooperation would be managed at the level of development programs specified in the plan.[1] Further, external funds were to be used only

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[1] Allowance was made for "exceptional cases" to be managed at the project level.

in the investment budget and not in the operations budget. Thus, as a practical matter, the 1968 Decree requires that all loans fit into a sector context and be negotiated and managed at the sector level (or above), except in exceptional cases.

It appears that the development planning concept of the 1968 Decree is inherently a Sector Development Concept and the financing of the plan also is sector wide in scope. Additionally, the Decree establishes a so-called "organic" concept for funding which requires commingling of GOC ordinary resources, internal borrowing (through emission of bonds) and externally acquired funds. When an annual budget law is approved, the original character of the funding source is lost. All funds become government resources subject equally to GOC management and control.

II. GOC AGRICULTURAL SECTOR DEVELOPMENT PLANS

The point of departure for GOC development planning of the agricultural sector appears to be the 1971-1974[1] Plan de Desarrollo, Part Three, Agriculture, prepared by the National Planning Department. At the sector level, this plan provides only general descriptions, objectives, strategies and policies. Very few quantified goals appear in the plan, except at the macro level for general economic performance. For example, in the agriculture portion of the plan the only quantified goals are:

1. Double the extraction rate for beef production (this is stated more as an "ought to happen" rather than a definite goals) from a 12% existing rate.

2. Increase cotton planting to a total of 270,000 hectares.

3. Raise sugar cane production to satisfy internal demand, fill a U.S. quota of 65,000 or more metric tons and recuperate world market sales (100,000 Mt).

4. Try to increase banana exports to $21 million in 1972.

5. Increase non-exportable bean pulses production area from 66,000 has. to 80,000 has.

A brief summary of this document provides a useful adjunct to our examination of USAID sector analysis effort and general sector approach to assistance. Major topics covered by the GOC document are as follows:

A. Employment Generation Disequilibria

This plan cites "persistent notorious disequilibria" that limit sufficient employment generation, as follows:

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[1] On page 2, the referenced document refers to the "Plan 1970-73". However, on page 22, the Document refers to "The 1971-1974 Development Plan" and its requirements.

1. Concentration of land ownership and of income

2. Concentration of financial resources

3. Technological Dualism

4. Limited use of modern inputs

5. Deficiencies in marketing channels and systems.

B. Development Obstacles

The plan goes on to cite the following as "principal obstacles to development" of the sector:

1. Concentration of property and of income.

2. Technological dualism.

3. Limited use of inputs, specifically mentioning technical assistance, improved seeds, fertilizers, insecticides, and fungicides, and agricultural machinery.

4. Deficiencies in physical infrastructure and marketing channels. It specifically mentions inadequate and insufficient transport equipment, lack of or bad condition of roads, lack of a national marketing plan, and lack of storage.

5. Inadequate utilization of renewable natural resources, with specific reference to water and soil.

C. Policy Objectives

Objectives of agricultural policy are specified as:

1. Increase productive employment and incomes.

2. Equitable distribution of productive resources and incomes.

3. Improve productivity and increase production of agricultural goods..

4. Improve marketing.

5. Increase and diversify exports.

6. Train peasants and promote their organization.

7. Adequate utilization and conservation of renewable natural resources.

D. Strategies (Policy criteria)

Strategies (criteria) for executing agricultural policy are specified as:

1. A general strategy of coordinated action to achieve maximum utilization of resources, especially with regard to an integrated agrarian reform.

2. Specifically, agricultural sector entities (and those other entities operating in the agricultural sector) must give priority attention to execution of their program responsibilities within the process of agrarian reform with INCORA serving a coordinating function.

3. Agency specialization in the execution of agricultural policy (the Plan names 13 agencies and briefly describes their special responsibilities).

4. All agencies shall direct their resources toward benefiting small and medium farmers, graduating them as commercial farmers, so the agency then can move on to other small and medium farmers.

Commercial farmers are expected to be provided with an appropriate environment and adequate stimulus through "indicative" policies.

5. Consolidation of the Agricultural Sector Planning Committee at the national level and the agricultural development sectional councils at regional levels as coordinating mechanisms to assure compliance with the Sector Development and Investment Plans in accordance with the specified strategies.

E. Policies

1. Agrarian Reform

a. Continue and accelerate the agrarian reform process by concentrating on redistribution preferentially of large and unproductive farms, giving preference to landless peasants and those from zones that have no available lands for restructuring "minifundios".

b. INCORA must first define the land tenure structure for areas that are to be the subject of special development plans.

c. Land improvement and colonization is to be carried out only when no alternatives exist and then subject to INDERENA criteria for adequate use and conservation of natural resources (soil and water).

d. Improve and streamline the agrarian reform law in several specific aspects.

e. Determine and inventory lands not subject to agrarian reform in order to assure private investment security.

f. All entities are obligated to collaborate, with INCORA responsible for coordination of activities.

g. Studies, planning activities, and project evaluations are to be intensified.

2. Institutional involvement in training and promotion of peasant organization is given considerable emphasis.

3. Research and diffusion of technology.

ICA is to concentrate on activities that tend to eliminate "Technological Dualism".

Some of the more interesting specific policies included are:

a. Conduct more experiments and demonstrations at the farm level.

b. Establish a system of rotating extension agents from one region to another.

c. Train a larger number of peasants to carry out diffusion and demonstration activities.

d. Promote private sector financing of research.

e. Intensify integrated production plans.

4. Credit Policy

Considerable emphasis is given to credit as an important instrument in realizing policy objectives, especially as a device for diffusion of technology, thereby bringing about income redistribution.

The policy statement carries an inference that use of public institutional credit should be temporary -- and that the client can "graduate" to other sources of capital.

Integrated technical assistance is to be a prerequisite to receiving institutional credit. Low income farmers are to receive free technical assistance from ICA while other farmers are required to contract it through their lender or independently. Credit institutions are required to provide the means for obtaining technical assistance for those clients who request it.

Commercial farmers are to be served by the Agricultural Finance Fund, commercial banks, and finance companies, with preference to those who produce for export.

The Caja Agraria, Livestock and Coffee Banks are to give preference to small and medium farmers, and supply (except the Coffee Bank) credit within agrarian reform projects.

Additional special credit lines are to be established, especially for land purchase to:

a. Restructure "minifundio"

b. Finance voluntary parcellations

c. Finance agricultural professionals so they can become producers and thereby demonstrate use of adequate technology.

5. Production and Export Policy

Policies increasing production and exports are to be pursued to the extent they are consistent with employment generation.

Production efficiency and marketing efficiency to increase the competitive position in the export market is emphasized. Increased farm level soil analysis for assuring optimum use of fertilizers and quality control are specifically mentioned.

A clear price policy for inputs is indicated as a critical element for increasing production efficiency.

6. Additionally, the plan mentions some more specific goals and policy orientation for certain crops and livestock.[1]

The sector plan is very sketchy and provides virtually no indication of an analytical base from which conclusions and priorities were derived. However, it does provide a reasonably definable framework within which an analytically based sector development plan could be developed.

As mentioned earlier, OPSA has yet to develop such a sector development plan. The nearest thing to a sector plan is a Ministry of Agriculture document which collects together the various projects and programs of the different sector implementing agencies.[2] It appears that program and project formulation and specification still is carried out almost entirely within the planning programming offices of the implementing agencies, with little or no initiative in coordinating or establishment of planning guidelines by OPSA. These agencies develop their programs within the general framework

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[1] Those few goals that are quantified were mentioned earlier.

[2] See Ministerio de Agricultura, Programas Agricolas. Oficina de Planeacion del Sector Agropecuario (OPSA) December, 1972.

of the three year investment plan developed by the DNP. OPSA does carry out a budget allocation role at the budget proposal development stage by sub-allocation of a guideline quota for the sector which is established by the DNP in coordination with the Ministry of Finance. OPSA also assembles the budget proposals prepared by the various sector implementing agencies and transmits them to the DNP for further processing.

The Programas Agricolas (Agriculture Programs) document referred to above includes a brief statistical summary of agricultural performance during the last decade.[1] It then sets out (in one page) the policy objectives and strategies for agricultural production, followed by a general program strategy for agricultural production and productivity, with some attempts at making projections and establishing goals to 1975. Finally, nineteen specific product programs are discussed.

The presentation is often internally inconsistent, and there is little discernable linkage between objectives, strategies, goals and programs suggested, except in a very general sense. However, the effort is an acceptable first approximation which looks at the sector more or less as a whole. The effort should be commended.[2]

There are indications that OPSA capability to fulfill its specified role is increasing, and that its initiative will increase accordingly.

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[1] There also exists a three-volume detailed diagnosis of the livestock sector, resulting from commission studies sponsored in part by OPSA.

[2] It is interesting to note that the Introduction, signed by the present Minister (Vice-Minister during the Document preparation), refers to the expectation of applying improved programming techniques to this type of work in the future, specifically input-output and linear programming models.

Chapter 6

GOC AGRICULTURAL SECTOR PROGRAM

IMPLEMENTING AGENCIES

One of the tasks of the evaluation team was to obtain information on which to evaluate the ability of the various GOC entities involved in the sector loans to plan, implement and provide evaluation of their various project activities. The evaluation team also attempted to obtain knowledge of USAID's responsibilities and degree of involvement in assisting the GOC in planning, conducting and monitoring these project activities. Field trips were made by team members to the Caqueza Pilot Development Area, to Cali to visit the Santander Pilot Development Area and the International Center for Tropical Agriculture (CIAT), in the Central Market at Corabastos, and to the La Mesa Pilot Development Area. In addition, meetings were held with GOC officials at the Ministry of Agriculture, OPSA and the DANE. Observations made during these field trips and consultation visits are covered under the brief descriptions of the individual GOC entities and programs which follow.

It should be pointed out, however, that many of the conclusions reached concerning agency performance and capabilities are impressionistic in natu· and based on secondary sources and discussions with knowledgeable persons. We have not been able to make an even superficial first hand examination of the operations of most agencies. Under the reorganization effected in 1968 all public agencies operating in the agricultu 1 sector were made, in effect constituent agencies of the Ministry of Agriculture. The Ministry proper was greatly reduced in size and became a planning, policy making, budgeting, financing, and coordinating agency. A description of agriculture development plans is contained in Chapter 5. Program implementation functions were placed in a number of agencies as indicated below.

I. INSTITUTO COLOMBIANA AGROPECUARIO (ICA)

A brief historical account of the formation of ICA will provide background for understanding its current status and responsibilities for conducting ongoing and future programs contributing to agricultural development in Colombia.[1]

The predecessor agency of ICA within the GOC was the Division de Investigaciones Agropecuarias (DIA) which in 1959 was the largest Division of the Ministry of Agriculture, comprising some 1,200 employees, 150 of which were well qualified technical personnel. DIA had considerable capacity for conducting research in agricultural problems with particular emphasis in the highlands of Colombia.

Recognizing that one of the serious constraints to agricultural development in Colombia was the lack of a capable cadre of trained technical personnel and lack of institutional capabilities in Colombia to train personnel for agricultural research, education and extension programs, certain Rockefeller Foundation personnel who had been working in Colombia since 1951[2] took the initiative to convince the GOC to create, within the Ministry of Agriculture, an institution with functional responsibilities more or less similar to those performed by Land Grant Colleges in the U.S. USAID also supported this reorganization within the GOC. This organizational change was accomplished slowly over a period of time and in spite of considerable administrative, political and financial problems.

The ICA was established in 1962 by Decree 1562, and ratified in 1963 by Decree 3116. It initiated its work in January 1964. Facilities and some

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[1] A complete historical background is provided in "History of Rockefeller Foundation in Colombia", Rockefeller Foundation, New York, New York, 1973.

[2] Historical account as discussed with Dr. U. J. Grant, Director General, CIAT - March 30, 1973.

personnel of DIA were transferred to ICA which assumed the role of providing leadership in agricultural research, graduate training and extension with emphasis to be placed on the tropical low and medium level altitudes where the future of agricultural development has the greatest potential for growth. Administrative reforms made in 1968 added additional functions to ICA -- promotion, development and control functions in the agricultural sector. The Ministry of Agriculture, per se, retained the basic functions of policy formation, direction programming and evaluation of agricultural activities.

Eight international agencies made financial and material commitments to ICA early in its formative period. These included the Rockefeller Foundation, Ford Foundation, Kellogg Foundation, the UN Special Fund, UNESCO, IDB, and AID (assistance from AID through the University of Nebraska and the Mid-America States Universities Association -- MASUA). Funding was in the form of grants and later loans (IDB and AID). An important element was the technical assistance provided through the University of Nebraska contract which began in 1966. This activity strengthened the graduate school training in five agricultural disciplines. At one time as many as 35 professors, scientists and extension specialists from Nebraska and cooperating universities, Rockefeller, Ford and Kellogg Foundations were stationed in Colombia providing technical aid to ICA. In the opinion of competent, knowledgeable foreign observers, the seven years of activities of the Nebraska University and related scientific personnel from other entities mentioned above are recognized as having produced one the the most significant long-term results of AID financed activity in agricultural development. It has trained adequate numbers of qualified agricultural technicians in various fields either in Colombia or in the U.S. so that now, Colombian competence can replace that provided formerly by Nebraska and other entities. The Nebraska activity is

scheduled for phase-out in June, 1973, having accomplished more than anticipated, particularly in the fields of agricultural research and graduate training. The development of a training and research institutional capability in ICA should be recognized as the accomplishment of a means to an important larger end goal -- that of agricultural development for the improvement of social and economic well-being of all the Colombian people.

ICA's administrative organization consists of three Divisions (Investigations, Education and Extension) and four Departments (Agronomy, Animal Science, Agricultural Economics and Information/Development). ICA conducts crop and animal research in nine regions of Colombia; it operates 60 extension service agencies throughout the country; it provides or has provided graduate training in the U.S. for 122 M.S. and Ph.D. scholars and for 74 M.S. scholars in the ICA-National University Graduate School in Colombia in five major disciplines; and it prepares ICA technical personnel as well as those of the other governmental entities for executing agricultural programs. In addition, it provides other services of various kinds, including: soil testing services totaling 10,000 samples per year at cost to farmers; plant and animal quarantine and health services to control diseases and pests in crops and animal agriculture; foundation seed production and seed certification of improved varieties of crops; diagnostic and technical assistance services to farmers in the field; control of use of agricultural inputs; assistance in control of vertebrate pests of crops and animals; assistance in gathering statistical information on crop and animal agricultural production; and services to farmers by communicating technical information to farmers through mass media of all types. In evaluating ICA as an institution the evaluation team rates it very high. It has made and can continue to make very significant contributions to agricultural development in Colombia. In the ten years of its existence it has more than adequately fulfilled the functions assigned to it.

ICA has a cadre of more than 863 professional and sub-professional people adequately trained to perform the research, teaching, extension and service functions in the agricultural sector. Comparing ICA to analogous institutions in other developing countries of Latin America, ICA could be placed among the very top in considering such criteria as its technical competence, its organization structure, its administrative leadership and the conduct of its program. ICA personnel policies of rewarding good professional work through a merit promotion system has insured high morale and long tenure of its technical people. Its programs of research, training, extension and services have grown since its creation in 1962 from a budget of 2 million pesos to a current total budget from all sources of more than 633 million pesos in 1973. ICA as an institution has demonstrated its competence to make effective use of assistance for conducting its program.

The most recent and dramatic activity of ICA is the assumption of the role of coordinating and directing the activities of the GOC's new program -- Proyecto de Desarrollo Rural -- known by the USAID nomenclature as the Pilot Area Development Program. This activity involves the multi-disciplinary coordination of several GOC entities to promote activities in 20 areas of Colombia to improve agricultural productivity, employment, income distribution, agricultural credit and input availability, the structure of land holdings, marketing, nutrition, health, education, and the general standard of living of Colombian farm families in these areas. These activities, coordinated at the national, regional and municipal levels provide development assistance to farmers in crops and animal agriculture that are the most appropriate for a given area. Besides ICA, entities involved are the Ministries of Agriculture, Health, Education, Public Works, Governors, Mayors, Caja Agraria, INCORA, IDEMA, INDERENA, Universities, community leaders, cooperative leaders and farmer leaders and groups.

Although this program is only one year old, it is apparent, from discussions with National, Regional and Municipal leaders, that this program has been well conceived and planned to provide valuable direct services to a considerable number of farmers in order to improve their social and economic well being. While the Proyecto de Desarrollo Rural is looked on by both GOC and USAID as a "method" of providing technical assistance rather than as a "specific program", the evaluation team considers this activity to be sound and practical when viewed in the latter perspective. It has many characteristics similar to those of the very effective production programs of rice, wheat and maize conducted in such countries as India, Pakistan, Turkey, the Philippines, Mexico, Indonesia, Tunisia, Kenya, and others.

USAID/Bogota has played a significant role in this program by initiating interest in it, guiding its planning development, advising in selection of areas and program content and providing financial support through the 1972, 1973, and 1974 Agricultural Sector Loans to ICA, Caja Agraria, INCORA, and INDERENA, among other entities of the GOC. Not enough time has elapsed to determine the effectiveness of the program. It is understood that the Ministry of Agriculture will be evaluating results of the activity to determine the effectiveness of this method of development and to consider the possible expansion to other areas of Colombia. From the evaluation team's brief overview of this activity, we were impressed by the creation of high morale and optimism, the spirit of cooperation and dedication on the part of the GOC entity personnel and farmers with which we came in contact. Substantial presence of governmental assistance to the farmers may very well be the critical ingredient that can produce significant results on the part of the farmers themselves. However, in the final analysis, it is the farmer who will make the decision to participate in national programs or not. If he recognizes that the potentials for benefits are high and risks are low he will become involved.

It is interesting to note that the activities of the Colombian Rural Development Project in pilot areas are being observed on a regular basis by agricultural development specialists of other Latin American countries. USAID/Bogota expects to monitor and assist in the activity to the fullest extent of its limited staff capabilities. Toward this end USAID has assisted the GOC to establish a program planning, budget allocation, implementation, monitoring and reporting system[1] by trimesters in order to allow both the GOC and USAID to be aware of the status of project activities at any time within the fiscal year. The system is an excellent one which deserves complimentary comments for its development and use.

II. INSTITUTO COLOMBIANO DE LA REFORMA AGRARIA (INCORA)

INCORA, an agency of the Ministry of Agriculture, responsible for land tenure and related activities, was created in 1961 as a land reform institution by the Agrarian Reform Law 135. A later revision in the law in 1968 extended its coverage to renters and sharecroppers. Its authority includes distribution of public lands, management of public lands, redistribution of private lands, provision of credit, land improvement and social development activities of many kinds. It receives the majority share of the Ministry of Agriculture budget. INCORA's budget in 1973 was 1,659,474,000 pesos. Besides purchase of land by means of Class A Agrarian Bonds, its activities conducted through its 230 zone offices include a wide range of activities designed to help meet objectives of the national development plan.

It provides land titles of lands redistributed through sales; it assists in colonization efforts, including road construction, bridge construction, land improvement, topographic studies for development of primary and

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[1] See "Programacion de Ingresos, Ejecuciones Presupuestales y Metas Fisicas para 1973", Prestamo No. 514-L-067, "Oficina de Planeamiento del Sector Agropecuario - OPSA", Ministerio de Agricultura, Bogota, March 1, 1973.

secondary hydrological works, irrigation and drainage systems; it assists in formation of agricultural cooperatives, farmers organizations and similar groups; it provides supervised credit for agricultural production loans on short, medium and long term basis; it provides technical assistance in agriculture; and it assists in developmental services of many other kinds involving health centers, schools, marketing, forestry, industry and building construction. The total number of loans extended by INCORA to large sized operations (including cooperatives) are not known but are estimated to be 500-600 throughout the country. Loans to all type borrowers were made to approximately 23,300 families in 1969. Its present outstanding loans total approximately 650,000,000 pesos. Studies made in 1969 on 543 sample borrowers indicated the following conclusions regarding the effectiveness of the INCORA credit activities:

1. An estimated 26,400 man-years of off-farm employment and 15,500 man-years of on-farm employment were generated.

2. The gross value of products sold increased substantially.

3. Farmers were changed from nearly subsistence levels of operations to more involvement in commercial operation, with moderate increases in the standard of living, steadily increasing rates of cash return, substantial debt repayments, reinvestments in farm operations and savings accumulations.

These positive results of the INCORA credit activities are somewhat overshadowed by negative aspects of the program. Credit was provided on a subsidy basis. Credit funds were tied up for long periods of time. Costs of administering and supervising loans were also estimated to be excessive because of the large staff of INCORA personnel (estimated at approximately 1400 professional and sub-professional and 400 central administrative personnel).

INCORA's land reform efforts have been hampered by ambiguities in the basic legislation. Nevertheless, even when account is taken of this problem, its accomplishments seem small. According to the February 1973 IBRD report, 90% of its land acquisitions have resulted from annulment of private claims to abandoned land and only 4,200 titles to 60,000 hectares have been issued for what were primarily public lands. One is tempted to conclude that the issuance of titles to public lands has become synonymous with agrarian reform rather than reform being considered as consisting of changes in the structure of the sector through changes in the pattern of land ownership and farm size. Examination of criteria for issuance of titles and discussions with Mission staff also suggest that the criteria themselves and some arbitrariness or capriciousness in their application may be a deterrent to a farmer's making the decision to move and invest in new lands.

The IBRD report also indicates that INCORA's colonization and irrigation projects (which have absorbed 55% of its project expenditures) are very expensive and have reached very few farmers.

The AID Sector Analysis Paper also indicates shortfalls in program accomplishments and legal impediments to effective operation.

Finally, it provides some duplicative services which other Ministry of Agriculture agencies might be able to provide more effectively, for example, credit by Caja Agraria and technical assistance by ICA.

III. INSTITUTO DE DESARROLLO DE LOS RECURSOS NATURALES RENOVABLES (INDERENA)

INDERENA, a relatively new agency of the Ministry of Agriculture was created in September 1968 with responsibilities for administration of programs in conservation and development of maritime and inland fisheries, forests, prairies, watershed basins, parks, wildlife and related natural resources. INDERENA's plan for the conservation and judicial use of natural resources

places major emphasis on forestry and fisheries development activities and to a lesser extent on national parks, wildlife and other activities of relative minor economic importance.

Colombia's extensive forest reserves estimated at approximately 64,500,000 hectares represent perhaps its greatest natural resource for export potential. Its commercial forests based on present accessibility total about 25,000,000 hectares consisting of about 75% unexploited virgin timber. Only about 10% of this area has been inventoried. INDERENA is expected to provide leadership in development of these and other natural resource potentials in future years. Of particular importance is the policy question of the rate of exploitation of Colombia's forestry resources taking into the consideration the many unknown factors (requiring long-term research for answers) which affect economic utilization and judicial conservation management of the forest resources over the long term period. These policy questions are under study by the GOC but probably will not be completely resolved soon.

Meanwhile, INDERENA, charged with natural resource management responsibilities of a gigantic magnitude, has launched its program with a modest budget of 193 million pesos for 1973 for addressing the many technological, social and economic problems related to forestry, fisheries, etc. INDERENA's program for forestry includes such activities as: revision of existing regulations concerning export of wood and control for the prevention of extinction of desirable wood species; creation of community forestry concessions and issuances of licenses on private and GOC-owned land for the production of wood products; photo interpretation, tabulation of forestry resource data and reporting on forestry inventories to the forestry industry enterprises; conducting research investigation on disease and insect damage to forestry species and conducting forestry look-out activities; conducting technical studies of wood products to determine wood characteristics and use

of by-products; conducting studies in forestry management including ecological, dendrological, and growth studies; carrying out reforestration projects involving seed collection and purchase, seedling production in nurseries, soil preparation and seedling planting; preparing studies on sawmill operations; lumber production and the small wood products industry; and providing technical assistance to forestry industry, concessionaires and foresters through training courses, publications, seminars and other means.

INDERENA's activities in fisheries includes both marine and inland fisheries. It assists in providing new plants and renovating old plants for processing of marine fish, provides technical assistance to fishing communities in improving fish quality, issues sport fisheries licenses, conducts research on reproduction, physiology, pathology and culture of marine and fresh water fish species, oysters, shrimps and other species; and it assists in the industrial and semi-industrial production of native and new species of inland water fish.

INDERENA's other activities of lesser importance economically, but certainly important from an environmental conservation point of view include: providing for regulations and control on the use of water resources of all kinds; providing for development and management of watershed areas for the protection of forest, land and water resources and the prevention of floods; conducting studies and managing projects designed to conserve wildlife species; and development and management of national parks.

INDERENA being a relatively young agency within the Ministry of Agriculture has not yet acquired adequate numbers of technical personnel. INDERENA professional staff of 334 personnel conduct the development and research program briefly described above at some 12 centers. The Ministry of Agriculture has recognized that a priority need exists to train more professionals in INDERENA and is taking steps to provide such training.

While it is early in INDERENA's institutional development stage to judge if it is, at this date, a viable institution, capable of utilizing sector loan funds effectively, and since it has received such a small percentage of the total AID allocation (4%), the evaluation team is of the opinion that support to activities in natural resource development via INDERENA should be increased significantly in future years. This is particularly justified when considering the domestic and worldwide, long range outlook for wood and wood products requirements and the growing domestic and worldwide need for improved protein nutrition which can largely be met by increased fish production, both marine exploitation and aquaculture. As pointed out by the Agriculture Sector Analysis Paper, more developed and better managed forestry and fisheries sub-sectors can provide significant and substantial opportunities for increased employment, increased income distribution, foreign exchange savings, and export earnings for Colombia.

IV. CORPORACION FINANCIERA DE FOMENTO AGROPECUARIO Y DE EXPORTACION (COFIAGRO), AND INSTITUTO DE MERCADEO AGROPECUARIO (IDEMA).

COFIAGRO has been, since 1971, a mixed economy entity of the Ministry of Agriculture receiving AID Agriculture Sector Loan Funds for implementation of its provision of loans for processing, marketing and exportation of agricultural products. It has been in operation since 1966 and has obtained capital subscriptions through the Banco Ganadero, Banco Cafetero and INCORA. Its Board of Directors are the Minister of Agriculture, the Manager of IDEMA, and other members nominated by shareholders. It has provided loans to food marketing firms of many kinds during the last nine months. Some of these loans are supervised by CORABASTOS (Corporacion de Abastos) which has sponsored the establishment of a modern wholesale market in Bogota. The interrelated activities of COFIAGRO, CORABASTOS, and IDEMA through the

PAN program (Programa de Abaratamiento de Nutricion) have been very instrumental in recent months in maintaining current levels of wholesale and retail prices, especially by purchase and distribution of market-basket staples in Bogota. Similarly, IDEMA's program of mobile truck-trailer "tiendas" (stores) has been effective in providing basic staples and other foods at stabilized market prices to people throughout Colombia. IDEMA, although not a recipient entity of sector loan funding, has received PL 480 financial assistance from the U.S. and IDB loan financing for renovation of old and construction of new modern grain storage facilities capable of handling more than 243,000 metric tons of grain. While COFIAGRO is receiving increasing budgetary allocations from the GOC (increases from 250 million in 1971 to 977 million in 1973), AID contribution through the sector loan has only been about 2% of COFIAGRO's total budget during the last two years. AID loan funds for 1971 and 1972, totalling 21 million pesos, were matched by GOC sources.

Due to some faulty administrative procedures, however, these 1971 and 1972 funds were not transferred to COFIAGRO until some 17 months later. The team has not been able to make a detailed evaluation of COFIAGRO's operations as an entity because its operations have only just begun. However, in reviewing the overall progress made in the food marketing subsector, especially at the wholesale level where COFIAGRO has been involved, we are convinced that it should be able to be effective in the future in spite of the relatively low level of AID financing provided to this agency. We have gathered the impression that more coordination in marketing activities between enticies would be desirable.

Increased emphasis should definitely be put on the field of marketing because of the potential economic benefits to be achieved by improving the overall food marketing structure in Colombia. Improvements made through

more efficient operations, reduced losses and improved quality standards, are expected to provide more food at cheaper costs to both the urban and rural sectors. Estimates made by a Michigan State University study in 1968 estimated that 10% savings could be made in food prices. The multiplier effect of such savings in total food costs would have a significant economic impact for development.

V. CAMINOS VECINALES

Caminos Vecinales is an agency of the Ministry of Public Works formed in 1961 and charged with the responsibility for the construction of secondary and tertiary roads linking inaccessible agricultural production areas to the primary highway system and urban marketing centers. It operates by means of employing farm laborers and their families in labor intensive methods of road construction usually in rough-terrain areas where access roads can serve remote agricultural areas and communities.

AID Sector Loan funds were provided in 1971 and 1972 to assist in the Caminos Vecinales operations in 40 fronts. The agency expects to complete over a three-year period ending in December 1973, an estimated 1,548 kilometers of feeder roads in 18 Departments of Colombia. Two locations were visited by the evaluation team where we observed an estimated 200 people working with picks, shovels and wheel barrows, making cuts in rough terrain, removing earth, gravel, rock and forming a graded engineered road approximately 6 meters wide at its base. We were impressed by the magnitude of the manual task being performed by workers who were apparently eager to benefit both by the relatively good pay they received for their work and by the long range transportation benefits that would be derived to their community or farming area. The base of pay is approximately the same as the cost of removing an equivalent cubic measurement of earth or rock by a DC-6 Caterpillar Bulldozer (6 pesos/M^3). We understand that in some areas payment is made (at

least in part) by an equivalent value in a basic food staple. Payments are made by a local engineer -- project manager who is also responsible for designing the engineering features of the road and supervising and controlling task assignments under contractual arrangements with individual workers. The system functions well and is producing substantial progress.

It gives the workers a return above that of ordinary rural day wages. This program strikes us as an excellent example of the employment benefits to be gained by avoiding unnecessary mechanization and using labor-intensive methods where appropriate. Roads are laid out so as to make most cuts and fills manageable by pick, shovel and wheel barrow. The system judiciously still uses machinery for tasks that would be excessively costly by hand labor, such as larger fills and longer dirt hauls, and rock is broken loose by explosives.

Caminos Vecinales activities are included in the Proyecto de Desarrollo Rural (Pilot Area Development Program) areas described previously under ICA coordinated activities. The feeder roads that result from these activities lower the costs and reduce the time and difficulty of moving agricultural products to markets, provide for transport of inputs into agricultural areas and facilitate other economic and social development functions of agricultural areas heretofore relatively isolated from the rest of the Colombian economy and society. Caminos Vecinales activities are serving to provide needed employment to farmers in seasons of the year when they are normally unemployed. Income gained from work is available to farmers for investment, for purchase of inputs, or for living expenses and thus can have a valuable multiplier effect in the rural areas. These activities in feeder road construction are perhaps one of the most effective uses of AID sector loan funds for meeting objectives of the agricultural sector strategy that we have observed.

VI. SERVICIO COLOMBIANO DE METEOROLOGIA E HIDROLOGIA (SCMH)

SCMH is a service agency of the GOC responsible for scientific measurement of weather data, preparation of long range climatic studies, stream flow measurements and flood forecasting in watersheds throughout Colombia. These operations are conducted by more than 100 weather stations and 220 streams gauging stations scattered throughout the numerous micro-climate locations in the country. It is responsible for preparing monthly, annual and 5-year reports on its findings, which are intended to serve as basic data to be used by agriculturalists, livestock men, foresters, engineers, planners, and biologists of many disciplines. It is responsible for the preparation of climatic input data for official maps of Colombia. SCMH plans to increase its number of meteorological stations by 10,000 by 1976.

As an institution, SCMH has been relatively minor-level recipient of GOC budget allocations, receiving during the 1970-1973 period only 0.3% to 1.0% of the budget of those agencies supported by AID sector loand funding. AID's contribution to the total SCMH annual budgets during these same years varied from 20 to 32%. Due to the need of the GOC to provide adequate and timely meteorological information services to farmers and related groups, continued financial support to SCMH through the loan appears to be reasonable and justified, especially in view of the relatively low level of funding requirements for the services performed.

VII. CAJA DE CREDITO AGRARIO, INDUSTRIAL Y MINERO (CAJA AGRARIA)

Caja Agraria formed in 1931 and at present the largest development bank in Colombia, operates 670 branch offices, for providing credit and 13 distribution centers for serving its 444 retail agricultural supply outlets in all regions of Colombia. It is the principal source of institution credit for small farmers providing 80% of all institutional loans (348,134 of the total 436,894 in 1970). Other agricultural credit institutions include

INCORA, the Banco Ganadero, Banco Cafetero, COFIAGRO, the Agricultural Financial Fund (FAA) and private banks. It is estimated that of the 1.2 million farming units in Colombia, 757,000 have less than 5 hectares and only about 35% of the total farming units probably received agricultural credit assistance. This points out that the demand for agricultural credit, especially by small farmers who need assistance most, is yet unfulfilled by Colombian credit institutions. The demand is increasing due to many reasons -- among them are, increasing use of modern technology in agriculture requiring more inputs, favorable interest rates for credit, initiation of programs by the GOC to provide credit to farmers, and knowledge on the part of farmers regarding sources of credit and desirability of its use. A comprehensive account of credit to Colombian farmers has recently been compiled.[1]

Caja Agraria, a recipient of AID 1972 sector loan funds, has increasingly become the prime role agency in meeting small farmer credit needs. Its portfolio has increased from 40 million dollars in 1960 to 230 million dollars in 1970. As a result of reorganization of the Ministry of Agriculture in 1968 as described previously, Caja Agraria moved into the Ministry framework. It is subject to the same controls and regulations as other banks, but it is allowed special exemptions to promote agricultural development.

In addition to extending credit, Caja Agraria provides farm inputs such as seed, fertilizer, tools, vaccines, etc., throughout its retail outlets, it provides some technical assistance to farmers, insurance and serves as a savings institution.

Since the legislation of Law 33 in 1971, Caja Agraria has begun extending credit to small farmers on the basis of production or income arising

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[1]Small Farmer Credit in Colombia, AID Spring Review of Small Farmer Credit No. SR 105, February, 1973.

from credit activities rather than on the basis of existing collateral. For the 18 month period ending December 1971, 95% of the new loans of Caja Agraria were granted to small and medium sized farmers with less than 300,000 pesos assets and about one-third of the new loans were granted to farmers with less than 50,000 pesos assets. This represents a shift in policy from a traditional "banking" philosophy to a "development" oriented philosophy.

Caja Agraria serves as the administrative agency for maintaining financial accounts of all ICA and INCORA credit programs for small farmers. It serves also as the financial agent for the Proyecto de Desarrollo Rural in the 20 pilot area activities described previously. As an institutional entity, it apparently has served and will continue to serve an indispensible role in Colombian agricultural development.

VIII. AID MONITORING ACTIVITY

During the period 1968-1970 dollar releases against the sector loans were related to releases against the program loans. Balance of payments considerations determined the amount and timing of these releases. Since counterpart funds were generated only as dollars were used for imports, the timing of such deposits and the amount to be available during a particular period was uncertain. Without accumulated balances on hand it was difficult to plan counterpart releases and to directly relate requests for releases to GOC performance on and requirements for specific programs.

Beginning with the 1971 loan, however, the procedure was changed to one in which pesos were bought with dollars by AID at the time of demonstration by the GOC of the need for pesos. In November of 1971 a procedure was put into effect under which releases were based upon requests from the GOC incorporating reports of use of and needs for funds and substantive program progress.

This system was recently revised so that as of the beginning of 1973 comprehensive quarterly reports will be received showing both financial and physical progress. Under this system, at the beginning of the year there is submitted to the Mission an estimate of funds to be received by each by source including the GOC budget, AID funds, and other sources during the year and an indication of performance targets to be achieved, e.g., kilometers of farmer constructed roads to be built, numbers of new titles to be issued, number of new small farmer loans to be made, etc. Each quarter thereafter a report is to be made of funds actually received and of progress against the performance targets together with an estimate of financial requirements and anticipated requirements for the coming quarter. These reports are supplemented by textual reports on any special problems or requirements.

These reports serve as the basis for AID releases of funds against the sector loan. This system has also been adopted within the Ministry and serves as the basis for OPSA review of financial requirements and operating results.

We have gained the impression that such reports are carefully reviewed by the Mission and are used by Mission staff as the basis for raising questions of program administration and implementation and for resolving problems with the Ministry and operating agencies. They may also serve as the basis for field inspections for examination and resolution of specific problems. We also understand that the system and the relating of loan releases to it has been instrumental in improving the Ministry's operations and has facilitated a timely and more complete flow of budgeted funds to programs. It is also a system which will assure the attribution of AID funds to programs and projects specified in loan agreements.

It is pointed out, however, that while this system identifies releases and uses with particular programs or projects, funds are in fact released to the GOC treasury where they become commingled with other budget funds as a

part of an investment budget. It is thus not possible to say, in fact, that AID funds were used to support any particular program or project.

In summary, we conclude as a generalization that (1) GOC agencies operating in the sector are competent to administer programs with acceptable efficiency and effectiveness and that Mission procedures for monitoring programs are adequate. (We have some concern, however, that INCORA may be involved in such a broad range of activities as to interfere with its effectiveness. Its operations also appear to be very high in cost); (2) the natural resources programs and projects of credit to agricultural processors, wholesalers, and retailers may need more emphasis than they are not getting; and (3) the burden placed on the Mission staff may be too great for the contemplated reduced staff to handle effectively.

Mission professional staff in the agricultural area now consists of the Rural Development Officer, one senior officer concerned with natural resources development, one economist primarily concerned with the mathematical sector analysis, and two local hire Colombian agriculturists. During our visit this staff was being supplemented on a temporary basis for assistance in reviewing the Sector Analysis Paper and preparing the 1973 loan paper by the former Deputy Rural Development Officer as a consultant and by an economist from the LA Bureau on TDY, who will soon join the staff permanently. It is our understanding that it is expected that the permanent professional staff is to consist of the Rural Development Officer, two economists, and the two Colombian agriculturalists. This represents a considerable reduction in staff resources from prior year levels. We doubt that this staff is of the optimum size needed to consider and deal with the GOC on matters of sector policy and strategy, to monitor loan supported projects, evaluate progress of sector development, supervise the development of a comprehensive sector analysis, and prepare all the documentation required for loans. Precise staff

requirements, however, depend on the scope of the work to be undertaken in the future, and on the amount of technical staff help that can be supplied by Colombia, other donor institutions, and (on a non-resident basis) by AID/W.