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THE WORLD BANK

Project Performance Audit Report

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

April 21, 1978

Operations Evaluation Department

Project Performance Audit Report

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

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Project Performance Audit Report

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

PREFACE

This is a report on an audit of performance under the Caqueta Land Colonization Project in Colombia, supported by Loan 739-CO. The project was identified in 1967, prepared in March and October 1969, appraised in January 1970, signed in May 1971, and became effective in September 1971. The execution of the project was governed by a Loan Agreement for US$8.1 m. The original closing date was October 31, 1974, later extended to September 30, 1976. Loan 739-CO was fully disbursed by November 4, 1976.

This report consists of an Audit Memorandum and a Project Completion Report prepared by the Latin America and the Caribbean Regional Office in July 1977. The Memorandum is based on the PCR, a review of the project supervision reports, the appraisal report, and other relevant Bank documents and discussions with Bank staff.

An OED mission visited Colombia in 1977. During its visit the mission had intensive discussions with INCORA and other agencies concerned with the implementation of the project and also made a field trip to the project area. The assistance of INCORA staff, other Government officials, and colonists who provided data and discussed the project so readily is gratefully acknowledged.

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Basic Data Sheet

A. Amounts (in US$ million)

	Original	Disbursed
Loan 739-CO	8.1	8.1

B. Project Data

	Original Plan	Actual or Current Estimate
Bank/FAO/CP		
Report TO-611		10/26/67
Government's application		11/15/68
Board approval	5/04/71	5/04/71
Loan Agreement	5/28/71	5/28/71
Loan effectiveness	9/15/71	10/19/71
Last disbursement	6/30/74	11/04/76
Closing date	10/31/74	9/30/76
Total costs (million)	Col$ 388.4/US$21.6	Col$ 575.3/US$20.3
Economic rate of return	16.5%	13.0%

C. Mission Data

	Month/Year	Number of Persons	Number of Weeks	Man Weeks in Field	Date of Report
Identification	October 1967	-	-	-	1967
Preparation I	March/April '69	3	2.5	7.5	4/12/69
Preparation II	October '69	4	-	-	11/01/69
Appraisal	Jan/Feb '70	5	3	15	1/29/71
Supervision I	July '71	1	1.5	1.5	8/12/71
Supervision II	October '71	2	1	2	11/08/71
Supervision III	April '72	2	1.5	3	5/05/72
Supervision IV	August '72	1	1	1	9/13/72
Supervision V	Feb/March '73	2	1	2	3/22/73
Supervision VI	August '73	2	1.5	3	9/19/73
Supervision VII	Jan/Feb '74	3	3	9	3/06/74
Supervision VIII	June '74	2	1	2	7/05/74
Supervision IX	Jan '75	2	1.5	3	2/24/75
Supervision X	July '75	3	1	3	8/07/75
Supervision XI	Feb/March '76	2	3	6	4/05/76
Supervision XII	Sept '76	1	2.5	2.5	11/09/76
Completion	March '77	2	1	2	7/15/77
				45.0	

D. Follow-on Project

Loan 1118-CO of US$19.5 million, signed June 2, 1975 for Caqueta II Settlement Project.

The average weighted exchange rate for the disbursement period is US$1 = Col$ 28.34.

Project Performance Audit Report

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

I. PROJECT SUMMARY[1/]

Background

1. The Caqueta Land Settlement Project was designed to support spontaneous colonization taking place in the upper reaches of the Colombian Amazon basin just southeast of the Andean piedmont. The area was opened to non-Indian settlement at the turn of the century during the short-lived rubber boom and experienced further development when military operations were introduced as a result of border conflicts between Colombia and Peru. Spontaneous colonization continued at a slow pace in the 1950s and increased during the 1960s, spurred by tenancy problems and by civil conflicts (la Violencia) in the Andean highlands.

2. The Government initiated a program of directed colonization in 1959, administered by the Caja Agraria (CA). Prospective colonists were selected, transported to Caqueta, and provided with plots of jungle to clear and farm. This effort proved a failure not only because inadequate infrastructure and producer credit were provided, but also because many of the colonists selected simply could not accommodate themselves to the difficult conditions faced: tropical humid forest, heavy rainfall during nine months of the year, malaria and contaminated water. In addition, the deep clay soils of the region are not suitable for continuous annual cropping, though they are adequate for permanent pastures.

1/ Adapted from the PCR.

3. The colonization program was given a different orientation in 1961 when, instead of directed colonization, it was decided to provide assistance to those settlers who had come independently to the zone to claim and establish themselves on public lands. Colonists were to be assisted only after they had shown themselves both willing and capable of living in the area. Under this plan, the Government would incur no expense for moving potential settlers nor for initial land clearing, cultivation and house construction. The administration of the new program was assumed by the Instituto Colombiano de la Reforma Agraria (INCORA) and, in the late 1960s, was expanded with financial assistance from USAID.

4. Colonization in Caqueta has followed a simple procedure. Access to the area was limited to a poor road running along the foothills of the Andes, a few short penetration roads leading into the jungle, and the network of rivers which run southwest into the Amazon basin. River transportation has been the principal avenue for new colonists and lands along the rivers were the first to be cleared and settled. Arriving with little more than a machete, an axe, and perhaps a mule, colonists laid claim to public lands by staking out their property, clearing pieces at the corner boundaries, and gradually clearing larger pieces for cultivation and/or pasture. Because soils are poor, colonists were forced either to continue with slash and burn rotational cultivation producing only for subsistence or develop a larger livestock enterprise. Without financial credit, however, most colonists could not obtain cattle; many colonists spent years in the process of building up even a small herd. Others simply sold their land to wealthier

migrants and moved on, returning to towns or seeking to use their capital to develop a farm further into the jungle. The Government assisted colonists by building roads, schools, medical facilities and by providing credit and technical assistance. Efforts to support colonization, however, were hindered by a severe lack of funds, especially when USAID assistance ended. And the population was growing; it was estimated at 170,000 in 1968, rising at 8% per year.

Targets and Goals

5. The Bank was approached in 1968 to expand the support being given colonists. On the basis of INCORA's experience, a project was prepared in 1969 and appraised in 1970 to provide about 4,500 settlers with farm development credit, land titles and technical assistance and to assist indirectly about 8,000 families in total through the provision of 380 km of roads, 90 schools and 6 health centers. The project also was to strengthen INCORA's administrative staff in Caqueta and assist the development of an agricultural and livestock research center in the area. INCORA planned to subcontract specific aspects of the program to other government agencies already operating in these areas. Responsibility for the program within the Bank was divided between the transportation and the agricultural divisions, with the latter assuming principal responsibility.

6. The design of the project proved overly ambitious because of the difficulties of the location and building up the technical and support services. The costs of farm, road, and social infrastructure development were also significantly higher than projected. In September 1973, after a

careful re-evaluation, the project targets were reduced to 1,600 farms, 200 km roads, 60 schools and 6 health posts; at the same time the closing date was extended by two years. The revised goals were met at completion.

Costs and Disbursements

7. The Bank loan financed about 40% of the total project cost (appraisal estimate was 38%). Bank loan disbursement for farm development amounted to US$3.8 million instead of US$2.9 million in the appraisal estimates, although the number of direct beneficiaries of the lending program was less than half the number originally planned. An appraisal error in budgeting for the purchase of livestock, and higher livestock costs, were responsible. Road costs were also underestimated and were about 45% higher on a unit cost basis than predicted.

Agricultural, Social and Economic Impact

8. The analysis of the project revealed: (i) the average beneficiary had approximately 102 hectares, 50% of which was in pasture, and 19 animals at the time the subloan was received. The average number of animals obtained through the subloan was 16. The median is well below the average in both cases; (ii) the investment per family for farm development was about US$4,900. Investments provided for roads, social infrastructure, and administration are approximately US$5,600 per participating family; (iii) the net incomes of subborrowers increased little during the first six years of development, as expected, because of the slow gestation of the livestock development and subloan amortization; subborrower expenditures on housing improvements and hygienic facilities, nutrition, education and other items remained low;

(iv) the value of the subborrowers' net assets increased about 60% to approximately Col$ 1 million (1977); the number of cattle on participating farms increased during the first five years of the project by 140% and the area devoted to pasture by 40%; (v) eighteen percent of the subborrowers were removed from the development program because of failure to comply with the subloan conditions, 71% continued in the program with satisfactory performance, and 11% cancelled their subloans on their own initiative; (vi) project subloans were purposefully limited in size to permit a larger number of farmers to benefit from the project. Subloans went to farmers with viable holdings, but larger and well established farmers were excluded; (vii) the economic rate of return has been recalculated at about 13% in comparison with the appraisal estimate of 16.5%.

Conclusions

9. The Caqueta Land Colonization Project has demonstrated that squatters in the Amazon forests can be encouraged to properly develop farms, which can provide a reasonable living for themselves and their families. The project has also proved the feasibility of productive land use in the Amazon basin. The project is one of the Bank's first efforts in integrated rural development and should be studied as a source of valuable experience for planning further rural development activities in Colombia or elsewhere under similar conditions. Although the project, as completed, is substantially smaller than originally planned, and although there are a number of development issues which continue to require close supervision, the physical infrastructure completed is providing benefits greater than those expected. INCORA's administration is of

high quality, and the credit granted has been distributed equitably and is providing the benefits expected.

II. MAIN ISSUES

General

10. The Caqueta Land Colonization Project, as completed, has been a success. As a result of the first project, and the follow-up project signed in 1975, the Caqueta region has received a considerable development stimulus consistent with distributional concerns. The findings of the audit concur with the conclusions reached in the PCR. The project, however, experienced substantial early difficulties due to a series of factors including appraisal errors, unexpected administrative and environmental difficulties, and unexpected cost increases of project investments. In addition, certain ecological problems in or immediately adjacent to the project area, and land distribution concerns require comment.

A. Roads

11. At appraisal a dangerous highway in poor condition over the Andes connected Florencia, the capital of Caqueta, with the rest of Colombia. Within Caqueta an unpaved trunk road ran 164 km along the Andean foothills through Florencia northeast to Puerto Rico and southeast to San Jose; six other roads penetrated in southernly directions from the trunk road into the area of colonization, none more than 25 km in length and all of poor standard. The project planned the construction of 380 km of new roads, all with gravel

surface, of three classes: 110 km of class B, 30 of class B/C, and 240 of class C. The estimated cost varied from Col$370,000 (US$21,500) per km for the most expensive to Col$190,000 (US$11,000) per km for the least. The more expensive roads were designed to connect the existing road network with river ports not then easily accessible from Florencia and, in doing so, open up new regions. The less expensive roads were designed to provide lower class service within specific farming regions.

12. By late 1972, at the end of the first season in which large scale construction had been attempted, it became clear that the road program was not materializing as appraised and by mid-1973 it was recognized that drastic alterations would have to be made if work were to be continued. Unit costs of road construction were well above those predicted, physical progress was much slower, and several of the small contractors who had received construction awards were in obvious financial difficulty. As part of the overall project redesign at that time, the road program was reduced to 200 and then to 177 km; 164 were ultimately completed. The principal changes introduced were the elimination of 132 km of access roads, the shortening by 110 km of the penetration roads (these will be completed during the second project, now in progress), and the addition of 39 km of penetration roads not previously planned. The principal problems occurring in the road program were the result of (i) poor contracting procedures, (ii) appraisal errors, (iii) difficult physical working conditions, and (iv) financial and economic changes in Colombia. At appraisal the Bank and INCORA recognized that few qualified contractors existed in the Caqueta region, but expected that the opportunities

offered by the project would attract contractors from other parts of Colombia. This assumption was probably too optimistic. Between appraisal and the letting of bids urban construction in Colombia boomed and few contractors from other regions found it attractive to bid on the road construction projects in Caqueta. Of those contractors who showed interest, several were only minimally qualified, were not familiar with either climatic or soil conditions in the zone, and lacked sufficient equipment. Worse, several of the original contractors, either because they were overly eager or because they were unfamiliar with the region, submitted bids which were unrealistically low. INCORA accepted these bids because they were the lowest, rejecting in the process the bid of at least one contractor who was already active in the area and who subsequently successfully completed road segments in the first project and again in the second project. The rejected bid turned out to have been much more realistic than those which were accepted.[1/]

13. Insufficient attention was given to the road program at appraisal. The fact that the project was divided between the agricultural and transportation divisions, with the latter taking only secondary responsibility, may have been a factor. The Caqueta area is of difficult access, but information from several completed roads was not fully used when estimating construction costs and time requirements. In particular, more attention should have been given to soil and climatic conditions. Fault seems to lie equally with INCORA and the Bank. INCORA provided the Bank with costs regarding roads which had

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1/ Individual contractors in Colombia wishing to bid on government projects are required to register, but are not prequalified. Later on, neither INCORA nor the Bank adequately evaluated the qualifications of the winning bidders.

previously been built, but to lower specifications than those in the Bank project. The Bank accepted them without adequate review.

14. Contracting procedures at the beginning of the project were also faulty. INCORA let bids separately for different roads instead of permitting bidding on the project as a whole, which thereby attracted smaller firms. The Bank and INCORA subsequently discussed the possiblity of linking road segments together for bidding, hoping to induce larger and more experienced firms to enter the area, but this was never done. This approach probably should have been adopted at appraisal; once the project was underway, recontracting took place on a piecemeal basis making it difficult to link road segments. INCORA felt that it would have been difficult to attract large firms to Caqueta in any event, that it would have been risky to place the entire project in the hands of one firm, and that it was useful to have a number of smaller firms available for construction in the area. The Bank did not confront INCORA on this issue.

15. The contractors ran into several problems almost immediately. First, because of heavy rainfall during nine months of the year, most work had to be completed during the dry season, the three months from December through February. The effective work year was much shorter than expected and it was physically impossible to construct a road system as rapidly as had been planned. Lacking the necessary equipment, several contractors had to delay work and the delay meant that the effective work season was missed, setting the program back an entire year. Second, contractors encountered difficult soil conditions, principally a white clay which was exposed when deep cuts

were made in hilly terrain and which proved extremely unstable when wet. Once exposed it was necessary to remove the clay to permit fill and compaction. However, gravel for fill in the Caqueta region is available in only a few areas and, as the road system was extended, it was frequently necessary to transport gravel for longer distances at higher cost. The existence of the white clays could have been determined at appraisal from previous road construction. The problem was alleviated in some areas by making shallower cuts and accepting steeper gradients. Third, most roads originally planned for class C standards were upgraded to class B/C. The class C roads were thought at appraisal to be suitable for labor intensive construction methods, but labor in Caqueta is scarce; the annual construction period is also too short to allow time consuming but labor intensive construction. Further, most traffic on the roads was expected to consist of heavy trucks for livestock or buses for passenger travel and wider roads were both more suitable and cheaper to maintain. Although as appraised the unit cost of class B/C roads was nearly double that of class C roads, the cost differences in practice were not so great, making the preferred choice between classes clear. The Bank ought to have recognized that labor in an area of colonization is scarce.[1/] Fourth, the urban construction boom resulted in a sharp increase in the cost of construction inputs, particularly steel and cement. Fifth, payments to contractors for completed road segments were frequently delayed by INCORA because INCORA was left without funds during a period of acute governmental

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1/ The same error required changes in the school construction program; see PCR para. 3.07.

budgetary difficulties. Because of their weak capital structure, contractors had to borrow to meet their expenses and continue working. The financial costs were high because, again due to the urban construction boom, short term credit markets had become extremely tight. While the above problems resulted in a slower pace of construction and higher costs than predicted, progress since the project's re-evaluation has been steady and close to design plans in both speed and cost. A number of different contractors and two consulting firms advising on road design and routing have performed successfully.

16. Several other issues are pertinent. During the 1973 re-evaluation, a decision was taken to eliminate most of the access roads previously planned. Traffic on the roads being built seemed to exceed appraisal predictions, but, given the financial and institutional inability to build the total mileage originally planned, emphasis was placed on penetration roads which were expected to benefit the largest number of individuals. No rigorous cost/benefit study has been made, but the decision appears correct on both economic and social grounds.

17. The average cost of the roads constructed, per km, was Col$780,000 as opposed to a predicted Col$252,000, an increase of 210%. The difference is somewhat misleading insofar as the shift in class mix, based on the appraisal estimates, should have caused a 23% increase in average road costs and general inflation in Colombia would have caused a 75% cost increase, leaving a 45% increase in real unit costs. There was an enormous variation in the per km costs of the roads actually constructed, even within the same class -

ranging from Col$252,000 to Col$1,682,000 for B/C roads; the large differences appear to be due to a variety of factors, including contractor efficiency.[1/]

18. Caqueta possesses some of the world's few natural asphalt deposits which can be mined and directly applied as road surfacing. These deposits are found only in the piedmont area and transport is costly. However, the existence of the raw material has allowed some roads to be economically upgraded to a higher level than originally expected, increasing traffic velocity and decreasing vehicle wear and required road maintenance.

19. The increase in traffic on project roads beyond the forecasts has increased project benefits, but it is causing roads to deteriorate more rapidly and will require increased maintenance expenditures. The use of heavy trucks is a particularly serious problem. There is no agency in Caqueta institutionally equipped to control the weight of trucks using the roads and bridges constructed by the project. The issue is not discussed in supervision reports and appears to need resolution.

20. The project encountered another problem regarding road maintenance. At the time of loan negotiation, Bank staff sought and received assurance that

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1/ Contracting procedures originally provided for periodic cost readjustments in line with both approved design changes as construction proceeded and with increases in the cost of materials. This procedure placed no incentive on the firm to complete the project within the stipulated period, and a new procedure now provides for cost readjustment only until the contract's stipulated closing date. It does not appear that individual contractors fraudulently enriched themselves; several went bankrupt. The fact that bids were awarded to small contractors, without an adequate capital structure, meant that there was little effective legal recourse against any contractor who, because of inefficiency or justifiable difficulty, simply could not terminate his road segment as agreed. INCORA may have been willing to bear with some contractors overly long, however, before cancelling the original awards and initiating rebidding.

Caminos Vecinales, a department of the Ministry of Public Works, would maintain roads after they had been completed. However, Caminos Vecinales had no funds for maintenance and, although the Bank repeatedly pointed out this breach of loan covenant to the Government, urging that funds be made available, such funding of maintenance was not provided during the first project. The situation was alleviated by the fact that road contractors were required to maintain the segments being constructed until completed and delivered. Given the delay in road completion, relatively little maintenance was required until 1975, at which time funding was made available to Caminos Vecinales through provisions under the follow-on project. The maintenance of roads is now adequate.

21. The issue nonetheless demonstrates a problem which can easily arise when one central agency, such as INCORA, is expected to coordinate the actions of other government agencies and where the contributions of the latter agencies are not directly funded by the project through the coordinating agency. Different government agencies compete for scarce funds and, without specific written accords, general assurances regarding the provision of project components may turn out to be insufficient to achieve the desired ends. In this case, INCORA was in a strong political position when the project was negotiated and the Bank accepted INCORA's assurances that the funds would be forthcoming and the Caminos Vecinales would undertake the work without adequately confirming these possibilities. Caminos Vecinales was not a party to the agreement. By the time the project was being implemented, INCORA's political power had declined and the Government was experiencing a difficult

fiscal situation. INCORA could not obtain funds from the Ministry of Finance for road maintenance in Caqueta and, without financing, Caminos Vecinales, already short of funds, would do nothing. Had funds been provided in the first loan to assist Caminos Vecinales, as it was done in the second project, the situation would have been improved. The latter approach required that the Bank finance maintenance as well as construction costs, a position which the Bank was reluctant to accept, but the alternative of having roads deteriorate rapidly, as they do when not maintained in a region like Caqueta, is unacceptable. It is hoped that sufficient local pressure will gradually develop in Caqueta to ensure proper maintenance after Bank financing has terminated.

22. One final issue is important. The penetration roads constructed by the project have not kept up with ongoing settlement, benefitting chiefly areas which are already settled and largely cleared. The same will be true of most roads constructed under the second project. This is not because roads have been diverted to settled areas, but simply that the area of colonization is large and growing. New colonization is now occurring in areas several days by horse travel beyond the end of existing roads.

B. Livestock Credit Program

23. Long-term cattle development loans were expected at appraisal to be made to 4500 colonists over a three-year period. Operated through the Banco Ganadero, the program proposed to make small in-kind loans to farmers, chiefly in the form of breeding animals. A number of initial difficulties were encountered by the program and by 1973, it was clear that the appraisal target

was no longer feasible; it was reduced to reach 1600 colonists over a five-year period. The reasons for this reduction were (i) the administrative apparatus for on-farm lending developed more slowly than expected so that fewer than the predicted loans could be processed, (ii) funds provided in the loan were insufficient to purchase the number of animals which had been anticipated in the appraisal report, and (iii) an increase in cattle prices further reduced the number of cattle which could be purchased with project funds.

24. INCORA experienced difficulty in building up an adequate staff, both for land titling which was an important precondition for lending to colonists in recently settled areas, and for loan promotion and processing. Staff salaries were low and frozen for periods, despite inflation, while working conditions were difficult. Roads had not yet been constructed into most areas and transportation was arduous and time consuming. A shortage of cattle for delivery to subborrowers was an additional problem. And the Banco Ganadero was originally rather conservative in its approach, relying heavily on traditional mortgage concepts for loan security. Loans during the first two years of the project were concentrated in areas close to Florencia and among ranches which had already experienced some development. A study of the subloans made during 1973 indicated that a number had been larger than expected. Because of the sharp reduction in the number of loans which the project was to be able to make, and because the project's cattle development loans were thought chiefly as a means of assisting colonists who could not otherwise obtain financing, Bank and INCORA staff agreed to

strictly enforce loan criteria designed to channel farm development loans toward smaller, poorer ranchers initiating their farm development in frontier areas. Improvements in staff and project procedures were gradually brought about and the revised lending targets were met while also directing loans to less developed ranchers.

Spontaneous Colonization, Land and Cattle Distribution, and Project Impact

25. The importance of this decision can be understood fully only by examining the dynamics of development in Caqueta. Although the virgin lands of the Caqueta region were seen as offering landless peasants from the densely populated Andean highlands an opportunity to achieve substantial improvements in their economic and social position, recent studies of the Caqueta region suggest that spontaneous settlement has not been as fully successful as had been hoped.[1/] The distribution of land ownership in Caqueta is already highly concentrated, replicating the land distribution of the older interior regions of the country. The census data for 1961 and 1971 indicate that in both years the largest 10% of landholdings in Caqueta accounted for approximately 57% of total area. In contrast, the smallest 50% of all landholdings

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1/ Pidelta Ltda., Consultores, Plan de Desarrollo del Proyecto de Colonizacion del Caqueta Etapa II, Bogota, December 1973, especially Volumes I and III; R. Roberts, "Migration and Colonization in Colombian Amazonia: Agrarian Reform or Neo-Latifundismo," Ph.D dissertation, Department of Anthropology, Syracuse University 1975; and M. L. Gomez Rojas, et. al., "Incidencia Socioeconomica del Projecto de Colonizacion del Caqueta Etapa I," Tesis de Grado, Departamento de Economia, Universidad Santo Tomas de Aquino, Bogota, Colombia, 1971.

accounted for only 10% of area.[1/] Further, 54% of all landholdings are smaller than 50 hectares and the average holding between 50-100 hectares is only 59 hectares.[2/] INCORA estimates that a minimum of 80 hectares is needed in the zone for the establishment of an economic livestock ranch. Land settlement policy has been inadequate insofar as it has failed to assure either an egalitarian distribution of public lands or ensure that most plots are of economic size.

26. The skewness of landholdings in Caqueta results chiefly from a land titling system which favors those with greater personal resources, both physical and financial, rather than one which simply provides the same amount of land to all, and which attempts to avoid subsequent land fragmentation or concentration through continued sale/purchase. Alternative policies would be difficult, however, because of the stage process through which colonization has occurred. In the first stage, adventurer-explorers have entered the jungle, claimed large

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1/ The data on land distribution in Caqueta are probably biased toward equality because some landholders have more than one holding and because individuals frequently occupy more land than that for which they have legal title. INCORA permits the titling of up to 50 hectares gratis for the husband and wife each (and an additional 50 hectares for any children of majority age). It is common practice (both socially and politically condoned) for an individual to obtain legal title to 50-100 hectares with additional holdings simply being occupied. This practice occurs principally for larger landholders as there is no economic incentive for owners of parcels of less than 50 hectares. INCORA has considered increasing the size of the parcels which can be entitled gratis, but such a policy has negative social effects as well. INCORA has also considered instituting action to preclude individuals from occupying land parcels greater than that to which they are legally entitled. But this would be difficult to enforce from the pure administrative capacity.

2/ As shown in Table A2, this conclusion is not significantly altered if the holdings between 0-10 hectares are excluded (on the assumption that they are urban rather than rural plots). Plots of less than 50 hectares account for 46% of total holdings, but for only 11% of total area.

areas and cleared small parts of the same, dedicating themselves to temporary exploitation of forest resources and to subsistence agriculture. Although these individuals have claimed land de facto, they usually do not secure title. In the second stage, colonists interested in permanent settlement have arrived, but usually avoided areas of extremely difficult access. These later colonists were also often of limited resources and thus unable to purchase large amounts of land. Accordingly, they settled where considerable land was already claimed, either purchasing a subdivision of land occupied by another colonist or accepting smaller plots which had not yet been claimed.[1/] Whether purchasing or occupying land, the size of the parcel developed is usually associated with the physical capacity of the colonist (his size, age, and strength), the size of his family (number of other laborers), or his financial capacity (ability to purchase land and to hire other laborers to clear jungle). In an area in which land is relatively inexpensive, a small amount of capital can permit an individual to achieve control over a significant area. In the third stage, wealthier individuals from outside the region, noticing the potential, arrive to purchase land from existing farmers, usually consolidating a number of relatively smaller holdings. The farmers who sell to these entrants may leave the area, move to a nearby town or, if they have sufficient energy and zeal, move farther into the forest to begin again anew.

1/ For comparison purposes, 63% of the project's subborrowers indicate that they obtained their landholdings by purchase rather than the claim of public lands.

27. The description given is general; the distinction between the stages is not fixed in chronological time, nor is it always simple to classify individual colonists into one of the three categories. The important issue is that initial possession of greater resources by some colonists permits them to rapidly accumulate substantial amounts of land while other, poorer colonists remain with much less. By increasing the availability of credit for ranchers of smaller size, INCORA and the Bank expected to improve the likelihood that poorer colonists wishing to establish viable farm enterprises would be able to do so, being less pressured to sell their lands. In turn, it was hoped that a large strata of middle sized producers could be preserved, gradually contributing to an improved land and income distribution in the region.

28. The situation described above was not known at appraisal, becoming clear only in 1973 when INCORA commissioned (and contributed to) an evaluation of the first project in preparation for the second. At that time Bank staff became yet more determined to direct assistance to colonists who had not been able to exploit the land they possessed. Agreement was reached with INCORA that subloans would not exceed 15 animals and would not be given to any producer whose total herd would exceed 25 animals after receipt of the loan. The project, as completed, was reasonably successful in this respect. The data in Table A3 indicate that 41% of subborrowers had less than 10 cattle when they received the credit (average 5), 29% had 10-20 (average 15), and 30% had more than 20 animals (average 42). The average number of animals received by subborrowers through their loan was 16. Most

of the larger subloans, or those received by more developed ranches, were made during the first two years before the decision to adhere strictly to smaller loans was taken.

29. Despite the controls, the statistics on loan size and destination may be slightly misleading. Officials of the Banco Ganadero, the agent during most of the first project, informed the audit mission that they believe it is not economical to initiate cattle production with less than 40 animals. Accordingly, despite limitations on project loans, the Banco Ganadero said their practice has consistently been to complement Bank-financed INCORA loans with additional loans made from their own resources or other credit lines. The full extent of this practice is not known. From one perspective the Banco Ganadero's view is quite correct; given the required infrastructure and the labor, it is much more economical for producers to work with additional cattle. The only justification for limiting loans to smaller size is the desire to assist a larger number of producers with the scarce resources available, hoping to provide them with additional loans during future programs. The second project has done this in some cases.

30. The lending criteria applied seem more appropriate with respect to the size of landholdings of subborrowers. Although the distribution of landholdings in Caqueta is skewed, most project borrowers are medium sized landowners. As shown in Table A3, in a sample of subborrowers who received their loans prior to 1975 (this includes 80% of all borrowers under the first project), there were no borrowers with less than 50 hectares and borrowers with less than 160 hectares account for 83% of loans and 63% of the total

area occupied by subborrowers in the sample. Still, 37% of the total funds went to borrowers having more than 160 hectares (average farm size 257 hectares).

31. Although the size of holdings may suggest that subborrowers are substantial farmers, at least at the time loans are received, this would be mistaken. In a subsequent section the available information of subborrowers' gross and net incomes, their gross assets, and changes in these variables over time is presented. Subborrowers were poor and few have passed out of the poor category, although their net asset position has begun to improve. This discussion is postponed, however, until other information specifically relevant to the implementation of the livestock credit program is presented.

Cattle Purchase

32. Due to a shortage of breeding animals in Caqueta relative to the growing demand, some of the cattle purchased for delivery to subborrowers had to be brought from other regions in Colombia; of the 28,500 cattle provided to farmers through the credit program, approximately 15,000 were purchased in Caqueta and 13,500 were purchased outside the area. The Banco Ganadero, which was responsible for developing the mechanisms for purchase, transportation and delivery of cattle, originally sought to use commission agents to make the required purchases, but shortly discovered fraud. It subsequently utilized its own employees, over which it felt it had more control, authorizing buyers to purchase no more than 300 animals at a time. The demand for animals was advertised in different areas and sealed bids were requested, the lowest bid of animals of acceptable quality being

accepted. A campesino from Caqueta was selected by his peers and sent on buying trips to approve the animals purchased. Once transported to Caqueta the animals were divided into lots, subborrowers drew numbers and, with right of refusal, obtained their animals randomly.

33. The purchasing program has been criticized because (i) cattle were allegedly bought in areas in Colombia where the purchasing agencies had existing interests, even when prices there were high, (ii) the project's demand drove prices still higher, (iii) transport to Caqueta was expensive and additional losses occurred through animal deaths and weight loss, and (iv) cattle were frequently pastured for lengthy periods in Florencia before being turned over to borrowers, with the cost of forage being added to the price which borrowers had to pay. Nonetheless, when all additional charges are considered, the cost of heifers purchased outside Caqueta was systematically lower than the cost of those purchased in Caqueta. The price of bulls, in contrast, was slightly higher, but this may reflect a difference in quality. Although the purchasing program might have been improved, it functioned well as an innovational program designed to increase the number of breeding animals available in Caqueta and to distribute these animals to producers in small lots.

Short-Term Livestock Credit

34. The short-term livestock credit program, which was instituted in 1973 when it became clear that administrative obstacles would make it impossible to make the number of long-term loans originally planned, was not very successful. It was thought that livestock loans for fattening animals could be processed

more rapidly, thereby speeding the delivery of cattle to colonists, and at the same time strengthen the development of the Caqueta regional cooperative, COOPERAGRO, through which such loans were to be channeled. The type of loans planned had already been made successfully in Caqueta. The Fondo Ganadero, essentially a livestock bank making loans in kind, lends animals to producers and shares the profits of production, on a pre-agreed proportion, when sales are made. It has placed about 40,000 animals with producers throughout the region and its "portfolio" has steadily increased over the last decade. A number of larger ranchers and individual proprietors in Caqueta also provide animals for pasturage on a "share" basis.

35. INCORA's plan was to supplement these sources by permitting CECORA, a national cooperative agency associated with INCORA, to make credit available to COOPERAGRO, which in turn would purchase animals and provide these to its members, splitting the profits with them at the time of sale. The program made 141 of the 300 planned loans, but never functioned well, due largely to political disputes. COOPERAGRO became highly politicized, and its emphasis on financial and business affairs declined. CECORA and COOPERAGRO engaged in disputes over both finances and politics. CECORA refused to provide COOPERAGRO with funds for the short-term credit program, despite the fact that INCORA had made these funds available to CECORA for that purpose, alleging that COOPERAGRO owed it money on other accounts. INCORA, eager to promote a viable cooperative program, struggled to arbitrate for some period before giving up. The short-term credit program is now being operated directly by INCORA with better results.

36. At appraisal it was envisaged that INCORA would also provide seasonal supervised credit, using the Caja Agraria as its financial agent, for other products, principally rice and pigs. The production of both was important to colonists during their initial years when clearing forest, although subsequently such production is phased out as cattle production is begun. Due to a general institutional shortage of funds which required a reprogramming of support to projects throughout Colombia, INCORA made less available for seasonal credit in Caqueta than originally planned.

Project Loan Allocations and Increases in Cattle Prices

37. As pointed out in the PCR, several serious errors appeared in the appraisal report regarding budgetary allocations for livestock purchases. The appraisal report farm development models call for livestock purchases to be spread over 5 years for 1000 of the 4500 colonists borrowing, but the project was expected to last only 3 years and funds were not included in the Bank loan for the purchase of animals after the project's end. Thus, the ostensible target of providing 69,000 cattle to colonists was infeasible because no budgetary provision was made for 12,000 of these animals. Further, using the domestic peso prices for cows and bulls which appear in the appraisal report models, a total of Col$108.1 million (1970 pesos) would have been required to purchase even the 57,000 cattle (plus complementary pigs and mules) which were to be purchased during the project's three years. But the project's budget provided only for Col$91.4 million, 15% less than that needed.

38. As is clear from the figures in the paragraph above, even had no livestock price increases occurred, the livestock credit targets could not have been met. There were funds for only about 50,000 animals, not 69,000. The actual number of cattle purchased, however, was 28,535; the further reduction in animal purchases was brought about chiefly by an increase in cattle prices.[1/] The data on prices are given in Table A1. Unit cattle prices measured in constant pesos rose by 25-30% between project appraisal (1970) and project implementation (1972) but rose at a slower rate thereafter. The price increases which occurred in Caqueta are consistent with price increases occurring throughout Colombia during the same period and, in turn, were associated with an upswing in international markets. The appraisal mission also estimated farm prices conservatively when calculating the predicted rate of return, expecting that the then ongoing price downswing would continue. Instead prices rose. Inflation in the U.S. further reduced the purchasing power of the dollar, the currency in which the loan was denominated. Thus, while the average real peso price of breeding livestock in Caqueta increased by about 40% over the project, the U.S. dollar price of the same animals increased about 65%. At appraisal, the cost of an "average breeding animal" (15 cows and 1 bull) was about US$95 while the average price of the animals actually purchased was US$155.

1/ The audit mission agrees with the PCR in nearly all respects, but we find that price increases, principally between 1970 and 1972, rather than after 1972, explain a major proportion of the financing gap encountered for livestock purchases. See PCR para. 3.05.

39. The project financed the purchase of 28,535 cattle, some 57% of the 50,000 which were actually budgeted. The reduction is explicable by (i) the error in budgeting in the appraisal report (20%) and (ii) the increase in the U.S. dollar price of cattle (63%); 1.2 x 1.63 = 1.96 and 50,000/1.96 = 25,600. The slight increase in livestock purchases over 25,600 was made possible by allocating a higher than originally planned proportion of the loan to this end use.

40. The price of fat steers in Caqueta has risen in recent years somewhat more than in Medellin, perhaps because of improving market links with the rest of Colombia, or growing local demand. Nonetheless, cattle prices now seem to be unusually high and at unsustainable levels if reference is made to international market conditions.

Interest Rates

41. Interest rates for subloans were made at 8% per annum on a linear basis, or 6.3% compounded, plus 1% for life insurance. Inflation at the time of appraisal was about 7-9%, although it accelerated steadily after 1969 and averaged 20% annually during the implementation period. At the time of appraisal, another Bank loan (Loan 448-CO) financed cattle development for large commercial ranchers in the Costa and Llanos regions, at 12% interest rates. Because inflation was still moderate, and real interest rates positive, indexing on subloans in Colombia had not been made a strong issue by the Bank. Moreover, among credit lines available to livestock producers, the Bank-financed subloans carried relatively high interest rates. In discussing the Caqueta project with the Bank, INCORA argued that small colonists ought to receive terms better than those available

to larger ranchers. Perhaps partly because the small loans proposed for colonists appeared financially of marginal profitability in any event (see the section on living standards of subborrowers), the Bank agreed.

42. In the second project, due to rising inflation, interest rates were raised to 15%. Rates of the Settlement II follow-on project could not be raised above 15% because in the meantime the Livestock II Project (Loan 651-CO of March 1971) became operational in the Caqueta area in 1972 and charging also 15% interest on its subloans. An interesting policy dilemma nonetheless remains. Although interest rates on both subloans were negative in real terms, efforts were made in the Colonization project to ensure that the loans were channeled to smaller, less developed producers and were restricted in size, thus reducing the absolute amount of the subsidy received and spreading the benefits over a larger number of relatively poorer producers. Apparently no such effort was made for subloans financed under Loan 651-CO. There is no evidence of an effort in the Bank to coordinate lending policy for these two loans in Caqueta.

Technical Assistance and Farm Technical Impact

43. INCORA planned to provide subborrowers with a reasonably intensive and sophisticated program of technical assistance. The actual program implemented fell short of plans throughout most of the first loan, but has steadily improved and is now reaching adequate levels. The technical assistance program has several aspects. Technical discussions are held regularly for INCORA staff and short courses on cattle management are given periodically for colonists in different regions. On-farm assistance

by technicians includes vaccination against major animal diseases, the construction of cattle dips, corrals, salt trays, and other infrastructure and, to bring about longer run improvements, continual instruction in heifer selection, cow culling and cross breeding. Initial efforts to improve pasture management and to protect natural legumes growing in the area have been made and INCORA has begun the establishment of a few pilot ranches to demonstrate improved techniques to ranchers more directly. The research station on agricultural and livestock problems which was assisted in the loan and which is operated by ICA required several years for establishment, but staff are now in place and research programs have been initiated. It has not yet had a major impact on regional production practices, but appears to offer the potential for substantial future benefits.

44. When the project was initiated, INCORA and the Banco Ganadero signed an agreement that each would contribute five professionals to the technical assistance program in addition to the regional loan chiefs and supervisors. During the first years, there were rarely more than seven or eight professionals active; because of difficult working conditions, INCORA staff frequently quit and the Banco Ganadero tended to use its technicians on other projects. The technical assistance program was further weakened by the fact that several of the professionals and most of the loan supervisors were trained in agronomy and knew little about cattle ranching. And loan supervisors devoted most of their time to loan control rather than technical assistance. The professional staff is now composed chiefly of veterinarians and a growing proportion of the loan supervisors are knowledgeable about

cattle. INCORA and the Bank considered dividing the staff into one group specifically for loan control and another for technical assistance, but given the difficulty of access to colonists it was decided that one staff could more efficiently carry out both functions. Supervisors are now required to visit each colonist a minimum of three times during the year. The number of visits to colonists averaged about 1300 during the first three years of the project, rising to 3000 in 1974 and to 10,000 in 1975.

45. Good data on farm technical efficiency have not yet been obtained (and are badly needed), but several surveys have indicated that nearly all colonists vaccinate against hoof and mouth disease and a large proportion against other major diseases in the area. Adult animal mortality seems to have declined slightly less than appraisal assumptions, from about 4-5% to 3-4%. Less information is available regarding weaning rates which were anticipated to rise from 50 to 65% during the first seven years of farm development. It appears that weaning rates have risen from about 50% to 60% during five to six years of project development (the average for ranchers with cattle borrowed from the Fondo Ganadero, which also provides technical assistance, was 62% in 1976). Stocking rates were expected at appraisal to remain at about one animal unit per hectare throughout ranch development; although most project farms still have an excess of pasture relative to cattle so that feed availability is not yet a major constraint in the region, carrying capacity on ranches which are fully stocked appears now to be about one animal unit per hectare. If ICA is successful in introducing new grass and legume species to the area, carrying capacity

will rise. Farm inputs like salt, other minerals, and drugs, which are sold principally through private commerce in frontier regions, are still quite limited in supply and of high cost, making technical improvements more difficult.

Living Standards of Subborrowers

46. Living standards of the subborrowers have remained at extremely modest levels even though a number of subborrowers have now begun to accumulate considerable net worth. It was fully recognized in the first appraisal report that colonists would not significantly improve their cash flow as a result of receiving credit until around the eighth year of farm development (see the first appraisal report, Annex 2, Table 4). Cash flow is very much restricted until the natural growth of the herd permits sufficient sales to exceed loan repayments. An interesting aspect of the appraisal report, brought forth only within the context of the models themselves, is that the expected sale of cattle would not have produced sufficient income to cover programmed subborrower loan repayments in a world of stable prices. Accordingly, the appraisal report models assume that cattle prices will rise at 15% per year due to inflation, although loan repayments remain fixed (there was no indexing). Inflation was thus expected to reduce real interest rates to negative levels, thereby permitting planned amortization of the loan. Even under these circumstances, however, farm disposable income does not rise until the seventh year of development.1/

1/ This was an additional argument put forward originally in support of the low interest rate charged on subloans.

47. The appraisal report models appear fairly accurate in their prediction of events. Most borrowers have not yet enjoyed a major increase in their living standards. Assuming that most subborrowers spent several years in the jungle prior to receiving their first credit for cattle purchase, and assuming that no major income increase occurs until seven or eight years of farm development, they will have spent ten or twelve years before their living standards rise above subsistence levels given the constraints on their cash flow.

48. A recent study[1/] provides more detailed information on the income position of subborrowers in 1977, indicating a wide distribution. The gross and net incomes for the 138 families sampled are shown in Table A4 and A5. Several interesting facts emerge: (i) although gross incomes average Col$92,000, net incomes average less than half as much, Col$45,000 (to each of these figures an amount for consumption in kind of farm produce should be added, probably about Col$15,000), (ii) the apparent U.S. dollar equivalent of these incomes, i.e., US$2600 and US$1250, is exaggerated because of the unusual appreciation of the Colombian peso during the last two years, the result of the coffee boom, (iii) a rough interpolation of information available on the distribution of incomes in Colombia suggests that a family earning Col$60,000 (45,000 + 15,000) would be about the mid-point of the distribution of agricultural families in 1976, and in the lower third of all Colombian

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1/ Martha Lucia Gomez Rojas, et. al., op. cit. All references are to 1976 pesos.

families, (iv) the average disposable income of colonists is adequate, and may well exceed the levels which would have been achieved by the same individuals had they not migrated, particularly if the implicit wealth gains from the growth in the value of their land and cattle herds are included; nonetheless, most subborrowers earn substantially less than the average income quoted — as shown in Table A5, 43% of the colonists have annual net incomes below Col$25,000 (10,000 + 15,000) and 70% fall below the average income. These data confirm that most subborrowers have not yet achieved substantial increases in their disposable income levels, although some subborrowers are significant exceptions.

49. The increase in subborrowers' net assets has been substantial, the result primarily of the growth in their cattle herds and of farm improvements, and the implicit subsidy contained in the low interest rate on the credit obtained, rather than of increases in the real prices of land and cattle. The average colonist appears to have had about 115 hectares of land and 45 cattle in 1977. Using a value of Col$6,000 per hectare of land, and Col$8,000 per animal, the gross value of these assets is Col$ 1 million, or approximately US$28,000 at the current exchange rate.[1/] The average subloan, Col$70,000 (US$3000), has been reduced substantially in real terms by inflation, but this has contributed a maximum of about US$2,000 to the colonist's net assets. Cattle prices remained roughly constant in real terms during project implementation from 1972 through 1975. They increased in 1977, but a sustained increase

1/ These figures are in 1977 prices. As seen above, perhaps 70% of subborrowers would lie below the average.

over the long run is not expected. However, given that the number of animals in the herd increased by about 165%, the average colonist enjoyed a substantial increase in total herd value.

50. Data on the amount, use and value of land on subborrowers' farms, taken from the 142 colonists surveyed by Rojas, et. al., and given for both 1971 and 1976 in Tables A6 and A7, contain several surprising indications. First, the average farm increased in size by 14% over the period. Second, the area in pasture increased 40%. Third, most of the increase in pasture area is explained by the increase in farm size, not by a reduction in cultivated land, uncleared land, or semi-cleared area. Farmers could have been buying uncleared land at the same time they were clearing their own, or simply purchasing already cleared land from neighbors. Fourth, there was no increase in the real unit value of land between 1971 and 1976, in fact, nominal land price increases did not quite keep up with inflation. Using the data on price inflation contained in the PCR, Annex 11, the GDP deflator increased by 133% between 1971 and 1976. Yet the land price data suggest that a hectare of cleared pasture land increased in value over the same period by only 100% (Col$2500 to Col$5000). The data given in these tables are approximate and, accordingly, the conclusion might be changed were better information available. The result is somewhat surprising insofar as other information had suggested that the provision of improved transport facilities had resulted in an increase in the real value of uncleared land so served. These data suggest that the existence of substantial free public land has restricted the increase in value of uncleared land and, so long as

colonists continue to flock into the area and are interested to clear the jungle, the value of cleared land will not greatly increase (except perhaps within close proximity to urbanized areas like Florencia).

51. In summary, subloans went predominantly to poor farmers with undeveloped landholdings who had the opportunity to become viable cattle producers. The size of subloans was small, lower than the optimum economic size. Nonetheless, colonists who have been able to obtain credit have benefited. Their net incomes are believed to slightly exceed the incomes of colonists who were not able to obtain credit, even after loan repayments are considered, but, more importantly, their asset accumulation will permit rising cash incomes in the near future. Given that land appreciation does not appear to have been great, colonists have not been able to increase their wealth without being able to bring land into productive employment. This has made the provision of credit even more important.

Project Coverage

52. The credit project reached a significant proportion of the target group, but a much smaller number than originally contemplated. Migration into the area continues at a rapid pace and the number of potential borrowers is increasing. In 1971 there were estimated to be 185,000 inhabitants in Caqueta of whom 145,000 were resident in rural areas. With an estimated seven members per household, there were 20,500 rural households, 9,000 of which held plots which were officially registered. Approximately half of these (4500) were thought to be potential subloan beneficiaries. The first loan provided credit to 1600 colonists while the second will provide 2100

loans (some subloans will provide additional assistance to participants in the first project). The total subloans granted would provide good coverage of colonists resident in the area in 1971, but subsequent migration is adding about 500-1000 colonists per year who are potential users of the same type of credit.

C. Ecological Issues

53. Erosion, economic use of forests, and preservation of wooded areas were of concern to the Bank and to Government in both the first and second projects. Within the project area, erosion is a minor problem when forests are cleared and land is planted to pastures, even when colonists permit over-grazing. INCORA has worked to instruct colonists on pasture management, including the planting of Kudzu in problem areas, and on-farm erosion seems under control. A more serious problem occurs along the river banks. As colonization occurred first by river, and as river lowlands are among the most fertile lands in the region, settlement here is also the most intense. To obtain additional pasture, and to be able to enjoy easy access to the river, colonists removed almost all trees along river banks. Each year erosion has increased, stimulated by a seasonal increase in river flow caused by the denuding of the cordillera, just outside the project area (this is discussed below). Rivers which once provided deep channels throughout the year and which were capable of navigation by paddle-wheel steamers have increased their width several times and, in the process, become much more shallow and filled with shifting sandbars. Navigation of large boats is now impossible in many parts, although smaller boats and canoes continue to

provide transportation. The roads being constructed have opened substantial new areas and have made transport more rapid and more direct to areas already accessible, but Caqueta has lost important transportation arteries as the rivers have deteriorated — and erosion has also eliminated many hectares of the area's most valuable soil.

54. Laws have existed for some time requiring that colonists maintain forests for 50 meters from the river bank, thus providing protection from erosion. These laws simply are not respected, nor enforced, and there appears to be no viable method to achieve enforcement without the use of a police power which does not exist in the zone. In appraising the second project the Bank considered developing a program to encourage tree establishment along river banks, but decided this work could be left to the Government's own initiative. Little has been done to date. There are areas further downstream where erosion is not yet too bad and it may be economical to prevent it before it becomes worse.

55. The Bank was also concerned about appropriate forest use and the general ecological effect of widescale deforestation in this area of the Amazon. Several studies have indicated that at current commercial prices, given the heterogeneity of forest species and the high cost of timber extraction from the zone, exploitation is quite unattractive except for domestic use by settlers or for certain high value species. Although existing laws require recipients of more than 50 hectares of public lands to keep 20% under forest and allow Government to maintain 10% of the area as a protective zone, it has been impossible to enforce farmers' obligation.

The Bank and INCORA attempted to set aside a forest reserve of 16,000 hectares during the second project to retain a significant area of forest cover and for study of the indigenous conditions. The effort was a failure; although an area of marginal development potential removed from current settlement was selected, political activists decided that there must be something special about the area if an effort was being made to exclude colonists. The activists forced the forest guards out of the area and brought colonists into the reserve. INCORA and the Bank decided to give up the idea of a forest reserve rather than initiate the social conflict which might have occurred had an effort been made to recover the area invaded. No other zone of appropriate size for a forest reserve is available.

56. Although the problem of progressive clearance of forest is difficult, the audit mission believes additional analysis and executive force is required if serious long run damage is to be avoided. The first and second projects, by assisting existing colonists, are encouraging further settlement before the issue of forest control is adequately dealt with.

57. Another ecological problem exists in the Andean cordillera. Although not located within the perimeter designated for the Caqueta Colonization Project, the cordillera forms the catchment of most rivers flowing through the project area and accordingly developments there can strongly influence project activities. Many peasants, accustomed to farming on the slopes in the highlands, migrated toward Caqueta in hopes of colonizing land. Discouraged by conditions in the tropical forest, they chose to remain at higher altitudes and established small farms on steeply sloping mountainsides. After deforestation and the planting of crops, or pasture formation, erosion has increased

and threatens to devastate large areas. Rainfall now runs off the cordillera more rapidly, causing rivers in the project area to flood and erode during the rainy season and to run dry during the rest of the year. Some claim that the weather itself is changing in the area, with less rainfall occurring as a result of lower soil moisture content. Efforts have been made to reduce erosion on the cordillera slopes, but the problem is extremely sensitive socially and politically. The only real solution is to move people out of the zone, prohibiting farming, and to reforest on a broad basis. There is no land, however, on which to place the inhabitants who would be displaced and pressures for land in other parts of Colombia would make new invasions by other peasants almost a certainty. The Government is considering a reforestation program to pay peasants for planting trees on a portion of their soil and subsequently for tending such trees till maturity. If some radical reduction in erosion in the cordillera is not brought about within the next decade, it appears that damage in the project area may be great. The Bank has recognized this problem and discussed it with Government, but the development of a more satisfactory long run solution is important to the Caqueta project and requires greater emphasis.

D. Project Evaluation and Monitoring

58. The establishment of a permanent project evaluation unit was not envisaged in either the first or second projects. Such a unit has since been discussed by the Bank and INCORA and INCORA plans to establish it soon. Regardless, several key evaluations of the project have been undertaken. Prior to appraisal of the second project, INCORA employed an independent

consulting firm to evaluate progress under the first and to make recommendations for the second. This study, to which several INCORA staff contributed, is excellent, containing candid recognition of past mistakes as well as thoughtful analysis of how project operations could be improved. Particular attention was paid to the dynamics of regional colonization, the destination of project subloans by farmer size and level of development, the mechanism for cattle purchase and delivery to subborrower, the inadequacy of technical assistance, and the socio-economic conditions of colonists. INCORA also encouraged four students to write a joint thesis evaluating the socio-economic impact of the first project. The students collected considerable useful data through sample surveys and their thesis updates and extends the previous consulting study. INCORA provided assistance for two Ph.D dissertations written by U.S. students on Caqueta's development as well, and undertook a small survey of subborrowers to obtain data on farm technical achievements needed for the PCR.

59. Despite these surveys, additional information and evaluation on several key aspects of the project are badly needed. Too little is known about highway utilization to make confident assessments of their economic profitability, or of possible design or route changes. Data is needed on the current level of farm technical efficiency. And additional research is needed on the profitability of perennial crops such as rubber and oil palm. These two activities were introduced into Caqueta decades ago but were excluded from project financing because their technological and economic viability was not known. Because of their greater labor intensiveness, and as a

useful regional diversification, a re-examination of their potential seems overdue. Additional evaluation of the project's ecological impact, and the design of specific programs to improve the situation, are also important.

E. Rates of Return

60. The economic rate of return predicted in the first appraisal report was 16.5%. The PCR estimates that the rate of return will be about 17% even after the substantial revisions in the project's size. The methodology on which these estimates are based could be improved. Such changes, if introduced, would reduce the rate of return to about 13%.

61. The rate of return on the project is a weighted average of the returns on its component parts, principally road construction and farm development. Cattle prices were higher throughout implementation than at appraisal which acted to shrink the number of animals purchased by raising investment costs, but had little impact on the rate of return itself (as sales will be proportionately higher also). The technical assumptions utilized in constructing the farm models, such as expected changes in weaning and mortality rates, seem realistic, if perhaps slightly optimistic. However, the rate of return estimates quoted assume that family labor utilized for clearing land, sowing pasture, fence building, and subsequent herd and pasture management should be given zero value. In the appraisal report it was argued that a high rate of unemployment in Colombia would justify this assumption. An alternative calculation indicated that if the family labor were given a total value of US$220 per year, the economic rate of return on the entire project would be reduced to 8%. Clearly the economic

profitability of the project was highly sensitive to the assumption regarding the value of labor. The second appraisal report assumed that the shadow cost of labor was zero, as did the PCR, without considering the impact on the rate of return of alternative values. While it seems reasonable to use a wage rate somewhat less than what is being paid in the zone, a labor scarce area, to reflect the low level of labor utilization in Colombia under current conditions, and thereby capture the special attractiveness of this project, a zero labor opportunity cost seems extreme.

62. The road construction program was significantly smaller than planned and unit construction costs were 45% higher than predicted. These cost increases would have reduced the rate of return on this component had it been assumed that the transport savings per mile of constructed road had remained constant. Although there is no adequate information on road use, transportation (and maintenance) seem heavier than originally expected. The higher utilization at least partly offsets the higher costs of construction. Further, the benefits of improved transportation, as estimated in the first appraisal report and the PCR, are conservatively limited to savings on the transport of cattle and grains out of the zone. No savings were estimated for the transport of farm inputs, including cattle, into or within the zone, for the transport of consumer goods, or for personal travel, all of which are signficant. If included at realistic levels, however, these do not fully offset the impact on the project's estimated rate of return of costing family labor at a level significantly above zero.

63. The costs and benefits associated with health and educational investments were not explicitly considered in the rate of return calculations, as is

Bank practice, but the administrative costs associated with road construction and project management were included. No benefits were included for administrative services, like the titling of land, which also have been important and which are not fully included in subborrower output increases.

64. The audit mission estimates that if family labor is costed at US$500 per year, about half its market value (1.5 workers per farm), and the other methodological changes are made, the economic rate of return is 13%.

F. Bank Performance

65. Appraisal of the project was difficult. Relatively little was known about the area to be developed and communication into the zone of colonization was limited. The Bank had few prior experiences in colonization or rural development programs. Accordingly, while the appraisal mission can be faulted for some serious errors regarding road design, budgeting, costing of activities, and the scheduling of project implementation, it showed imagination and a good entrepreneurial sense in the conception and overall design of the project. Although predominantly a road construction and livestock credit project, the Bank accepted a perspective on regional problems which permitted support of activities in health, education, nutrition and ecological problems. This made the project one of the Bank's first specific efforts in overall rural development. Its contributions in each of these areas have been important even if much remains to be done. The Bank also supported a regional center for agricultural and livestock research at a time when such support was not common in Bank projects;

the establishment of this center should provide significant benefits in the future. The project is also noteworthy for its distributional concerns. An emphasis was placed on assisting colonists with undeveloped lands. Efforts to ensure that credits were directed to poorer farmers were continued throughout the project.

66. Project supervision throughout the project was adequate; reports filed have kept up with developments and the aide memoires are unusually detailed. When forced to decide in 1973 whether to continue with the project at a level much reduced over that originally planned, or seek to terminate, the Bank chose the former option, calculating that even the reduced project would be economically attractive. The decision seems well taken. The second project corrected some of the faults of the first and is continuing development along those lines which seemed most promising.

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

COMPLETION REPORT

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ANNEXES 1-13

MAP NO. IBRD 11000
MAP NO. IBRD 2082R2

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

PROJECT COMPLETION REPORT

I. BACKGROUND

1.01 The Caqueta Land Colonization Project is located in the Intendencia of Caqueta in the eastern foothills of the Andean ridge adjoining the lowlands of the Amazon in southeast Colombia (Map IBRD 11000). Florencia, the main town of the region, was founded during the rubber boom early this century. With the decline of rubber exploitation in the early 1920's, settlers remained in the area and cleared forest land for extensive livestock development. In addition, spontaneous colonization has continued since in many parts of the overpopulated mountain areas of Colombia, peasant farmers have insufficient land to make a reasonable living while much of the country remained unpopulated. The Government estimated in 1971 that about 360,000 families should move to the unpopulated forest areas to make a living as settlers. However, the cost of moving large numbers of people and of making the initial investments required to assist them to start with colonization is prohibitive and an earlier directed settlement project managed by Caja de Credito, Industrial y Minero (Caja Agraria) had not been successful. The National Institute of Agrarian Reform, Instituto Colombiano de la Reforma Agraria (INCORA), created in 1961, evolved a less expensive approach to support spontaneous settlement. Under this plan: (a) only settlers who had already established small farms, or at least had cleared some forest land and prepared pasture using their own resources, would receive technical and financial assistance. Thus, only the most reliable and persistent settlers would receive the support of INCORA's program; and (b) the Government would incur no expense for moving potential settlers from other areas or for initial land clearing, cultivation and house construction. The land in the proposed settlement area is publicly owned and, by Law 135 of 1961, INCORA is responsible for the development and the implementation of regulations for granting land titles.

1.02 Two main supervised credit programs were carried out by INCORA with USAID assistance before the project started: one was for general agriculture in association with Caja Agraria, the other for livestock in association with the National Livestock Bank (Banco Ganadero). Their objective was to provide development loans, coupled with technical assistance to farmers having sufficient land and labor resources to constitute viable farm units.

II. PROJECT FORMULATION

2.01 A Bank mission, which visited Colombia in 1967 to review INCORA's activities in rural development, also identified the Caqueta Land Colonization Project. In November 1968, the Government submitted an application to the Bank for a loan to finance a settlement project in Caqueta with a total cost of US$20.9 million. In March and October 1969, two FAO/Bank CP missions assisted INCORA to complete the preparation of the Caqueta Land Colonization Project. In January/February 1970, the Bank appraised the project which was approved by the Board on May 4, 1971.

III. PROJECT DESCRIPTION

Initial Project

3.01 According to the appraisal estimates, the project was to benefit directly and indirectly 8,000 families; however, it was later established that there were 12,500 families within the area of influence of the project. It included the construction of about 380 km of roads in the Caqueta area to service some 3,500 partially established settlers and to open up 280,000 ha of undeveloped land for a further 2,800 new settlers. It also was to provide credit for farm development, land clearing, fencing, livestock and other farm inputs for the 3,500 partially established settlers, as well as for about 1,000 of the 2,800 new settlers expected to move into the project area during the development period. In addition, about 90 primary schools and 6 health centers were to be constructed. Project costs were estimated at US$21.6 million. The loan was to finance the foreign exchange costs of US$5.5 million, 25% of total project costs, and US$2.6 million of the local currency cost, thus 38% of total project costs. The Government was to contribute 30% and farmers 32% of total project costs through 40% participation in farm investments.

Difficulties Experienced with the Initial Project

3.02 By September 1973, which was half-way through the investment period planned for the project, only 20% of the expected number of sub-loans had been made and only 16% of the length of roads and 13% of the number of schools had been completed. The main reasons which led to these shortfalls are discussed in paragraphs 3.03 to 3.07. Paragraph 3.08 presents the main changes in the project targets following the revision of original plans as a result of experience during the initial period of project implementation.

3.03 Credit Program. It took longer than expected by the appraisal mission for Banco Ganadero to set up the procedures and train the staff required to administer the long-term lending program. The sub-loans made in the first two years were larger than expected and made predominantly to established settlers who were already receiving credit. The sub-borrowers (Category A) generally completed the investments financed by the sub-loans in one or two years, whereas the appraisal report envisaged investments spread over three years. Partially established settlers (category B) and new settlers (category C) applying for their first sub-loans also completed their investments far more rapidly than the five years and seven years, respectively, projected at appraisal. The draw-down of funds and the total funds required differed substantially from appraisal estimates which, furthermore, appear not to be internally consistent.

3.04 From Annex 2 of the appraisal report, it can be calculated that it was then estimated that the total investment costs necessary to establish 4,500 settlers would be Col$ 342.65 million (US$19 million) equivalent to

US$4,220 1/ per settler. It was assumed that, of this total, 3,500 settlers would have invested Col$ 98.65 million (US$5.4 million) before the project, leaving a balance of Col$ 244 million (US$13.6 million) to be invested over the following seven years (Annex 1). The project, however, was to enter sub-loan commitments phased over three years, which would indicate that investments were to be made over five years, totalling Col$ 168.55 million (US$9.4 million) leaving a balance of Col$ 75.45 million (US$4.2 million) required for post-project investment. In Annex 9, Table 1 and in the main text, paragraph 4.01 of the Appraisal Report, the total investment in farm development is shown as Col$ 135.4 (US$7.52 million), out of which medium-term loans would provide US$4.17 million and settlers' contribution US$3.35 million; only 80% of the financial requirements for the proposed project period derived from the farm investment models (Annex 2 of Appraisal Report) and proposed numbers and phasing of sub-loans.

3.05 An important factor which affected the early development of the project was the sharp increase in local prices although, in dollar terms, this amounted to a smaller proportional increase because of the devaluation of the Colombian peso. It has been estimated that only 16% of the financial gap can be attributed to price increases for which the 10% contingency item was evidently not able fully to compensate.

3.06 The Road Program. The road program was delayed because of the following factors: (a) difficulties caused by the high rainfall, unstable soils and shortages of construction materials; (b) technical and managerial inadequacies of contractors and their field supervisors; (c) procurement deficiencies due mostly to inadequate standards in bidding and contract involving procedures that, together with the remoteness of the area, did not attract reliable companies; and (d) price increases. To a large extent, these difficulties arose from the lack of experience of both the Bank and INCORA with working conditions in the Amazon region.

3.07 Social Infrastructure. As originally agreed between Instituto Colombiano de Construccions Escolars (ICCE) and INCORA, 90 schools were to be built with free labor provided by the beneficiaries. However, it was optimistic to assume that farmers could spend a part of their time for works in the community since, apparently under local conditions, this cannot be expected for such a major operation from people living and working individually on dispersed farms. Consequently, the school program was scaled down to 60 schools and labor had to be financed with project funds. Further, ICCE failed in carrying out its responsibilities and INCORA had to undertake the program.

1/ Exchange rate at the time of appraisal Col$ 18:US$1.00.

The Revised Project

3.08 In September 1973, the project was scaled down as follows:

Revised Physical Targets

Credit Program	Appraisal Estimates (Jan. 1971)	Revised Targets (Sept. 1973)	Results at Completion (1976)
No. of sub-loans for breeding cattle	4,500	1,600	1,716
No. of sub-loans for fattening cattle		300	141
Cattle (no.)	67,000	25,600	28,535
Infrastructure			
Roads (km)	380	200	177
Schools (no.)	90	60	60
Health centers (no.)	6	6	4 /1

/1 Instead of six health centers, four health centers and one hospital were constructed.

The adjustment to the reality, the growing experience of the INCORA's management staff, and the selection of better contractors, combined with a better system for tenders and awarding contracts, improved project implementation.

IV. IMPLEMENTATION

4.01 The project was declared effective on October 19, 1971 and was closed September 30, 1976, 23 months behind schedule. Despite many initial difficulties the project has been successful in transforming squatters into farmers and converting land of low productivity into fairly productive livestock farms.

4.02 Credit Program. The original target was to provide 4,500 settlers with credits for an average of 11 head of cattle during the three-year project period. Initially, the sub-loans were considerably larger than had been intended and, following discussions with the Bank in 1973, INCORA agreed to limit the number of cattle to be financed to 15 for any sub-borrower, with the additional proviso that the number of cattle to be purchased would not bring the herd to more than 25 heads. At completion, about 27,000 cows and 1,500 bulls had been distributed to 1,716 families, receiving 1,907 sub-loans for an amount of Col$ 153 million, or about 89% of total investment in farm development, excluding cattle fattening; the rest was invested in farm improvement and housing. The average sub-loan was Col$ 89,033 per family (US$3,142) covering 15.8 cows and the purchase of 0.9 bulls. The sub-borrowers' contribution of US$3.35 million could not be obtained for purchasing cattle or on-farm improvements as stipulated in the farm models of the appraisal. However, the settler added with his labor for land clearing a considerable value. Since uncleared forest land is abundant in Colombia and has no market value, the price of cleared land is the value of labor input. A sub-loan required a settler's contribution to the project of 5 ha cleared land which had in 1971 a price of about Col$ 30,000 (US$1,660), amounting to about Col$ 51.5 million (US$2.9 million) in total for 1,716 sub-borrowers.

4.03 Research and Forest Reserves were regarded as integral parts of the colonization scheme. In accordance with a contract between INCORA and the agricultural research institute (Instituto Colombiano Agropecuario - ICA), the research work has been satisfactorily carried out (paragraph 8.05). There was little attention paid to the preservation of forest reserves since a Bank supervision mission, which was particularly concerned with the environmental impact of the project, could find little or no adverse effect within the project area. However, in the following project (Caqueta Rural Settlement Project, Loan 1118-CO) a special component was included for forestry and erosion control.

4.04 Land Titling and Technical Assistance were included as essential elements of the project concept and cost, although the Bank loan financed only vehicles, equipment and building construction under the general heading of administration. When the second project was appraised, it was stated that outstanding problems at that time were the lack of technical assistance to farmers, for which no explicit allowance had been made; these aspects therefore are receiving special attention under the second project. About 4,700 land titles covering slightly over 207,000 ha have been issued to farmers in the Caqueta area. After slow progress for the period 1973-1974, averaging 649 titles per year, the topographic and land survey unit reached at the end of the Caqueta I Project its full strength to meet the target of 1,500 titles per year under the Caqueta II project.

4.05 Road Construction. Delays in road construction were principally a result of the difficult physical conditions of the area. The problems of climate, soils, topography and the remote location of the area were, at first, not fully recognized. Thus, although at appraisal, a "few difficulties in finding good road alignments on easy gradients" were anticipated, "unexpected and difficult physical conditions" were later reported during supervision to be important causes of delays and cost increases. During the course of the project, INCORA modified its tendering procedures to bring them into line with the standards of the Ministry of Works. This attracted larger and better qualified contractors but, throughout the project period, there was a nationwide difficulty within the construction industry which had serious problems arising from rapid expansion exceeding financial and managerial capacities. The actual cost of the road network (average US$29,499/km) was almost double the appraisal estimates of US$17,222/km. Funds ran short after expenditures of about Col$ 151 million, or US$5.33 million, which financed only 177 km of roads (47% of appraisal estimates), a bridge over the San Pedro River and a part of the cost of a bridge over the Pescado River, instead of a ferry which proved impracticable (Annex 2). The road program was continued successfully under the second phase of the Caqueta project which included retroactive finance for some items of the first phase.

4.06 Social Infrastructure. The health program was slightly modified: out of six planned health centers, four were completed and one hospital was constructed at Cartagena del Chaira instead of the two other health centers (Annex 3). The equipment had been provided by the Ministry of Health; however, it has been difficult to employ enough personnel. The school program was reduced from 90 to 60 schools (Annex 4) during the project revision in 1973. INCORA constructed the schools and the beneficiaries furnished the classrooms. However, there is a lack of teaching material 1/ and there is no correct census of how many children of the region are attending the schools. According to local teachers, each school has about 50 students and the capacity is currently almost fully used.

V. PROCUREMENT, COST AND DISBURSEMENT

5.01 The construction of road works was carried out under contracts with local firms. These contracts were advertised according to the Bank's procedures for international competitive bidding, but there never was any response from foreign firms due to the low value of the contracts (the largest of which was about US$1 million), the relatively low unit costs offered by local contractors, and the remoteness of the area. INCORA had serious problems in attracting competent contractors and establishing tendering procedures appropriate to conditions in Caqueta. A supervision report mentioned that cutthroat bidding and unrealistic price adjustment formulae led the majority of the contractors to work with insufficient profit margins. Furthermore, credit sources were limited and some contractors claim that their financial charges corresponded to as much as 30% of their operating costs. INCORA revised the procedures for evaluating tenders, giving more weight to the managerial capacity of the applicants, and also adjusted the price formulae so as to attract more experienced and reliable contractors, as in fact has happened with a considerable improvement in the road construction program. In all, 18 contracts for road and bridge construction and four for health buildings were awarded under the project.

5.02 The total project expenditure as of September 30, 1976 (Annex 5) and project cost and financing are presented in Annex 6; the allocation of the Bank loan is shown in Annex 7 and the schedule of disbursement in Annex 8.

1/ Which will be provided for 500 schools under the Second Caqueta Project.

The Bank loan financed about 40% of the total project cost and not 38% as originally approved. Loan disbursements for farm development amounted to US$3.8 million instead of US$2.9 million of the appraisal estimates (Annex 6).

5.03 The seasonal inputs shown in reports from INCORA totalled Col$ 91.5 million over the project period. These inputs were financed by short-term credit provided by Caja Agraria and INCORA repayable within a year and the maximum amount of seasonal lending of Col$ 28.7 million for one year was disbursed in 1972 at the beginning of the project. The accumulated amount of Col$ 91.5 million was included in Annex 6 for project costs and financing.

VI. AGRICULTURAL AND SOCIAL IMPACT

6.01 In most agricultural projects, completion of investment for livestock and on-farm developments is far ahead of the full development of output. This is particularly true in settlement projects like Caqueta. Many years must elapse until farms reach their final structure, full herd development and stable size. Thus, production data shown in this report should be considered as giving only an interim picture. At the request of the Bank, INCORA carried out a survey in October 1976 of 38 out of about 600 farms with more than three years in the program. Although the sample of the number of farms is small and not completely representative, it helps to make a tentative judgment and shows the trend. The 38 farms were divided into five categories, according to the number of cattle they purchased with sub-loans under Loan 739-CO.

Farm Category	No. of Cattle	No. of Farms
I	10	8
II	11-15	9
III	16-20	7
IV	21-25	9
V	26-30	5

	Prior to Receiving Credit (1971)	At Completion (October 1976)	Difference	
	number	number	number	%
Total farm area (ha)				
Aggregate	3,179	3,676	+497	+15.6
Average farm size	84	97	+ 13	-
Total area under pasture (ha)				
Aggregate	1,785	2,693	+908	+50.9
Average	47	71	+ 24	
Total cattle (no. of head)				
Aggregate	740	1,894	+1,054	+142.4
Average	19	50	+ 31	-

Livestock Development

6.02 The average initial size of farms was 84 ha, with 19 head of cattle on 47 ha of pasture. These were partially developed farms and not new settlers. This is in accordance with the estimates of the appraisal that about 70% of the loan should first benefit established farmers having a low income. The size of the pasture area was generally twice as big as necessary for the number of cattle. This confirms that these farmers lacked capital but had a good potential for further development. The first Caqueta project was concentrated particularly on these farmers in order that they might attain their agricultural potential (Annex 9).

Farm Development

6.03 The increase of farm land was not only achieved by clearing more forest but also by purchasing farm land cleared by pioneering settlers who moved on as the frontier of development advanced. This process of enlarging farms by purchase was accelerated by the soaring cattle prices. Although this development is not yet critical for the social structure of the area, INCORA is watching this process carefully and may have to intervene to avoid serious distortions in the equity of land ownership in the area. Two other significant developments have been noted: some few farmers have employees working on the farm while they live in the nearest town (Florencia) to run another business, and, in some instances, small farmers have sold their cleared land in order to obtain cash. Then, having spent a large portion of this cash, they have moved on again as squatters in a frontier area.

Cultivation of Field Crops

6.04 Settlers start with forest clearing and the cultivation of crops for subsistence and sale in the first year. They use the virgin soil for about three years until they have sufficient land cleared and can afford to purchase pasture seed or planting material. This primitive form of agriculture provides the basis for developing the first 5 ha of pasture which is a condition for a sub-loan and the purchase of some cows. As the farm activities change to livestock production, and when the farmer receives his first sub-loan, the cultivation of field crops is reduced to subsistence level because it is not economical to produce large crop surplus since there is only limited local market for crop products.

Overall Assessment

6.05 Most sub-loans were made to established farmers with an average herd of 19 heads of cattle and, only to a minor extent, to settlers beginning their farm development. It appears that this decision was correct since (a) it takes several years before a settler in the frontier area is linked to the infrastructure system, which is a precondition for including him in a lending and extension service; and (b) the established farmer still has a low-level income and productivity and lacks the capital essential for further sound farm development. Although the target group of the project did not include the poorest in that area, practical experience has shown that, after providing the more accessible and established settlers with credit, the squatters starting with colonization at the frontier have derived some indirect benefits from INCORA's lending program. This is because as the roads penetrate into the frontier zones and the good experiences of the more established settlers are observed the pioneers are encouraged to seek assistance from INCORA.

6.06 During the project period the value of livestock tripled while the area of pasture was doubled. The impact, however, on lifestyle and standard of living has been less than expected. The expenditure for better housing and hygienic facilities on the farm and for education has remained low, but this pattern will probably be modified through more intensive education efforts. On the other hand, the farmers should accumulate capital, principally livestock, which after some years would lead to a sounder enterprise rather than to spend it for an unduly high consumption to demonstrate that a high standard of living is achieved under the project.

6.07 The mission which prepared the completion report also reviewed the performance of two groups of sub-borrowers: (a) 251 farmers, 63 of whom received sub-loans in 1972, the first year of the program in the credit zone of Doncello; and (b) 181 farmers, 84 of whom received sub-loans in 1973, the first operative year in the credit zone of Valparaiso. The first group started repayment in 1976 and the second started repayment in 1977. Observations were as follows:

(a) about 18% of beneficiaries dropped out of the project due to failure to comply with conditions of the subloans and other various reasons, 71% remain in the program with satisfactory performance, and 11% cancelled the loan on their own initiative;

(b) those remaining in the program repaid 116% (including advance payments) in 1976, which shows that their position is fairly sound; and

(c) reports from INCORA supervisors, confirmed during the mission by direct interviews with farmers, indicated that these figures are representative of the general pattern throughout the project area.

6.08 Under the project, the average investment per family for farm development was about US$4,900 (1,716 beneficiaries). The total investment excluding seasonal expenses but including transport and social infrastructure (12,500 beneficiaries) was about US$5,600 (Annex 10).

VII. RATE OF RETURN

Economic Rate of Return

7.01 In calculating the project rate of return to the economy, actual investment costs were adjusted to the Colombian peso of 1972, using the GDP deflator whose annual values, together with the price indices and average exchange rates, are shown in Annex 11. Farmgate prices used in the calculations are given in Annex 12. The farm investment models prepared for the second phase of the project (Loan 1118-CO, Appraisal Report 501a-CO) were used, with minor adjustments, to estimate the economic benefits to be expected from the first project, since these models are representative of the developments taking place on typical farms. On these bases, if costs and benefits are discounted over a period of 23 years, 1/ the economic rate of return of the project is calculated to be about 17% (Annex 13). To provide a basis for comparing economic rates of return obtained at completion with the previous estimates, the following assumptions should be noted:

1/ Sub-loans have been made throughout the period 1972-75; thus, considering a period of 20 years per farm, the project economic life would be 23 years.

	Present Completion Report	1973 Revision During Caqueta II Appraisal	Original Project Appraisal
Investments			
Public sector	Base of comparison	Slightly below base (fewer sub-loans, more km of roads)	Well below base (costs of roads and livestock underestimated)
Private sector	Disregarded	Disregarded	Computed
Benefits			
Farms during development period	Base of comparison	Slightly below base (fewer farms)	Higher than base (more farms)
Roads	Computed	Computed	Disregarded
Final capital value	Computed	Computed	Disregarded
Economic Rate of Return	17%	15%	16.5%

7.02 Farmers participating in the project have reached or are likely to reach a financial position which is acceptably sound and notably higher than settlers in similar conditions who do not participate in the project. On the other hand, except for a few, most participating settlers have not improved their standard of living, which is probably due to educational constraints. A few, however, have improved their houses, spent more money for food, and clothing, and even kept their children in school through to high school level in Florencia. Two factors have contributed to consolidate the settlers' position: the sharp increase of cattle prices and the favorable terms and low interest rate, which are:

(a) terms: 10 years, including a three-year grace period;

(b) amortization: seven annual payments at the end of years 4 to 10, these payments being as percentages of principal 5, 10, 10, 15, 20, 20, 20; and

(c) interest rate: 8% p.a. to be computed on the amount of annual rate of 6.3% which is clearly a subsidized rate in relation to the price index (Annex 10).

At completion, farmers who received a sub-loan in 1972 had an average annual income of about Col$ 45,000 or about US$1,280 per family.

Financial Rate of Return

7.03 When the cash flow of an average farm is discounted over a 10-year period, the loan maturity period, the financial rate of return in about 24%. The return to a settler's equity, estimated as the market value of a 100-ha farm, with some 20 ha of cleared land (about Col$ 40,000 to Col$ 50,000), would be about 40%.

VIII. INSTITUTIONAL PERFORMANCE

8.01 INCORA. In 1961, the Colombian Government established the Instituto Colombiano de la Reforma Agraria (INCORA) to be the public entity responsible for modifying the inequitable pattern of land ownership. INCORA has responsibility for the administration of 11 colonization projects, not all of which it initiated itself. For the major colonization projects, approximately 53.5% of development expenditure has been directed to credit, 43% to roads, 2.5% to school construction and 1% to health facilities, and this is similar to the allocation of funds in the project. Historically, colonization projects have accounted for approximately 20% of INCORA's direct project expenditure.

8.02 At the start of the project, the INCORA project unit experienced many difficulties; an important underlying problem was the lack of a definition of the duties of the deputy project director. However, during project implementation and after the staff was brought to full strength, INCORA's performance for this project improved considerably and it is currently one of the most effective INCORA projects. The field staff is competent and dedicated, led by an excellent project manager. Headquarters staff performance in connection with the project was also satisfactory and the quarterly reporting was usually punctual and gave the necessary information. The Project Unit also prepared a completion report. INCORA, however, is now faced with a serious cutback of its activities in all fields except land distribution and land titling.

8.03 Banco Ganadero. In general, the performance of the Banco Ganadero, the banking agent of INCORA for the First Caqueta project, was satisfactory. However, some constraints should be mentioned. On some occasions, Banco Ganadero purchased more cattle than the project could absorb. The maintenance of these cattle for up to a year increased the price considerably for the sub-borrower who had to purchase them from Banco Ganadero, and, second, the employment of the necessary field staff for supervision was often delayed by administrative restrictions which impeded the implementation of the project.

8.04 CECORA. Central de Cooperativas de Reforma Agraria (CECORA) and INCORA signed an agreement for provision of about 300 sub-loans for cattle fattening in cooperation with the Cooperativa Agropecuaria (COPERAGO) de Caqueta. After issuing 141 sub-loans totalling about Col$ 4.3 million, the program was cancelled at the end of 1974 due largely to administrative difficulties between CECORA and COPERAGO. Neither organization was prepared to handle these credits properly and it seems that there was not sufficient preparation before starting the program.

8.05 ICA. The Instituto Colombiano Agropecuario (ICA) is working at the experimental farm of Macagual on several topics, those more directly related to the project being: (a) pasture improvement; (b) cattle genetic improvements; and (c) herd management. ICA, with a realistic approach, is carrying out straightforward experiments such as introducing leguminosae/gramineae association for pasture improvement, producing crossbred cattle, and using rotational grazing. Results obtained so far are encouraging; the carrying capacity obtained at Macagual is 1.4 head/ha in comparison with an estimated average of 0.8 head/ha for the entire project area. Under the follow-up project, special efforts are being made to transfer these results to farmers through a more effective extension service.

8.06 ICCE. ICCE did not comply with the requirements of the contract concluded with INCORA, as explained in paragraph 4.04. After this experience, the Bank should be reluctant to consider ICCE for carrying out components in other projects until a major improvement in performance is assured. Unfortunately, ICCE is again involved in the implementation of Caqueta II (Loan 1118-CO), with apparently the same poor results. ICCE is also scheduled to provide school furniture and teaching equipment under the Integrated Rural Development Project (Loan 1352-CO).

IX. BANK PERFORMANCE

9.01 The Bank underestimated the technical and managerial difficulties of implementing a project in a remote area at the edge of the Amazon basin. Fortunately, after revision in September 1973, the project had new attainable targets which have been almost completely achieved.

9.02 The main analytical problem arose from the design of farm models in which the investment period exceeded the project period of three years, without indicating the source of funds to complete the farm development. This was corrected during the revision of the project in September 1973 by reducing the number of beneficiaries and setting attainable investment targets.

9.03 In the road program, delays caused by soil and climate conditions might have been reduced by more complete studies before implementation, but this would have further delayed the initiation of the project as a whole. The problem of attracting reliable contractors for construction work was underestimated, but was eventually overcome with better tendering and contracting procedures. Finally, the contingencies of 10% for equipment, construction and administration were apparently too low for this type of innovative project.

X. CONCLUSIONS

10.01 The Caqueta Land Colonization Project is demonstrating, probably for the first time in South America, that a squatter can be assisted to settle permanently and establish a farm providing a reasonable living for himself and his family. The project has already shown the feasibility of productive land use in the Amazon basin.

10.02 The project concept was developed by INCORA after a long period of practical experience of trial and error. Apparently, there are three main reasons for the general success of the project: first, the settlers selected for the credit program had already cleared enough forest land to cultivate sufficient field crops for their subsistence and 5 ha for pasture; thus only the most reliable and persistent settlers had access to the credit program; second, INCORA prepared the land titles, farm investment plans, a credit program for livestock development and on-farm improvement, and eventually provided technical and financial supervision by specialized field personnel; and, third, INCORA developed the social infrastructure and road system for the project area.

10.03 The following point should be noted as being of more general relevance:

(a) whether or not it is necessary to have consistency between the investment periods of illustrative farm models and the period of investment under the project (para 3.03);

(b) difficulties in road construction in remote areas of colonization (paras 3.06 and 4.05); and

(c) the sound basic concept (para 1.01), implemented by a competent field staff and regular Bank supervision and support, finally led to the successful development of the project.

10.04 This interim analysis of the project can only be concluded when settlers have repaid their sub-loans and the farms have a stabilized input and output structure. The Caqueta I Land Colonization Project has been continued with a second phase and the experience collected under the first project had a major influence on the second project.

May 9, 1977

ANNEX 1

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Farm Development Cost

(Col$ million)

	Project Period			Farm Development Period 1/		
Investment Period (year)	3	3	3	3	5	7
Farm Model	A	B	C	A	B	C
Number of Models	2000	1500	1000	2000	1500	1000
Sub-loan	20.0	60.0	17.0	20.0	60.0	50.0
Settler's Contribution	35.6	23.0	13.0	35.6	40.2	38.2
Sub-total	55.6	83.0	30.0	55.6	100.2	88.2
Total	168.6 2/			244.0		

1/ Derived from Appraisal Report; Annex 2, Tables 2 and 4.

A - Partially established settlers, currently receiving credit

B - Partially established settlers, currently not receiving credit

C - New settlers

2/ Total investment for farm development was only Col$ 135.4 million in the appraisal report.

COLOMBIA
CAQUETA LAND COLONIZATION PROJECT
(LOAN 739-CØ)

ANNEX 2

Investment for Road Construction

CONTRACT		1971	1972	1973	1974	1975	Total
		(Col$'000)					
	A. Studies						
089/70	Valparaíso-La Solita	580,170 1/	-	-	-	-	580,170
090/70	Maguaré-Rionegro-C2	448,244 1/	-	26,586	-	-	474,830
092/70	Albania-Curillo	745,874 2/	-	-	-	-	745,874
105/70	Rionegro-C-2 y Líbano-Peneya	216,406 1/	-	-	-	-	216,406
228/70	Estudio de Suelos (Líbano-Peneya)	52,892 3/	-	-	-	-	52,892
229/70	C-10 Rio Bodoquero y C-11-Bodoquero	302,105	-	-	-	-	302,105
231/70	Líbano-Peneya	352,205	-	-	-	-	352,205
232/70	La Esmeralda-Puerto Manrique	143,550	-	-	-	-	143,550
256/70	Estudio de Suelos (Albania-Curillo) Valparaíso-La Solita	160,544	-	-	-	-	160,544
288/70	B-1 Río Guayas-Río Caguan	401,144	-	-	-	-	401,144
074/71	B-2 Río Guayas	119,214	-	-	-	-	119,214
134/71	Riecito-C-2	489,225	430,537	-	-	-	919,762
163/71	C-6-C-8	58,500	114,764	-	-	-	173,264
166/71	C-5-Río Peneya	58,500	-	125,950	-	-	184,450
085/72	C-8 San Antonio	-	216,781	24,641	-	-	241,622
009/73	Air photographs	-	-	304,500	-	136,246	440,746
074/73	Soil Studies	-	-	221,061	76,830	-	297,891
076/73	Photo interpretations	-	-	640,000	960,000	0	1.600,000
	Subtotal	4,128,573	762,282	1,342,738	1,036,830	136,246	7,406,669
	B. Construction						
144/71	Líbano-Peneya	185,000	1,685,182	602,638	464,903	-	2,937,723
145/71	Albania-Curillo	217,500	1,457,005	-	5,112	-	1,679,617
149/71	Maguaré-Rionegro	1,012,500	2,602,033	2,126,660	495,011	-	6,236,204
250/71	La Esmeralda-Puerto Manrique	-	2,342,446	2,157,576	1,003,463	-	5,503,485
253/71	C-11-Río Bodoquero	-	877,604	303,988	145,787	-	1,327,379
254/71	C-10-Río Bodoquero	-	808,046	601,509	31,137	-	1,440,692
099/72	Valparaíso-La Solita	-	1,900,000	1,004,905	92,634	-	2,997,539
004/73	Cajamarca-Bodoquero	-	-	1,927,044	210,198	-	2,137,242
096/73	Albania-Curillo	-	-	2,239,740	6,009,038	3,614,878	11,863,656
100/73	Transportable bridge	-	-	-	623,600	-	623,600
157/73	Líbano-Peneya	-	-	4,559,250	12,859,308	8,868,210	26,286,768
168/73	C-5-Río Peneya	-	-	-	5,247,895	3,503,054	8,750,949
173/73	C-11 Río Bodoquero	-	-	-	6,050,236	3,021,208	9,071,044
091/74	El Aguila-B1-Río Caguan	-	-	-	7,628,670	4,987,251	12,615,921
100/74	Doncello-Maguaré-Rionegro	-	-	-	3,818,985	4,984,004	8,802,989
106/74	C-10 Rio Bodoquero	-	-	-	2,505,653	2,695,356	5,201,009
112/74	Valparaíso-La Solita	-	-	-	6,343,292	339,117	12,682,409
136/74	C6-C8	-	-	-	1,712,000	3,840,869	5,552,869
160/74	Bridge Río Pescado	-	-	-	500,000	811,887	1,311,887
	Subtotal	1,415,000	11,672,316	15,523,310	55,746,922	42,665,834	127,022,982
	C. Supervision						
195/71		300,000	1,947,332	-	-	-	2,247,332
122/72		-	500,000	1,994,341	-	-	2,494,341
		-	-	-	3,400,792	-	3,400,792
115/74		-	-		2,513,085	2,885,090	5,398,175
	Subtotal	300,000	2,447,332	1,994,341	5,913,877	2,885,090	13,540,640
	Grand Total	5,843,573	14,881,930	18,860,389	62,697,629	45,687,170	147,970,291

1/ Expenditure in 1970.
2/ US$496,248 paid in 1970.
3/ US$19,740 paid in 1970.

May 3, 1972

May 3, 1977

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Investment for Health Facilities

(Col$'000)

Contract	Item		1973	1974	1975	1976	Total
	Health Centers						
001/73	San Jose del Fraguaha	- Health Center	245,083	20,000	-	-	265,083
002/73	Cartagena del Chaira	- Hospital	1,016,751	655,163	-	-	1,671,914
154/74	Santa Rosa del Caquan	- Health Center	-	110,573	288.524	-	399,097
155/74	Yurayaco	- Health Center	-	161,123	179,593	-	340,716
	La Union	- Health Center	-	-	-	360,343	360,343
	Total		1,261,834	946,859	468,117	360,343	3,037,153

ANNEX 3

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)
(Col$)

Investment for Schools

	Name of Schools	Municipality	1972	1973	1974	1975	1976	Total
1.	La Libertad	Curillo		30,005	32,942			62,947
2.	Berlin	Albania	60,060	35,665	159			95,884
3.	Las Iglesias	San Jose			207,031			207,031
4.	Azabache	Belen			285,719			285,719
5.	Bagazal	Belen		46,633	28,082			74,715
6.	Chapinero	Belen			199,644			199,644
7.	El Salado	Belen			194,296			194,296
8.	Sarabando Medio	Belen		106,110	4,601			110,711
9.	Bocana Aguacaliente	Morelia				252,906		252,906
10.	Carnicerias	Morelia				251,493		251,493
11.	Kilometro 13	Morelia	82,030	67,685	3,232			152,947
12.	Palmarito	Morelia				284,435		284,435
13.	Pueblitos Bajos	Morelia			234,882			234,882
14.	El Paraiso	Valparaiso				269,810		269,810
15.	Florida Nueva	Valparaiso				120,562	19,237	139,799
16.	San Pedro Bocana	Valparaiso				256,394		256,394
17.	Trocha Seis	Valparaiso				19,008	267,983	286,991
18.	Caldas	Florencia		176,870				176,870
19.	La Holanda	Florencia				235,420		235,420
20.	La Miranda	Florencia				257,899		257,899
21.	La Paila	Florencia				186,127		186,127
22.	Maracaibo	Florencia				303,879		303,879
23.	Norcacia	Florencia				137,067		333,268
24.	Santana La Culebra	Florencia				249,301		249,301
25.	Turbia Abajo	Florencia			228,207			228,207
26.	El Triunfo	Montañita		126,614	15,475			142,089
27.	La Tigrera	Montañita				289,795		289,795
28.	Palma Azul	Montañita				271,846		271,846
29.	Corea	Paujil				162,523		162,523
30.	La Cristalina	Paujil			233,174			233,174
	Sub-total carried forward		142,090	589,582	1,667,444	3,548,464	483,422	6,431,002

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)
(Col$)

Investment for Schools

	Name of Schools	Municipality	1972	1973	1974	1975	1976	1977
	Sub-total brought forward		142,090	589,582	1,667,444	3,548,464	483,422	6,431,002
31.	La Estrella	Paujil				240,562		240,562
32.	Los Alpes	Paujil	66,150	40,469				106,619
33.	San Juan	Paujil				255,125		255,125
34.	Santa Teresa	Paujil				240,673		240,673
35.	Achapo	Doncello	44,609	69,300	14,510			128,419
36.	El Cafeto	Doncello	11,560	63,043				74,603
37.	El Carmen	Doncello			29,906			29,906
38.	El Cerindo	Doncello				249,778		249,778
39.	La Ceiba	Doncello				276,908		276,908
40.	La Trinidad	Doncello				308,426		308,426
41.	Los Alpes	Doncello				236,151		236,151
42.	Palma Abajo	Doncello				183,021		183,021
43.	Tigra Cartuja	Doncello				244,212		244,212
44.	Trocha A. San Pablo	Doncello				254,255		254,255
45.	Trocha D. La Libertad	Doncello				202.505		202,505
46.	Trocha E. Maguare	Doncello	117,419	52,196				169,615
47.	Trocha E. Nemal	Doncello				255,639		255,639
48.	Trocha F. Maguaré	Doncello	18,587	39,776	53,224			111,587
49.	El Aguila	Puerto Rico				254,119		254,119
50.	El Aguililla	Puerto Rico				292,292		292,292
51.	El Recreo	Puerto Rico				278,940		278,940
52.	La Esmeralda	Puerto Rico	26,810	85,568	24,900			137,278
53.	Lusitania	Puerto Rico	42,756	56,654				99,410
54.	Caiman Alto	San Vicente				206,215		206,215
55.	Los Espejos	San Vicente				32,542	307,938	340,480
56.	Luz Perdida	San Vicente				42,762	139,574	182,336
57.	Santa Rosa	San Vicente				157,186	189,403	346,589
58.	Lusitania II	Cartagena				83,955	258,585	342,540
59.	El Carmen	Solano			112,837	6,524	54,000	173,361
60.	La Esperanza	Solano			118,654	103,186		221,840
		TOTAL	469,981	996,588	2,021,475	7,953,440	1,432,922	12,874,406

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

Project Cash Expenditures

	(Col$'000)						(US$'000)					
	1972	1973	1974	1975	1976	Total	1972	1973	1974	1975	1976	Total
Lending program for farm development												
Livestock	14,229	44,594	36,910	18,064	-	113,797	622	1,792	1,287	546	-	4,247
Other	3,142	11,010	11,510	6,544	-	32,206	137	442	401	198	-	1,178
Sub-Total	17,371	55,604	48,420	24,608	-	146,003	759	2,234	1,688	744	-	5,425
Cattle fattening program	1,000	1,000	2,000	-	-	4,000	44	40	70	-	-	154
Road development												
Design	4,891	1,343	1,037	136	-	7,407	213	54	36	4	-	307
Construction	13,087	15,523	55,747	42,666	-	127,023	572	624	1,943	1,289	-	4,428
Supervision	2,747	1,994	5,914	2,885	-	13,540	120	80	206	87	-	493
Sub-Total	20,725	18,860	62,698	45,687	-	147,970	905	758	2,185	1,380	-	5,228
Health Centers	-	1,262	1,531	779	530	4,102	-	51	53	24	15	143
Schools	470	997	2,021	7,953	1,433	12,847	21	40	70	240	41	412
Administration												
Current expenditures	17,465	10,173	15,296	17,395	5,502	65,831	763	409	533	526	156	2,387
Vehicles equipment	-	869	61	1,884	295	3,109	-	35	2	57	8	102
Buildings	404	109	1,433	786	963	3,695	18	4	50	24	27	123
Sub-Total	17,869	11,151	16,790	20,065	6,760	72,635	781	448	585	607	191	2,612
Seasonal input	28,703	16,890	15,493	25,602	4,810	91,498	1,254	679	540	774	137	3,384
Total	86,138	105,764	148,953	124,694	13,533	479,082	3,764	4,250	5,191	3,769	384	17,358

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

Project Cost and Financing

(US$ million)

	Sub-borrowers	Government	Bank	Total	Foreign Exchange US$	Foreign Exchange %
Road Development						
Appraisal	-	1.97	4.59	6.56	3.28	50
Actual	-	1.50	3.73	5.23	2.62	50
Farm Development						
Appraisal	3.35 5/	1.25	2.92	7.52 1/	0.39	5
Actual	2.9 5/	1.81	3.77	8.48	0.42	5
Administration						
Appraisal	-	1.49	0.13	1.62	0.28	18
Actual	-	2.46	0.14	2.60	0.08	3
Health & Education						
Appraisal	-	0.20	0.46	0.66	0.26	40
Actual	-	0.15	0.41	0.56	0.22	40
Seasonal Inputs						
Appraisal	3.45 4/	1.17 3/	-	5.22 2/	1.30	25
Actual	2.78 4/	0.60 3/	-	3.38	0.85	25
Total						
Appraisal	6.80	6.68	8.10	21.58	5.51	25
Actual	5.69	6.52	8.05	20.26	4.19	21

1/ US$4.17 million to be lent through Banco Ganadero.
2/ US$1.77 million to be lent through Caja Agraria.
3/ Short term loans by INCORA.
4/ Short term loans by Caja Agraria.
5/ Settler's contribution is 5 ha cleared land with a market price of Col$ 6,000/ha since uncleared forest land has no market price.

June 30, 1977

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Allocation of Bank Loan

US$'000

Categories		Appraisal Estimate Jan.1970	Revision Feb.12,1973	Revision Aug.12,1974	Disbursement at Completion Nov.4,1976
1.	Long-term agricultural loans	2,630	2,130	3,470	3,589
II.	Cattle Fattening Program	-	500	250	185
III.	Designs and construction of roads	4,130	4,130	3,800	3,729
IV.	Vehicles, equipment and building for administration	120	120	120	144
V.	Construction of schools and health centers	420	420	460	406
VI.	Unallocated	800	800	-	-
	Total	8,100	8,100	8,100	8,053

May 9, 1977

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Schedule of Disbursements
(US$ million)

Bank Fiscal Years & Semester	Appraisal Estimate 1	Actual Total Disbursements 2	Actual Disbursements As Percentage of Appraisal Estimate %
1970/71			
2nd	0.2		
1971/72			
1st	1.67		
2nd	3.17	0.40	12.6
1972/73			
1st	4.86	0.50	10.3
2nd	6.26	1.60	25.6
1973/74			
1st	7.26	3.20	44.1
2nd	8.10	3.97	49.0
1974/75			
1st		6.50	80.3
2nd		7.50	92.6
1975/76			
1st		7.90	97.5
2nd		8.05	99.4
1976/77			
1st		8.05	99.4
	Closing Date: September 30, 1976		

April 29, 1977

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Development of Livestock Value Under Loan 739-CO

In 38 selected farms
October, 1976

1	2	3	4	5	6	7	8	9
Farm Category	No. of Cattle Purchased under Sub-loan 1972	Value of Purchased Cattle 1972	No. of Cattle before Sub-loan 1972	Value of Cattle before Sub-loan 1972	Total Value after loan 1972	Total Value 1976 1/	1976 Herd value in 1972 Col$ 2/	1976 herd value (1972 Col$) as % of value in 1974 before subloan
I	10	25,000	20	50,000	75,000	165,000	84,400	169
II	13	32,500	19	47,000	79,000	174,900	89,500	190
III	18	45,000	28	70,000	115,000	253,000	129,000	185
IV	23	57,500	36	90,000	147,500	324,500	166,000	184
V	28	70,000	49	122,500	192,500	434.500	222,300	181

1/ 1970 price per cow Col$ 2,500
1976 price per cow Col$ 5,500

2/ 1976 price index 195.5; see Annex 11.

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

Investment per Family at Completion (1976)

	Total Project US$ million	Number of Families Benefitting	Average Per Family US$
Investments			
Farm development	8.48	1,716	4,942
Road development	5.23	12,500	418
Administration	2.60	12,500	208
Health & education	0.56	12,500	45
Sub-Total	8.39		671
Total	16.87		5,613
Operations			
Seasonal farm operations	3.39		
Cattle fattening	0.14	141	1,000

May 9, 1977

COLOMBIA

CAQUETA LAND COLONIZATION
(Loan 739-CO)

	GDP Deflator	Average Exchange Rate	Price Index
	%	US$1:COL$	
1970	9.8	19.17	
1971	10.4	21.50	
1972	13.4	22.88	100.0
1973	22.0	24.89	122.0
1974	27.2	28.69	155.2
1975	20.0	33.09	186.2
1976	26.0	35.19	195.5

Source: Bank.

May 3, 1977

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

Farmgate Prices
(Col$)

ITEM	1972	1973	1974	1975	1976
Corn (kg)		3.10	3.30	3.70	4.30
Rice (kg)		1.79	2.89	3.68	3.64
Steers for fattening	1,400	2,400	2,950	2,900	4,500
Cow and calf	3,300	4,100	5,380	5,900	7,500
Heifers	2,300	2,900	3,850	3,700	5,500
Breeding bulls	6,300	7,300	9,700	12,800	18,000

Source: Instituto de Mercadeo Agropecuario (IDEMA)

COLOMBIA

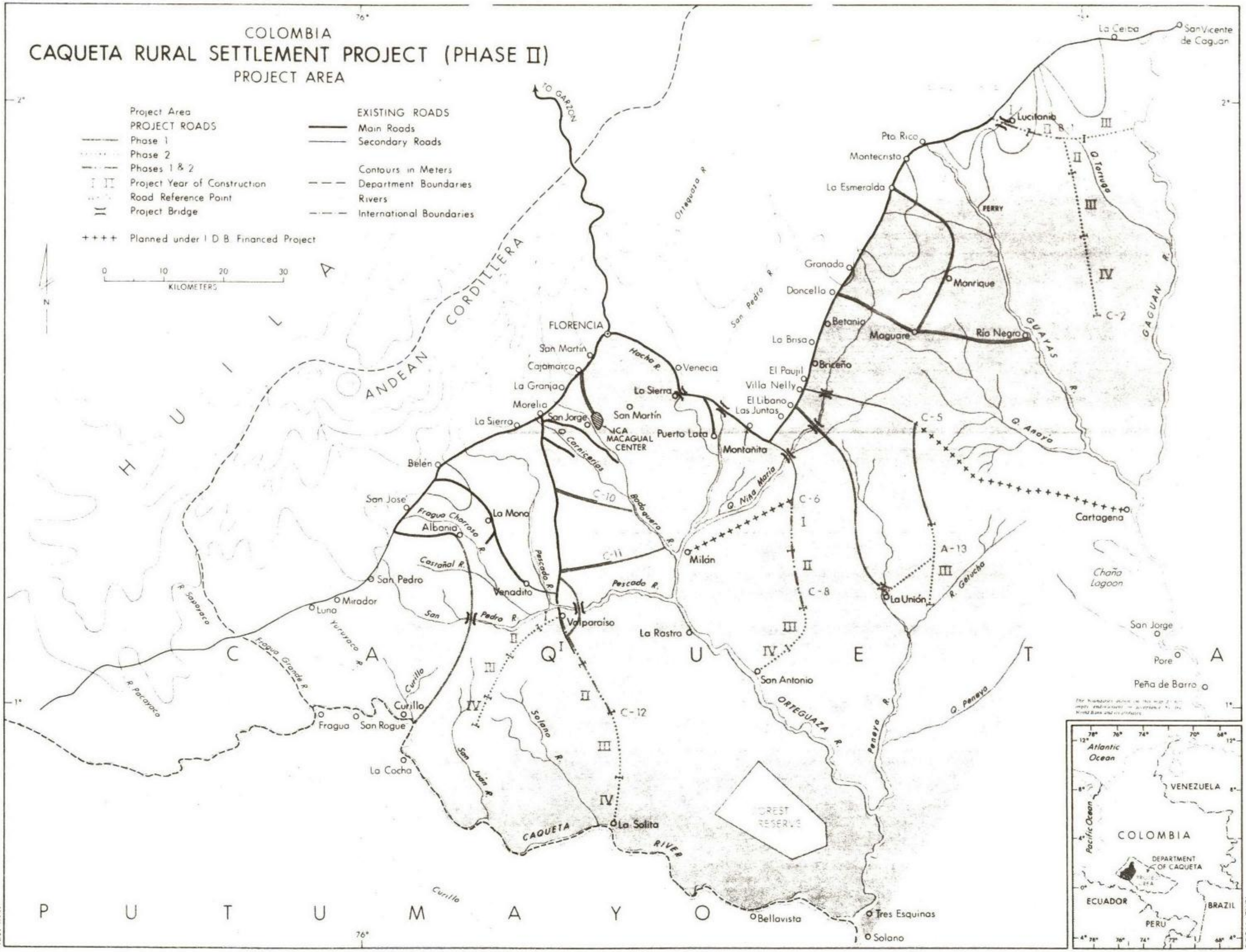
CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Economic Rate of Return: Benefits and Costs Streams

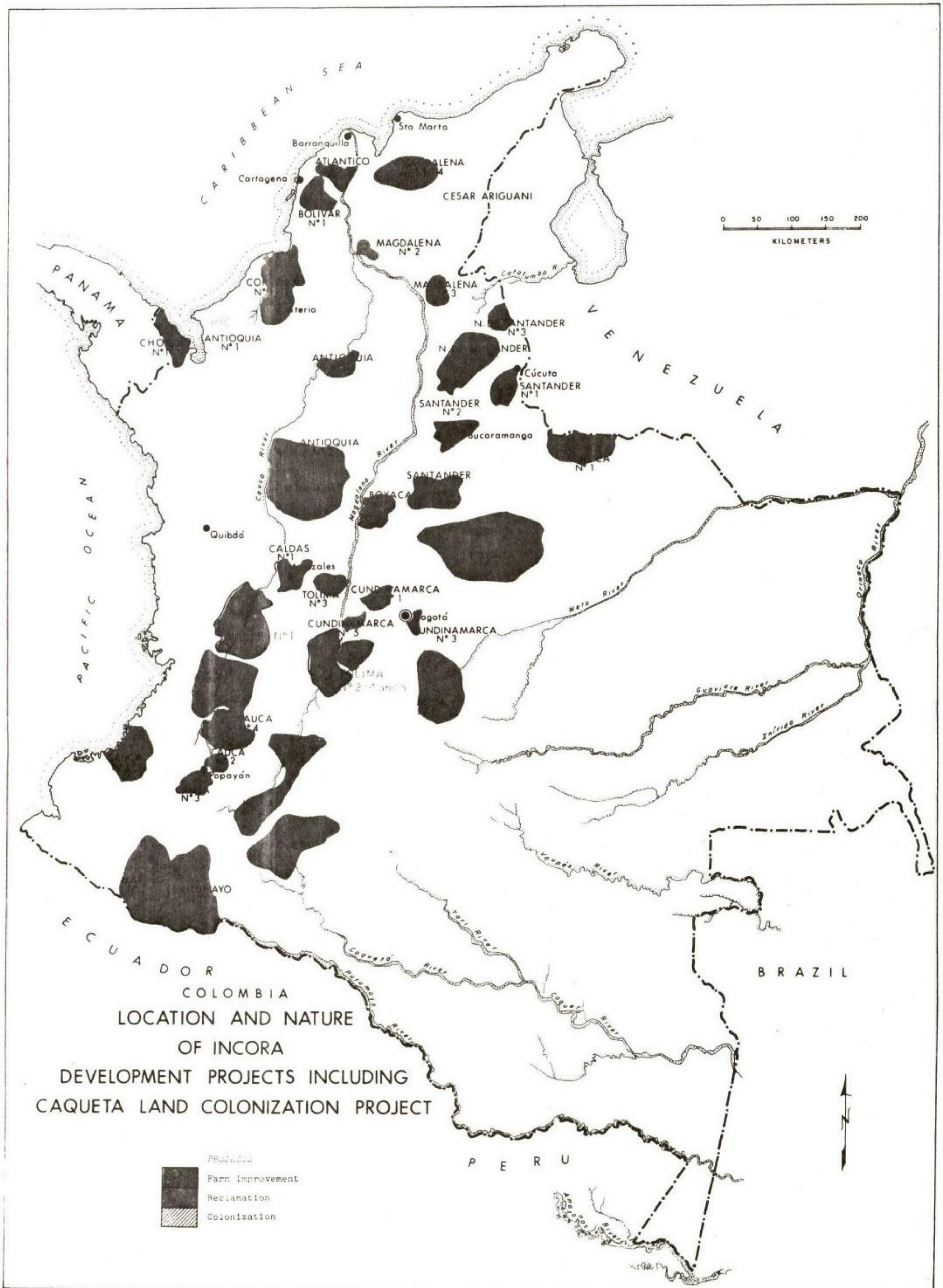
	Project Gross Benefits							Project Costs	Project Net Benefits
	On-Farm					Roads	Total		
Initial years	1972	1973	1974	1975	Sub-total				
No. of farms	252	770	613	272	1,907				
	(Col$ million)								
1972	2.0	-	-	-	2.0	-	2.0	57.4	(55.4)
1973	2.0	6.2	-	-	8.2	-	8.2	72.9	(64.7)
1974	2.3	6.2	5.0	-	13.5	-	13.5	86.0	(72.5)
1975	4.4	7.1	5.0	2.2	18.7	4.2	22.9	53.2	(30.3)
1976	3.9	13.6	5.6	2.2	25.3	4.5	29.8	4.5	25.3
1977	5.1	11.8	10.8	2.5	30.2	4.8	35.0	8.0	27.0
1978	6.7	15.6	9.4	4.8	36.5	5.1	41.6	8.0	33.6
1979	6.2	20.3	12.4	4.2	43.1	5.4	48.5	8.0	40.5
1980	6.5	18.6	16.2	5.5	46.8	5.7	52.5	8.0	44.5
1981	8.6	19.8	15.0	7.2	50.6	6.1	56.7	8.0	48.7
1982	8.2	26.3	15.8	6.6	56.9	6.5	63.4	8.0	55.4
1983	8.7	25.0	21.0	7.0	61.9	6.9	68.8	8.0	60.8
1984	5.9	26.7	19.9	9.3	61.8	7.3	69.1	8.0	61.1
1985	7.4	18.1	21.3	8.8	55.6	7.8	63.4	8.0	55.4
1986	7.4	22.5	14.4	9.4	53.7	8.3	62.0	8.0	54.0
1987	7.2	22.6	17.9	6.4	54.1	8.8	62.9	8.0	54.9
1988	9.7	22.0	18.0	7.9	57.6	9.4	67.0	8.0	59.0
1989	18.7	29.5	17.5	8.0	73.7	10.0	83.7	8.0	75.7
1990	17.7	57.0	23.5	7.8	106.0	10.7	116.7	8.0	108.7
1991	86.0 1/	54.0	45.4	10.4	195.8	11.4	207.2	8.0	199.2
1992	-	262.6 1/	43.1	20.1	325.8	12.2	338.0	8.0	330.0
1993	-	-	209.1 1/	19.1	228.2	13.0	241.2	8.0	233.2
1994	-	-	-	92.8	92.8 1/	13.9	106.7	8.0	98.7

Economic rate of return = 17%

1/ Including final value of herds.



COLOMBIA
CAQUETA RURAL SETTLEMENT PROJECT (PHASE II)
PROJECT AREA
Project Area
PROJECT ROADS
Phase 1
Phase 2
Phases 1 & 2
Project Year of Construction
Road Reference Point
Project Bridge
Planned under I.D.B. Financed Project
EXISTING ROADS
Main Roads
Secondary Roads
Contours in Meters
Department Boundaries
Rivers
International Boundaries
KILOMETERS
HUILA
ANDEAN CORDILLERA
CAQUETA
PUTUMAYO
TO GARZON
FLORENCIA
San Martin
Cajamarca
La Granja
Morelia
San Jorge
La Sierra
ICA MACAGUAL CENTER
Belén
San José
La Mona
Albania
Venadito
San Pedro
Mirador
Luna
Valparaiso
La Rastra
San Antonio
Milán
Puerto Lara
Montañita
La Sierra
Venecia
Las Juntas
El Libano
Villa Nelly
El Paujil
Briceño
La Brisa
Betania
Doncello
Granada
Maguare
Monrique
Río Negro
La Esmeralda
Montecristo
Pto. Rico
Lucitania
La Ceiba
San Vicente de Caguan
FERRY
C-2
C-5
C-6
C-8
C-10
C-11
C-12
A-13
La Unión
Cartagena
Chaña Lagoon
San Jorge
Pore
Peña de Barro
Curillo
Fragua
San Roque
La Cocha
La Solita
FOREST RESERVE
CAQUETA RIVER
ORTEGUAZA R.
Bellavista
Tres Esquinas
Solano
Atlantic Ocean
Pacific Ocean
VENEZUELA
COLOMBIA
DEPARTMENT OF CAQUETA
ECUADOR
PERU
BRAZIL
MAY 1974
IBRD 11000



COLOMBIA

LOCATION AND NATURE OF INCORA DEVELOPMENT PROJECTS INCLUDING CAQUETA LAND COLONIZATION PROJECT

MARCH 1970

IBRD - 2082R2

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. Warren C. Baum, Vice President, Projects Staff
Mr. Adalbert Krieger, Vice President, LCN

DATE: April 11, 1978

FROM: Shiv S. Kapur, Director, OED

SUBJECT: Project Performance Audit Report: Colombia Caqueta Land Colonization Project (Loan 739-CO)

1. I attach, for your review and comments, the draft of a Performance Audit Report on the project supported by Loan 739-CO. I would appreciate receiving any comments you may have by May 16, 1978.

2. On April 18, 1978 we plan to send the audit report to the Government and INCORA for their comments. Your comments at this stage should normally concern themselves only with factual inaccuracies and with statements that could injure the Bank/country relationships. More detailed comments are requested by the date mentioned in para. 1 above.

Attachment

cc: Messrs. van der Meer
van der Tak
Yudelman
Lerdau
Favilla
van Dijck
Goffin
Wyss
Doyen
Storrar (Bangladesh)
Gregor
Darnell
Sutherland
Haasjes

CONFIDENTIAL

DRAFT

THE WORLD BANK

Project Performance Audit Report

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

April 11, 1978

Operations Evaluation Department

Project Performance Audit Report

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

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Project Performance Audit Report

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

PREFACE

This is a report on an audit of performance under the Caqueta Land Colonization Project in Colombia, supported by Loan 739-CO. The project was identified in 1967, prepared in March and October 1969, appraised in January 1970, signed in May 1971, and became effective in September 1971. The execution of the project was governed by a Loan Agreement for US$8.1 m. The original closing date was October 31, 1974, later extended to September 30, 1976. Loan 739-CO was fully disbursed by November 4, 1976.

This report consists of an Audit Memorandum and a Project Completion Report prepared by the Latin America and the Caribbean Regional Office in July 1977. The Memorandum is based on the PCR, a review of the project supervision reports, the appraisal report, and other relevant Bank documents and discussions with Bank staff.

An OED mission visited Colombia in 1977. During its visit the mission had intensive discussions with INCORA and other agencies concerned with the implementation of the project and also made a field trip to the project area. The assistance of INCORA staff, other Government officials, and colonists who provided data and discussed the project so readily is gratefully acknowledged.

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Basic Data Sheet

A. Amounts (in US$ million)

	Original	Disbursed
Loan 739-CO	8.1	8.1

B. Project Data

	Original Plan	Actual or Current Estimate
Bank/FAO/CP		
Report TO-611		10/26/67
Government's application		11/15/68
Board approval	5/04/71	5/04/71
Loan Agreement	5/28/71	5/28/71
Loan effectiveness	9/15/71	10/19/71
Last disbursement	6/30/74	11/04/76
Closing date	10/31/74	9/30/76
Total costs (million)	Col$ 388.4/US$21.6	Col$ 575.3/US$20.3
Economic rate of return	16.5%	13.0%

C. Mission Data

	Month/Year	Number of Persons	Number of Weeks	Man Weeks in Field	Date of Report
Identification	October 1967	-	-	-	1967
Preparation I	March/April '69	3	2.5	7.5	4/12/69
Preparation II	October '69	4	-	-	11/01/69
Appraisal	Jan/Feb '70	5	3	15	1/29/71
Supervision I	July '71	1	1.5	1.5	8/12/71
Supervision II	October '71	2	1	2	11/08/71
Supervision III	April '72	2	1.5	3	5/05/72
Supervision IV	August '72	1	1	1	9/13/72
Supervision V	Feb/March '73	2	1	2	3/22/73
Supervision VI	August '73	2	1.5	3	9/19/73
Supervision VII	Jan/Feb '74	3	3	9	3/06/74
Supervision VIII	June '74	2	1	2	7/05/74
Supervision IX	Jan '75	2	1.5	3	2/24/75
Supervision X	July '75	3	1	3	8/07/75
Supervision XI	Feb/March '76	2	3	6	4/05/76
Supervision XII	Sept '76	1	2.5	2.5	11/09/76
Completion	March '77	2	1	2	7/15/77
				45.0	

D. Follow-on Project

Loan 1118-CO of US$19.5 million, signed June 2, 1975 for Caqueta II Settlement Project.

The average weighted exchange rate for the disbursement period is US$1 = Col$ 28.34.

Project Performance Audit Report

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

I. PROJECT SUMMARY[1/]

Background

1. The Caqueta Land Settlement Project was designed to support spontaneous colonization taking place in the upper reaches of the Colombian Amazon basin just southeast of the Andean piedmont. The area was opened to non-Indian settlement at the turn of the century during the short-lived rubber boom and experienced further development when military operations were introduced as a result of border conflicts between Colombia and Peru. Spontaneous colonization continued at a slow pace in the 1950s and increased during the 1960s, spurred by tenancy problems and by civil conflicts (la Violencia) in the Andean highlands.

2. The Government initiated a program of directed colonization in 1959, administered by the Caja Agraria (CA). Prospective colonists were selected, transported to Caqueta, and provided with plots of jungle to clear and farm. This effort proved a failure not only because inadequate infrastructure and producer credit were provided, but also because many of the colonists selected simply could not accommodate themselves to the difficult conditions faced: tropical humid forest, heavy rainfall during nine months of the year, malaria and contaminated water. In addition, the deep clay soils of the region are not suitable for continuous annual cropping, though they are adequate for permanent pastures.

1/ Adapted from the PCR.

3. The colonization program was given a different orientation in 1961 when, instead of directed colonization, it was decided to provide assistance to those settlers who had come independently to the zone to claim and establish themselves on public lands. Colonists were to be assisted only after they had shown themselves both willing and capable of living in the area. Under this plan, the Government would incur no expense for moving potential settlers nor for initial land clearing, cultivation and house construction. The administration of the new program was assumed by the Instituto Colombiano de la Reforma Agraria (INCORA) and, in the late 1960s, was expanded with financial assistance from USAID.

4. Colonization in Caqueta has followed a simple procedure. Access to the area was limited to a poor road running along the foothills of the Andes, a few short penetration roads leading into the jungle, and the network of rivers which run southwest into the Amazon basin. River transportation has been the principal avenue for new colonists and lands along the rivers were the first to be cleared and settled. Arriving with little more than a machete, an axe, and perhaps a mule, colonists laid claim to public lands by staking out their property, clearing pieces at the corner boundaries, and gradually clearing larger pieces for cultivation and/or pasture. Because soils are poor, colonists were forced either to continue with slash and burn rotational cultivation producing only for subsistence or develop a larger livestock enterprise. Without financial credit, however, most colonists could not obtain cattle; many colonists spent years in the process of building up even a small herd. Others simply sold their land to wealthier

migrants and moved on, returning to towns or seeking to use their capital to develop a farm further into the jungle. The Government assisted colonists by building roads, schools, medical facilities and by providing credit and technical assistance. Efforts to support colonization, however, were hindered by a severe lack of funds, especially when USAID assistance ended. And the population was growing; it was estimated at 170,000 in 1968, rising at 8% per year.

Targets and Goals

5. The Bank was approached in 1968 to expand the support being given colonists. On the basis of INCORA's experience, a project was prepared in 1969 and appraised in 1970 to provide about 4,500 settlers with farm development credit, land titles and technical assistance and to assist indirectly about 8,000 families in total through the provision of 380 km of roads, 90 schools and 6 health centers. The project also was to strengthen INCORA's administrative staff in Caqueta and assist the development of an agricultural and livestock research center in the area. INCORA planned to subcontract specific aspects of the program to other government agencies already operating in these areas. Responsibility for the program within the Bank was divided between the transportation and the agricultural divisions, with the latter assuming principal responsibility.

6. The design of the project proved overly ambitious because of the difficulties of the location and building up the technical and support services. The costs of farm, road, and social infrastructure development were also significantly higher than projected. In September 1973, after a

careful re-evaluation, the project targets were reduced to 1,600 farms, 200 km roads, 60 schools and 6 health posts; at the same time the closing date was extended by two years. The revised goals were met at completion.

Costs and Disbursements

7. The Bank loan financed about 40% of the total project cost (appraisal estimate was 38%). Bank loan disbursement for farm development amounted to US$3.8 million instead of US$2.9 million in the appraisal estimates, although the number of direct beneficiaries of the lending program was less than half the number originally planned. An appraisal error in budgeting for the purchase of livestock, and higher livestock costs, were responsible. Road costs were also underestimated and were about 45% higher on a unit cost basis than predicted.

Agricultural, Social and Economic Impact

8. The analysis of the project revealed: (i) the average beneficiary had approximately 102 hectares, 50% of which was in pasture, and 19 animals at the time the subloan was received. The average number of animals obtained through the subloan was 16. The median is well below the average in both cases; (ii) the investment per family for farm development was about US$4,900. Investments provided for roads, social infrastructure, and administration are approximately US$5,600 per participating family; (iii) the net incomes of subborrowers increased little during the first six years of development, as expected, because of the slow gestation of the livestock development and subloan amortization; subborrower expenditures on housing improvements and hygienic facilities, nutrition, education and other items remained low;

(iv) the value of the subborrowers' net assets increased about 60% to approximately Col$ 1 million (1977); the number of cattle on participating farms increased during the first five years of the project by 140% and the area devoted to pasture by 40%; (v) eighteen percent of the subborrowers were removed from the development program because of failure to comply with the subloan conditions, 71% continued in the program with satisfactory performance, and 11% cancelled their subloans on their own initiative; (vi) project subloans were purposefully limited in size to permit a larger number of farmers to benefit from the project. Subloans went to farmers with viable holdings, but larger and well established farmers were excluded; (vii) the economic rate of return has been recalculated at about 13% in comparison with the appraisal estimate of 16.5%.

Conclusions

9. The Caqueta Land Colonization Project has demonstrated that squatters in the Amazon forests can be encouraged to properly develop farms, which can provide a reasonable living for themselves and their families. The project has also proved the feasibility of productive land use in the Amazon basin. The project is one of the Bank's first efforts in integrated rural development and should be studied as a source of valuable experience for planning further rural development activities in Colombia or elsewhere under similar conditions. Although the project, as completed, is substantially smaller than originally planned, and although there are a number of development issues which continue to require close supervision, the physical infrastructure completed is providing benefits greater than those expected. INCORA's administration is of

high quality, and the credit granted has been distributed equitably and is providing the benefits expected.

II. MAIN ISSUES

General

10. The Caqueta Land Colonization Project, as completed, has been a success. As a result of the first project, and the follow-up project signed in 1975, the Caqueta region has received a considerable development stimulus consistent with distributional concerns. The findings of the audit concur with the conclusions reached in the PCR. The project, however, experienced substantial early difficulties due to a series of factors including appraisal errors, unexpected administrative and environmental difficulties, and unexpected cost increases of project investments. In addition, certain ecological problems in or immediately adjacent to the project area, and land distribution concerns require comment.

A. Roads

11. At appraisal a dangerous highway in poor condition over the Andes connected Florencia, the capital of Caqueta, with the rest of Colombia. Within Caqueta an unpaved trunk road ran 164 km along the Andean foothills through Florencia northeast to Puerto Rico and southeast to San Jose; six other roads penetrated in southernly directions from the trunk road into the area of colonization, none more than 25 km in length and all of poor standard. The project planned the construction of 380 km of new roads, all with gravel

surface, of three classes: 110 km of class B, 30 of class B/C, and 240 of class C. The estimated cost varied from Col$370,000 (US$21,500) per km for the most expensive to Col$190,000 (US$11,000) per km for the least. The more expensive roads were designed to connect the existing road network with river ports not then easily accessible from Florencia and, in doing so, open up new regions. The less expensive roads were designed to provide lower class service within specific farming regions.

12. By late 1972, at the end of the first season in which large scale construction had been attempted, it became clear that the road program was not materializing as appraised and by mid-1973 it was recognized that drastic alterations would have to be made if work were to be continued. Unit costs of road construction were well above those predicted, physical progress was much slower, and several of the small contractors who had received construction awards were in obvious financial difficulty. As part of the overall project redesign at that time, the road program was reduced to 200 and then to 177 km; 164 were ultimately completed. The principal changes introduced were the elimination of 132 km of access roads, the shortening by 110 km of the penetration roads (these will be completed during the second project, now in progress), and the addition of 39 km of penetration roads not previously planned. The principal problems occurring in the road program were the result of (i) poor contracting procedures, (ii) appraisal errors, (iii) difficult physical working conditions, and (iv) financial and economic changes in Colombia. At appraisal the Bank and INCORA recognized that few qualified contractors existed in the Caqueta region, but expected that the opportunities

offered by the project would attract contractors from other parts of Colombia. This assumption was probably too optimistic. Between appraisal and the letting of bids urban construction in Colombia boomed and few contractors from other regions found it attractive to bid on the road construction projects in Caqueta. Of those contractors who showed interest, several were only minimally qualified, were not familiar with either climatic or soil conditions in the zone, and lacked sufficient equipment. Worse, several of the original contractors, either because they were overly eager or because they were unfamiliar with the region, submitted bids which were unrealistically low. INCORA accepted these bids because they were the lowest, rejecting in the process the bid of at least one contractor who was already active in the area and who subsequently successfully completed road segments in the first project and again in the second project. The rejected bid turned out to have been much more realistic than those which were accepted.[1/]

13. Insufficient attention was given to the road program at appraisal. The fact that the project was divided between the agricultural and transportation divisions, with the latter taking only secondary responsibility, may have been a factor. The Caqueta area is of difficult access, but information from several completed roads was not fully used when estimating construction costs and time requirements. In particular, more attention should have been given to soil and climatic conditions. Fault seems to lie equally with INCORA and the Bank. INCORA provided the Bank with costs regarding roads which had

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1/ Individual contractors in Colombia wishing to bid on government projects are required to register themselves, a bureaucratic formality, but are not prequalified. Neither INCORA nor the Bank adequately evaluated the contractors who were originally assigned contracts.

previously been built, but to lower specifications than those in the Bank project. The Bank accepted them without adequate review.

14. Contracting procedures at the beginning of the project were also faulty. INCORA let bids separately for different roads instead of permitting bidding on the project as a whole, which thereby attracted smaller firms. The Bank and INCORA subsequently discussed the possiblity of linking road segments together for bidding, hoping to induce larger and more experienced firms to enter the area, but this was never done. This approach probably should have been adopted at appraisal; once the project was underway, recontracting took place on a piecemeal basis making it difficult to link road segments. INCORA felt that it would have been difficult to attract large firms to Caqueta in any event, that it would have been risky to place the entire project in the hands of one firm, and that it was useful to have a number of smaller firms available for construction in the area. The Bank did not confront INCORA on this issue.

15. The contractors ran into several problems almost immediately. First, because of heavy rainfall during nine months of the year, most work had to be completed during the dry season, the three months from December through February. The effective work year was much shorter than expected and it was physically impossible to construct a road system as rapidly as had been planned. Lacking the necessary equipment, several contractors had to delay work and the delay meant that the effective work season was missed, setting the program back an entire year. Second, contractors encountered difficult soil conditions, principally a white clay which was exposed when deep cuts

were made in hilly terrain and which proved extremely unstable when wet. Once exposed it was necessary to remove the clay to permit fill and compaction. However, gravel for fill in the Caqueta region is available in only a few areas and, as the road system was extended, it was frequently necessary to transport gravel for longer distances at higher cost. The existence of the white clays could have been determined at appraisal from previous road construction. The problem was alleviated in some areas by making shallower cuts and accepting steeper gradients. Third, most roads originally planned for class C standards were upgraded to class B/C. The class C roads were thought at appraisal to be suitable for labor intensive construction methods, but labor in Caqueta is scarce; the annual construction period is also too short to allow time consuming but labor intensive construction. Further, most traffic on the roads was expected to consist of heavy trucks for livestock or buses for passenger travel and wider roads were both more suitable and cheaper to maintain. Although as appraised the unit cost of class B/C roads was nearly double that of class C roads, the cost differences in practice were not so great, making the preferred choice between classes clear. The Bank ought to have recognized that labor in an area of colonization is scarce.[1/] Fourth, the urban construction boom resulted in a sharp increase in the cost of construction inputs, particularly steel and cement. Fifth, payments to contractors for completed road segments were frequently delayed by INCORA because INCORA was left without funds during a period of acute governmental

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1/ The same error required changes in the school construction program; see PCR para. 3.07.

budgetary difficulties. Because of their weak capital structure, contractors had to borrow to meet their expenses and continue working. The financial costs were high because, again due to the urban construction boom, short term credit markets had become extremely tight. While the above problems resulted in a slower pace of construction and higher costs than predicted, progress since the project's re-evaluation has been steady and close to design plans in both speed and cost. A number of different contractors and two consulting firms advising on road design and routing have performed successfully.

16. Several other issues are pertinent. During the 1973 re-evaluation, a decision was taken to eliminate most of the access roads previously planned. Traffic on the roads being built seemed to exceed appraisal predictions, but, given the financial and institutional inability to build the total mileage originally planned, emphasis was placed on penetration roads which were expected to benefit the largest number of individuals. No rigorous cost/benefit study has been made, but the decision appears correct on both economic and social grounds.

17. The average cost of the roads constructed, per km, was Col$780,000 as opposed to a predicted Col$252,000, an increase of 210%. The difference is somewhat misleading insofar as the shift in class mix, based on the appraisal estimates, should have caused a 23% increase in average road costs and general inflation in Colombia would have caused a 75% cost increase, leaving a 45% increase in real unit costs. There was an enormous variation in the per km costs of the roads actually constructed, even within the same class -

ranging from Col$252,000 to Col$1,682,000 for B/C roads; the large differences appear to be due to a variety of factors, including contractor efficiency.[1/]

18. Caqueta possesses some of the world's few natural asphalt deposits which can be mined and directly applied as road surfacing. These deposits are found only in the piedmont area and transport is costly. However, the existence of the raw material has allowed some roads to be economically upgraded to a higher level than originally expected, increasing traffic velocity and decreasing vehicle wear and required road maintenance.

19. The increase in traffic on project roads beyond the forecasts has increased project benefits, but it is causing roads to deteriorate more rapidly and will require increased maintenance expenditures. The use of heavy trucks is a particularly serious problem. There is no agency in Caqueta institutionally equipped to control the weight of trucks using the roads and bridges constructed by the project. The issue is not discussed in supervision reports and appears to need resolution.

20. The project encountered another problem regarding road maintenance. At the time of loan negotiation, Bank staff sought and received assurance that

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1/ Contracting procedures originally provided for periodic cost readjustments in line with both approved design changes as construction proceeded and with increases in the cost of materials. This procedure placed no incentive on the firm to complete the project within the stipulated period, and a new procedure now provides for cost readjustment only until the contract's stipulated closing date. It does not appear that individual contractors fraudulently enriched themselves; several went bankrupt. The fact that bids were awarded to small contractors, without an adequate capital structure, meant that there was little effective legal recourse against any contractor who, because of inefficiency or justifiable difficulty, simply could not terminate his road segment as agreed. INCORA may have been willing to bear with some contractors overly long, however, before cancelling the original awards and initiating rebidding.

Caminos Vecinales, a department of the Ministry of Public Works, would maintain roads after they had been completed. However, Caminos Vecinales had no funds for maintenance and, although the Bank repeatedly pointed out this breach of loan covenant to the Government, urging that funds be made available, such funding of maintenance was not provided during the first project. The situation was alleviated by the fact that road contractors were required to maintain the segments being constructed until completed and delivered. Given the delay in road completion, relatively little maintenance was required until 1975, at which time funding was made available to Caminos Vecinales through provisions under the follow-on project. The maintenance of roads is now adequate.

21. The issue nonetheless demonstrates a problem which can easily arise when one central agency, such as INCORA, is expected to coordinate the actions of other government agencies and where the contributions of the latter agencies are not directly funded by the project through the coordinating agency. Different government agencies compete for scarce funds and, without specific written accords, general assurances regarding the provision of project components may turn out to be insufficient to achieve the desired ends. In this case, INCORA was in a strong political position when the project was negotiated and the Bank accepted INCORA's assurances that the funds would be forthcoming and the Caminos Vecinales would undertake the work without adequately confirming these possibilities. Caminos Vecinales was not a party to the agreement. By the time the project was being implemented, INCORA's political power had declined and the Government was experiencing a difficult

fiscal situation. INCORA could not obtain funds from the Ministry of Finance for road maintenance in Caqueta and, without financing, Caminos Vecinales, already short of funds, would do nothing. Had funds been provided in the first loan to assist Caminos Vecinales, as it was done in the second project, the situation would have been improved. The latter approach required that the Bank finance maintenance as well as construction costs, a position which the Bank was reluctant to accept, but the alternative of having roads deteriorate rapidly, as they do when not maintained in a region like Caqueta, is unacceptable. It is hoped that sufficient local pressure will gradually develop in Caqueta to ensure proper maintenance after Bank financing has terminated.

22. One final issue is important. The penetration roads constructed by the project have not kept up with ongoing settlement, benefitting chiefly areas which are already settled and largely cleared. The same will be true of most roads constructed under the second project. This is not because roads have been diverted to settled areas, but simply that the area of colonization is large and growing. New colonization is now occurring in areas several days by horse travel beyond the end of existing roads.

B. Livestock Credit Program

23. Long-term cattle development loans were expected at appraisal to be made to 4500 colonists over a three-year period. Operated through the Banco Ganadero, the program proposed to make small in-kind loans to farmers, chiefly in the form of breeding animals. A number of initial difficulties were encountered by the program and by 1973, it was clear that the appraisal target

was no longer feasible; it was reduced to reach 1600 colonists over a five-year period. The reasons for this reduction were (i) the administrative apparatus for on-farm lending developed more slowly than expected so that fewer than the predicted loans could be processed, (ii) funds provided in the loan were insufficient to purchase the number of animals which had been anticipated in the appraisal report, and (iii) an increase in cattle prices further reduced the number of cattle which could be purchased with project funds.

24. INCORA experienced difficulty in building up an adequate staff, both for land titling which was an important precondition for lending to colonists in recently settled areas, and for loan promotion and processing. Staff salaries were low and frozen for periods, despite inflation, while working conditions were difficult. Roads had not yet been constructed into most areas and transportation was arduous and time consuming. A shortage of cattle for delivery to subborrowers was an additional problem. And the Banco Ganadero was originally rather conservative in its approach, relying heavily on traditional mortgage concepts for loan security. Loans during the first two years of the project were concentrated in areas close to Florencia and among ranches which had already experienced some development. A study of the subloans made during 1973 indicated that a number had been larger than expected. Because of the sharp reduction in the number of loans which the project was to be able to make, and because the project's cattle development loans were thought chiefly as a means of assisting colonists who could not otherwise obtain financing, Bank and INCORA staff agreed to

strictly enforce loan criteria designed to channel farm development loans toward smaller, poorer ranchers initiating their farm development in frontier areas. Improvements in staff and project procedures were gradually brought about and the revised lending targets were met while also directing loans to less developed ranchers.

Spontaneous Colonization, Land and Cattle Distribution, and Project Impact

25. The importance of this decision can be understood fully only by examining the dynamics of development in Caqueta. Although the virgin lands of the Caqueta region were seen as offering landless peasants from the densely populated Andean highlands an opportunity to achieve substantial improvements in their economic and social position, recent studies of the Caqueta region suggest that spontaneous settlement has not been as fully successful as had been hoped.1/ The distribution of land ownership in Caqueta is already highly concentrated, replicating the land distribution of the older interior regions of the country. The census data for 1961 and 1971 indicate that in both years the largest 10% of landholdings in Caqueta accounted for approximately 57% of total area. In contrast, the smallest 50% of all landholdings

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1/ Pidelta Ltda., Consultores, Plan de Desarrollo del Proyecto de Colonizacion del Caqueta Etapa II, Bogota, December 1973, especially Volumes I and III; R. Roberts, "Migration and Colonization in Colombian Amazonia: Agrarian Reform or Neo-Latifundismo," Ph.D dissertation, Department of Anthropology, Syracuse University 1975; and M. L. Gomez Rojas, et. al., "Incidencia Socioeconomica del Projecto de Colonizacion del Caqueta Etapa I," Tesis de Grado, Departamento de Economia, Universidad Santo Tomas de Aquino, Bogota, Colombia, 1971.

accounted for only 10% of area.[1] Further, 54% of all landholdings are smaller than 50 hectares and the average holding between 50-100 hectares is only 59 hectares.[2] INCORA estimates that a minimum of 80 hectares is needed in the zone for the establishment of an economic livestock ranch. Land settlement policy has been inadequate insofar as it has failed to assure either an egalitarian distribution of public lands or ensure that most plots are of economic size.

26. The skewness of landholdings in Caqueta results chiefly from a land titling system which favors those with greater personal resources, both physical and financial, rather than one which simply provides the same amount of land to all, and which attempts to avoid subsequent land fragmentation or concentration through continued sale/purchase. Alternative policies would be difficult, however, because of the stage process through which colonization has occurred. In the first stage, adventurer-explorers have entered the jungle, claimed large

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1/ The data on land distribution in Caqueta are probably biased toward equality because some landholders have more than one holding and because individuals frequently occupy more land than that for which they have legal title. INCORA permits the titling of up to 50 hectares gratis for the husband and wife each (and an additional 50 hectares for any children of majority age). It is common practice (both socially and politically condoned) for an individual to obtain legal title to 50-100 hectares with additional holdings simply being occupied. This practice occurs principally for larger landholders as there is no economic incentive for owners of parcels of less than 50 hectares. INCORA has considered increasing the size of the parcels which can be entitled gratis, but such a policy has negative social effects as well. INCORA has also considered instituting action to preclude individuals from occupying land parcels greater than that to which they are legally entitled. But this would be difficult to enforce from the pure administrative capacity.

2/ As shown in Table A2, this conclusion is not significantly altered if the holdings between 0-10 hectares are excluded (on the assumption that they are urban rather than rural plots). Plots of less than 50 hectares account for 46% of total holdings, but for only 11% of total area.

areas and cleared small parts of the same, dedicating themselves to temporary exploitation of forest resources and to subsistence agriculture. Although these individuals have claimed land de facto, they usually do not secure title. In the second stage, colonists interested in permanent settlement have arrived, but usually avoided areas of extremely difficult access. These later colonists were also often of limited resources and thus unable to purchase large amounts of land. Accordingly, they settled where considerable land was already claimed, either purchasing a subdivision of land occupied by another colonist or accepting smaller plots which had not yet been claimed.[1/] Whether purchasing or occupying land, the size of the parcel developed is usually associated with the physical capacity of the colonist (his size, age, and strength), the size of his family (number of other laborers), or his financial capacity (ability to purchase land and to hire other laborers to clear jungle). In an area in which land is relatively inexpensive, a small amount of capital can permit an individual to achieve control over a significant area. In the third stage, wealthier individuals from outside the region, noticing the potential, arrive to purchase land from existing farmers, usually consolidating a number of relatively smaller holdings. The farmers who sell to these entrants may leave the area, move to a nearby town or, if they have sufficient energy and zeal, move farther into the forest to begin again anew.

1/ For comparison purposes, 63% of the project's subborrowers indicate that they obtained their landholdings by purchase rather than the claim of public lands.

27. The description given is general; the distinction between the stages is not fixed in chronological time, nor is it always simple to classify individual colonists into one of the three categories. The important issue is that initial possession of greater resources by some colonists permits them to rapidly accumulate substantial amounts of land while other, poorer colonists remain with much less. By increasing the availability of credit for ranchers of smaller size, INCORA and the Bank expected to improve the likelihood that poorer colonists wishing to establish viable farm enterprises would be able to do so, being less pressured to sell their lands. In turn, it was hoped that a large strata of middle sized producers could be preserved, gradually contributing to an improved land and income distribution in the region.

28. The situation described above was not known at appraisal, becoming clear only in 1973 when INCORA commissioned (and contributed to) an evaluation of the first project in preparation for the second. At that time Bank staff became yet more determined to direct assistance to colonists who had not been able to exploit the land they possessed. Agreement was reached with INCORA that subloans would not exceed 15 animals and would not be given to any producer whose total herd would exceed 25 animals after receipt of the loan. The project, as completed, was reasonably successful in this respect. The data in Table A3 indicate that 41% of subborrowers had less than 10 cattle when they received the credit (average 5), 29% had 10-20 (average 15), and 30% had more than 20 animals (average 42). The average number of animals received by subborrowers through their loan was 16. Most

of the larger subloans, or those received by more developed ranches, were made during the first two years before the decision to adhere strictly to smaller loans was taken.

29. Despite the controls, the statistics on loan size and destination may be slightly misleading. Officials of the Banco Ganadero, the agent during most of the first project, informed the audit mission that they believe it is not economical to initiate cattle production with less than 40 animals. Accordingly, despite limitations on project loans, the Banco Ganadero said their practice has consistently been to complement Bank-financed INCORA loans with additional loans made from their own resources or other credit lines. The full extent of this practice is not known. From one perspective the Banco Ganadero's view is quite correct; given the required infrastructure and the labor, it is much more economical for producers to work with additional cattle. The only justification for limiting loans to smaller size is the desire to assist a larger number of producers with the scarce resources available, hoping to provide them with additional loans during future programs. The second project has done this in some cases.

30. The lending criteria applied seem more appropriate with respect to the size of landholdings of subborrowers. Although the distribution of landholdings in Caqueta is skewed, most project borrowers are medium sized landowners. As shown in Table A3, in a sample of subborrowers who received their loans prior to 1975 (this includes 80% of all borrowers under the first project), there were no borrowers with less than 50 hectares and borrowers with less than 160 hectares account for 83% of loans and 63% of the total

area occupied by subborrowers in the sample. Still, 37% of the total funds went to borrowers having more than 160 hectares (average farm size 257 hectares).

31. Although the size of holdings may suggest that subborrowers are substantial farmers, at least at the time loans are received, this would be mistaken. In a subsequent section the available information of subborrowers' gross and net incomes, their gross assets, and changes in these variables over time is presented. Subborrowers were poor and few have passed out of the poor category, although their net asset position has begun to improve. This discussion is postponed, however, until other information specifically relevant to the implementation of the livestock credit program is presented.

Cattle Purchase

32. Due to a shortage of breeding animals in Caqueta relative to the growing demand, some of the cattle purchased for delivery to subborrowers had to be brought from other regions in Colombia; of the 28,500 cattle provided to farmers through the credit program, approximately 15,000 were purchased in Caqueta and 13,500 were purchased outside the area. The Banco Ganadero, which was responsible for developing the mechanisms for purchase, transportation and delivery of cattle, originally sought to use commission agents to make the required purchases, but shortly discovered fraud. It subsequently utilized its own employees, over which it felt it had more control, authorizing buyers to purchase no more than 300 animals at a time. The demand for animals was advertised in different areas and sealed bids were requested, the lowest bid of animals of acceptable quality being

accepted. A campesino from Caqueta was selected by his peers and sent on buying trips to approve the animals purchased. Once transported to Caqueta the animals were divided into lots, subborrowers drew numbers and, with right of refusal, obtained their animals randomly.

33. The purchasing program has been criticized because (i) cattle were allegedly bought in areas in Colombia where the purchasing agencies had existing interests, even when prices there were high, (ii) the project's demand drove prices still higher, (iii) transport to Caqueta was expensive and additional losses occurred through animal deaths and weight loss, and (iv) cattle were frequently pastured for lengthy periods in Florencia before being turned over to borrowers, with the cost of forage being added to the price which borrowers had to pay. Nonetheless, when all additional charges are considered, the cost of heifers purchased outside Caqueta was systematically lower than the cost of those purchased in Caqueta. The price of bulls, in contrast, was slightly higher, but this may reflect a difference in quality. Although the purchasing program might have been improved, it functioned well as an innovational program designed to increase the number of breeding animals available in Caqueta and to distribute these animals to producers in small lots.

Short-Term Livestock Credit

34. The short-term livestock credit program, which was instituted in 1973 when it became clear that administrative obstacles would make it impossible to make the number of long-term loans originally planned, was not very successful. It was thought that livestock loans for fattening animals could be processed

more rapidly, thereby speeding the delivery of cattle to colonists, and at the same time strengthen the development of the Caqueta regional cooperative, COOPERAGRO, through which such loans were to be channeled. The type of loans planned had already been made successfully in Caqueta. The Fondo Ganadero, essentially a livestock bank making loans in kind, lends animals to producers and shares the profits of production, on a pre-agreed proportion, when sales are made. It has placed about 40,000 animals with producers throughout the region and its "portfolio" has steadily increased over the last decade. A number of larger ranchers and individual proprietors in Caqueta also provide animals for pasturage on a "share" basis.

35. INCORA's plan was to supplement these sources by permitting CECORA, a national cooperative agency associated with INCORA, to make credit available to COOPERAGRO, which in turn would purchase animals and provide these to its members, splitting the profits with them at the time of sale. The program made 141 of the 300 planned loans, but never functioned well, due largely to political disputes. COOPERAGRO became highly politicized, and its emphasis on financial and business affairs declined. CECORA and COOPERAGRO engaged in disputes over both finances and politics. CECORA refused to provide COOPERAGRO with funds for the short-term credit program, despite the fact that INCORA had made these funds available to CECORA for that purpose, alleging that COOPERAGRO owed it money on other accounts. INCORA, eager to promote a viable cooperative program, struggled to arbitrate for some period before giving up. The short-term credit program is now being operated directly by INCORA with better results.

36. At appraisal it was envisaged that INCORA would also provide seasonal supervised credit, using the Caja Agraria as its financial agent, for other products, principally rice and pigs. The production of both was important to colonists during their initial years when clearing forest, although subsequently such production is phased out as cattle production is begun. Due to a general institutional shortage of funds which required a reprogramming of support to projects throughout Colombia, INCORA made less available for seasonal credit in Caqueta than originally planned.

Project Loan Allocations and Increases in Cattle Prices

37. As pointed out in the PCR, several serious errors appeared in the appraisal report regarding budgetary allocations for livestock purchases. The appraisal report farm development models call for livestock purchases to be spread over 5 years for 1000 of the 4500 colonists borrowing, but the project was expected to last only 3 years and funds were not included in the Bank loan for the purchase of animals after the project's end. Thus, the ostensible target of providing 69,000 cattle to colonists was infeasible because no budgetary provision was made for 12,000 of these animals. Further, using the domestic peso prices for cows and bulls which appear in the appraisal report models, a total of Col$108.1 million (1970 pesos) would have been required to purchase even the 57,000 cattle (plus complementary pigs and mules) which were to be purchased during the project's three years. But the project's budget provided only for Col$91.4 million, 15% less than that needed.

38. As is clear from the figures in the paragraph above, even had no livestock price increases occurred, the livestock credit targets could not have been met. There were funds for only about 50,000 animals, not 69,000. The actual number of cattle purchased, however, was 28,535; the further reduction in animal purchases was brought about chiefly by an increase in cattle prices.[1/] The data on prices are given in Table A1. Unit cattle prices measured in constant pesos rose by 25-30% between project appraisal (1970) and project implementation (1972) but rose at a slower rate thereafter. The price increases which occurred in Caqueta are consistent with price increases occurring throughout Colombia during the same period and, in turn, were associated with an upswing in international markets. The appraisal mission also estimated farm prices conservatively when calculating the predicted rate of return, expecting that the then ongoing price downswing would continue. Instead prices rose. Inflation in the U.S. further reduced the purchasing power of the dollar, the currency in which the loan was denominated. Thus, while the average real peso price of breeding livestock in Caqueta increased by about 40% over the project, the U.S. dollar price of the same animals increased about 65%. At appraisal, the cost of an "average breeding animal" (15 cows and 1 bull) was about US$95 while the average price of the animals actually purchased was US$155.

1/ The audit mission agrees with the PCR in nearly all respects, but we find that price increases, principally between 1970 and 1972, rather than after 1972, explain a major proportion of the financing gap encountered for livestock purchases. See PCR para. 3.05.

39. The project financed the purchase of 28,535 cattle, some 57% of the 50,000 which were actually budgeted. The reduction is explicable by (i) the error in budgeting in the appraisal report (20%) and (ii) the increase in the U.S. dollar price of cattle (63%); 1.2 x 1.63 = 1.96 and 50,000/1.96 = 25,600. The slight increase in livestock purchases over 25,600 was made possible by allocating a higher than originally planned proportion of the loan to this end use.

40. The price of fat steers in Caqueta has risen in recent years somewhat more than in Medellin, perhaps because of improving market links with the rest of Colombia, or growing local demand. Nonetheless, cattle prices now seem to be unusually high and at unsustainable levels if reference is made to international market conditions.

Interest Rates

41. Interest rates for subloans were made at 8% per annum on a linear basis, or 6.3% compounded, plus 1% for life insurance. Inflation at the time of appraisal was about 7-9%, although it accelerated steadily after 1969 and averaged 20% annually during the implementation period. At the time of appraisal, another Bank loan (Loan 448-CO) financed cattle development for large commercial ranchers in the Costa and Llanos regions, at 12% interest rates. Because inflation was still moderate, and real interest rates positive, indexing on subloans in Colombia had not been made a strong issue by the Bank. Moreover, among credit lines available to livestock producers, the Bank-financed subloans carried relatively high interest rates. In discussing the Caqueta project with the Bank, INCORA argued that small colonists ought to receive terms better than those available

to larger ranchers. Perhaps partly because the small loans proposed for colonists appeared financially of marginal profitability in any event (see the section on living standards of subborrowers), the Bank agreed.

42. In the second project, due to rising inflation, interest rates were raised to 15%. Rates of the Settlement II follow-on project could not be raised above 15% because in the meantime the Livestock II Project (Loan 651-CO of March 1971) became operational in the Caqueta area in 1972 and charging also 15% interest on its subloans. An interesting policy dilemma nonetheless remains. Although interest rates on both subloans were negative in real terms, efforts were made in the Colonization project to ensure that the loans were channeled to smaller, less developed producers and were restricted in size, thus reducing the absolute amount of the subsidy received and spreading the benefits over a larger number of relatively poorer producers. Apparently no such effort was made for subloans financed under Loan 651-CO. There is no evidence of an effort in the Bank to coordinate lending policy for these two loans in Caqueta.

Technical Assistance and Farm Technical Impact

43. INCORA planned to provide subborrowers with a reasonably intensive and sophisticated program of technical assistance. The actual program implemented fell short of plans throughout most of the first loan, but has steadily improved and is now reaching adequate levels. The technical assistance program has several aspects. Technical discussions are held regularly for INCORA staff and short courses on cattle management are given periodically for colonists in different regions. On-farm assistance

by technicians includes vaccination against major animal diseases, the construction of cattle dips, corrals, salt trays, and other infrastructure and, to bring about longer run improvements, continual instruction in heifer selection, cow culling and cross breeding. Initial efforts to improve pasture management and to protect natural legumes growing in the area have been made and INCORA has begun the establishment of a few pilot ranches to demonstrate improved techniques to ranchers more directly. The research station on agricultural and livestock problems which was assisted in the loan and which is operated by ICA required several years for establishment, but staff are now in place and research programs have been initiated. It has not yet had a major impact on regional production practices, but appears to offer the potential for substantial future benefits.

44. When the project was initiated, INCORA and the Banco Ganadero signed an agreement that each would contribute five professionals to the technical assistance program in addition to the regional loan chiefs and supervisors. During the first years, there were rarely more than seven or eight professionals active; because of difficult working conditions, INCORA staff frequently quit and the Banco Ganadero tended to use its technicians on other projects. The technical assistance program was further weakened by the fact that several of the professionals and most of the loan supervisors were trained in agronomy and knew little about cattle ranching. And loan supervisors devoted most of their time to loan control rather than technical assistance. The professional staff is now composed chiefly of veterinarians and a growing proportion of the loan supervisors are knowledgeable about

cattle. INCORA and the Bank considered dividing the staff into one group specifically for loan control and another for technical assistance, but given the difficulty of access to colonists it was decided that one staff could more efficiently carry out both functions. Supervisors are now required to visit each colonist a minimum of three times during the year. The number of visits to colonists averaged about 1300 during the first three years of the project, rising to 3000 in 1974 and to 10,000 in 1975.

45. Good data on farm technical efficiency have not yet been obtained (and are badly needed), but several surveys have indicated that nearly all colonists vaccinate against hoof and mouth disease and a large proportion against other major diseases in the area. Adult animal mortality seems to have declined slightly less than appraisal assumptions, from about 4-5% to 3-4%. Less information is available regarding weaning rates which were anticipated to rise from 50 to 65% during the first seven years of farm development. It appears that weaning rates have risen from about 50% to 60% during five to six years of project development (the average for ranchers with cattle borrowed from the Fondo Ganadero, which also provides technical assistance, was 62% in 1976). Stocking rates were expected at appraisal to remain at about one animal unit per hectare throughout ranch development; although most project farms still have an excess of pasture relative to cattle so that feed availability is not yet a major constraint in the region, carrying capacity on ranches which are fully stocked appears now to be about one animal unit per hectare. If ICA is successful in introducing new grass and legume species to the area, carrying capacity

will rise. Farm inputs like salt, other minerals, and drugs, which are sold principally through private commerce in frontier regions, are still quite limited in supply and of high cost, making technical improvements more difficult.

Living Standards of Subborrowers

46. Living standards of the subborrowers have remained at extremely modest levels even though a number of subborrowers have now begun to accumulate considerable net worth. It was fully recognized in the first appraisal report that colonists would not significantly improve their cash flow as a result of receiving credit until around the eighth year of farm development (see the first appraisal report, Annex 2, Table 4). Cash flow is very much restricted until the natural growth of the herd permits sufficient sales to exceed loan repayments. An interesting aspect of the appraisal report, brought forth only within the context of the models themselves, is that the expected sale of cattle would not have produced sufficient income to cover programmed subborrower loan repayments in a world of stable prices. Accordingly, the appraisal report models assume that cattle prices will rise at 15% per year due to inflation, although loan repayments remain fixed (there was no indexing). Inflation was thus expected to reduce real interest rates to negative levels, thereby permitting planned amortization of the loan. Even under these circumstances, however, farm disposable income does not rise until the seventh year of development.1/

1/ This was an additional argument put forward originally in support of the low interest rate charged on subloans.

47. The appraisal report models appear fairly accurate in their prediction of events. Most borrowers have not yet enjoyed a major increase in their living standards. Assuming that most subborrowers spent several years in the jungle prior to receiving their first credit for cattle purchase, and assuming that no major income increase occurs until seven or eight years of farm development, they will have spent ten or twelve years before their living standards rise above subsistence levels given the constraints on their cash flow.

48. A recent study[1/] provides more detailed information on the income position of subborrowers in 1977, indicating a wide distribution. The gross and net incomes for the 138 families sampled are shown in Table A4 and A5. Several interesting facts emerge: (i) although gross incomes average Col$92,000, net incomes average less than half as much, Col$45,000 (to each of these figures an amount for consumption in kind of farm produce should be added, probably about Col$15,000), (ii) the apparent U.S. dollar equivalent of these incomes, i.e., US$2600 and US$1250, is exaggerated because of the unusual appreciation of the Colombian peso during the last two years, the result of the coffee boom, (iii) a rough interpolation of information available on the distribution of incomes in Colombia suggests that a family earning Col$60,000 (45,000 + 15,000) would be about the mid-point of the distribution of agricultural families in 1976, and in the lower third of all Colombian

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1/ Martha Lucia Gomez Rojas, et. al., op. cit. All references are to 1976 pesos.

families, (iv) the average disposable income of colonists is adequate, and may well exceed the levels which would have been achieved by the same individuals had they not migrated, particularly if the implicit wealth gains from the growth in the value of their land and cattle herds are included; nonetheless, most subborrowers earn substantially less than the average income quoted — as shown in Table A5, 43% of the colonists have annual net incomes below Col$25,000 (10,000 + 15,000) and 70% fall below the average income. These data confirm that most subborrowers have not yet achieved substantial increases in their disposable income levels, although some subborrowers are significant exceptions.

49. The increase in subborrowers' net assets has been substantial, the result primarily of the growth in their cattle herds and of farm improvements, and the implicit subsidy contained in the low interest rate on the credit obtained, rather than of increases in the real prices of land and cattle. The average colonist appears to have had about 115 hectares of land and 45 cattle in 1977. Using a value of Col$6,000 per hectare of land, and Col$8,000 per animal, the gross value of these assets is Col$ 1 million, or approximately US$28,000 at the current exchange rate.[1/] The average subloan, Col$70,000 (US$3000), has been reduced substantially in real terms by inflation, but this has contributed a maximum of about US$2,000 to the colonist's net assets. Cattle prices remained roughly constant in real terms during project implementation from 1972 through 1975. They increased in 1977, but a sustained increase

1/ These figures are in 1977 prices. As seen above, perhaps 70% of subborrowers would lie below the average.

over the long run is not expected. However, given that the number of animals in the herd increased by about 165%, the average colonist enjoyed a substantial increase in total herd value.

50. Data on the amount, use and value of land on subborrowers' farms, taken from the 142 colonists surveyed by Rojas, et. al., and given for both 1971 and 1976 in Tables A6 and A7, contain several surprising indications. First, the average farm increased in size by 14% over the period. Second, the area in pasture increased 40%. Third, most of the increase in pasture area is explained by the increase in farm size, not by a reduction in cultivated land, uncleared land, or semi-cleared area. Farmers could have been buying uncleared land at the same time they were clearing their own, or simply purchasing already cleared land from neighbors. Fourth, there was no increase in the real unit value of land between 1971 and 1976, in fact, nominal land price increases did not quite keep up with inflation. Using the data on price inflation contained in the PCR, Annex 11, the GDP deflator increased by 133% between 1971 and 1976. Yet the land price data suggest that a hectare of cleared pasture land increased in value over the same period by only 100% (Col$2500 to Col$5000). The data given in these tables are approximate and, accordingly, the conclusion might be changed were better information available. The result is somewhat surprising insofar as other information had suggested that the provision of improved transport facilities had resulted in an increase in the real value of uncleared land so served. These data suggest that the existence of substantial free public land has restricted the increase in value of uncleared land and, so long as

colonists continue to flock into the area and are interested to clear the jungle, the value of cleared land will not greatly increase (except perhaps within close proximity to urbanized areas like Florencia).

51. In summary, subloans went predominantly to poor farmers with undeveloped landholdings who had the opportunity to become viable cattle producers. The size of subloans was small, lower than the optimum economic size. Nonetheless, colonists who have been able to obtain credit have benefited. Their net incomes are believed to slightly exceed the incomes of colonists who were not able to obtain credit, even after loan repayments are considered, but, more importantly, their asset accumulation will permit rising cash incomes in the near future. Given that land appreciation does not appear to have been great, colonists have not been able to increase their wealth without being able to bring land into productive employment. This has made the provision of credit even more important.

Project Coverage

52. The credit project reached a significant proportion of the target group, but a much smaller number than originally contemplated. Migration into the area continues at a rapid pace and the number of potential borrowers is increasing. In 1971 there were estimated to be 185,000 inhabitants in Caqueta of whom 145,000 were resident in rural areas. With an estimated seven members per household, there were 20,500 rural households, 9,000 of which held plots which were officially registered. Approximately half of these (4500) were thought to be potential subloan beneficiaries. The first loan provided credit to 1600 colonists while the second will provide 2100

loans (some subloans will provide additional assistance to participants in the first project). The total subloans granted would provide good coverage of colonists resident in the area in 1971, but subsequent migration is adding about 500-1000 colonists per year who are potential users of the same type of credit.

C. Ecological Issues

53. Erosion, economic use of forests, and preservation of wooded areas were of concern to the Bank and to Government in both the first and second projects. Within the project area, erosion is a minor problem when forests are cleared and land is planted to pastures, even when colonists permit overgrazing. INCORA has worked to instruct colonists on pasture management, including the planting of Kudzu in problem areas, and on-farm erosion seems under control. A more serious problem occurs along the river banks. As colonization occurred first by river, and as river lowlands are among the most fertile lands in the region, settlement here is also the most intense. To obtain additional pasture, and to be able to enjoy easy access to the river, colonists removed almost all trees along river banks. Each year erosion has increased, stimulated by a seasonal increase in river flow caused by the denuding of the cordillera, just outside the project area (this is discussed below). Rivers which once provided deep channels throughout the year and which were capable of navigation by paddle-wheel steamers have increased their width several times and, in the process, become much more shallow and filled with shifting sandbars. Navigation of large boats is now impossible in many parts, although smaller boats and canoes continue to

provide transportation. The roads being constructed have opened substantial new areas and have made transport more rapid and more direct to areas already accessible, but Caqueta has lost important transportation arteries as the rivers have deteriorated — and erosion has also eliminated many hectares of the area's most valuable soil.

54. Laws have existed for some time requiring that colonists maintain forests for 50 meters from the river bank, thus providing protection from erosion. These laws simply are not respected, nor enforced, and there appears to be no viable method to achieve enforcement without the use of a police power which does not exist in the zone. In appraising the second project the Bank considered developing a program to encourage tree establishment along river banks, but decided this work could be left to the Government's own initiative. Little has been done to date. There are areas further downstream where erosion is not yet too bad and it may be economical to prevent it before it becomes worse.

55. The Bank was also concerned about appropriate forest use and the general ecological effect of widescale deforestation in this area of the Amazon. Several studies have indicated that at current commercial prices, given the heterogeneity of forest species and the high cost of timber extraction from the zone, exploitation is quite unattractive except for domestic use by settlers or for certain high value species. Although existing laws require recipients of more than 50 hectares of public lands to keep 20% under forest and allow Government to maintain 10% of the area as a protective zone, it has been impossible to enforce farmers' obligation.

The Bank and INCORA attempted to set aside a forest reserve of 16,000 hectares during the second project to retain a significant area of forest cover and for study of the indigenous conditions. The effort was a failure; although an area of marginal development potential removed from current settlement was selected, political activists decided that there must be something special about the area if an effort was being made to exclude colonists. The activists forced the forest guards out of the area and brought colonists into the reserve. INCORA and the Bank decided to give up the idea of a forest reserve rather than initiate the social conflict which might have occurred had an effort been made to recover the area invaded. No other zone of appropriate size for a forest reserve is available.

56. Although the problem of progressive clearance of forest is difficult, the audit mission believes additional analysis and executive force is required if serious long run damage is to be avoided. The first and second projects, by assisting existing colonists, are encouraging further settlement before the issue of forest control is adequately dealt with.

57. Another ecological problem exists in the Andean cordillera. Although not located within the perimeter designated for the Caqueta Colonization Project, the cordillera forms the catchment of most rivers flowing through the project area and accordingly developments there can strongly influence project activities. Many peasants, accustomed to farming on the slopes in the highlands, migrated toward Caqueta in hopes of colonizing land. Discouraged by conditions in the tropical forest, they chose to remain at higher altitudes and established small farms on steeply sloping mountainsides. After deforestation and the planting of crops, or pasture formation, erosion has increased

and threatens to devastate large areas. Rainfall now runs off the cordillera more rapidly, causing rivers in the project area to flood and erode during the rainy season and to run dry during the rest of the year. Some claim that the weather itself is changing in the area, with less rainfall occurring as a result of lower soil moisture content. Efforts have been made to reduce erosion on the cordillera slopes, but the problem is extremely sensitive socially and politically. The only real solution is to move people out of the zone, prohibiting farming, and to reforest on a broad basis. There is no land, however, on which to place the inhabitants who would be displaced and pressures for land in other parts of Colombia would make new invasions by other peasants almost a certainty. The Government is considering a reforestation program to pay peasants for planting trees on a portion of their soil and subsequently for tending such trees till maturity. If some radical reduction in erosion in the cordillera is not brought about within the next decade, it appears that damage in the project area may be great. The Bank has recognized this problem and discussed it with Government, but the development of a more satisfactory long run solution is important to the Caqueta project and requires greater emphasis.

D. Project Evaluation and Monitoring

58. The establishment of a permanent project evaluation unit was not envisaged in either the first or second projects. Such a unit has since been discussed by the Bank and INCORA and INCORA plans to establish it soon. Regardless, several key evaluations of the project have been undertaken. Prior to appraisal of the second project, INCORA employed an independent

consulting firm to evaluate progress under the first and to make recommendations for the second. This study, to which several INCORA staff contributed, is excellent, containing candid recognition of past mistakes as well as thoughtful analysis of how project operations could be improved. Particular attention was paid to the dynamics of regional colonization, the destination of project subloans by farmer size and level of development, the mechanism for cattle purchase and delivery to subborrower, the inadequacy of technical assistance, and the socio-economic conditions of colonists. INCORA also encouraged four students to write a joint thesis evaluating the socio-economic impact of the first project. The students collected considerable useful data through sample surveys and their thesis updates and extends the previous consulting study. INCORA provided assistance for two Ph.D dissertations written by U.S. students on Caqueta's development as well, and undertook a small survey of subborrowers to obtain data on farm technical achievements needed for the PCR.

59. Despite these surveys, additional information and evaluation on several key aspects of the project are badly needed. Too little is known about highway utilization to make confident assessments of their economic profitability, or of possible design or route changes. Data is needed on the current level of farm technical efficiency. And additional research is needed on the profitability of perennial crops such as rubber and oil palm. These two activities were introduced into Caqueta decades ago but were excluded from project financing because their technological and economic viability was not known. Because of their greater labor intensiveness, and as a

useful regional diversification, a re-examination of their potential seems overdue. Additional evaluation of the project's ecological impact, and the design of specific programs to improve the situation, are also important.

E. Rates of Return

60. The economic rate of return predicted in the first appraisal report was 16.5%. The PCR estimates that the rate of return will be about 17% even after the substantial revisions in the project's size. The methodology on which these estimates are based could be improved. Such changes, if introduced, would reduce the rate of return to about 13%.

61. The rate of return on the project is a weighted average of the returns on its component parts, principally road construction and farm development. Cattle prices were higher throughout implementation than at appraisal which acted to shrink the number of animals purchased by raising investment costs, but had little impact on the rate of return itself (as sales will be proportionately higher also). The technical assumptions utilized in constructing the farm models, such as expected changes in weaning and mortality rates, seem realistic, if perhaps slightly optimistic. However, the rate of return estimates quoted assume that family labor utilized for clearing land, sowing pasture, fence building, and subsequent herd and pasture management should be given zero value. In the appraisal report it was argued that a high rate of unemployment in Colombia would justify this assumption. An alternative calculation indicated that if the family labor were given a total value of US$220 per year, the economic rate of return on the entire project would be reduced to 8%. Clearly the economic

profitability of the project was highly sensitive to the assumption regarding the value of labor. The second appraisal report assumed that the shadow cost of labor was zero, as did the PCR, without considering the impact on the rate of return of alternative values. While it seems reasonable to use a wage rate somewhat less than what is being paid in the zone, a labor scarce area, to reflect the low level of labor utilization in Colombia under current conditions, and thereby capture the special attractiveness of this project, a zero labor opportunity cost seems extreme.

62. The road construction program was significantly smaller than planned and unit construction costs were 45% higher than predicted. These cost increases would have reduced the rate of return on this component had it been assumed that the transport savings per mile of constructed road had remained constant. Although there is no adequate information on road use, transportation (and maintenance) seem heavier than originally expected. The higher utilization at least partly offsets the higher costs of construction. Further, the benefits of improved transportation, as estimated in the first appraisal report and the PCR, are conservatively limited to savings on the transport of cattle and grains out of the zone. No savings were estimated for the transport of farm inputs, including cattle, into or within the zone, for the transport of consumer goods, or for personal travel, all of which are signficant. If included at realistic levels, however, these do not fully offset the impact on the project's estimated rate of return of costing family labor at a level significantly above zero.

63. The costs and benefits associated with health and educational investments were not explicitly considered in the rate of return calculations, as is

Bank practice, but the administrative costs associated with road construction and project management were included. No benefits were included for administrative services, like the titling of land, which also have been important and which are not fully included in subborrower output increases.

64. The audit mission estimates that if family labor is costed at US$500 per year, about half its market value (1.5 workers per farm), and the other methodological changes are made, the economic rate of return is 13%.

F. Bank Performance

65. Appraisal of the project was difficult. Relatively little was known about the area to be developed and communication into the zone of colonization was limited. The Bank had few prior experiences in colonization or rural development programs. Accordingly, while the appraisal mission can be faulted for some serious errors regarding road design, budgeting, costing of activities, and the scheduling of project implementation, it showed imagination and a good entrepreneurial sense in the conception and overall design of the project. Although predominantly a road construction and livestock credit project, the Bank accepted a perspective on regional problems which permitted support of activities in health, education, nutrition and ecological problems. This made the project one of the Bank's first specific efforts in overall rural development. Its contributions in each of these areas have been important even if much remains to be done. The Bank also supported a regional center for agricultural and livestock research at a time when such support was not common in Bank projects;

the establishment of this center should provide significant benefits in the future. The project is also noteworthy for its distributional concerns. An emphasis was placed on assisting colonists with undeveloped lands. Efforts to ensure that credits were directed to poorer farmers were continued throughout the project.

66. Project supervision throughout the project was adequate; reports filed have kept up with developments and the aide memoires are unusually detailed. When forced to decide in 1973 whether to continue with the project at a level much reduced over that originally planned, or seek to terminate, the Bank chose the former option, calculating that even the reduced project would be economically attractive. The decision seems well taken. The second project corrected some of the faults of the first and is continuing development along those lines which seemed most promising.

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

COMPLETION REPORT

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ANNEXES 1-13

MAP NO. IBRD 11000
MAP NO. IBRD 2082R2

COLOMBIA CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

PROJECT COMPLETION REPORT

I. BACKGROUND

1.01 The Caqueta Land Colonization Project is located in the Intendencia of Caqueta in the eastern foothills of the Andean ridge adjoining the lowlands of the Amazon in southeast Colombia (Map IBRD 11000). Florencia, the main town of the region, was founded during the rubber boom early this century. With the decline of rubber exploitation in the early 1920's, settlers remained in the area and cleared forest land for extensive livestock development. In addition, spontaneous colonization has continued since in many parts of the overpopulated mountain areas of Colombia, peasant farmers have insufficient land to make a reasonable living while much of the country remained unpopulated. The Government estimated in 1971 that about 360,000 families should move to the unpopulated forest areas to make a living as settlers. However, the cost of moving large numbers of people and of making the initial investments required to assist them to start with colonization is prohibitive and an earlier directed settlement project managed by Caja de Credito, Industrial y Minero (Caja Agraria) had not been successful. The National Institute of Agrarian Reform, Instituto Colombiano de la Reforma Agraria (INCORA), created in 1961, evolved a less expensive approach to support spontaneous settlement. Under this plan: (a) only settlers who had already established small farms, or at least had cleared some forest land and prepared pasture using their own resources, would receive technical and financial assistance. Thus, only the most reliable and persistent settlers would receive the support of INCORA's program; and (b) the Government would incur no expense for moving potential settlers from other areas or for initial land clearing, cultivation and house construction. The land in the proposed settlement area is publicly owned and, by Law 135 of 1961, INCORA is responsible for the development and the implementation of regulations for granting land titles.

1.02 Two main supervised credit programs were carried out by INCORA with USAID assistance before the project started: one was for general agriculture in association with Caja Agraria, the other for livestock in association with the National Livestock Bank (Banco Ganadero). Their objective was to provide development loans, coupled with technical assistance to farmers having sufficient land and labor resources to constitute viable farm units.

II. PROJECT FORMULATION

2.01 A Bank mission, which visited Colombia in 1967 to review INCORA's activities in rural development, also identified the Caqueta Land Colonization Project. In November 1968, the Government submitted an application to the Bank for a loan to finance a settlement project in Caqueta with a total cost of US$20.9 million. In March and October 1969, two FAO/Bank CP missions assisted INCORA to complete the preparation of the Caqueta Land Colonization Project. In January/February 1970, the Bank appraised the project which was approved by the Board on May 4, 1971.

III. PROJECT DESCRIPTION

Initial Project

3.01 According to the appraisal estimates, the project was to benefit directly and indirectly 8,000 families; however, it was later established that there were 12,500 families within the area of influence of the project. It included the construction of about 380 km of roads in the Caqueta area to service some 3,500 partially established settlers and to open up 280,000 ha of undeveloped land for a further 2,800 new settlers. It also was to provide credit for farm development, land clearing, fencing, livestock and other farm inputs for the 3,500 partially established settlers, as well as for about 1,000 of the 2,800 new settlers expected to move into the project area during the development period. In addition, about 90 primary schools and 6 health centers were to be constructed. Project costs were estimated at US$21.6 million. The loan was to finance the foreign exchange costs of US$5.5 million, 25% of total project costs, and US$2.6 million of the local currency cost, thus 38% of total project costs. The Government was to contribute 30% and farmers 32% of total project costs through 40% participation in farm investments.

Difficulties Experienced with the Initial Project

3.02 By September 1973, which was half-way through the investment period planned for the project, only 20% of the expected number of sub-loans had been made and only 16% of the length of roads and 13% of the number of schools had been completed. The main reasons which led to these shortfalls are discussed in paragraphs 3.03 to 3.07. Paragraph 3.08 presents the main changes in the project targets following the revision of original plans as a result of experience during the initial period of project implementation.

3.03 Credit Program. It took longer than expected by the appraisal mission for Banco Ganadero to set up the procedures and train the staff required to administer the long-term lending program. The sub-loans made in the first two years were larger than expected and made predominantly to established settlers who were already receiving credit. The sub-borrowers (Category A) generally completed the investments financed by the sub-loans in one or two years, whereas the appraisal report envisaged investments spread over three years. Partially established settlers (category B) and new settlers (category C) applying for their first sub-loans also completed their investments far more rapidly than the five years and seven years, respectively, projected at appraisal. The draw-down of funds and the total funds required differed substantially from appraisal estimates which, furthermore, appear not to be internally consistent.

3.04 From Annex 2 of the appraisal report, it can be calculated that it was then estimated that the total investment costs necessary to establish 4,500 settlers would be Col$ 342.65 million (US$19 million) equivalent to

US$4,220 1/ per settler. It was assumed that, of this total, 3,500 settlers would have invested Col$ 98.65 million (US$5.4 million) before the project, leaving a balance of Col$ 244 million (US$13.6 million) to be invested over the following seven years (Annex 1). The project, however, was to enter sub-loan commitments phased over three years, which would indicate that investments were to be made over five years, totalling Col$ 168.55 million (US$9.4 million) leaving a balance of Col$ 75.45 million (US$4.2 million) required for post-project investment. In Annex 9, Table 1 and in the main text, paragraph 4.01 of the Appraisal Report, the total investment in farm development is shown as Col$ 135.4 (US$7.52 million), out of which medium-term loans would provide US$4.17 million and settlers' contribution US$3.35 million; only 80% of the financial requirements for the proposed project period derived from the farm investment models (Annex 2 of Appraisal Report) and proposed numbers and phasing of sub-loans.

3.05 An important factor which affected the early development of the project was the sharp increase in local prices although, in dollar terms, this amounted to a smaller proportional increase because of the devaluation of the Colombian peso. It has been estimated that only 16% of the financial gap can be attributed to price increases for which the 10% contingency item was evidently not able fully to compensate.

3.06 The Road Program. The road program was delayed because of the following factors: (a) difficulties caused by the high rainfall, unstable soils and shortages of construction materials; (b) technical and managerial inadequacies of contractors and their field supervisors; (c) procurement deficiencies due mostly to inadequate standards in bidding and contract involving procedures that, together with the remoteness of the area, did not attract reliable companies; and (d) price increases. To a large extent, these difficulties arose from the lack of experience of both the Bank and INCORA with working conditions in the Amazon region.

3.07 Social Infrastructure. As originally agreed between Instituto Colombiano de Construccions Escolars (ICCE) and INCORA, 90 schools were to be built with free labor provided by the beneficiaries. However, it was optimistic to assume that farmers could spend a part of their time for works in the community since, apparently under local conditions, this cannot be expected for such a major operation from people living and working individually on dispersed farms. Consequently, the school program was scaled down to 60 schools and labor had to be financed with project funds. Further, ICCE failed in carrying out its responsibilities and INCORA had to undertake the program.

1/ Exchange rate at the time of appraisal Col$ 18:US$1.00.

The Revised Project

3.08 In September 1973, the project was scaled down as follows:

Revised Physical Targets

Credit Program	Appraisal Estimates (Jan. 1971)	Revised Targets (Sept. 1973)	Results at Completion (1976)
No. of sub-loans for breeding cattle	4,500	1,600	1,716
No. of sub-loans for fattening cattle		300	141
Cattle (no.)	67,000	25,600	28,535
Infrastructure			
Roads (km)	380	200	177
Schools (no.)	90	60	60
Health centers (no.)	6	6	4 /1

/1 Instead of six health centers, four health centers and one hospital were constructed.

The adjustment to the reality, the growing experience of the INCORA's management staff, and the selection of better contractors, combined with a better system for tenders and awarding contracts, improved project implementation.

IV. IMPLEMENTATION

4.01 The project was declared effective on October 19, 1971 and was closed September 30, 1976, 23 months behind schedule. Despite many initial difficulties the project has been successful in transforming squatters into farmers and converting land of low productivity into fairly productive livestock farms.

4.02 Credit Program. The original target was to provide 4,500 settlers with credits for an average of 11 head of cattle during the three-year project period. Initially, the sub-loans were considerably larger than had been intended and, following discussions with the Bank in 1973, INCORA agreed to limit the number of cattle to be financed to 15 for any sub-borrower, with the additional proviso that the number of cattle to be purchased would not bring the herd to more than 25 heads. At completion, about 27,000 cows and 1,500 bulls had been distributed to 1,716 families, receiving 1,907 sub-loans for an amount of Col$ 153 million, or about 89% of total investment in farm development, excluding cattle fattening; the rest was invested in farm improvement and housing. The average sub-loan was Col$ 89,033 per family (US$3,142) covering 15.8 cows and the purchase of 0.9 bulls. The sub-borrowers' contribution of US$3.35 million could not be obtained for purchasing cattle or on-farm improvements as stipulated in the farm models of the appraisal. However, the settler added with his labor for land clearing a considerable value. Since uncleared forest land is abundant in Colombia and has no market value, the price of cleared land is the value of labor input. A sub-loan required a settler's contribution to the project of 5 ha cleared land which had in 1971 a price of about Col$ 30,000 (US$1,660), amounting to about Col$ 51.5 million (US$2.9 million) in total for 1,716 sub-borrowers.

4.03 Research and Forest Reserves were regarded as integral parts of the colonization scheme. In accordance with a contract between INCORA and the agricultural research institute (Instituto Colombiano Agropecuario - ICA), the research work has been satisfactorily carried out (paragraph 8.05). There was little attention paid to the preservation of forest reserves since a Bank supervision mission, which was particularly concerned with the environmental impact of the project, could find little or no adverse effect within the project area. However, in the following project (Caqueta Rural Settlement Project, Loan 1118-CO) a special component was included for forestry and erosion control.

4.04 Land Titling and Technical Assistance were included as essential elements of the project concept and cost, although the Bank loan financed only vehicles, equipment and building construction under the general heading of administration. When the second project was appraised, it was stated that outstanding problems at that time were the lack of technical assistance to farmers, for which no explicit allowance had been made; these aspects therefore are receiving special attention under the second project. About 4,700 land titles covering slightly over 207,000 ha have been issued to farmers in the Caqueta area. After slow progress for the period 1973-1974, averaging 649 titles per year, the topographic and land survey unit reached at the end of the Caqueta I Project its full strength to meet the target of 1,500 titles per year under the Caqueta II project.

4.05 Road Construction. Delays in road construction were principally a result of the difficult physical conditions of the area. The problems of climate, soils, topography and the remote location of the area were, at first, not fully recognized. Thus, although at appraisal, a "few difficulties in finding good road alignments on easy gradients" were anticipated, "unexpected and difficult physical conditions" were later reported during supervision to be important causes of delays and cost increases. During the course of the project, INCORA modified its tendering procedures to bring them into line with the standards of the Ministry of Works. This attracted larger and better qualified contractors but, throughout the project period, there was a nationwide difficulty within the construction industry which had serious problems arising from rapid expansion exceeding financial and managerial capacities. The actual cost of the road network (average US$29,499/km) was almost double the appraisal estimates of US$17,222/km. Funds ran short after expenditures of about Col$ 151 million, or US$5.33 million, which financed only 177 km of roads (47% of appraisal estimates), a bridge over the San Pedro River and a part of the cost of a bridge over the Pescado River, instead of a ferry which proved impracticable (Annex 2). The road program was continued successfully under the second phase of the Caqueta project which included retroactive finance for some items of the first phase.

4.06 Social Infrastructure. The health program was slightly modified: out of six planned health centers, four were completed and one hospital was constructed at Cartagena del Chaira instead of the two other health centers (Annex 3). The equipment had been provided by the Ministry of Health; however, it has been difficult to employ enough personnel. The school program was reduced from 90 to 60 schools (Annex 4) during the project revision in 1973. INCORA constructed the schools and the beneficiaries furnished the classrooms. However, there is a lack of teaching material 1/ and there is no correct census of how many children of the region are attending the schools. According to local teachers, each school has about 50 students and the capacity is currently almost fully used.

V. PROCUREMENT, COST AND DISBURSEMENT

5.01 The construction of road works was carried out under contracts with local firms. These contracts were advertised according to the Bank's procedures for international competitive bidding, but there never was any response from foreign firms due to the low value of the contracts (the largest of which was about US$1 million), the relatively low unit costs offered by local contractors, and the remoteness of the area. INCORA had serious problems in attracting competent contractors and establishing tendering procedures appropriate to conditions in Caqueta. A supervision report mentioned that cutthroat bidding and unrealistic price adjustment formulae led the majority of the contractors to work with insufficient profit margins. Furthermore, credit sources were limited and some contractors claim that their financial charges corresponded to as much as 30% of their operating costs. INCORA revised the procedures for evaluating tenders, giving more weight to the managerial capacity of the applicants, and also adjusted the price formulae so as to attract more experienced and reliable contractors, as in fact has happened with a considerable improvement in the road construction program. In all, 18 contracts for road and bridge construction and four for health buildings were awarded under the project.

5.02 The total project expenditure as of September 30, 1976 (Annex 5) and project cost and financing are presented in Annex 6; the allocation of the Bank loan is shown in Annex 7 and the schedule of disbursement in Annex 8.

1/ Which will be provided for 500 schools under the Second Caqueta Project.

The Bank loan financed about 40% of the total project cost and not 38% as originally approved. Loan disbursements for farm development amounted to US$3.8 million instead of US$2.9 million of the appraisal estimates (Annex 6).

5.03 The seasonal inputs shown in reports from INCORA totalled Col$ 91.5 million over the project period. These inputs were financed by short-term credit provided by Caja Agraria and INCORA repayable within a year and the maximum amount of seasonal lending of Col$ 28.7 million for one year was disbursed in 1972 at the beginning of the project. The accumulated amount of Col$ 91.5 million was included in Annex 6 for project costs and financing.

VI. AGRICULTURAL AND SOCIAL IMPACT

6.01 In most agricultural projects, completion of investment for livestock and on-farm developments is far ahead of the full development of output. This is particularly true in settlement projects like Caqueta. Many years must elapse until farms reach their final structure, full herd development and stable size. Thus, production data shown in this report should be considered as giving only an interim picture. At the request of the Bank, INCORA carried out a survey in October 1976 of 38 out of about 600 farms with more than three years in the program. Although the sample of the number of farms is small and not completely representative, it helps to make a tentative judgment and shows the trend. The 38 farms were divided into five categories, according to the number of cattle they purchased with sub-loans under Loan 739-CO.

Farm Category	No. of Cattle	No. of Farms
I	10	8
II	11-15	9
III	16-20	7
IV	21-25	9
V	26-30	5

	Prior to Receiving Credit (1971)	At Completion (October 1976)	Difference	
	number	number	number	%
Total farm area (ha)				
Aggregate	3,179	3,676	+497	+15.6
Average farm size	84	97	+ 13	-
Total area under pasture (ha)				
Aggregate	1,785	2,693	+908	+50.9
Average	47	71	+ 24	
Total cattle (no. of head)				
Aggregate	740	1,894	+1,054	+142.4
Average	19	50	+ 31	-

Livestock Development

6.02 The average initial size of farms was 84 ha, with 19 head of cattle on 47 ha of pasture. These were partially developed farms and not new settlers. This is in accordance with the estimates of the appraisal that about 70% of the loan should first benefit established farmers having a low income. The size of the pasture area was generally twice as big as necessary for the number of cattle. This confirms that these farmers lacked capital but had a good potential for further development. The first Caqueta project was concentrated particularly on these farmers in order that they might attain their agricultural potential (Annex 9).

Farm Development

6.03 The increase of farm land was not only achieved by clearing more forest but also by purchasing farm land cleared by pioneering settlers who moved on as the frontier of development advanced. This process of enlarging farms by purchase was accelerated by the soaring cattle prices. Although this development is not yet critical for the social structure of the area, INCORA is watching this process carefully and may have to intervene to avoid serious distortions in the equity of land ownership in the area. Two other significant developments have been noted: some few farmers have employees working on the farm while they live in the nearest town (Florencia) to run another business, and, in some instances, small farmers have sold their cleared land in order to obtain cash. Then, having spent a large portion of this cash, they have moved on again as squatters in a frontier area.

Cultivation of Field Crops

6.04 Settlers start with forest clearing and the cultivation of crops for subsistence and sale in the first year. They use the virgin soil for about three years until they have sufficient land cleared and can afford to purchase pasture seed or planting material. This primitive form of agriculture provides the basis for developing the first 5 ha of pasture which is a condition for a sub-loan and the purchase of some cows. As the farm activities change to livestock production, and when the farmer receives his first sub-loan, the cultivation of field crops is reduced to subsistence level because it is not economical to produce large crop surplus since there is only limited local market for crop products.

Overall Assessment

6.05 Most sub-loans were made to established farmers with an average herd of 19 heads of cattle and, only to a minor extent, to settlers beginning their farm development. It appears that this decision was correct since (a) it takes several years before a settler in the frontier area is linked to the infrastructure system, which is a precondition for including him in a lending and extension service; and (b) the established farmer still has a low-level income and productivity and lacks the capital essential for further sound farm development. Although the target group of the project did not include the poorest in that area, practical experience has shown that, after providing the more accessible and established settlers with credit, the squatters starting with colonization at the frontier have derived some indirect benefits from INCORA's lending program. This is because as the roads penetrate into the frontier zones and the good experiences of the more established settlers are observed the pioneers are encouraged to seek assistance from INCORA.

6.06 During the project period the value of livestock tripled while the area of pasture was doubled. The impact, however, on lifestyle and standard of living has been less than expected. The expenditure for better housing and hygienic facilities on the farm and for education has remained low, but this pattern will probably be modified through more intensive education efforts. On the other hand, the farmers should accumulate capital, principally livestock, which after some years would lead to a sounder enterprise rather than to spend it for an unduly high consumption to demonstrate that a high standard of living is achieved under the project.

6.07 The mission which prepared the completion report also reviewed the performance of two groups of sub-borrowers: (a) 251 farmers, 63 of whom received sub-loans in 1972, the first year of the program in the credit zone of Doncello; and (b) 181 farmers, 84 of whom received sub-loans in 1973, the first operative year in the credit zone of Valparaiso. The first group started repayment in 1976 and the second started repayment in 1977. Observations were as follows:

(a) about 18% of beneficiaries dropped out of the project due to failure to comply with conditions of the subloans and other various reasons, 71% remain in the program with satisfactory performance, and 11% cancelled the loan on their own initiative;

(b) those remaining in the program repaid 116% (including advance payments) in 1976, which shows that their position is fairly sound; and

(c) reports from INCORA supervisors, confirmed during the mission by direct interviews with farmers, indicated that these figures are representative of the general pattern throughout the project area.

6.08 Under the project, the average investment per family for farm development was about US$4,900 (1,716 beneficiaries). The total investment excluding seasonal expenses but including transport and social infrastructure (12,500 beneficiaries) was about US$5,600 (Annex 10).

VII. RATE OF RETURN

Economic Rate of Return

7.01 In calculating the project rate of return to the economy, actual investment costs were adjusted to the Colombian peso of 1972, using the GDP deflator whose annual values, together with the price indices and average exchange rates, are shown in Annex 11. Farmgate prices used in the calculations are given in Annex 12. The farm investment models prepared for the second phase of the project (Loan 1118-CO, Appraisal Report 501a-CO) were used, with minor adjustments, to estimate the economic benefits to be expected from the first project, since these models are representative of the developments taking place on typical farms. On these bases, if costs and benefits are discounted over a period of 23 years, 1/ the economic rate of return of the project is calculated to be about 17% (Annex 13). To provide a basis for comparing economic rates of return obtained at completion with the previous estimates, the following assumptions should be noted:

1/ Sub-loans have been made throughout the period 1972-75; thus, considering a period of 20 years per farm, the project economic life would be 23 years.

	Present Completion Report	1973 Revision During Caqueta II Appraisal	Original Project Appraisal
Investments			
Public sector	Base of comparison	Slightly below base (fewer sub-loans, more km of roads)	Well below base (costs of roads and livestock underestimated)
Private sector	Disregarded	Disregarded	Computed
Benefits			
Farms during development period	Base of comparison	Slightly below base (fewer farms)	Higher than base (more farms)
Roads	Computed	Computed	Disregarded
Final capital value	Computed	Computed	Disregarded
Economic Rate of Return	17%	15%	16.5%

7.02 Farmers participating in the project have reached or are likely to reach a financial position which is acceptably sound and notably higher than settlers in similar conditions who do not participate in the project. On the other hand, except for a few, most participating settlers have not improved their standard of living, which is probably due to educational constraints. A few, however, have improved their houses, spent more money for food, and clothing, and even kept their children in school through to high school level in Florencia. Two factors have contributed to consolidate the settlers' position: the sharp increase of cattle prices and the favorable terms and low interest rate, which are:

(a) terms: 10 years, including a three-year grace period;

(b) amortization: seven annual payments at the end of years 4 to 10, these payments being as percentages of principal 5, 10, 10, 15, 20, 20, 20; and

(c) interest rate: 8% p.a. to be computed on the amount of annual rate of 6.3% which is clearly a subsidized rate in relation to the price index (Annex 10).

At completion, farmers who received a sub-loan in 1972 had an average annual income of about Col$ 45,000 or about US$1,280 per family.

Financial Rate of Return

7.03 When the cash flow of an average farm is discounted over a 10-year period, the loan maturity period, the financial rate of return in about 24%. The return to a settler's equity, estimated as the market value of a 100-ha farm, with some 20 ha of cleared land (about Col$ 40,000 to Col$ 50,000), would be about 40%.

VIII. INSTITUTIONAL PERFORMANCE

8.01 INCORA. In 1961, the Colombian Government established the Instituto Colombiano de la Reforma Agraria (INCORA) to be the public entity responsible for modifying the inequitable pattern of land ownership. INCORA has responsibility for the administration of 11 colonization projects, not all of which it initiated itself. For the major colonization projects, approximately 53.5% of development expenditure has been directed to credit, 43% to roads, 2.5% to school construction and 1% to health facilities, and this is similar to the allocation of funds in the project. Historically, colonization projects have accounted for approximately 20% of INCORA's direct project expenditure.

8.02 At the start of the project, the INCORA project unit experienced many difficulties; an important underlying problem was the lack of a definition of the duties of the deputy project director. However, during project implementation and after the staff was brought to full strength, INCORA's performance for this project improved considerably and it is currently one of the most effective INCORA projects. The field staff is competent and dedicated, led by an excellent project manager. Headquarters staff performance in connection with the project was also satisfactory and the quarterly reporting was usually punctual and gave the necessary information. The Project Unit also prepared a completion report. INCORA, however, is now faced with a serious cutback of its activities in all fields except land distribution and land titling.

8.03 Banco Ganadero. In general, the performance of the Banco Ganadero, the banking agent of INCORA for the First Caqueta project, was satisfactory. However, some constraints should be mentioned. On some occasions, Banco Ganadero purchased more cattle than the project could absorb. The maintenance of these cattle for up to a year increased the price considerably for the sub-borrower who had to purchase them from Banco Ganadero, and, second, the employment of the necessary field staff for supervision was often delayed by administrative restrictions which impeded the implementation of the project.

8.04 CECORA. Central de Cooperativas de Reforma Agraria (CECORA) and INCORA signed an agreement for provision of about 300 sub-loans for cattle fattening in cooperation with the Cooperativa Agropecuaria (COPERAGO) de Caqueta. After issuing 141 sub-loans totalling about Col$ 4.3 million, the program was cancelled at the end of 1974 due largely to administrative difficulties between CECORA and COPERAGO. Neither organization was prepared to handle these credits properly and it seems that there was not sufficient preparation before starting the program.

8.05 ICA. The Instituto Colombiano Agropecuario (ICA) is working at the experimental farm of Macagual on several topics, those more directly related to the project being: (a) pasture improvement; (b) cattle genetic improvements; and (c) herd management. ICA, with a realistic approach, is carrying out straightforward experiments such as introducing leguminosae/gramineae association for pasture improvement, producing crossbred cattle, and using rotational grazing. Results obtained so far are encouraging; the carrying capacity obtained at Macagual is 1.4 head/ha in comparison with an estimated average of 0.8 head/ha for the entire project area. Under the follow-up project, special efforts are being made to transfer these results to farmers through a more effective extension service.

8.06 ICCE. ICCE did not comply with the requirements of the contract concluded with INCORA, as explained in paragraph 4.04. After this experience, the Bank should be reluctant to consider ICCE for carrying out components in other projects until a major improvement in performance is assured. Unfortunately, ICCE is again involved in the implementation of Caqueta II (Loan 1118-CO), with apparently the same poor results. ICCE is also scheduled to provide school furniture and teaching equipment under the Integrated Rural Development Project (Loan 1352-CO).

IX. BANK PERFORMANCE

9.01 The Bank underestimated the technical and managerial difficulties of implementing a project in a remote area at the edge of the Amazon basin. Fortunately, after revision in September 1973, the project had new attainable targets which have been almost completely achieved.

9.02 The main analytical problem arose from the design of farm models in which the investment period exceeded the project period of three years, without indicating the source of funds to complete the farm development. This was corrected during the revision of the project in September 1973 by reducing the number of beneficiaries and setting attainable investment targets.

9.03 In the road program, delays caused by soil and climate conditions might have been reduced by more complete studies before implementation, but this would have further delayed the initiation of the project as a whole. The problem of attracting reliable contractors for construction work was underestimated, but was eventually overcome with better tendering and contracting procedures. Finally, the contingencies of 10% for equipment, construction and administration were apparently too low for this type of innovative project.

X. CONCLUSIONS

10.01 The Caqueta Land Colonization Project is demonstrating, probably for the first time in South America, that a squatter can be assisted to settle permanently and establish a farm providing a reasonable living for himself and his family. The project has already shown the feasibility of productive land use in the Amazon basin.

10.02 The project concept was developed by INCORA after a long period of practical experience of trial and error. Apparently, there are three main reasons for the general success of the project: first, the settlers selected for the credit program had already cleared enough forest land to cultivate sufficient field crops for their subsistence and 5 ha for pasture; thus only the most reliable and persistent settlers had access to the credit program; second, INCORA prepared the land titles, farm investment plans, a credit program for livestock development and on-farm improvement, and eventually provided technical and financial supervision by specialized field personnel; and, third, INCORA developed the social infrastructure and road system for the project area.

10.03 The following point should be noted as being of more general relevance:

(a) whether or not it is necessary to have consistency between the investment periods of illustrative farm models and the period of investment under the project (para 3.03);

(b) difficulties in road construction in remote areas of colonization (paras 3.06 and 4.05); and

(c) the sound basic concept (para 1.01), implemented by a competent field staff and regular Bank supervision and support, finally led to the successful development of the project.

10.04 This interim analysis of the project can only be concluded when settlers have repaid their sub-loans and the farms have a stabilized input and output structure. The Caqueta I Land Colonization Project has been continued with a second phase and the experience collected under the first project had a major influence on the second project.

May 9, 1977

ANNEX 1

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Farm Development Cost
(Col$ million)

	Project Period			Farm Development Period 1/		
Investment Period (year)	3	3	3	3	5	7
Farm Model	A	B	C	A	B	C
Number of Models	2000	1500	1000	2000	1500	1000
Sub-loan	20.0	60.0	17.0	20.0	60.0	50.0
Settler's Contribution	35.6	23.0	13.0	35.6	40.2	38.2
Sub-total	55.6	83.0	30.0	55.6	100.2	88.2
Total	168.6 2/			244.0		

1/ Derived from Appraisal Report; Annex 2, Tables 2 and 4.

A - Partially established settlers, currently receiving credit

B - Partially established settlers, currently not receiving credit

C - New settlers

2/ Total investment for farm development was only Col$ 135.4 million in the appraisal report.

ANNEX 2

COLOMBIA
CAQUETA LAND COLONIZATION PROJECT
(LOAN 739-CØ)
Investment for Road Construction

CONTRACT		1971	1972	1973	1974	1975	Total
		(Col$'000)					
		A. Studies					
089/70	Valparaíso-La Solita	580,170 1/	-	-	-	-	580,170
090/70	Maguaré-Rionegro-C2	448,244 1/	-	26,586	-	-	474,830
092/70	Albania-Curillo	745,874 2/	-	-	-	-	745,874
105/70	Rionegro-C-2 y Líbano-Peneya	216,406 1/	-	-	-	-	216,406
228/70	Estudio de Suelos (Líbano-Peneya)	52,892 3/	-	-	-	-	52,892
229/70	C-10 Rio Bodoquero y C-11-Bodoquero	302,105	-	-	-	-	302,105
231/70	Líbano-Peneya	352,205	-	-	-	-	352,205
232/70	La Esmeralda-Puerto Manrique	143,550	-	-	-	-	143,550
256/70	Estudio de Suelos (Albania-Curillo) Valparaíso-La Solita	160,544	-	-	-	-	160,544
288/70	B-1 Río Guayas-Río Caguan	401,144	-	-	-	-	401,144
074/71	B-2 Río Guayas	119,214	-	-	-	-	119,214
134/71	Riecito-C-2	489,225	430,537	-	-	-	919,762
163/71	C-6-C-8	58,500	114,764	-	-	-	173,264
166/71	C-5-Río Peneya	58,500	-	125,950	-	-	184,450
085/72	C-8 San Antonio	-	216,781	24,641	-	-	241,622
009/73	Air photographs	-	-	304,500	-	136,246	440,746
074/73	Soil Studies	-	-	221,061	76,830	-	297,891
076/73	Photo interpretations	-	-	640,000	960,000	0	1.600,000
	Subtotal	4,128,573	762,282	1,342,738	1,036,830	136,246	7,406,669
		B. Construction					
144/71	Líbano-Peneya	185,000	1,685,182	602,638	464,903	-	2,937,723
145/71	Albania-Curillo	217,500	1,457,005	-	5,112	-	1,679,617
149/71	Maguaré-Rionegro	1,012,500	2.602,033	2,126,660	495,011	-	6,236,204
250/71	La Esmeralda-Puerto Manrique	-	2,342,446	2,157,576	1,003,463	-	5,503,485
253/71	C-11-Río Bodoquero	-	877,604	303,988	145,787	-	1,327,379
254/71	C-10-Río Bodoquero	-	808,046	601,509	31,137	-	1,440,692
099/72	Valparaíso-La Solita	-	1,900,000	1,004,905	92,634	-	2,997,539
004/73	Cajamarca-Bodoquero	-	-	1,927,044	210,198	-	2,137,242
096/73	Albania-Curillo	-	-	2,239,740	6,009,038	3,614,878	11,863,656
100/73	Transportable bridge	-	-	-	623,600	-	623,600
157/73	Líbano-Peneya	-	-	4,559,250	12,859,308	8,868,210	26,286,768
168/73	C-5-Río Peneya	-	-	-	5,247,895	3,503,054	8,750,949
173/73	C-11 Río Bodoquero	-	-	-	6,050,236	3,021,208	9,071,044
091/74	El Aguila-B1-Río Caguan	-	-	-	7,628,670	4,987,251	12,615,921
100/74	Doncello-Maguaré-Rionegro	-	-	-	3,818,985	4,984,004	8,802,989
106/74	C-10 Rio Bodoquero	-	-	-	2,505,653	2,695,356	5,201,009
112/74	Valparaíso-La Solita	-	-	-	6,343,292	339,117	12,682,409
136/74	C6-C8	-	-	-	1,712,000	3,840,869	5,552,869
160/74	Bridge Río Pescado	-	-	-	500,000	811,887	1,311,887
	Subtotal	1,415,000	11,672,316	15,523,310	55,746,922	42,665,834	127,022,982
		C. Supervision					
195/71		300,000	1,947,332	-	-	-	2,247,332
122/72		-	500,000	1,994,341	-	-	2,494,341
		-	-	-	3,400,792	-	3,400,792
115/74		-	-		2,513,085	2,885,090	5,398,175
	Subtotal	300,000	2,447,332	1,994,341	5,913,877	2,885,090	13,540,640
	Grand Total	5,843,573	14,881,930	18,860,389	62,697,629	45,687,170	147,970,291

1/ Expenditure in 1970.
2/ US$496,248 paid in 1970.
3/ US$19,740 paid in 1970.

May 3, 1977

May 3, 1977

ANNEX 3

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Investment for Health Facilities

(Col$'000)

Contract	Item		1973	1974	1975	1976	Total
	Health Centers						
001/73	San Jose del Fraguacha	- Health Center	245,083	20,000	-	-	265,083
002/73	Cartagena del Chaira	- Hospital	1,016,751	655,163	-	-	1,671,914
154/74	Santa Rosa del Caquan	- Health Center	-	110,573	288.524	-	399,097
155/74	Yurayaco	- Health Center	-	161,123	179,593	-	340,716
	La Union	- Health Center	-	-	-	360,343	360,343
	Total		1,261,834	946,859	468,117	360,343	3,037,153

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)
(Col$)

Investment for Schools

	Name of Schools	Municipality	1972	1973	1974	1975	1976	Total
1.	La Libertad	Curillo		30,005	32,942			62,947
2.	Berlin	Albania	60,060	35,665	159			95,884
3.	Las Iglesias	San Jose			207,031			207,031
4.	Azabache	Belen			285,719			285,719
5.	Bagazal	Belen		46,633	28,082			74,715
6.	Chapinero	Belen			199,644			199,644
7.	El Salado	Belen			194,296			194,296
8.	Sarabando Medio	Belen		106,110	4,601			110,711
9.	Bocana Aguacaliente	Morelia				252,906		252,906
10.	Carnicerias	Morelia				251,493		251,493
11.	Kilometro 13	Morelia	82,030	67,685	3,232			152,947
12.	Palmarito	Morelia				284,435		284,435
13.	Pueblitos Bajos	Morelia			234,882			234,882
14.	El Paraiso	Valparaiso				269,810		269,810
15.	Florida Nueva	Valparaiso				120,562	19,237	139,799
16.	San Pedro Bocana	Valparaiso				256,394		256,394
17.	Trocha Seis	Valparaiso				19,008	267,983	286,991
18.	Caldas	Florencia		176,870				176,870
19.	La Holanda	Florencia				235,420		235,420
20.	La Miranda	Florencia				257,899		257,899
21.	La Paila	Florencia				186,127		186,127
22.	Maracaibo	Florencia				303,879		303,879
23.	Norcacia	Florencia				137,067		333,268
24.	Santana La Culebra	Florencia				249,301		249,301
25.	Turbia Abajo	Florencia			228,207			228,207
26.	El Triunfo	Montañita		126,614	15,475			142,089
27.	La Tigrera	Montañita				289,795		289,795
28.	Palma Azul	Montañita				271,846		271,846
29.	Corea	Paujil				162,523		162,523
30.	La Cristalina	Paujil			233,174			233,174
	Sub-total carried forward		142,090	589,582	1,667,444	3,548,464	483,422	6,431,002

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)
(Col$)

Investment for Schools

	Name of Schools	Municipality	1972	1973	1974	1975	1976	1977
	Sub-total brought forward		142,090	589,582	1,667,444	3,548,464	483,422	6,431,002
31.	La Estrella	Paujil				240,562		240,562
32.	Los Alpes	Paujil	66,150	40,469				106,619
33.	San Juan	Paujil				255,125		255,125
34.	Santa Teresa	Paujil				240,673		240,673
35.	Achapo	Doncello	44,609	69,300	14,510			128,419
36.	El Cafeto	Doncello	11,560	63,043				74,603
37.	El Carmen	Doncello			29,906			29,906
38.	El Cerindo	Doncello				249,778		249,778
39.	La Ceiba	Doncello				276,908		276,908
40.	La Trinidad	Doncello				308,426		308,426
41.	Los Alpes	Doncello				236,151		236,151
42.	Palma Abajo	Doncello				183,021		183,021
43.	Tigra Cartuja	Doncello				244,212		244,212
44.	Trocha A. San Pablo	Doncello				254,255		254,255
45.	Trocha D. La Libertad	Doncello				202.505		202,505
46.	Trocha E. Maguare	Doncello	117,419	52,196				169,615
47.	Trocha E. Nemal	Doncello				255,639		255,639
48.	Trocha F. Maguaré	Doncello	18,587	39,776	53,224			111,587
49.	El Aguila	Puerto Rico				254,119		254,119
50.	El Aguililla	Puerto Rico				292,292		292,292
51.	El Recreo	Puerto Rico				278,940		278,940
52.	La Esmeralda	Puerto Rico	26,810	85,568	24,900			137,278
53.	Lusitania	Puerto Rico	42,756	56,654				99,410
54.	Caiman Alto	San Vicente				206,215		206,215
55.	Los Espejos	San Vicente				32,542	307,938	340,480
56.	Luz Perdida	San Vicente				42,762	139,574	182,336
57.	Santa Rosa	San Vicente				157,186	189,403	346,589
58.	Lusitania II	Cartagena				83,955	258,585	342,540
59.	El Carmen	Solano			112,837	6,524	54,000	173,361
60.	La Esperanza	Solano			118,654	103,186		221,840
		TOTAL	469,981	996,588	2,021,475	7,953,440	1,432,922	12,874,406

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

Project Cash Expenditures

	(Col$'000)						(US$'000)					
	1972	1973	1974	1975	1976	Total	1972	1973	1974	1975	1976	Total
Lending program for farm development												
Livestock	14,229	44,594	36,910	18,064	-	113,797	622	1,792	1,287	546	-	4,247
Other	3,142	11,010	11,510	6,544	-	32,206	137	442	401	198	-	1,178
Sub-Total	17,371	55,604	48,420	24,608	-	146,003	759	2,234	1,688	744	-	5,425
Cattle fattening program	1,000	1,000	2,000	-	-	4,000	44	40	70	-	-	154
Road development												
Design	4,891	1,343	1,037	136	-	7,407	213	54	36	4	-	307
Construction	13,087	15,523	55,747	42,666	-	127,023	572	624	1,943	1,289	-	4,428
Supervision	2,747	1,994	5,914	2,885	-	13,540	120	80	206	87	-	493
Sub-Total	20,725	18,860	62,698	45,687	-	147,970	905	758	2,185	1,380	-	5,228
Health Centers	-	1,262	1,531	779	530	4,102	-	51	53	24	15	143
Schools	470	997	2,021	7,953	1,433	12,847	21	40	70	240	41	412
Administration												
Current expenditures	17,465	10,173	15,296	17,395	5,502	65,831	763	409	533	526	156	2,387
Vehicles equipment	-	869	61	1,884	295	3,109	-	35	2	57	8	102
Buildings	404	109	1,433	786	963	3,695	18	4	50	24	27	123
Sub-Total	17,869	11,151	16,790	20,065	6,760	72,635	781	448	585	607	191	2,612
Seasonal input	28,703	16,890	15,493	25,602	4,810	91,498	1,254	679	540	774	137	3,384
Total	86,138	105,764	148,953	124,694	13,533	479,082	3,764	4,250	5,191	3,769	384	17,358

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

Project Cost and Financing

(US$ million)

	Sub-borrowers	Government	Bank	Total	Foreign Exchange US$	Foreign Exchange %
Road Development						
Appraisal	-	1.97	4.59	6.56	3.28	50
Actual	-	1.50	3.73	5.23	2.62	50
Farm Development						
Appraisal	3.35 5/	1.25	2.92	7.52 1/	0.39	5
Actual	2.9	1.81	3.77	8.48	0.42	5
Administration						
Appraisal	-	1.49	0.13	1.62	0.28	18
Actual	-	2.46	0.14	2.60	0.08	3
Health & Education						
Appraisal	-	0.20	0.46	0.66	0.26	40
Actual	-	0.15	0.41	0.56	0.22	40
Seasonal Inputs						
Appraisal	3.45 4/	1.17 3/	-	5.22 2/	1.30	25
Actual	2.78	0.60	-	3.38	0.85	25
Total						
Appraisal	6.80	6.68	8.10	21.58	5.51	25
Actual	5.69	6.52	8.05	20.26	4.19	21

1/ US$4.17 million to be lent through Banco Ganadero.
2/ US$1.77 million to be lent through Caja Agraria.
3/ Short term loans by INCORA.
4/ Short term loans by Caja Agraria.
5/ Settler's contribution is 5 ha cleared land with a market price of Col$ 6,000/ha since uncleared forest land has no market price.

June 30, 1977

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Allocation of Bank Loan

US$'000

Categories		Appraisal Estimate Jan.1970	Revision Feb.12,1973	Revision Aug.12,1974	Disbursement at Completion Nov.4,1976
1.	Long-term agricultural loans	2,630	2,130	3,470	3,589
II.	Cattle Fattening Program	-	500	250	185
III.	Designs and construction of roads	4,130	4,130	3,800	3,729
IV.	Vehicles, equipment and building for administration	120	120	120	144
V.	Construction of schools and health centers	420	420	460	406
VI.	Unallocated	800	800	-	-
	Total	8,100	8,100	8,100	8,053

May 9, 1977

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Schedule of Disbursements
(US$ million)

Bank Fiscal Years & Semester	Appraisal Estimate 1	Actual Total Disbursements 2	Actual Disbursements As Percentage of Appraisal Estimate %
1970/71			
2nd	0.2		
1971/72			
1st	1.67		
2nd	3.17	0.40	12.6
1972/73			
1st	4.86	0.50	10.3
2nd	6.26	1.60	25.6
1973/74			
1st	7.26	3.20	44.1
2nd	8.10	3.97	49.0
1974/75			
1st		6.50	80.3
2nd		7.50	92.6
1975/76			
1st		7.90	97.5
2nd		8.05	99.4
1976/77			
1st		8.05	99.4
	Closing Date: September 30, 1976		

April 29, 1977

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Development of Livestock Value Under Loan 739-CO

In 38 selected farms
October, 1976

1	2	3	4	5	6	7	8	9
Farm Category	No. of Cattle Purchased under Sub-loan 1972	Value of Purchased Cattle 1972	No. of Cattle before Sub-loan 1972	Value of Cattle before Sub-loan 1972	Total Value after loan 1972	Total Value 1976 1/	1976 Herd value in 1972 Col$ 2/	1976 herd value (1972 Col$) as % of value in 1974 before subloan
I	10	25,000	20	50,000	75,000	165,000	84,400	169
II	13	32,500	19	47,000	79,000	174,900	89,500	190
III	18	45,000	28	70,000	115,000	253,000	129,000	185
IV	23	57,500	36	90,000	147,500	324,500	166,000	184
V	28	70,000	49	122,500	192,500	434.500	222,300	181

1/ 1970 price per cow Col$ 2,500
1976 price per cow Col$ 5,500

2/ 1976 price index 195.5; see Annex 11.

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

Investment per Family at Completion (1976)

	Total Project US$ million	Number of Families Benefitting	Average Per Family US$
Investments			
Farm development	8.48	1,716	4,942
Road development	5.23	12,500	418
Administration	2.60	12,500	208
Health & education	0.56	12,500	45
Sub-Total	8.39		671
Total	16.87		5,613
Operations			
Seasonal farm operations	3.39		
Cattle fattening	0.14	141	1,000

May 9, 1977

COLOMBIA

CAQUETA LAND COLONIZATION
(Loan 739-CO)

	GDP Deflator	Average Exchange Rate	Price Index
	%	US$1:COL$	
1970	9.8	19.17	
1971	10.4	21.50	
1972	13.4	22.88	100.0
1973	22.0	24.89	122.0
1974	27.2	28.69	155.2
1975	20.0	33.09	186.2
1976	26.0	35.19	195.5

Source: Bank.

May 3, 1977

COLOMBIA

CAQUETA LAND COLONIZATION PROJECT

(Loan 739-CO)

Farmgate Prices

(Col$)

ITEM	1972	1973	1974	1975	1976
Corn (kg)		3.10	3.30	3.70	4.30
Rice (kg)		1.79	2.89	3.68	3.64
Steers for fattening	1,400	2,400	2,950	2,900	4,500
Cow and calf	3,300	4,100	5,380	5,900	7,500
Heifers	2,300	2,900	3,850	3,700	5,500
Breeding bulls	6,300	7,300	9,700	12,800	18,000

Source: Instituto de Mercadeo Agropecuario (IDEMA)

May 9, 1977

ANNEX 13

COLOMBIA

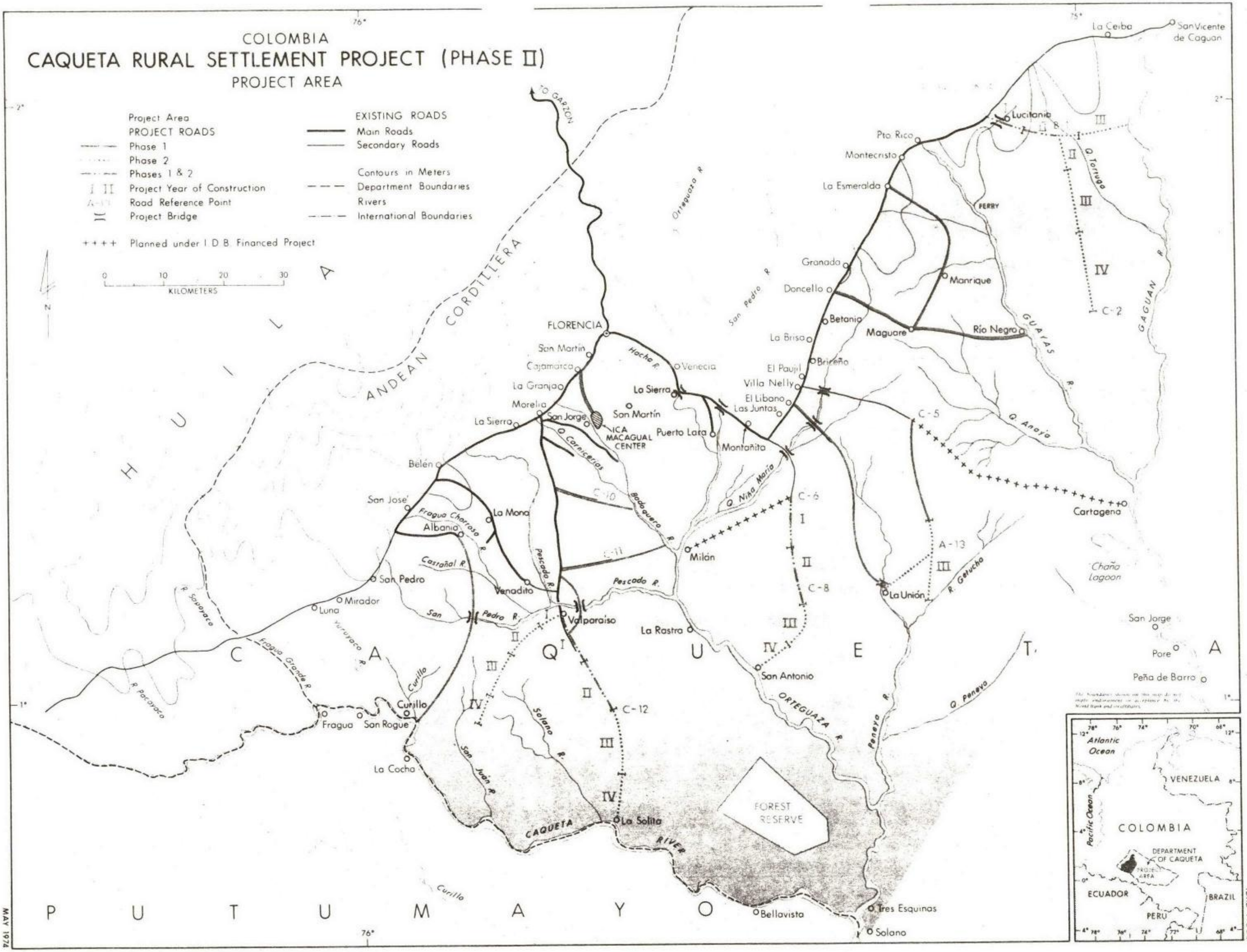
CAQUETA LAND COLONIZATION PROJECT
(Loan 739-CO)

Economic Rate of Return: Benefits and Costs Streams

	Project Gross Benefits							Project Costs	Project Net Benefits
	On-Farm					Roads	Total		
Initial years	1972	1973	1974	1975	Sub-total				
No. of farms	252	770	613	272	1,907				
	(Col$ million)								
1972	2.0	-	-	-	2.0	-	2.0	57.4	(55.4)
1973	2.0	6.2	-	-	8.2	-	8.2	72.9	(64.7)
1974	2.3	6.2	5.0	-	13.5	-	13.5	86.0	(72.5)
1975	4.4	7.1	5.0	2.2	18.7	4.2	22.9	53.2	(30.3)
1976	3.9	13.6	5.6	2.2	25.3	4.5	29.8	4.5	25.3
1977	5.1	11.8	10.8	2.5	30.2	4.8	35.0	8.0	27.0
1978	6.7	15.6	9.4	4.8	36.5	5.1	41.6	8.0	33.6
1979	6.2	20.3	12.4	4.2	43.1	5.4	48.5	8.0	40.5
1980	6.5	18.6	16.2	5.5	46.8	5.7	52.5	8.0	44.5
1981	8.6	19.8	15.0	7.2	50.6	6.1	56.7	8.0	48.7
1982	8.2	26.3	15.8	6.6	56.9	6.5	63.4	8.0	55.4
1983	8.7	25.0	21.0	7.0	61.9	6.9	68.8	8.0	60.8
1984	5.9	26.7	19.9	9.3	61.8	7.3	69.1	8.0	61.1
1985	7.4	18.1	21.3	8.8	55.6	7.8	63.4	8.0	55.4
1986	7.4	22.5	14.4	9.4	53.7	8.3	62.0	8.0	54.0
1987	7.2	22.6	17.9	6.4	54.1	8.8	62.9	8.0	54.9
1988	9.7	22.0	18.0	7.9	57.6	9.4	67.0	8.0	59.0
1989	18.7	29.5	17.5	8.0	73.7	10.0	83.7	8.0	75.7
1990	17.7	57.0	23.5	7.8	106.0	10.7	116.7	8.0	108.7
1991	86.0 1/	54.0	45.4	10.4	195.8	11.4	207.2	8.0	199.2
1992	-	262.6 1/	43.1	20.1	325.8	12.2	338.0	8.0	330.0
1993	-	-	209.1 1/	19.1	228.2	13.0	241.2	8.0	233.2
1994	-	-	-	92.8	92.8 1/	13.9	106.7	8.0	98.7

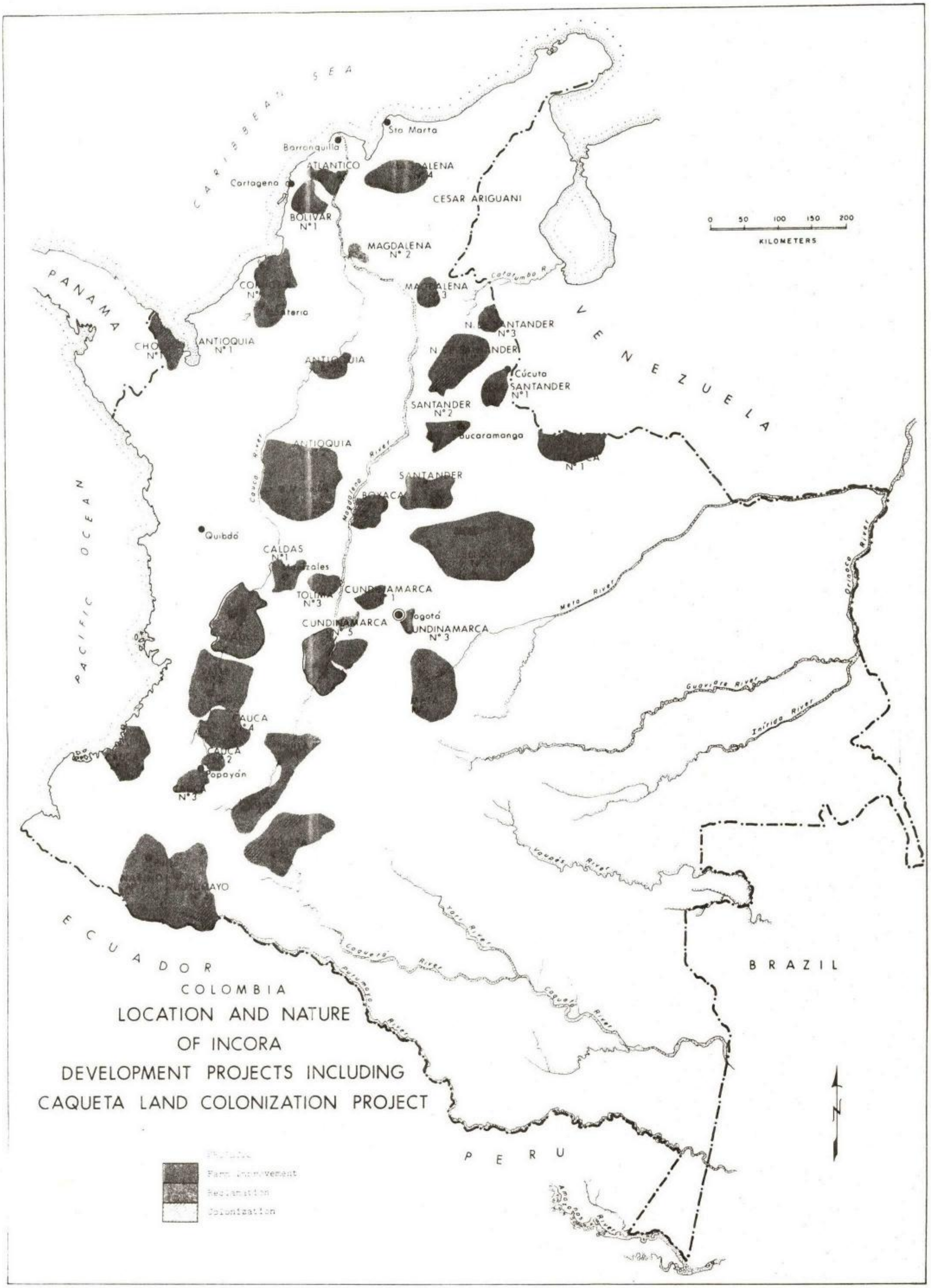
Economic rate of return = 17%

1/ Including final value of herds.



MAY 1974

IBRD 11000



MARCH 1970

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