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7. ESTIMATED COSTS (\$000 OR EQUIVALENT, \$1 = )				FUNDING SOURCE					
A. ADJ				LIFE OF PROJECT 4,150					
B. Other U.S.				1. _____ 2. _____					
C. Host Country				6,600					
D. Other Donor(s)				TOTAL 10,750					
8. PROPOSED BUDGET AID FUNDS (\$000)									
A. APPROPRIATION		B. PRIMARY PURPOSE CODE		C. PRIMARY TECH. CODE		D. 1ST FY		E. LIFE OF PROJECT	
				1. Grant      2. Loan		1. Grant      2. Loan		1. Grant      2. Loan	
(1) ARDN		730				440      850		3,300      850	
(2)									
(3)									
(4)									
				TOTALS					
9. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)						10. SECONDARY PURPOSE CODE			
11. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)									
A. Code									
B. Amount									
12. PROJECT PURPOSE (maximum 480 characters)									

To mitigate the impact of coffee disease on production by adapting and introducing improved production technologies on small coffee farms.

13. RESOURCES REQUIRED FOR PROJECT DEVELOPMENT

Staff: 12.5 person mths. - external consultants for dev. of technical package, credit, social and economic analyses.

5 person/mths. - USDH for economic analysis.

Funds \$138,000 PD&S  
\$ 1,500 OE

14. ORIGINATING OFFICE CLEARANCE		Signature: <i>Cynthia T. Gibetti</i>				15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY 01 31 86			
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18. ACTION APPROVED BY		Signature: <i>Orlando Llenza</i>				19. ACTION REFERENCE		20. ACTION DATE MM DD YY	
		Title: Orlando Llenza Mission Director, USAID/E							

PRIVATE SECTOR COFFEE RENOVATION PROJECT  
(A.I.D. Project No. 518-0054)  
Project Identification Document

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Attachments:

- A. Logical Framework
- B. Scope of Work for Technical Analysis
- C. Scope of Work for Social Soundness Analysis
- D. Economic and Financial Analysis
- E. Initial Environmental Examination (IEE)
- F. Scope of Work for Credit Analysis

## I. Project Background.

A. Summary. Coffee production in Ecuador is an important source of income for over 120,000 families involved in production, harvesting and processing of approximately of 350,000 hectares of land planted in coffee. Approximately 80% of these families cultivate plots of less than five hectares in size. In addition, coffee is a vital export earner, generating between \$150 million and \$200 million in foreign exchange annually. The recent appearance of coffee rust and broca in Ecuador poses a critical threat to the coffee industry as a whole, and particularly threatens the ability of the thousands of smaller producers to stay in production. Unless coffee production technologies are quickly modernized, the majority of small producers will be unable to control rust and broca. Within a few years they could lose most of their coffee trees and the income derived from them.

## B. Socioeconomic Structure of Coffee Production.

1. External Sector. Coffee is Ecuador's third most important export commodity, earning approximately \$170 million in foreign exchange in 1984 and an estimated \$163 million in 1985. It is one of the three most important non-petroleum exports, and competes closely with seafood and bananas as the top non-petroleum foreign exchange earner. Coffee, alone, represents 46% of the total value of agricultural exports.

The International Coffee Agreement, administered by the International Coffee Organization (ICO) and signed in 1980, provides for a system of international coffee export quotas. Ecuador is a member of the ICO and a party to the Agreement. Most non-communist consuming nations have agreed to enforce the quotas. The purpose of the quota system is to maintain base export prices in periods of high world supply. If a country produces more than that which is required to fill its export limit, provide for domestic production, and maintain adequate stocks, the difference may be sold to non-ICO countries, usually at a lower price than quota sales. Quotas are largely determined by projected production levels and stocks. During the 1984/1985 season, exports increased about 20% over the previous year as a result of additional shipments to non-ICO members because of the larger crop and higher domestic storage costs.

2. Domestic Characteristics of Coffee Production. Aggregate coffee production in Ecuador has grown from 82,680 metric tons in 1977 to about 90,000 metric tons in 1984. At the same time, internal consumption is increasing at approximately 4% per year. Most of the domestic consumption in Ecuador is in the form of roasted or ground coffee, while soluble coffee is of increasing importance in urban areas. Coffee for domestic consumption is not subject to price controls, and recent price increases have been accepted in the market. The devaluation of the sucre has resulted in increased sales of domestic solubles as imports have been priced out of the market.

Coffee provides an important source of income for nearly 20% of the Ecuadorean population. There are an estimated 120,000 coffee producing families in Ecuador. Of these, approximately 96,000 farm plots are less than five hectares in size. (Source: National Coffee Program Census, 1984-85) While indications are that many of these families also produce much of the family subsistence requirements, they largely depend on coffee for cash income. Such income may come from two sources: coffee produced on the farm and wages earned by selling surplus farm labor to neighboring farms. Additionally, census figures indicate that a total of over 1,000,000 Ecuadoreans are involved directly in coffee production, harvesting, and processing. This would not include those whose livelihoods depend on coffee marketing and exporting businesses.

There is a considerable amount of variation in living conditions, alternative sources of income, and the importance of the income earned from coffee among the 96,000 smaller producer families. Variations depend on regional conditions, markets, roads, levels of technology, and a variety of other factors. However, certain characteristics are general within this group. While, in the aggregate, they generate a substantial national income, there are thousands of families who have incomes well below the poverty level. They generally produce a very limited amount of other crops and generate little or no cash income from them. They often live in relative geographic and social isolation. Finally, they grow coffee on very old plantations in a manner utilizing technologies extremely susceptible to rust and other diseases.

The typical small coffee producer also grows a subsistence crop and keeps a few domestic animals. While the income derived from coffee is very small for these farmers, it is generally cash over the most basic subsistence requirements. However, for these families, average yields equal about 6.1 quintals per hectare. This translates into gross income per hectare of approximately \$332 (S/.100=US\$1.00), or net income per hectare of about \$165. The farm family with five hectares in coffee, then, would realize about \$825 in net cash per coffee year (15 months), or about \$110 per capita per year. For the farm family with 2.5 hectares in coffee, per capita annual cash income would be half, or \$55.00.

C. Technology of Coffee Production. Coffee production in Ecuador is characterized by extensive production practices and a low level of technology use. In general, plants are old and of less modern varieties. Plant density is low, and shade is heavily used. Irrigation techniques are poor, and fungicide and pesticide controls are not common. Average coffee yields in Ecuador are extremely low, varying between 6 and 8 quintals/hectare. It is important to point out that yield appears to increase very little between the smallest and the largest farms. These low yields are a direct result of the low level of technology utilized on Ecuadorean farms. Average yields achieved on a national level in countries where technology improvement programs have been successful, such as Costa Rica and Honduras, reach 45 quintals/hectare.

The major threat currently facing Ecuadorean producers is disease. Coffee rust and broca have already invaded five provinces and despite natural barriers and sanitation campaigns, it is only a matter of time until the principal coffee producing areas are also infected. The most serious of the diseases threatening production is coffee rust.

Coffee rust, or roya, is considered to be one of the most serious of coffee diseases. Rust first appeared in South America in 1970 when it was found in Brazil. It spread northward in a pattern which missed Ecuador, entering into Central America in the late 1970's. Rust entered Ecuador from Peru in 1981. It is a fungus, spread by any number of agents, which invades the leaves of coffee plants causing pale yellow lesions, an early and persistent loss of foliage, and a resultant loss of yield. Depending on climatological conditions and plant variety, it will defoliate the plant and cause production losses so significant that they force the producer to destroy them. When rust attacks older plantings which already produce low yields, even basic fungicide controls are not economical. While coffee rust is a threat to all coffee producers in Ecuador and to the national economy, it poses the greatest threat to the smaller producer because his trees are generally older, are generally grown under lower levels of technology and are generally less vigorous than those of a larger producers who employ higher levels of technology.

In addition to coffee rust, there are several other insects and fungi present in Ecuador. Coffee broca is an insect which lays eggs in the pulp of developing coffee beans. The larvae enter the bean and can reduce yields up to 70% in the absence of control. Control on old, traditional, low yielding plantations is difficult and, given current yields, not cost effective. Control is a viable practice on renovated farms with higher yields.

Another insect problem present in Ecuador is the leaf minor, but it has no significant impact on production. Other fungi include Ojo de gallo, Koleroga, and Cercospora. None of these represent an immediate threat to coffee production in Ecuador, and control would be a natural result of improved technology use.

Another important aspect of technology use is the amount of initial processing that occurs on the farm. The farmer typically receives a higher price for his coffee depending upon which stage in the production-processing-marketing cycle he sells his crop; that is, farm gate price is proportional to the degree of technology employed. For example, if the farmer is forced to sell his crop at the flowering or fruit (uva) stage of the production cycle, he will typically receive a very low price. If he can sell it after harvesting, washing and initial drying, he will receive a higher price, and so on.

In Ecuador, the typical coffee farmer's position is relatively weak vis-a-vis the market. The poorest producers often have to sell their beans while they are still on the tree (in flower or uva) in order to raise the capital required to harvest the crop. Most sell their crop immediately after initial harvesting because of the lack of basic on-farm infrastructure to wash and dry the beans. With minimal, inexpensive on-farm or cooperative investments (drying patios and depulpers), producers could improve their positions in the market and receive a greater return on their crop.

## II. Relationship of the Project to A.I.D. and GOE Development Strategies.

A. Relationship to A.I.D. Policy. The A.I.D. Policy Paper on Food and Agricultural Development outlines four essential policy elements of assistance: the development of human and institutional capacities to generate, adapt and apply improved science and technology, the expansion of the role of developing country private sectors in development activities, the employment of all available assistance mechanisms in an integrated manner, and the improvement of country policies. The proposed program, as described in more detail in the remainder of this paper, is thoroughly consistent with these policy elements. It is a technology transfer program which builds upon, and strengthens existing domestic private sector capability to adapt and disseminate a proven technology package. Both Development Assistance and PL-480, Title I local currency generations will be used to implement the program. The Mission's preliminary analysis indicates that there exists no GOE policy constraints to introduction of improved coffee production technologies.

An important aspect of US government international policy is support for the International Coffee Organization, including compliance with the International Coffee Agreement. In fact, the United States is one of the only member countries that organizes its negotiations through USDA and State Department channels. In this regard, it is important to stress that the proposed Project does not seek to increase the amount of coffee produced in Ecuador, nor will it be designed to do so. Rather, the Project will seek to maintain current, or recapture previously achieved production levels and, thereby, preserve export earnings. Production per unit area will increase dramatically in order to make control of coffee rust and broca economically viable. Land will thus be liberated for diversification, preferably for other export crops. Introduction of heartier varieties of mild coffees will enable Ecuador to maintain its market share of this coffee variety, which usually commands a higher price (up to 50% higher) on export markets. Through intensive cultivation practices and better production methodologies, coffee quality will improve, thus tending to increase export earnings.

B. Relationship to A.I.D. Country Strategy.

1. Country Development Strategy and Action Plan. The approved Mission agricultural strategy is to support the sectoral structural adjustment process by assisting Ecuador to exploit its potential to substantially increase agricultural production and exports while addressing problems of rural poverty and resource degradation. The CDSS further describes that the strategy will be implemented through institution building activities, technology transfer activities, and private sector participation. The proposed Project is based on the principle of structural adjustment of coffee production utilizing the means described and approved in the CDSS.

2. Complementary A.I.D. and Other Donor Programs. The proposed project does not seek to achieve significant reforms in the policy framework related to internal or external marketing of coffee. It will focus on production and initial processing technologies that can be implemented at the farm level. The Mission's Agricultural Sector Reorientation Project (518-0051) is a major effort aimed at the larger agricultural sector policy framework. A significant amount of activity under that project will result in improved GOE agricultural marketing policies. Policies to be adopted are expected to generally free markets, reduce subsidies, and establish market policies which increase the power of the producer vis-a-vis the marketing intermediary.

There are no other major programs financed by other donors being executed in the coffee sector in Ecuador. A small grant program financed by the Federal Republic of Germany is providing, through the MAG, the services of an entomologist in the Programa Nacional del Café (PNF) and the Programa Nacional de Sanidad Vegetal. Given the limited scope and research, rather than production, orientation of this program, it serves only as a partial complement to the proposed Project.

C. Relationship to GOE Development Strategy. In 1984, the World Bank analyzed and presented an economic stabilization and recovery strategy to the GOE. The recommendations are embodied in the Bank publication, "Ecuador: A Program for Economic Stabilization and Recovery." This presents an export-led stabilization and growth strategy based on Ecuador's ability to maintain, or increase its level of traditional exports over the medium to long term while, at the same time, making the investments necessary to increase the quantity of non-traditional exports. GOE policy reforms and development strategy statements over the life of the Febres-Cordero administration indicate the GOE's intent to follow such a strategy. More concretely, the newly developed and recently published GOE National Development Plan (1985-1988) outlines a development strategy based along the same lines. For example, it emphasizes the diversification and improvement of agricultural exports. Specifically for the coffee sector, the Plan states that the GOE will support the implementation and intensification of efforts designed to renovate and rehabilitate coffee plantations nationwide over the short to medium term. The Plan further indicates that very few GOE resources (about \$200,000) are planned to implement the strategy and that no source of external financing has been identified.

III. Preliminary Project Description.

A. The Problem.

1. The Technical Problem. Extensive production practices and low levels of technology use on coffee farms in Ecuador result in poor land use practices, low coffee yields, low incomes, and a dangerous susceptibility to coffee rust and other diseases on the majority of coffee farms. Rust and broca have already invaded five coffee producing provinces. Despite natural barriers and sanitation programs, it is only a matter of time before the principal production areas are affected. If allowed to continue, the level of coffee production in Ecuador will fall drastically and foreign exchange earnings from this important traditional export will decrease.

2. The Socioeconomic Problem. The technical problem is compounded by the fact that 80% of the coffee farms are small, marginally productive units producing at, or below poverty level incomes for their owners. These producers generally lack the technical expertise and access to financial resources necessary to combat the disease problem, increase productivity, and make cost effective on-farm investments.

3. Alternative Solutions. In the course of Project identification, a variety of alternative technology solutions were examined, as follows:

a. Coffee Rehabilitation vs. Renovation. The PID identifies complete renovation of one hectare on individual farms as the implementation strategy to be used under the Project. This discounts the possibility of providing loans for rehabilitation of existing plantations. Complete renovation means the complete destruction of existing plantings and starting over. Rehabilitation would allow for the introduction of improved management practices, with interplanting of new, stronger varieties of plants with older plants. The past experience of similar programs in other countries indicates a low level of demand for rehabilitation and a low return to investment when it has been attempted. Technically it is a much harder strategy to implement because older varieties of plants usually do not lend themselves to modern plantation management schemes. At the same time, the Mission recognizes that there may exist special circumstances in Ecuador where a rehabilitation technology may make sense technically and economically. As such, this will be a question to be examined during the intensive review of the technology package.

b. Disease Eradication. A common strategy often implemented to enable coffee farmers to survive the threat of coffee rust and other diseases and pests is a national eradication program. Often these are governmental programs involving minor participation of farmers themselves. One of the most comprehensive coffee rust eradication programs was attempted in Nicaragua, and failed. Quarantines were used in Central America and were largely ineffective. In Ecuador itself, the Ministry of Agriculture and Livestock (MAG) has attempted to implement disease control measures with very limited success.

Eradication as a solution to disease control is discredited among coffee experts. The manner in which rust spreads geographically makes it virtually impossible to eradicate, and nationwide chemical control measures are costly to implement and can at best be complementary to other efforts.

c. Introduction of Rust Resistant Varieties. Progress has been made within Latin America in the research and development of rust resistant varieties of coffee plants. Work is currently being carried out in Brazil, Colombia, Mexico, and region wide in Central America and the Carribean. While research indicates that in the long term, the introduction of rust resistant varieties may be possible, as a strategy it offers little in the short to medium term and its success as a long term strategy must be questioned. The principal limitation of a strategy to combat rust through introduction of resistant varieties is the time needed to make new germplasm available. Genetic material with resistance to all 32 known strains of coffee rust (two have been identified in the Americas) has been developed primarily in Portugal and Brazil. In developing hybrids with productive potential, the resistant characteristics must constantly be tested. The possibility always exists that a cross or plants within a cross would not have rust resistance and the dissemination of such plants could be disastrous for both farmers and the national economy. At best, the time needed to develop and test varieties could take 10 to 15 years and perhaps five years of additional work on those tentative crosses already developed. Even if a thoroughly rust resistant variety were introduced, the risk would always exist that the rust fungus could mutate and previously resistant varieties would become susceptible.

As a strategy to address other problems of coffee production in Ecuador which have resulted in such low national productivity, the introduction of rust resistant varieties would do nothing. Rust resistant varieties will still be susceptible to the numerous other diseases that are present in Ecuador. Existing poor plantation management practices would continue, as would the low productivity that results from such practices.

d. Crop Diversification. Under this strategy, the coffee producer would avoid, rather than address, the technical problems facing coffee production in Ecuador by growing something else. As a national strategy, this leaves much to be desired. Export earnings from coffee are important to the country. Ecuador can not afford to lose this income during the period it would take to shift production out of coffee and into something else.

Given the socioeconomic level and land size limitations of the majority of coffee producers, the shift out of a crop that is a sure income earner to "something else" would involve very high risks. There are few crops that provide the cash income that coffee does to the smallest producers. Probably the crop closest to coffee in terms of its production

methodology, income generating potential, and geographic spread is cacao. However, cacao production in Ecuador today is plagued with many of the same problems that affect coffee production, and the GOE is in the process of promoting renovation of that crop. Limited quantities of non-traditional crops could be produced, some even for export, but would require a large cadre of trained researchers, extensionists, and processing and marketing infrastructure. While these will eventually be developed over time, there is not enough in place now to encourage economically marginal families to take the risk.

e. Introduction of an Integrated, Highly Productive Technology Package. While the introduction of resistant varieties and crop diversification should remain part of a longer term strategy to assist small and medium farmers in coffee producing regions, the most effective immediate strategy is to initiate a program of coffee renovation based on the introduction of improved crop management technologies and high yielding varieties. In so doing, on-farm productivity increases will enable the small farmer to afford the cost of chemical disease control, which will enable him to coexist with the presence of coffee rust as well as other natural enemies of coffee.

Coffee renovation technology is available and familiar to coffee researchers and agronomists and has been proven under producer conditions in Colombia, Brazil, Costa Rica and Honduras. This technology package consists of the following elements:

- (1) introduction of newer, heartier varieties;
- (2) increased plant density and better weeding;
- (3) less shade, and better control of shading;
- (4) improved soil conservation practices
- (5) increased fertilizer use and management; and,
- (6) chemical disease and pest control.

Successful introduction of the renovation package will result in increased productivity and income per unit of land area utilized and will require that farmers increase their crop management skills. In this regard, improving the management practices of small farmers will also lay the groundwork for introduction, over the longer term, of some of the other technologies described above. Farmers will be better able to manage and afford rust resistant varieties if they become available and to introduce other crops on land freed from coffee production.

B. Project Strategy. The purpose of the proposed Project is to mitigate the impact of coffee disease on production by adapting and introducing improved production technologies on small coffee farms, thereby contributing to an overall sectoral goal of maintaining exports and increasing rural incomes. To achieve this purpose, the Project will address the constraints to introducing the technology package described above on target farms.

First, to adapt and disseminate the technology package, a specialized cadre of technical extension agents is necessary. Such a cadre presently does not exist in Ecuador, and will have to be established. While the National Coffee Program (PNC) has for some years been involved in a plan of renovation and rehabilitation of coffee farms, the results have been disappointing, and coffee producers have expressed little confidence in that organization. The PNC has been largely concerned with aggregate coffee production rather than providing assistance to individual farmers. The disproportionate ratio of extension agronomists to producers (42 to 120,000) precludes any likelihood that the PNC could provide adequate technical assistance to the entire sector. For this same reason the PNC has been unable to provide effective support to diversification activities, another of its various mandates, although it has strongly endorsed such activities. GOE budgetary considerations over the medium term make it highly unlikely that any additional extension agents could be hired to disseminate the technology package. Given that GOE salary schedules are so inadequate, it is also unlikely that qualified extension agents could be recruited to work on a government program in this area.

Coffee producers in many Latin American countries are among the best organized. Colombia and Brazil, where national coffee policies and quotas are negotiated through producer organizations, are the best examples of this. In most countries with highly developed producers associations, producers are accustomed to paying for the technical advice and services they receive. In other countries, including Ecuador, even though their influence does not reach the level of Colombia or Brazil, coffee producers' associations are among the strongest of the producer associations. The largest organization of producers in Ecuador is the National Federation of Coffee Cooperatives (FENACAFE). FENACAFE's cooperatives represent approximately 7,000 coffee farmers who produce nearly 35,000 hectares of coffee. If one were to count inactive or non-dues paying members of FENACAFE cooperatives, the number would be much larger. The average landholding of FENACAFE members is five hectares. This is skewed by larger holdings, and the true average of most cooperative producers more closely approximates 2.5 hectares. Given its member service orientation, FENACAFE appears to be the appropriate organization to implement this Project.

Secondly, to implement the technology package, participating farmers require access to considerably more investment and production credit than traditional coffee farming practices demand. Credit funds for coffee renovation are available through the National Development Bank (BNF) through a Central Bank rediscount line. Access by the target group to credit is constrained by land tenure requirements, lack of collateral, and lack of believable (i.e., bankable) farm renovation plans which include technical assistance. Except for the land tenure constraint, the Project will address these barriers to credit access.

C. Proposed Project Activities and Level of Effort

1. Establishment of a Private Sector Extension Program. The Project will establish small functioning demonstration plots and an extension service within FENACAFE.

a. Demonstration Plots. As stated above, coffee renovation technologies are widely known. In fact, the standard package of technologies identified above will be disseminated under this Project. However, in order to refine the technology to the special climatological and geographic realities of the various coffee-producing zones of Ecuador, a small demonstration activity will be financed. The emphasis of this activity will be on achieving the optimum mix of technology inputs to achieve the highest, cost-affordable productivity levels.

In 1985, A.I.D. provided a very small grant to FENACAFE to begin the development of small demonstration plots. To date, 17 plots encompassing 14 hectares are being planted. Under the Project, this pilot activity will be greatly expanded. Under this activity, A.I.D. funds will finance technical assistance, domestic and international training, and some commodities required to establish demonstration plots.

b. Extension. Under this activity, the Project will assist FENACAFE to establish a highly qualified, highly focussed extension program which, over time, will become self-financing. The Technical Division of FENACAFE will provide 30 extension agronomists and three supervisors who, with the assistance of a corps of paratechnicians, will service the approximately 132 coffee cooperatives and their members that are in selected geographic areas. This will require that extension agents become well versed in the technology package to be disseminated, traditional extension methods, and training techniques. During the first years of the Project, this cadre will focus on the development and dissemination of a technology package directly to small producers. At the central level, the Technical Division will also develop modern technology transfer materials making use of modern audio-visual and media teaching techniques. As the technology begins to take hold, extensionists will focus more of their activities on the development and training of a cadre of producer paratechnicians, most likely chosen from early Project participants. These paratechnicians will, in turn, assist their neighbors to initiate renovation programs on their own farms under the general supervision of FENACAFE extensionists. AID funds and PL-480 Title I local currency generations will provide initial salary and per diem support, technical assistance, training, vehicles and commodities for the development of the FENACAFE extension program.

2. Credit Mobilization. With a portion of the coffee export taxes, the GOE has established a credit fund for coffee rehabilitation and renovation activities. The BNF rediscounts loans through the Central Bank fund. By the end of 1985, this fund reportedly had \$3 million of

uncommitted funds. The fund grows by approximately \$1 million annually. The BNF, independently of this Project, has indicated its willingness to make funds available to coffee cooperatives for relending to producers if the cooperative's loan application is accompanied by a feasible renovation strategy and the assurance that an adequate technical assistance program is in place.

Under this Project, it is expected that FENACAFE will borrow funds from the BNF for on-lending to Project participants. Loans to producers will be made at the prevailing rate for such loans (18% at the end of 1985, and marginally positive at the time). More importantly, this rate should allow a point spread sufficient to cover the costs of the loan administration, a reserve for bad debts, and a partial offset of the costs of providing the technical assistance (i.e., the recurring costs of the extension program).

a. Renovation Loans. A typical loan to an individual producer will cover the investment and working capital requirements for the total renovation of one hectare of coffee. This is for three reasons. First, it allows the lender to spread his risk. Secondly, it allows the borrower to forgo income on a relatively small area, while maintaining income on the rest of his farm, thereby reducing his risk. Finally, the renovation of one hectare will, after three years, increase productivity of that hectare by 7 to 10 times, thus resulting in a significant income increase to the producer. With this additional income, the producer will be in a better position to finance renovation of a second hectare on his own or to invest in another crop since his income from coffee will be assured. Typically, renovation loans will be amortized for up to seven years, with an up to three year grace period on principal. The grace period is required during the period when the farmer is forgoing income on the renovated parcel.

b. Nursery Loans. FENACAFE will make short-term, one year loans for the planting of nurseries. A major renovation program will require the annual supply of large numbers of improved varieties of plants. These loans will be made to farmers who have demonstrated the ability to plant and manage coffee nurseries. An interest charge at the prevailing rate will be collected on these loans.

A.I.D. funds provided under this activity will provide technical assistance, training, and limited vehicle and commodity support to the Credit Division of FENACAFE. Training courses and seminars in credit will also incorporate BNF analysts, branch managers and field supervisors to assure continuity between lenders and implementers in Project credit policies.

3. Administrative Strengthening. The Project activities described above will strengthen the capacities of the technical and credit divisions of FENACAFE to directly implement Project field activities. However, in order for these two divisions of the

organization to perform well and increase the amount of services to members contemplated under this Project, the organization itself must perform its central tasks well. In this regard, two important problems need to be addressed. First, in early discussions, FENACAFE staff and members have emphasized a real and felt need to strengthen the administrative capability of the federation and member cooperatives in accounting and management areas. This will be particularly important if this Project is to succeed. Secondly, FENACAFE's membership needs strengthening. While one may assume that the provision of an increased level of real services to members such as those contemplated under the Project will attract more dues-paying members, other promotional activities and membership drives will help to increase the rate of membership.

AID funds will finance technical assistance in accounting and financial management for both FENACAFE and its cooperatives under this activity as well as technical assistance in membership promotion (publicity, design and execution of membership drives, registration of new members, etc.) In addition, training and a limited amount of commodity support for both financial and membership management will be provided. In addition, project coordination services will be financed under this component.

D. Expected Achievements. As a measurement of the achievement of the Project purpose, the Mission expects that the Project will successfully renovate approximately 4000 hectares of coffee on farms under five hectares in size by 1991. Renovated hectares will be producing an average of 30-40 quintals/ha. three years after renovation; will reach an average of 55 quintals/hectare four to seven years after renovation; and will return to average yields of 40 quintals/hectare after year seven and through the useful life of the plant. Achievement of the purpose will require that the following output targets be reached:

1. that an integrated extension service be firmly established within FENACAFE based on an initial core staff of 30 extensionists and three supervisors, to be expanded by the end of the Project to include a trained corps of 60-75 paratechnicians.
2. that the credit division of FENACAFE be fully operative and have approved and successfully supervised up to 4000 loans for coffee renovation with manageable risk levels and a number of nursery loans sufficient to guarantee the availability of new plants for renovation purposes.
3. that FENACAFE increase its membership level and income (including that earned through management of sub-loans) sufficiently to pay the recurring costs of the technical division and the credit division.

#### IV. Project Design Considerations.

A. Technical Considerations. Coffee renovation based on the technology package described for this Project is an accepted and proven response to the types of problems facing the Ecuadorean coffee sector. Furthermore, it has been successfully implemented in many of the coffee-producing nations of the region. There is little debate over the technical merits of this strategy.

The technical analysis for this Project will, therefore, focus on the adaptation of proven technologies in Ecuador. In a pilot effort financed by A.I.D. in 1985, the Mission has advanced work in this area. Ecuador is a nation of multiple microclimates. While coffee is produced in a variety of areas with similar characteristics, there are minor variations which will have to be reflected in the specific mix of technologies introduced in any area. At the same time that this research focuses on productivity increases, it has to take into account the affordability of the package for the target group. As part of the project design analysis, a specific technology package complete with cost implications will be developed for the first major geographic region to be affected by the Project. A preliminary analysis will also be made of the technical and cost adjustments that will be required to implement the package in other areas. A scope of work for these analyses is included as Attachment B.

B. Social Considerations. The PID makes a preliminary identification of project beneficiaries and makes several assumptions regarding the willingness of this target group to undertake renovation. As part of the design process, a more precise definition of the target group will be made. Data from the PNC census will be required for this task and, given the detail of this data, should allow for accurate participant pinpointing. Preliminary census data will be supplemented by field research. The PID assumes that target beneficiaries are risk takers and willing to undertake a significant amount of long-term debt. These assumptions will be thoroughly explored during project development. The result of this analysis will be a well developed strategy for the promotion of beneficiary participation. Depending on the results, FENACAFE responsibilities may be further modified to include more active promotion and beneficiary identification activities.

Based on the above, and the results of the technical and financial analyses, and anticipated spread effects of the Project which are to be institutionalized, the social analysis will also contain a comprehensive and quantified discussion of projected social impacts of this Project. In addition to income increases and the likely disposition of that income, the impact of the Project on rural employment patterns and gender division of labor within the small producer family will be carefully analyzed.

The specific questions to be addressed in these analyses and the methodology to be employed in the social analyses are included in the scope of work for the social analysis contained in Attachment C.

C. Economic Considerations. The economic analysis for this Project will be based on the assumption that the purpose of the Project is not to increase overall production levels. However, given historic trends and the project implementation strategy presented, there are two aspects of production and productivity levels to be achieved under the Project that will require analysis. First, in the early stages of the Project increased productivity will serve to off-set a part of the decline in production that has resulted since 1981. At a later stage, however, increased yields will require that unrenovated lands be withdrawn from production. These issues will require separate analyses.

Several assumptions will be required to undertake the detailed economic analysis. Most important are those related to market efficiency in rural land and labor markets and the opportunity cost of capital. These assumptions will be thoroughly examined during PP design and defended in the economic analysis.

Finally, the analysis will present a calculation of the farm-level benefits to be achieved as a result of renovation. A complete discussion of the economic analysis and the methodology to be utilized is presented in Attachment D.

D. Financial Considerations. The Project financial analysis will test the financial attractiveness of renovation to target group farmers. This will be accomplished through a series of analyses which will test the sensitivity of returns to farmers to variations in prices and yields. Further discussion of the methodology to be employed in these analyses is contained in Attachment D.

E. Administrative Analysis. FENACAFE is the parent federation of approximately 132 coffee cooperatives which have approximately 25,000 members, representing 7,000 families. FENACAFE is financed by income from its own exports, members' dues, and a special set aside on all coffee exported under the quota reserved for farmer organizations. FENACAFE was created in 1967 and has assumed the leadership role in the private sector in developing a strategy to combat rust in Ecuador. The staff is enthusiastic, hardworking and knowledgeable in exporting and overall cooperative concepts but has meager experience in the technical and credit areas required for a renovation program.

The administrative analysis to be completed during Project design will thoroughly examine all of the administrative aspects of FENACAFE's current activities and membership. It will focus on the membership structure of FENACAFE and its member cooperatives as well as provide a thorough analytical description of the organizational structure of FENACAFE and its member cooperatives. Finally, the internal and external

image of FENACAFE will be thoroughly explored within various social and technical groups. A detailed discussion of the analysis to be conducted is presented in Attachment C.

F. Environmental Concerns. The IEE presented in Attachment E recommends a negative determination, pending analysis of the fungicides/pesticides proposed by FENACAFE as part of the technology package. An analysis will be conducted during project design to analyze the effects of copper-based fungicides and pesticides available in Ecuador in order to be specific about which ones would be employed under the Project.

V. Preliminary Financial Plan. The total cost of the proposed Project is \$10,750,000. A.I.D. grant funds totaling \$3,300,000 will finance technical assistance, training, project coordination, evaluation and audit costs. A.I.D. loan funds totaling \$850,000 will finance FENACAFE equipment, vehicles, and publications costs. The local currency equivalent of \$1,600,000 of PL-480 Title I generations will finance counterpart expenses attributable to increased salary, per diem, and maintenance costs. Finally, the GOE will make the local currency equivalent of \$5,000,000 available for credit through the existing BNF rediscount line. These latter funds will be made available to FENACAFE on a loan basis. It is anticipated that the A.I.D. loan funds will also be on-lent to FENACAFE. Finally, A.I.D. funds will finance 39% of the Project costs, while host country resources will provide 61% of the funding required.

Preliminary Illustrative Budget  
(US \$000)

ACTIVITIES	A. I. D.		AID TOTAL	GOE TOTAL	TOTAL
	GRANT	LOAN			
<u>Extension</u>					
Technical Asst.	500		500		500
Training	220		220		220
Training Center	250		250		250
Foreign Training	100		100		100
Field Equipment		25	25		25
Vehicles		495	495		495
Publications		75	75		75
Paratechnicians (salaries)				165	165
(travel/perdiem)				100	100
Extensionists (salaries)				650	650
(travel/perdiem)				200	200
Gasoline/Maint.				300	300
SUB-TOTAL	<u>1,070</u>	<u>595</u>	<u>1,665</u>	<u>1,415</u>	<u>3,080</u>
<u>Credit Mobilization</u>					
Technical Asst.	432		432		432
Training	50		50		50
Vehicles		60	60		60
Publications		15	15		15
Credit Agents (salaries)				85	85
(travel/perdiem)				25	25
Gasoline/Maint.				30	30
Credit Fund				5,000	5,000
SUB-TOTAL	<u>482</u>	<u>75</u>	<u>557</u>	<u>5,140</u>	<u>5,697</u>
<u>Admin. Strengthening</u>					
Technical Asst.	552		552		552
Training	30		30		30
Foreign Training	10		10		10
Equipment		70	70		70
Vehicles		15	15		15
Publications		15	15		15
Gasoline/Maint.				10	10
Evaluation/Audit	100		100		100
Project Coord.	720		720		720
SUB-TOTAL	<u>1,412</u>	<u>100</u>	<u>1,512</u>	<u>10</u>	<u>1,522</u>
Contingencies	336	80	416	35	
PROJECT TOTAL	<u>3,300</u>	<u>850</u>	<u>4,150</u>	<u>6,600</u>	<u>10,750</u>

VI. Project Design Issues. The following issues have been identified for further review and analysis during Project Paper design.

A. Processing and Marketing. There is general feeling among smaller producers that the existing processing and marketing systems for coffee are not sufficiently developed to allow the farmer to retain a higher percentage of his selling price. Except for small investments in rudimentary on-farm processing facilities, the Project does not contemplate major assistance in this area. This is a result of two assumptions. First, if a major processing component were designed it would imply major capital and technical assistance to coffee cooperatives for the installation of processing infrastructure (beneficios) if it were to solve the problem. This would be a capital intensive venture, at best. Secondly, the project design as presented is highly focused on addressing the production problems of small producers with the assumption that this will be sufficient to effect dramatic improvements in the profitability of coffee production for them even in the absence of processing and marketing improvements. While a major project that included a processing component might further increase the small farmer's profits, the fact is that in spite of the lack of processing infrastructure and in the absence of production improvements, small farmers have continued to choose coffee production because it is presumably a profitable venture for them. The design team has, therefore, assumed that small farmers will wish to continue producing coffee and to improve their productivity in spite of the processing and marketing problems they face. Nonetheless, this issue will be addressed in the Project's social analysis to insure that the design team's assumptions are correct.

B. Domestic Export Quotas. In addition to the ICO imposed export quota for Ecuadorean coffee, the GOE imposes domestic quotas which have the effect of regulating how the ICO quota will be distributed. Coffee cooperatives have 25% of the Ecuadorean quota. Since this Project is being implemented through FENACAFE and productivity increases are to be effected on member farms, the question arises whether FENACAFE's share of the internal quota will be sufficient. If it were to be shown that the quota was not sufficient, it would imply that a portion of members' production would have to be marketed outside of the cooperative system. This issue will require analysis during the intensive project design phase.

C. Crop Diversification. As productivity increases are achieved, farmers may wish to reduce the amount of land they hold in coffee plantations, and they will be in an economic position to use the land for investments in other crops. The Mission design team has discussed the possibility of financing a crop diversification component of this Project. It has been suggested that research and adaptation of alternative crops, the development of an expanded extension service, and the implementation of a crop diversification strategy at the farm level be financed under this Project. Such a program would be implemented

through INIAP, the GOE research service, and FENACAFE. Mission review has concluded, however, that if such assistance were to be provided by A.I.D., it would most efficiently be implemented as a separate project. To finance it under this effort would complicate the implementation process. Secondly, the strategy as outlined in this PID clearly indicates that no Project beneficiaries will complete payment of their first renovation loan during the life of the Project. Since one assumes that beneficiaries would wish to complete the renovation process before they take land out of coffee production and assume new debt, it is unlikely that a crop diversification program for Project beneficiaries could get off the ground within the time frame of this Project.

D. Debt Absorption Capacity of FENACAFE and GOE Willingness to On-lend. The Project design calls for FENACAFE to assume a debt with the BNF for credit resources for on-lending. Such funds are generally available for coffee renovation at 9% interest. Assuming FENACAFE would on-lend at a minimum of 18%, funds would become available for financing the costs of administering the loan program. At the same time, the design as proposed would require FENACAFE to borrow the \$850,000 of AID loan funds, through a GOE entity. While preliminary indications are that FENACAFE can absorb this level of debt, the credit analysis will examine the issue further as loan terms and conditions are clarified.

VII. Project Design Strategy. Approximately 3 person months of USDH time will be required to analyze the results of the various project design tasks to be completed by consultants and contract staff, prepare the Project Paper for final review and approval, and conduct the final reviews. The Mission has identified the need for the following external advisors to assist in the final design of the Project.

A. Technology Development. Design assistance will be required for the development of the technical package including cost calculations and the preliminary identification of Project areas, as outlined in Attachment B. Approximately 5 person months will be required to be financed with \$60,000 of PD&S funds.

B. Credit Activity. Once the technical package has been designed and accurate cost estimates have been developed, the complementary credit package will be designed. Outside assistance will be required in two areas: to develop the producer credit package including what inputs should be financed under the individual loans and the terms and conditions of such loans; and, to further investigate and develop the loan for FENACAFE to be used for on-lending. This will require detailed research into the availability of financing over the short and medium terms through the Central Bank discount mechanism, development of a special credit line for FENACAFE whose terms and conditions take into account FENACAFE's ability to repay the loan, and the establishment of loan approval and supervision systems that are acceptable to both lender and borrower. A scope of work for this assistance is presented in Attachment G. This will require six person months of external technical advice to be contracted with a total of \$72,000 of PD&S funds.

C. Social Analysis. The social analysis will be conducted by a local rural sociologist to be contracted to complete the scope contained in Attachment C. This individual will work under the supervision and guidance of the Mission Social Scientist. Approximately \$5,000 of PD&S funds will be required to conduct this analysis.

D. Economic Analysis. This analysis will be conducted by the Regional Economic Advisor once all project analyses have been completed at or near the end of the project design process. OE funds totalling \$1,500 will be required to finance his TDY for approximately two weeks.

As a complement to the economic analysis, a local economist will be hired for a two week period to examine the export quota issues discussed above. This will require approximately \$1,000 of PD&S funds and will be completed prior to the TDY of the Regional Economic Advisor.

E. Financial Analysis. The financial analysis and the financial plan will be completed by the Mission's project design financial analyst, who will work closely with the Mission Controller.

F. Environmental Examination. Approximately one month of TDY assistance of the Regional Environmental Officer will be required to undertake a review of FENACAFE proposed pesticides and fungicides to be used as part of the technology package. This assistance will require no Mission funds.

G. Administrative Analysis. The administrative analysis will be conducted by the Mission Social Scientist.

H. Design Schedule. The following schedule has been established for the design, approval, and initial obligation of this Project:

1. Technical Analysis and Design of Technical Package	January - April 1986
2. Design of Credit Component	May - July 1986
3. Social Analysis	May - July 1986
4. Administrative Analysis	May - July 1986
5. Environmental Examination	May 1986
6. Economic Analysis	June 1986
7. Financial Analysis	June 1986
8. Mission Review of PP	July 1986
9. PP Approved	July 30, 1986
10. Preparation of Obligating Documents	August 1986
11. Obligation of FY86 Funds	August 30, 1986

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project:  
From FY 86 to FY 91  
Total U.S. Funding \$4,150,000  
Date Prepared: January, 1986

Project Title & Number: Private Sector Coffee Renovation (518-0054)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes: (A-1)</p> <p>To increase the incomes and quality of life of rural farm families while maintaining export earnings.</p>	<p>Measures of Goal Achievement: (A-2)</p> <p>Average income of farm families working less than 5 has. of land increases from \$ to \$ (real dollars).</p> <p>Increase of 6.5% in real value of GDP.</p>	<p>(A-3)</p> <p>National Agricultural statistics. FENACAFE Records.</p>	<p>Assumptions for achieving goal targets: (A-4)</p> <p>The world market price of coffee remains sufficiently high to enable most small coffee farmers to increase their production levels in view of coffee agreements.</p> <p>The farm gate price paid for non-coffee crops does not fall below a real 1979 level.</p> <p>Other income-generating activities of GOE positively affect rural family income.</p>
<p>PROJECT PURPOSE: (B-1)</p> <p>To mitigate the impact of coffee rust on production by adapting and introducing improved production technologies on small coffee farms.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status. (B-2)</p> <p>1.1 Productivity per ha. increased from 6-8 to a minimum of 25 quintals leading to a production increase of quintals on hectares which enter the technification program, with commensurate income increases for producers.</p>	<p>Project evaluation and records. FENACAFE records and reports</p>	<p>Assumptions for achieving purpose:</p> <p>No major natural or man-made disasters other than rust and broca adversely affect coffee production.</p>

PROJECT DESIGN SUMMARY  
 LOGICAL FRAMEWORK

Life of Project: 1986 - 1991  
 From FY 86 to FY 91  
 Total U.S. Funding \$4,150,000  
 Date Prepared: January, 1986

Project Title & Number: Private Sector Coffee Renovation (518-0054)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose: (B-1)</p>	<p>Conditions that will indicate purpose has been achieved: End-of-Project status. (B-2)</p> <p>1.2 By 1991, a total of 4,000 hectares will experience some increase in total production based upon year of entry into the Project.</p> <p>1.3 Credit availabilities for small farmer investment cease to be a constraint for technification of additional land by 1991.</p> <p>1.4 Success of program will attract 4000 hectares into an expanded technification program by EOPS.</p>	<p>(B-3)</p>	<p>Assumptions for achieving purposes: (B-4)</p>
<p>*OUTPUTS: (C-1)</p> <p>1. FENACAFE's ability to respond to small farmer needs strengthened.</p>	<p>Magnitude of outputs: (C-2)</p> <p>1.1 Small coffee farmers being serviced by FENACAFE and credit institutions increased and continues to increase by 10% per year.</p> <p>1.2 No. of small farmers receiving training from FENACAFE extension workers increased by 3,000 over life of Project.</p>	<p>Project reports and evaluations.</p> <p>FENACAFE records.</p>	<p>Assumptions for achievement outputs:          GOE/FENACAFE commitment to small coffee producers remains high.</p> <p>Project inputs are provided on a timely basis.</p>

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PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Life of Project:  
From FY 86 to FY 91  
Total U.S. Funding \$4,150,000  
Date Prepared: January, 1986

Project Title & Number: Private Sector Coffee Renovation (518-0054)

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs: (C-1)</p> <p>2. Technology improved at farm level.</p> <p>3. Management capabilities of small farmers strengthened.</p>	<p>Magnitude of Outputs: (C-2)</p> <p>2.1 Number of hectares using more productive varieties increased to 4,000 over life of Project.</p> <p>2.2 Number of hectares of farmer coffee land treated with fertilizers increased by 4,000 has. by end of Project.</p> <p>2.3 Number of hectares pest control practices increased by 4,000 has. by end of project.</p> <p>3.1 Amount of farm area employing improved cultivation practices increased by 4,000 has. by end of project.</p> <p>3.2 Amt. of area employing advance pruning techniques increased by 4,000 has. by end of project.</p> <p>3.3 Amt. of area increasing/decreasing shade tree canopy to optimum level increased by 4,000 has. by end of project.</p>	<p>(C-3)</p>	<p>Assumptions for achieving outputs: (C-4)</p>

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PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Project Title & Number: Private Sector Coffee Renovation (518-0054)

Life of Project:  
From FY 86 to FY 91  
Total U. S. Funding \$4,150,000  
Date Prepared: January, 1986

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Inputs: (D-1)</p> <p>4. Viable, self-sustaining credit system for small coffee farmers established.</p>	<p>Implementation Target (Type and Quantity) (D-2)</p> <p>3.4 Amt. of area increasing/decreasing per hectare plant population to optimum level by 4,000 has. by end of project.</p> <p>4.1 By, reflows begin to finance credit for small coffee growers beyond original participants.</p>	<p>(D-3)</p>	<p>Assumptions for providing inputs: (D-4)</p>
<p>INPUTS: (D-1)</p> <p>1. Establishment of Private Sector Extension Program.</p> <p>2. Credit Mobilization</p> <p>3. Administrative Strengthening</p> <p>4. Contingencies</p>	<p>Implementation Targets (Type and Quantity) (D-2)</p> <p>1.1 AID \$1,665,000 1.2 GOE \$1,415,000</p> <p>2.1 AID \$ 557,000 2.2 GOE \$5,140,000</p> <p>3.1 AID \$1,512,000 3.2 GOE \$ 10,000</p> <p>4.1 AID \$ 416,000 4.2 GOE \$ 35,000</p>	<p>AID Disbursement records and audit reports.</p>	<p>Assumptions for Providing Inputs:</p> <ul style="list-style-type: none"> <li>- Project authorized and funds allotted.</li> <li>- Project agreement executed.</li> </ul>

SCOPE OF WORK FOR TECHNICAL ANALYSIS

The purpose of the proposed project is to mitigate the impact of coffee rust and broca on production by adapting and introducing improved production technologies on cooperative coffee farms, thereby contributing to an overall sectoral goal of maintaining exports and increasing rural incomes. The technical analysis will examine and analyze the threat of rust and broca, alternative strategies, the soundness of the project's proposed technical strategy, the technical package and the proposed delivery system.

More specifically the technical analysis will:

1. Evaluate the test plots initiated in 1985 to determine their status and degree of adherence to the recommended technical package.
2. Utilize these findings to evaluate the proposed project technical package.
3. Review the technical selection criteria and the selection of areas for intensive project implementation efforts.
4. Examine the design cost content and feasibility of the technical package and its adaptability to the target group.
5. Examine and evaluate coffee research in Ecuador, role of INIAP in adaptive coffee research and judge its capability, physical resources and financing capability to provide research results to FENACAFE.
6. Evaluate the proposed technology and credit delivery system.

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Social Soundness Analysis

BACKGROUND

USAID/Ecuador is designing a five year project to mitigate the impact of coffee disease on production by adapting and introducing improved production technologies on small coffee farms in Ecuador. The adaptation and introduction of such technologies will contribute to the overall sectoral goal of maintaining exports and increasing rural incomes.

To accomplish the project purpose, three activities are proposed:

(1) the establishment of a private sector extension program in the National Federation of Coffee Cooperatives (FENACAFE) and the undertaking of adaptive research; (2) the channeling of BNF credit resources to producers through FENACAFE; and (3) the administrative strengthening of FENACAFE and member cooperatives in the areas of financial accounting and management and membership expansion.

While the Project Identification Document (PID) provides a preliminary identification of project beneficiaries, both a precise definition of the target group and a strategy for promotion of beneficiary participation is required. In addition, the design effort needs a comprehensive and quantified analysis of the projected social impacts of the project including such issues as income increases and likely disposition thereof, impact on rural employment patterns and impact on gender division of labor within the small producer family.

The social soundness analysis is to be prepared by the Mission Social Scientist on the basis of available material and of data collected and analyzed by the contractor.

STATEMENT OF WORK

Generally, the contractor shall:

1. Provide data and preliminary analysis to identify and develop selection criteria for the target groups;
2. Identify types, forms and mechanisms of participation, including the role of women;
3. Conduct a survey of the target groups to determine expectations regarding the project for use in quantifying the project's social impacts;

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4. Identify social and/or cultural constraints to project implementation and;
5. Examine the membership, administration and organizational structure of both FENACAFE and its coffee cooperatives.

Specifically, the contractor shall:

1. Research the coffee producing sector to provide a socio-economic and cultural overview of the principal target group. Address such issues as land tenure, farm size and area in coffee production, use of production technologies, access to credit, access to technical assistance, income, labor and the organization of coffee production.
2. Develop specific criteria for selection of project participants. Assess such characteristics as risk-taking and motivation, literacy and access to knowledge and quality of life indicators.
3. Identify types and forms of participation as well as factors which aid in or constrain participation.
4. Develop strategies and mechanisms to promote active participation by beneficiaries. Identify facilitators/inhibitors of each.
5. Collect and analyze data on the role of women in coffee production, addressing such issues as the provision of training as well as of extension and credit services.
6. Conduct a survey to determine expectations of the target group vis-à-vis the project.
7. Examine and analyze income and employment effects of the project. Determine expected income increases and projected uses of such incomes.
8. Examine and analyze social impact of income effects such as attitudinal changes vis-à-vis technology transfer, impact on social and economic organization of cooperatives, impact on participants vs. non-participants.
9. Examine and analyze the membership, administration and organizational structure of FENACAFE as well as of its member cooperatives. Address institutional constraints to project implementation.
10. Review questionnaire developed to survey pilot group of small producers and analyze results thereof.
11. Coordinate with Mission Social Scientist for collection and analysis of other data deemed necessary.

REPORTS

The contractor shall be responsible for providing reports of data collected and analyzed. This will involve responsibility for compiling, coordinating and editing the information and analyses gathered into concise reports summarizing his/her findings. Reports may be prepared and submitted in Spanish.

### Economic and Financial Analysis

The economic analysis of this project deals with a somewhat unusual feature inasmuch as its objective is not to increase the output of coffee which is constrained by a static internal market and export quotas. In the early stages of the project, the technification of coffee land will merely serve to offset a part of the decline in production which has been going on since 1981. In this stage, the project will, in fact, increase production over the levels that would have been achieved in the absence of the project while production on non-technified plots will decline due to the effects of coffee rust and broca. At a later stage however, as the technology spreads, increased yields will require that non-technified land be withdrawn from production. To accomodate this factor, the economic analysis will be based on the assumption that the output of coffee is fixed and that the effect of the project is to reduce the unit cost of production, freeing up land and labor for other productive activities.

It must be emphasized at the outset that this approach depends on fairly strong assumptions about market efficiency in rural land and labor markets. These assumptions (the ease with which land and labor can be transferred from coffee growing to other activities) will be explored in intensive review. This approach also requires that the values assigned to land and labor in the calculations outlined below be such that those factors would receive in non-coffee growing activity. Economic rents earned because land (and possibly labor) is particularly suited to coffee growing will be disregarded.

At the present time, it is believed that the Central Bank Intervention Rate closely approximates the opportunity cost of foreign exchange. Therefore that rate will be used to convert sucre costs to foreign exchange. Imported goods, of course, will be valued net of any import duties.

An illustrative calculation of the net present value of the project is shown on Table 1. It is assumed for purposes of illustration that the technified plots have a useful life without further renovation of 20 years. This assumption will be clarified (and probably shortened) during intensive review. Measurement of labor cost and purchased input cost has been discussed previously. The net benefits of the project at the farm level are the reduction in the cost of production of the volume of coffee produced after technification. The aggregate of farm net benefits are the sum of the farm level benefits for farms technified in each year.

In addition to on-farm benefits (which have been measured net of costs), there are direct project costs for technical assistance, commodities, etc. These are entered at the end of the table, distributed according to year, and divided between dollar costs and sucre costs (which are converted to dollars at the shadow exchange rate). From these costs and the on-farm net benefits, the net present value of the project and the internal rate of return are calculated.

In addition to project economic feasibility, it is important to determine the financial attractiveness of technification to farmers, and particularly, to determine the sensitivity of returns to farmers to variations in prices and yields. These aspects are examined on Table 2. This table is similar to the first part of Table 1 except that actual financial costs of land, labor, and purchased inputs are used rather than opportunity costs. Also, unlike the economic analysis, the farmer financial feasibility analysis is carried out in constant value sucres. Finally, the discount rate used is the actual expected real interest rate on loans to farmers. Based on Table 2, a series of estimates will be made testing the sensitivity of the financial rate of return to variations in yield, prices, and labor costs. Table 2 will also provide the basis for a cash flow analysis to determine the appropriate term for loans.

TABLE 1  
ECONOMIC ANALYSIS OF PRIVATE SECTOR COFFEE RENOVATION PROJECT  
(1985 DOLLARS)

YEAR	0	1	2	3	4-20
ON FARM RESULTS (PER HECTARE)					
WITHOUT PROJECT		122.00	122.00	122.00	122.00
COSTS		478.00	478.00	478.00	478.00
INVESTMENT					
LABOR		478.00	478.00	478.00	478.00
PURCHASED INPUTS					
BENEFITS		600.00	600.00	600.00	600.00
VOLUME (QUINTALE )		6.00	6.00	6.00	6.00
PRICE		100.00	100.00	100.00	100.00
WITH PROJECT					
COSTS		1391.00	1391.00	1391.00	1391.00
INVESTMENT		235.00	235.00	235.00	235.00
LABOR		956.00	956.00	956.00	956.00
PURCHASED INPUTS		200.00	200.00	200.00	200.00
BENEFITS		600.00	1200.00	2400.00	5000.00
VOLUME (QUINTALES)		6.00	12.00	24.00	50.00
PRICE		100.00	100.00	100.00	100.00
COST PER QUINTAL					
W/O PROJECT		79.67	79.67	79.67	79.67
COST PER QUINTAL					
W/ PROJECT		231.83	115.92	57.96	27.82
COST REDUCTION		-152.17	-36.25	21.71	51.85
PROJECT BENEFITS PER FARM					
(cost reduction times					
volume under project)		-913.00	-435.00	521.00	2592.33
HECTARES TECHNIFIED		133.33	133.33	133.33	
FARM LEVEL NET BENEFITS					
FROM FARMS TECHNIFIED IN YEAR					
(THOUSAND DOLLARS)					
1		-121.73	-58.00	69.46	345.64
2			-121.73	-58.00	69.46
3				-121.73	-58.00
SUM OF FARM LEVEL					
BENEFITS		-121.73	-179.73	-110.26	357.10
PROJECT COSTS OTHER THAN					
FARM LEVEL COSTS	1544.67	1544.67	1544.67		

4915.61 NPV OF ON-FARM NET BENEFITS

3841.36

1074.26 PROJECT NPV

TABLE 2  
ON-FARM FINANCIAL FEASIBILITY ANALYSIS OF PRIVATE SECTOR COFFEE  
RENOVATION PROJECT  
(CONSTANT 1985 SUCCRES)

YEAR	0	1	2	3	4-20
ON FARM RESULTS (PER HECTARE)					
WITHOUT PROJECT	60000	12200	12200	12200	12200
COSTS		47800	47800	47800	47800
INVESTMENT					
LABOR	47800	47800	47800	47800	47800
PURCHASED INPUTS					
BENEFITS	60000	60000	60000	60000	60000
VOLUME (QUINTALE)	6	6	6	6	6
PRICE	10000	10000	10000	10000	10000
WITH PROJECT	-200000	-55600	4400	124400	384400
COSTS	200000	115600	115600	115600	115600
INVESTMENT	200000				
LABOR		95600	95600	95600	95600
PURCHASED INPUTS		20000	20000	20000	20000
BENEFITS	0	60000	120000	240000	500000
VOLUME (QUINTALES)		6	12	24	50
PRICE		10000	10000	10000	10000
BENEFITS OF PROJECT	-260000	-67800	-7800	112200	372200

NPV TO FARMER            DISCOUNT RATE

1817597

0.10

INITIAL ENVIRONMENTAL EXAMINATION

Project Location: Ecuador  
Project Title: Private Sector Coffee Renovation  
Project Number: 518-0054  
Life of Project: 5 years  
IEE Prepared by: John L. Jordan, USAID/Honduras; update  
O/DR, USAID/Ecuador  
Date: July 22, 1985; update O/DR, April 18, 1986  
Action Recommended: Negative Determination, pending analysis  
of pesticides and herbicides as identified  
at the design stage.

Concurrence:

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Director  
USAID/Ecuador

Date: \_\_\_\_\_

## 1. Project Description

The Project purpose is to mitigate the impact of coffee disease on production by adapting and introducing improved production technologies on small coffee farms, thereby contributing to an overall sectoral goal of maintaining exports and increasing rural incomes. The project proposes a program of research, extension, and credit designed to transfer to coffee producers improved technology and management practices. The program will emphasize the total renovation of old, low yielding and rust susceptible plantations with more productive varieties, higher plant densities, improved pruning and shade practices, effective fertilization, integrated pest management, soil conservation practices and crop diversification.

The Project will be implemented by the Federación Nacional de Cooperativas Cafetaleras del Ecuador (FENACAFE) in conjunction with the research facility INIAP and a credit institution, Banco Nacional de Fomento (BNF). Grant financing will provide technical assistance to FENACAFE and INIAP for research and extension pertaining to improved production techniques which are appropriate to Ecuadorean coffee producers.

## II. Project Area

The Project will be implemented in the western slope (coastal) of the mountainous coffee producing regions of Ecuador, primarily in the provinces of Manabí, Loja, El Oro and to a lesser degree in Esmeraldas, Guayas, Bolívar, Zamora Chinchipe, Morona Santiago, Pichincha and Pastaza. There are approximately 120,000 producers who farm about 350,000 hectares of land. Approximately 80% of the producers farm less than 5 hectares. The Project expects to reach 4,000 farmers with 4,000 hectares in three years.

Coffee is produced in regions ranging from near sea level to 2,000 meters with average of 1,300 meters. Rainfall averages between 1000 and 3000 mm, rates ranging between lower dry forest to humid tropical forest. Temperatures, which range between 25°C and 16°C, are affected by elevation and cloud cover which is common in coffee areas. The terrain is low to medium mountains with a general broken topography, with slopes from 5° to 40°. Soils are generally volcanic, varying in depth of topsoil from several inches to several feet and varying in permeability and resistance to erosion. There is virtually no irrigation of small and medium coffee plantations. Virtually all small and medium coffee plantations are in regions where deforestation and resultant erosion would be frequent in the absence of coffee.

## IV. Discussion of Impacts

### D. Natural Resources

Technification of coffee production through renovation at the farm level is the only immediate alternative to counteract the effect of coffee rust in Ecuador. The utilization of resistant varieties commercially

adaptable to the area is not possible in the immediate future because such varieties do not exist. Coffee production is in the hands of a very large number of small and medium farmers and most plantations are located in mountainous marginal sites with pronounced slopes. All attempts to protect this crop (cultural farming system) from the debilitating effects of rust will have a highly positive impact on the environment as a whole. Changes from coffee farming to other agricultural systems is possible and in certain marginal coffee areas even desirable. Until adaptive research can be carried out, however, it is safe to say that coffee is generally better suited to the topography and the low fertility of the coffee growing region. Unproven other crops, coupled with poor farming practices and torrential rainfall (1982 El Niño) could trigger unsurmountable problems in soil erosion and siltation of watersheds throughout the coffee areas of the country. The technification, therefore, is urgent and will have a highly beneficial impact in the conservation of natural resources such as soil and water.

#### G. Health

Improvement in coffee production which results from renovation at the small and medium farm level will benefit the rural poor by increasing income. This in turn will enable coffee families to improve their basic diet and access to medical facilities as well as general housing and living conditions. Therefore, the impact on health may be considered to be moderate.

#### I. Other Possible Aspects

Technification of coffee involves the renovation of old, susceptible plantings with improved varieties, increased plant density, contour planting, shade improvement, improved pruning, use of fertilizers, fungicides (copper based) and pesticides. All but the last, pesticides, will have little or some beneficial effect to the environment. Pesticide use in areas which can be considered as part of the watershed system of the country will have a negative effect on the environment. However, the effects can be minimized by judicious selection and use of pesticides and an intensive practical extension training at the farm level in sound pesticide use and safety measures. Pesticides with serious potential threat to the environment must be avoided, only pesticides that are easily degradable and of low mammalian toxicity should be utilized.

Although the Project will not directly procure pesticides, it is contemplated that farmers will procure and use pesticides from local sources during the implementation phase of the Project. A further environmental review therefore will be required once the pesticides and their proposed patterns of use have been identified during project design, and further reviews should be done in accordance with AID Regulation 216.3(b), AID Handbook 3, APP4B.

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Scope of Work for Credit Analysis

BACKGROUND

USAID/Ecuador is designing a five-year project to mitigate the impact of coffee disease on production by adapting and introducing improved production technologies on small coffee farms in Ecuador. The adaptation and introduction of such technologies will contribute to the overall sectoral goal of maintaining exports and increasing rural incomes.

To accomplish the project purpose, three activities are proposed:

(1) the establishment of a private sector extension program in the National Federation of Coffee Cooperatives (FENACAFE) and the undertaking of adaptive research; (2) the channelling of BNF credit resources to producers through FENACAFE; and (3) the administrative strengthening of FENACAFE and member cooperatives in the areas of financial accounting and management and membership expansion.

Although the GOE, with a portion of coffee export taxes, has established a credit fund for coffee rehabilitation and renovation activities, timely access to sufficient credit is considered to be the single greatest limitation to the cooperative farmer's participation in a coffee renovation program.

Independently of this project, the BNF, which rediscounts loans through the Central Bank coffee credit fund, has indicated its willingness to make funds available to coffee cooperatives for relending to producers on the condition that the cooperative's loan application be accompanied by a feasible renovation strategy and the assurance that an adequate technical assistance program is in place. Under the project, it is expected that FENACAFE will borrow these funds from the BNF for on-lending to project participants. To this end, FENACAFE is developing a credit plan through which the farmer will borrow a specified amount, to be disbursed over a period of three years, for the complete renovation of one hectare of coffee in accordance with a specific technical package.

Once the technical package with accurate cost estimates has been designed, agreement reached to allocate sufficient credit funds and a delivery system developed to operate under Ecuadorean conditions, the assistance of three credit specialists is required in two areas:

(1) to further investigate and develop the flow of resources for FENACAFE'S on-lending and to determine its capacity to borrow \$850,000 of AID loan funds, through a GOE entity, at concessional terms; and (2) to develop the producer credit package and delivery system including identification of inputs to be financed under the individual loans as well as the terms and conditions of such loans.

STATEMENT OF WORK

Generally, the contractor shall:

1. Examine BNF's ability to provide credit resources for on-lending to FENACAFE; and
2. Examine FENACAFE's ability to absorb the level of debt proposed in the project design;
3. Develop the producer credit package to be provided by FENACAFE.

Specifically, the contractor shall:

1. Research the availability of financing over the short and medium term through the Central Bank discount mechanism. Assess the sufficiency and capability of credit resource delivery and alternative mechanisms.
2. Determine FENACAFE's resources for the life of project and determine how these resources will be utilized in project implementation.
3. Assess compatibility/coordination between BNF and FENACAFE and document major facilitators and/or inhibitors to implementation of a credit program by these actors. Examine alternative forms of cooperation.
4. Develop a special credit line for FENACAFE whose terms and conditions take into account FENACAFE's ability to repay the loan. To this end, establish criteria, norms and procedures for FENACAFE to borrow from the coffee renovation fund, forecast cash flow and loan repayments, determine interest rate requirements for FENACAFE to cover operating costs and develop a plan for the use of funds accrued from interest payments.
5. Design and adapt the credit delivery system, from origin to farmer through repayment, be operated by FENACAFE through the affiliated cooperatives. As such, establish loan approval and supervision systems that are acceptable to both lender and borrower, specify and negotiate clearly defined lending policies, norms and procedures striving for a minimum of documentation requirements and determine collateral requirements.
6. Prepare terms of reference for a project credit advisor and for FENACAFE credit agents.

7. Prepare credit management and reporting systems.
8. Develop evaluation criteria for credit aspects of the project.
9. Review AID's past experience in the provision of credit for such programs and incorporate "lessons learned" into the current design effort.
10. Develop criteria for donor participation.

REPORTS

The contractor shall be responsible for the final report/write-up and submission. This will involve responsibility for compiling, coordinating and editing the information and analyses gathered into a comprehensive and concise report summarizing his/her findings. The contractor shall provide a draft report to the project design coordinator in USAID/Ecuador prior to departure from Ecuador and 5 copies of the final report NLT 15 days following departure.

Reports may be prepared and submitted in Spanish.