CORECA

REGIONAL COUNCIL FOR
AGRICULTURAL COOPERATION

GISA

INTER-INSTITUTIONAL GROUP
OF THE AGRICULTURAL SECTOR

FIRST AGRICULTURAL SECTOR MEETING OF THE CENTRAL AMERICAN GOVERNMENTS WITH COOPERATING GOVERNMENTS AND INSTITUTIONS

6

REGIONAL PROGRAM ON INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

PEC/AS/91/6
PROJECT CAM/90/002
SPECIAL PLAN OF ECONOMIC COOPERATION
FOR CENTRAL AMERICA

The technical information for the First Agricultural Sector Meeting is presented in ten documents to facilitate reading by cooperating governments and institutions. The [illegible]nts are:

[illegible]: Executive Summary

Importance of the Agricultural Sector. Technical and Financial Assistance. Summary of Project Profiles.

Docu[illegible]o 10 describe the eight regional programs on topics selected as being of priority by the Central American governments. The Programs are:

PEC/AS/91/3: Regional Agro-alimentary Program.

PEC/AS/91/4: Program on Irrigation, Drainage and Land Leveling.

PEC/AS/91/5: Program on the Development of Bio-technology.

PEC/AS/91/6: Program on Intra-regional Trade and Exports to Third Countries.

PEC/AS/91/7: Program on Agroindustrial Development.

PEC/AS/91/8: Program to Strengthen Plant and Animal Health Services.

PEC/AS/91/9: Program on the Development of Border Areas.

PEC/AS/91/10: Program to Strengthen Rural Enterprises.

Each Program consists of two components: one of regional scope and the other of national scope. The regional component involves cooperative projects and actions among the countries of the Isthmus, while the national component is made up of the investment projects to be carried out in individual countries.

CORECA

REGIONAL COUNCIL FOR
AGRICULTURAL COOPERATION

GISA

INTER-INSTITUTIONAL GROUP
OF THE AGRICULTURAL SECTOR

FIRST AGRICULTURAL SECTOR MEETING OF THE CENTRAL AMERICAN GOVERNMENTS WITH COOPERATING GOVERNMENTS AND INSTITUTIONS

6 REGIONAL PROGRAM ON INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

PEC/AS/91/6
PROJECT CAM/90/002
SPECIAL PLAN OF ECONOMIC COOPERATION
FOR CENTRAL AMERICA

DOCUMENT CONTENTS

REGIONAL PROGRAM ON INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

One of the declared priorities of the Central American governments in reactivating their economies is to improve the balance of payments position by raising the level of exports. Important activities are currently under way and economic policy efforts and actions are being coordinated with this goal in mind.

Boosting intra- and extra-regional trade is a part of the strategic guidelines to reactivate the agricultural sector.

At the First Meeting of the Special Commission for Central America of the Regional Council for Agricultural Cooperation in Central America, Mexico, Panama and the Dominican Republic (CORECA), held in Tegucigalpa, Honduras in July 1990, the Central American ministers of agriculture set forth strategic guidelines for reactivating the agricultural sector, including the expansion of intra- and extra-regional trade.

The Regional Program on Intra-regional Trade and Exports to Third Countries makes an important contribution to this strategy and, in particular, to the initiative unveiled by the presidents of the isthmus in June 1990, which has come to be known as the Plan of Economic Action for Central America (PAECA).

Regional component: Technical assistance
National component: Investment project profiles

The Regional Program has two components -- one regional and one national. The regional technical assistance component is intended to generate joint Central American actions to support agricultural exports. Its relationship and coordination with private-sector Chambers of Exporters, ensures that its benefits will be felt across the entire range of agricultural exports.

The national component consists of investment project profiles, the contents of which are enclosed as separate, country-specific documents.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Regional Program

In 1959, all the Central American countries (except Panama) embarked upon a process of economic integration, the goal of which was essentially to bring about industrial development through the substitution of imports. The model was based on the use of three mechanisms: 1) a free trade zone; 2) a payments system (clearinghouse); 3) common external tariffs along protectionist lines.

For 20 years this integration model yielded surprising results: intra-regional trade rose from US$50 million in 1960 to US$1.099 million in 1980. It came to represent over 20 percent of the region's total exports, while industrialization also surpassed the 20-percent mark.

The economic crisis of the 1980s had a notable effect on exports from the isthmus.

The economic crisis of the eighties, however, hit the exports of countries in the isthmus very hard. By 1985, intra-regional trade had slumped to US$541 million, and though it did enjoy a slight upturn in the years that followed (US$566 million in 1988 and US$652 million in 1989), it had become clear that the assumptions on which the model was based were outmoded and obsolete.

Barriers to free trade were soon erected, the clearinghouse became inoperative when a crisis in intra-regional payments ensued, and new tariffs had to be introduced in 1986. Total export income fell so heavily that balance of payments current-account deficits topped US$1.5 billion a year.

The overall economic situation obliged the countries to implement severe stabilization plans and structural adjustment programs intended to liberalize the economy. They also endeavored to achieve maximum efficiency and productivity in production, and strove to participate competitively in foreign trade. One of the main objectives is to become economically self-sustaining again.

During this period of readjustment, the countries have made great efforts to improve their intra- and extra-regional marketing performance. Nevertheless, the problems facing the external sector are many. The most serious are:

- the lack of trade information systems providing data on export markets and prices for nontraditional products;
- inadequate infrastructure at border customs posts does not facilitate expeditious marketing in the region;
- the excessive paperwork required for the exchange of merchandise at border posts;
- the insufficient information regarding the capacity of the existing cold-storage infrastructure and actual requirements at air and seaports;
- the nonexistence of a commodities exchange to facilitate the intra-regional marketing of agricultural products;

— the lack of information on the actual capacity for transporting intra- and extra-regional trade;

— the disparity between export incentives and the lack of harmonization in regional trade policy. This has prevented countries from exploiting their individual comparative advantages to the full, and undermined the opportunities for joint marketing ventures.

Up-to-date information is required on topics such as present cold storage capacity and transportation capabilities.

Nevertheless, the possibilities of reestablishing intra-regional trade are enormous, particularly in the case of agricultural and agroindustrial products (not only manufactured goods, as in the past). To realize the potential of the external sector, it will be necessary to tap the experience acquired over the past 30 years and promote joint Central American efforts to penetrate the world market with its exports.

2. Options for Developing Foreign Trade

Political and economic measures have been taken to boost exports.

Central American governments have taken a series of economic policy measures designed to boost exports. Exchange-rate controls have been relaxed, laws have been enacted offering tariff and tax incentives for nontraditional exports, and efforts are being made in practically every country to attract foreign investments.

At the same time, new markets have opened up and important opportunities have arisen, such as the Caribbean Basin Initiative (1984 and renewed in 1990) and, more recently in June 1990, the Initiative for the Americas announced by the President of the United States, which proposes, among other measures, the creation of a free trade zone between the United States and the countries of Latin America and the Caribbean.

There are two options as far as the development of foreign trade in Central American countries is concerned:

Option 1. Unilateral action

During the crisis years, countries in the region broke away from the regional framework.

This entails each country individually establishing the incentives, developing the infrastructure and adopting the trade policies it feels are best suited to its particular needs, without being involved in a regional plan. This policy was instituted during the crisis years of the eighties; its parameters are still in place today.

This model was one reason for the downturn in each country's trade with the rest of Central America. Social instability, and the climate of regional insecurity, forced the countries to adopt this policy.

The region's potential was thus not exploited and opportunities for larger-scale investments at a lower cost were neglected. Neither

was advantage taken of specialized production activities, which result in higher profits due to economies of scale.

Option 2. Joint action

This involves strengthening Central America's foreign trade by reestablishing the process of integration, this time based on a more competitive model in regard to third markets, exploiting the advantages of operating as a block.

Relaunching the process of integration calls for a more competitive model vis-a-vis the international market.

This is the alternative that offers most advantages. It would permit specialization and coordination of production. At the same time, it would provide countries in the area with the means to penetrate new markets from a better negotiating position, with more stable demand and higher prices.

Such a scenario would require a high degree of coordination. The present degree of democratization in Central America, and the political determination expressed on various occasions by the governments concerned, provide evidence that a move towards this is already under way.

The clearest indication is the Plan of Economic Action for Central America (PAECA), adopted at the meeting of presidents in Antigua, Guatemala in June 1990.

At recent meetings, Central American presidents have called for open economies.

There, the presidents instructed their ministers of agriculture to draw up a coordinated agricultural policy, in order to "achieve a rapid recovery and expansion of traditional exports and raise the level of nontraditional exports, as well as achieve greater regional food security and boost the supply of manufacturing inputs, thereby generating production linkages." The presidents also agreed to coordinate the external trade policies of the various countries, with a view to acting on a collective basis in international trade forums.

This Regional Program profile is intended to support such an initiative by proposing specific actions that involve every Central American country.

3. Institutional Conditions

In recent years, important institutional efforts have been undertaken to promote joint action by Central American countries regarding exports.

The Permanent Secretariat of the General Treaty on Central American Economic Integration (SIECA) has conducted studies and organized events to promote integration among the Central American countries and to incorporate them into international trade.

The Association of National Organizations for the Promotion of Exports from Central America, Panama and the Dominican Republic

(ASOEXPO), executes various technical assistance projects related to packing and packaging, data bases for gathering information on trade, and management training.

The Federation of Private Entities of Central America and Panama (FEDEPRICAP), promotes joint action by the countries of the isthmus related to international transportation and marketing. It has already consolidated national committees of users of air and maritime freight services, and has been successful in negotiating joint tariff agreements with airlines and shipping companies.

Regional organizations such as ASOEXPO, FEDEPRICAP and FECAEXCA foster new methods of marketing.

The Central American Federation of Export Chambers (FECAEXCA), hosts periodic meetings of the presidents and executive directors of national organizations of private-sector exporters. FECAEXCA and FEDEPRICAP have submitted joint regional proposals to governments and have prepared documentation for lobbying activities in Washington (CBI II, textiles, etc.). They have also promoted coordination of the private sector with regard to the countries' adhesion to the GATT and to their participation in the Uruguay Round, via the exchange of experiences among entrepreneurs from the region.

The Central American Bank for Economic Integration (CABEI) has set up a program to promote nontraditional exports. This entails financing studies on pre-investment, pre-export and post-shipping activities, as well as exportable output and marketing companies. It has already obtained US$89 million in funding from the Japanese government.

Through its Medium Term Plan, the Inter-American Institute for Cooperation on Agriculture (IICA) executes regional projects related to rural agroindustry, technical assistance for intra-regional trade and food security, and promotes exports of nontraditional agricultural products.

4. Legal Framework

The agreement signed by Central American presidents in Antigua, Guatemala, concerning the restructuring, strengthening and reactivation of regional trade -- in particular extra-regional exports -- presupposes a review and updating of the existing legal framework. This will be redesigned and adjusted to the countries' new strategies to gain access to third markets and modernize production. For such an effort, joint participation by both public and private sectors is a must.

5. The Program in the Context of Regional Integration

The Regional Program's purpose is to promote, at the regional level, the cultivation of agricultural products that meet national and international standards (quality, variety, health regulations, etc.), and

There will be support for agricultural exports in countries of the region.

to foster forward and backward linkages through the promotion of the rural agroindustry.

At the same time, it will foster regional trade in agricultural and agroindustrial products, leading to the generation of economies of scale and specialized production in the Central American market.

Furthermore, the Regional Program will support actions to boost productivity in traditional export crops and encourage countries of the isthmus to act collectively in international markets.

When combined with a coordinated Central American economic policy, this will facilitate the incorporation of small- and medium-scale farmers into regional trade and exports, with a consequent improvement in their socioeconomic position.

II. REGIONAL PROGRAM DESCRIPTION

1. Justification

The Regional Program is justified for the following reasons:

Development of intra- and extra-regional trade is the top priority for nations of the region.

- Developing intra- and extra-regional trade is a top priority in the current economic strategy of the countries of the isthmus.
- The efforts undertaken by the different countries in coordination with regional organizations must be complemented by regional investment projects with an immediate impact.
- The diversification of agricultural exports requires the assignation of additional financial resources.
- The execution of these national agricultural projects will increase foreign-exchange earnings and generate employment; at the same time, it will improve living standards for a vast sector of the population with the potential for self-management.

2. Objectives

General

There can be no foreign trade without stable national output

- To boost trade in agricultural products between the countries of the Central American region
- To contribute to raising production and exports of nontraditional products by increasing the countries' capacity for collective bargaining with third markets

Specific

- To set up a computerized system that will provide data on prices and markets available for nontraditional export products. The countries will be able to use this as a basis for harmonizing their trade policies.
- To rehabilitate the infrastructure of customs border posts in order to expedite intra-regional marketing
- To enhance administrative procedures at border posts by introducing the "one-stop system" (ventanilla unica) for dealing with exports

A "one-stop" system for exports will be established.

- To quantify present requirements and future needs for cold-storage facilities, and to industrialize agriculture, particularly in rural zones
- To provide the legal and operational framework for setting up a Central American commodities exchange
- To rehabilitate and upgrade transportation services in Central America by expediting customs procedures and promoting a specialization of air and seaports, with a view to consolidating exports and imports from the various countries
- To propose a standard regional framework of incentives and a common foreign-trade policy that supports the production and export of nontraditional agricultural products

3. Goals

The goals of the national investment projects are included in their respective profiles.

The goals of the regional component are as follows:

- To present a proposal for setting up a computerized network of region-wide trade information

A computerized network of trade information will be set up

- To carry out an assessment and draft a proposal for the rehabilitation of 23 border customs posts
- To undertake a study for specifying the procedures required to establish the mechanism of a "one-stop system" for exports passing through border posts
- To conduct an analysis to quantify the existing cold-storage capacity in Central America, evaluate future requirements, and draft a proposal for developing refrigeration facilities at the regional level
- To prepare a study for determining the steps to be taken to create a regional commodities exchange

The technical studies will give rise to plans for new works and transportation to support national production activities.

— To carry out an assessment of the transportation requirements of Central America (by land, sea and air) to raise the level of intra- and extra-regional trade

— To undertake a comparative analysis of tariff and tax incentives for exports, including a proposal for standardizing such incentives and harmonizing foreign trade policy

4. Regional Program Beneficiaries

Beneficiaries: primarily, the six countries in the isthmus. The most direct and immediate beneficiaries will be private export companies and agricultural and agroindustrial producers.

The countries which will benefit are Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama. Direct Regional Program beneficiaries are private companies involved in export activities, small- and medium-scale farmers and small- and medium-scale private agricultural and agroindustrial companies.

Government institutions that provide services to promote agricultural and agroindustrial production and exports will also benefit.

5. Strategy*

The strategy will be developed in the following stages.

Stage I

Organization, setting-up and execution

To ensure execution of the Regional Program, agreements will be ratified with regional organizations currently involved in government initiatives to reactivate foreign trade.

Stage II

Execution of regional components

The consultants who are to conduct the assessments will be selected and hired. The executing unit will coordinate these efforts through ongoing consultations with businessmen's organizations in the different countries, thereby ensuring optimum results and the preparation of viable proposals which enjoy regional consensus.

Stage III

Presentation and negotiation of studies and proposals

---

* The strategy also takes into consideration the proposals made in the Central American Program to Promote the Export of Nontraditional Permanent Commodities, being conducted by the Central American Bank for Economic Integration (CABEI) and presented within the framework of the Inter-Institutional Group of the Agricultural Sector (GISA). These documents detail requirements for preinvestment and technical cooperation resources in the amount of US$1.3 million and US$1.6 million, respectively.

The executing unit and regional support organizations will negotiate the implementation of the proposals emerging from the studies with the countries and the organized private sector.

The public and private sectors will decide to implement new activities, based on real needs.

6. Components

This Regional Program has two components:

- Regional technical assistance
- National investment projects

Regional Component

The regional technical assistance component will develop the following proposals:

Regional Network of Agricultural Trade Information

The proposal will contain:

- Definition of operational aspects and organization of the Network
- Selection of the institutions which are to coordinate and take charge of the Regional Program in each country
- Identification and evaluation of training needs at the different levels
- Design and technical specifications of the capacity of the computer equipment required
- Information on international data-base systems
- Definition of information needs on the prices and markets available for agricultural exports in Central America and the rest of the world

A Regional Network of Agricultural Trade Information will be established to serve as a resource for decision-making.

Rehabilitation of the physical infrastructure of border customs posts

This will entail preparing a proposal for upgrading the physical facilities at 23 border posts throughout Central America.

Support for administrative aspects of intra-regional trade at border posts

This will require an evaluation of the constraints of present bureaucratic procedures on trade negotiations within the Central American region. It will also propose the setting up of the "one-stop system" as a mechanism for expediting transactions. This system will apply to all 23 existing border posts.

Development of cold-storage infrastructure

National cold-storage requirements will be analyzed and the possibilities of manufacturing the equipment in the region will be evaluated.

This will consist of a diagnostic study of the present state of the cold-storage system in place in each Central American country, as well as future requirements. It will evaluate current capacity and the metallurgical industry's ability to meet the demand for parts and components for refrigeration equipment.

Analysis of the possibilities of setting up a regional commodities exchange

This analysis will be based on the experience acquired by the commodities exchange now operating in Costa Rica; a proposal for setting up a similar mechanism in other countries in the area will be drawn up. This, in turn, will facilitate the organization of a regional exchange.

Development of intra- and extra-regional commercial transportation

The regional transportation network is of transcendental importance for the future of trade.

This will require work at three levels: infrastructure; services; and users. The proposal will contain: 1) details of current transportation requirements (land, sea and air) including the design of a network of terminals and cargo dispatching centers; 2) evaluation of the current services offered to exporters; 3) analysis of the possibilities of direct private-sector participation in the services required by commerce.

Export incentives and harmonization of foreign-trade policies

Tariff and tax incentives must form part of the new strategy for the production of exports.

This will entail a comparative analysis of the tariff and tax export incentives provided by the countries. The results will serve as the basis for the preparation of a proposal to standardize such mechanisms throughout Central America and establish the feasibility of a foreign-trade policy to support nontraditional agricultural exports.

National Component

This consists of investment projects that promote the cultivation, processing and export of agricultural products.

The countries concerned have presented the following investment projects. Details of each proposal are enclosed in the respective profile.

Costa Rica	Promoting the Cultivation, Processing and Export of Cashew Nuts
Costa Rica	Promoting the Production and Export of Mangoes in the Central Pacific and Chorotega Regions
El Salvador	Melon Production and Installation of Packing Plants in Comalapa
El Salvador	Banana Production and Installation of Packing Plants in Lempa-Acahuapa
El Salvador	Citrus Production and Processing
El Salvador	Promoting the Cultivation, Processing and Export of Cashew Nuts
Guatemala	Support for Fruit and Honey Exports
Guatemala	Processing and Cold Storage Facilities for Vegetable Preservation in Production Centers
Honduras	Rehabilitating Cashew Plantations in the Southern Zone and Installation of a Nut and False Fruit Processing Plant, in El Triunfo, Choluteca Department
Honduras	Chilling Plants for Agricultural Exports in Puerto Cortes and at the Ramon Villeda Morales International Airport in San Pedro Sula
Nicaragua	Developing Melon Production and Export
Nicaragua	Rehabilitation of Coffee Cultivation
Panama	Promoting the Production of Nontraditional Export Crops

Thirteen national investment project profiles are submitted along with this Regional Program profile.

7. Support Services for Production

Agricultural research and extension institutions, specialized regional organizations, and the private sectors of the exporting countries concerned, will play an active role in the development of the Regional Program.

This will be achieved through coordination of the activities proposed, the exchange of information, the complementary nature of research in each country, and the nexus established between research and production through harmonized agricultural policies of the countries concerned.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

SIECA will be responsible for overall Regional Program co-ordination

Overall coordination of the Regional Program will be the responsibility of the Permanent Secretariat of the General Treaty on Central American Economic Integration (SIECA), which will prepare the Regional Program's proposals and oversee subsequent execution. It will coordinate relations between the governments and maintain close contacts and collaboration with private-sector exporter organizations.

SIECA will coordinate actions with the Ministries of Agriculture, Trade, the Economy, Transport and Public Works of the countries of the isthmus. SIECA presently functions as the Technical Secretariat of the Meeting of Ministers Responsible for Central American Transportation.

Technical assistance agreements will be signed with IICA and OIRSA.

The Executing Unit will enter into cooperation and coordination agreements with the Inter-American Institute for Cooperation on Agriculture (IICA) and the International Regional Organization for Agricultural Health (OIRSA), regarding technical agricultural matters and quarantine arrangements for agricultural exports.

SIECA will make its headquarters available for the coordination of the Regional Program and will receive financial support of US$753,000.

2. Plan of Action

The Regional Program will be executed over three years. The main activities are:

Year 1

- Sign cooperation agreements between participating regional organizations
- Define terms of reference for consultants
- Consult and coordinate actions with exporter organizations
- Hire consultants
- Coordinate and prepare the regional technical assistance component

Year 2

- Harmonization and analysis of proposals

Year 3

— Negotiations with the governments concerned and the private sector to put the proposals into effect

3. Participating Institutions

Besides SIECA, as the executing unit, participants will include specialized regional organizations which provide support for the reactivation of agricultural exports in Central America, such as IICA, OIRSA, CABEI, ECLAC and other organizations belonging to the Inter-Institutional Group of the Agricultural Sector (GISA).

Besides SIECA, IICA and OIRSA, other regional organizations such as CABEI, ECLAC and the Central American Monetary Council will participate.

Additional regional organizations will participate in carrying out the proposals that emerge from the regional technical assistance component, in particular the Central American Monetary Council -- in data processing -- and the Federation of Private Entities in Central America and Panama.

IV. COSTS AND FINANCING

1. Costs

The total cost of the Regional Program, including the national investment projects, amounts to US$151,313,600.

Total cost of the Regional Program: US$151,293,700

The breakdown of the Regional Program's overall financing, by funding source, is as follows:

Item		(US$ X 000)
A. Regional Technical Cooperation Component		***5 159.2***
-Regional Network of Agricultural Trade Information		2 648.0
-Infrastructure of border customs posts		160.6
-One-stop system at border posts		37.8
-Development cold storage infrastructure		413.7
-Regional agricultural commodities exchange		320.6
-Development of transportation		701.0
-Uniform incentives and foreign trade policy		124.5
-Coordination of Regional Program		753.0
B. National Investment Projects		***146 154.4***
Costa Rica	-Cashews	4 948.2
	-Mango	17 195.1
El Salvador	-Melon	7 761.5
	-Bananas	10 204.0
	-Citrus	13 797.0
	-Cashews	3 175.3
Guatemala	-Fruits and Honey	21 682.0
	-Vegetables	2 456.4
Honduras	-Cashews	2 791.0
	-Cold Storage Network	4 000.0
Nicaragua	-Melón	4 494.0
	-Coffee	34 847.5
Panama	-Nontraditional	18 802.4
Total Regional Program (A + B)		**151 313.6**

2. Financing

Following is a table showing the financing for the regional technical cooperation component, by proposal. The Appendix shows how the funds will be used.

The overall funding for the regional component, by source of funds, is as follows:

Around 20 percent of the financing will come from local sources

Item	Countries	External	Total (US$ X 000)
Regional Technical Assistance Component	***926.0***	***4 233.2***	***5 159.2***
-Regional Network of Agricultural Trade Information	420.0	2 228.0	2 648.0
-Infrastructure border customs posts	35.0	125.6	160.6
-"One-stop system" at border posts	6.0	31.8	37.8
-Development cold-storage infrastructure	89.7	324.0	413.7
-Regional Commodities Exchange	94.8	225.8	320.6
-Development of transportation	96.0 *	605.0	701.0
-Standardization of incentives and external trade policy	23.5	101.0	124.5
-Coordination of regional technical assistance component	161.0	592.0	753.0

* Contribution from SIECA

V. ANALYSIS

1. Technical Analysis

The execution of the Regional Program calls for a high degree of coordination and harmonization throughout the isthmus. SIECA's experience in recent years with the Central American economic integration process, ensures the technical soundness of the components being proposed.

The experience in coordination acquired in recent years by the countries, and by organizations like SIECA, ensure the feasibility of the Regional Program.

2. Institutional Analysis

SIECA is presently in the process of reorganization which, once accomplished, will enable it to play an active role in this new phase to achieve economic integration in the area. The governments now in power in Central America, have stressed the importance of developing joint actions to step up intra- and extra-regional exports. The political determination expressed at the highest level in various forums, ensures that institutional and financial support for the Regional Program will be forthcoming.

3. Legal Analysis

Central American integration agreements establish a legal framework that will facilitate the development of joint regional programs. These regional agreements and accords are now under review; their modification will permit the development of a broader integration process which, in turn, will promote free trade between the countries as well as boosting international trade.

4. Regional Program Impact

- The Regional Program will expedite the process and negotiations aiming to re-launch Central American economic integration efforts. It will also support the guidelines drawn up by the presidents in the Plan of Economic Action for Central America (PAECA).
- It will boost nontraditional agricultural exports, and, in the case of Nicaragua, foster the introduction of new coffee technology as well as boosting coffee exports.
- The national investment projects constitute an important means of generating employment in rural zones, where the impact will be greatest among farm workers and small- and medium-scale producers.

— The regional technical assistance component will have a qualitative impact on intra- and extra-regional trade relations.

ANNEX

BREAKDOWN OF COSTS AND FINANCING FOR THE REGIONAL TECHNICAL COOPERATION COMPONENT

Proposal 1
Regional Network of Agricultural Trade Information

Description	Country contribution	External contribution
24 m/m external consultant (Data S.)		72 000
3 m/m external consultant (design)		50 000
Computer equipment		300 000
Purchase and updating of programs		270 000
Data base	100 000	500 000
Equipment maintenance	20 000	100 000
Equipping and fitting out of premises	150 000	150 000
Seminar-workshop		30 000
Training	100 000	500 000
Monitoring and follow-up	50 000	150 000
Contingencies	106 000	
Total	**420 000**	**2 228 000**
Total:		**US$ 2 648 000**

Proposal 2
Infrastructure, border customs posts

Description	Country contribution	External contribution
20 m/m external consultants		60 000
6 m/m local assistant	6 000	
Missions	14 000	23 000
Equipment and supplies	15 000	35 000
Contingencies (5%)		7 650
Total	**35 000**	**125 650**
Total:		**US$ 160 650**

Proposal 3
"One-stop" system at border posts

Description	Country contribution	External contribution
8 m/m external consultants		24 000
Missions	6 000	6 000
Contingencies		1 800
Total	**6 000**	**31 800**
Total:		**US$ 37 800**

Proposal 4
Development of cold-storage facilities

Description	Country contribution	External contribution
144 m/m external consultants*		324 000
Technical support and administrative personnel	89 700	
Total	**89 700**	**324 000**
Total:		**US$ 413 700**

*Includes cost of travel and per diem expenses

Proposal 5
Regional Commodities Exchange

Description	Country contribution	External contribution
36 m/m external consultants		108 000
108 m/m national consultant	64 800	64 800
Meetings	10 000	15 000
Missions	10 000	23 000
Equipment and materials	10 000	15 000
Total	**94 800**	**225 800**
Total:		**US$ 320 600**

Proposal 6
Development of Transportation

Description	Country contribution	External contribution
12 m/m Project director		72 000
12 m/m Counterpart Central American director	24 000	
12 m/m external consultant, land transportation		72 000
12 m/m Cocatransca expert	24 000	
12 m/m external consultant, air transportation		72 000
12 m/m specialist, air transportation	24 000	
12 m/m external consultant, sea transport		72 000
12 m/m Cocatram expert	24 000	
12 m/m Transport economics		72 000
Official missions		72 000
Training		125 000
Contingencies		48 000
Total	**96 000**	**605 000**
Total:		**US$ 701 000**

Proposal 7
Standard Incentives and External Trade Policy

Description	Country contribution	External contribution
18 m/m external consultant		54 000
Technical consultation meetings	12 500	34 000
Missions	11 000	13 000
Total	**23 500**	**101 000**
Total:		**US$ 124 500**

Coordination of Regional Technical Assistance Component

Description	Country contribution	External contribution
24 m/m general coordinator		72 000
144 m/m national liaisons		360 000
Secretarial support		
24 m/m for general c.	15 000	
255 m/m for country liaisons	90 000	
Missions		48 000
Equipment and materials	56 000	112 000
Total	161 000	592 000
Total:		**US$ 753 000**

COSTA RICA

PROMOTING THE PRODUCTION AND EXPORT OF MANGOES IN THE CENTRAL PACIFIC AND CHOROTEGA REGIONS

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

In 1989, a Technology Generation and Transfer Program was created in Costa Rica to support actions by programs promoting non-traditional export crops. The Institute for Agrarian Development (IDA), of the Ministry of Agriculture and Livestock, and the University of Costa Rica, work together inthese efforts.

Under this Project, the efforts to promote mango cultivation merit special mention. External market factors and high profit margins provide incentives to growers and make mango cultivation a viable, high-income alternative for growers. Since the early 1980s, technological advances and the use of new mango varieties have increased both production and productivity.

Presently, 4,100 hectares are under cultivation. The main objective of the Project described herein, is to provide credit for small- and medium-scale mango farmers in the Dry Pacific and Chorotega regions in order to increase production.

The Pacific Central Producers' Association conducted a feasibility study for a hot-water treatment plant, in collaboration with Agricultural Cooperative Development International.

The executive unit of the Project, which is programmed for a five-year period, will be headquartered at the Ministry of Agriculture and Livestock.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Project

Because of the foreign exchange and income it generates, the agricultural and livestock sector is the cornerstone of Costa Rica's economy. In the period 1983-1988, its contribution amounted to 19.9 percent of the GDP.

The implementation of economic policy favorable to the entrepreneurial sector, increased that sector's share of export goods from 65 percent in 1983 to 70 percent in 1988.

In the agriculture and livestock sector, agriculture is the most important subsector, representing 72.5 percent of that sector's production during the period 1984-1988. In that same period, livestock activity represented 19.3 percent of agricultural output, while the other subsectors amounted to 8.2 percent.

The actions contemplated in the Project will receive support from government incentives to nontraditional products

Increased volume of nontraditional exports was promoted with tax incentives (25% of the aggregate value of nontraditional exports), export contracts, creation of agencies dedicated exclusively to promoting foreign trade (Ministry of Foreign Trade), and the strengthening of private-sector institutions, such as the Costa Rican Coalition for Development Incentives (CINDE) and the Center for Export Promotion (CENPRO).

During the past six years, agriculture and livestock exports increased by US$264 million, growing from US$563 million in 1983 to US$827 million in 1988.

2. Analysis of Production Options and of the Technical Environment

Currently, 4,100 hectares of mango are under cultivation in the country. Mature plantations consist of 2,733 hectares, 60 percent of which produce exportable varieties. Of the total number of hectares geared for export, 700 are dedicated to the cultivation of yellow-skinned mango and 940 to red-skinned mango. Since 1988, a total of 1,367 hectares was planted under the National Mango Program, and projections indicate that the 800,000 five-kilogram crates exported in 1989 will double by 1993.

The Project represents a significant socioeconomic incentive for the selected areas.

Mango production has proven a viable alternative, both in terms of benefits to producers and socioeconomic development to the zone where the Project is to be implemented.

Mango production in 1987 totaled 17.2 million kilos; 41 percent were produced in the province of Alajuela, 36 percent in Guanacaste, 12 percent in Puntarenas, and 10 percent in San Jose. The false Haden (yellow) and Tommy Atkins varieties accounted for 75 percent of the total harvest.

The following problems arise during the agricultural production stage:

- A lack of planning when expanding cultivation areas
- A high percentage (approximately 43% of the total yield) of yellow mangoes, which are less marketable internationally
- Inadequate pest and disease control and insufficient internal quarantine measures to avoid the spread of pests, especially in some areas of Puntarenas and Guanacaste which show great potential

- Inadequate coverage by technical assistance and training programs for producers and their organizations
- A lack of specific credit lines for mango production

The following problems are specific to post-harvest management and marketing:

- Forty percent (40%) of the fruit cannot be exported, as a result of post-harvest management problems connected to cutting, degree of ripeness, latex removal, transportation, inadequate cold storage, and poor quality-control training.
- Collection centers used by producer organizations do not allow for adequate handling and storage.
- There is no manual of guidelines that standardizes criteria to determine the quality of export fruits and identify the causes of loss.
- Quarantine treatments used are only suitable for European markets.
- A better market information system is needed that will give producers greater bargaining power.

Special efforts will be placed on constructing a modern collection center.

Intermediate level technology has been used in production and post-harvest management during the past nine years. This notwithstanding, expertise is needed in:

- Irrigation periods and requirements for mangoes
- Characterization of varieties for industrial processing
- Induction of flowering in certain cultivars
- Integrated actions to combat mango flies
- Determining the effectiveness of pesticides currently in use
- Adapting post-harvest management technology in order to utilize quarantine fruit treatments

Industrial mango processing has not taken root because of insufficient market information, lack of supplies of raw materials, and unfamiliarity with processing technology. For these reasons, substantial support is needed for developing industrial technology for the processing of unexportable surplus fruits.

There is a need for technology that will make it possible to process unexportable, surplus fruit that can provide value added for the agricultural sector.

In comparison to traditional activities, mango production employs more manual labor (approximately 0.25 to 0.4 workers per hectare) year round.

3. Socioeconomic Situation of Potential Beneficiaries

The Project's area of action covers 1,192 km in the Central Pacific and 1,241 km in the Chorotega Region. The agricultural sector of the Chorotega Region contains 32 percent of the unemployed labor in the area, and the Central Pacific contains 26 percent.

Generally, 30 percent of the farms are under 50 hectares in size and cover 15 percent of the total area of both regions. Farm distribution, by size, of the 300 mango producers is as follows: under 10 hectares, 9.2 percent; over 50 hectares, 68.8 percent. Mango production is the principal crop of the small farmers.

This Project is aimed at producers having farms measuring less than 25 hectares, given that other activities, such as beef cattle, dual-purpose cattle, and staple grain farming are not profitable in farms of this size. Mango cultivation will allow producers to use large parts of their land and family labor during seasons when work is usually scarce.

4. Institutional Conditions

Mango production is promoted by the National Mango Program, of the Ministry of Agriculture and Livestock (MAG), which also provides support to the technological development of agricultural production. Post-harvest management support is provided by the Agricultural Research Center (CIA), and that related to mango processing, by the Food Technology Research Center (CITA).

Some 300 producers are organized into associations, and their efforts are of special importance to the success of Project activities.

Financial resources are provided through the National Banking System. Producers are organized into six associations for a total of 300 members. Generally, the budget assigned to support this activity is insufficient to meet planned goals, limiting comprehensive growth in mango production areas.

5. Legal Framework

These production efforts are based on a legal framework that governs agricultural development. In order to promote the export of nontraditional products, the Public Sector Financial Equilibrium Law was passed in February 1984.

Similarly, an export contract was created, which established special port duties, tax exemptions, and credits with preferential interest rates for producers and exporters of nontraditional products.

Negotiations are currently under way between the Ministry of Agriculture and Livestock of Costa Rica and the United States Department of Agriculture on an agreement to permit mango exports to the United States market. The agreement deals with requirements Costa Rica must meet to implement a program of inspection and technical cooperation with the United States.

6. The Project in the Context of Regional Integration

Increasing the export of nontraditional agricultural products is high on the list of priorities of the Central American countries. Both Costa Rica and Guatemala are interested in cultivating mangoes for export, and both countries are working on agreements to export hot-water treated mangoes to the United States.

Costa Rica and Guatemala are currently negotiating agreements to export hot-water treated mangoes to the United States.

The Project's region-wide components deal with price and market information, business training and technology transfer. IICA, SIECA and OIRSA, are regional organizations that support this initiative.

II. PROJECT DESCRIPTION

1. Justification

The mango subsector is represented by an organization of farmers, industrialists and exporters, who have come together during the past few years. However, in order to fully develop the crop and exploit marketing possibilities, optimum farming practices are required.

The Project aims to facilitate credit to improve physical infrastructure, upgrade technical and administrative training, and strengthen market information systems with a view to streamlining marketing.

Increased demand and prices on the national and international markets have spurred mango cultivation in the area to be covered by the Project, which seeks to bring about a 22-percent increase in area under cultivation, the renewal of 17 percent of same, and the rehabilitation of 29 percent of the cultivated land.

Technological improvements for post-harvest management are necessary.

Mango cultivation can generate new sources of employment that will raise family income levels. In order to encourage sustained growth in this area, new markets must be penetrated and updated technology implemented in the post-harvest management process. The Project aims to establish a quarantine treatment and mechanized packaging plant.

The area comprised by the Project is agriculturally-suited to profitably grow mangoes, as attested to by the output of the 4,000 hectares currently under cultivation. In addition, support is forthcoming from producers organizations, exporter organizations, and agreements between MAG and UCR guaranteeing technology generation and transfer.

2. Objectives

General

To promote mango production and exports in the Central Pacific and Chorotega regions, in order to increase the influx of foreign exchange and improve socioeconomic conditions in the Project's area of influence

Specific

- To increase mango production and productivity in the Project's area of influence
- To increase mango export volumes and improve domestic and external marketing systems
- To strengthen physical infrastructure for post-harvest crop management
- To modernize mango production systems
- To increase the number of producers growing mangoes
- To enable producer associations to become self-sufficient
- To raise family incomes

3. Strategy

The Project's strategy aims to:

- Incorporate new areas into mango production; renew and improve existing plantations
- Assess the collection, classification and packaging infrastructure used by producers' organizations
- Open lines of credit with the national credit system to renovate the physical infrastructure used by beneficiaries
- Finance and install a hot-water treatment plant for mangoes

- Conduct research programs to develop industrial processing technology
- Provide training to producers' organizations in connection with technical and administrative matters, with a view to improving their capabilities to process and market mangoes
- Train specialists and producers in the technical and administrative aspects of agricultural production, industrial processing and marketing

4. Components

Component 1. Planting and renewal of plantations

This component aims to recover 1,200 hectares, at a cost of US$340 per hectare; renew 700 hectares, and plant 900 hectares with mangoes at a cost of US$2,600 per hectare for the first three years. The Project will operate in the counties of Atenas, Orotina, and San Mateo in the province of Alajuela; Esparza, Montes de Oro, Garabito, and the districts of Paquera and Cobano in the province of Puntarenas; Nandayure and Abangares in the province of Guanacaste, and Turrubares in the province of San Jose.

Expanding the crop the additional 900 hectares will cost US$4,075,100; it will involve small- and medium-scale farmers. The renewal of 700 hectares with more profitable mango varieties will cost US$3.17 million.

The Project also envisages improving certain technological matters concerning plant health, pruning techniques and fumigation equipment. The rehabilitation of 1,200 hectares has an estimated cost of US$408,000.

Component 2. Quarantine treatment and marketing

This component aims to improve post-harvest management systems and strengthen market information systems, by strengthening the physical infrastructure of the collection, preclassification and temporary storage system employed by organized producers' groups. The estimated cost is US$906,000.

Special attention will be given to improving the market information system, as it will help open up new channels for export products.

A hot-water treatment and mechanized packing plant will be installed in the Orotina county of the province of Alajuela. The cost is estimated at US$1.5 million, and the area of construction required is 1,000 square meters. The plant will be able to process two million kilos of mangoes per four-month season.

The cost of strengthening the market information system is US$150,000. The aim will be to open new marketing channels for exports, expand existing markets and open new ones.

Component 3. Technological development

The third component deals with the development and validation of technology for production, post-harvest management and industrial processing of mangoes, which will ensure sustained development of the activity.

Since technology generation is an important element of Project activity, it will be necessary to strengthen research activities being conducted by MAG, CITA and CIA, at a cost of US$200,000.

Processing will require the development of specialized industrial technology. Processing generates value added and will provide an alternative outlet for unexportable mango surpluses.

5. Goals

National mango output will grow by 30 percent. During the first four years, 900 hectares will be renewed.

- To incorporate 700 additional hectares into mango production during the first four years of the Project
- To increase national mango output by 30 percent
- To renew 900 hectares of existing mango plantations during the first four years
- To rehabilitate 1,200 hectares of existing mango plantations during the first four years
- To provide training to 500 producers during the term of the Project
- To increase exports by 1.7 million four-kilo crates by the Project's tenth year
- To establish a quarantine treatment and mechanized packing plant by the fourth year
- To upgrade the farmers' collection infrastructure during the first three years of the Project
- To develop the processing technology needed to export processed mangoes

6. Project Beneficiaries

The Project's direct beneficiaries will be 420 small- and medium-scale farmers. New crops will be planted in five-hectare modules, which will benefit 180 farmers. The rehabilitation of plantations will directly benefit 140 producers.

The credit component to finance equipment and efforts to improve plantation management technology will benefit 100 producers.

An estimated US$13,000 will be invested per beneficiary.

Actions to improve collection infrastructure will benefit the six organized farmers' groups. The participation of these farmers and large-scale businesses will be sought in the quarantine treatment and mechanized packing plant, through a system of capital investments.

7. Support Services for Production

Component 1. Planting and renewal of plantations, will be supported by institutions of the National Banking System and MAG's regional offices.

Component 2. Quarantine treatment and marketing, will be supported by producers' organizations and the Export Promotion Center.

Component 3. Technological development, will be supported by CIA, CITA and MAG.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

The executing unit will be headquartered in the Ministry of Agriculture and Livestock. A technical-administrative group will be in charge of operating, directing and supervising the implementation of the Project.

A technical and administrative group, headquartered at MAG, will serve as the executing unit.

After developing the operating plans and annual budgets for the different components, the duties of the executing unit include follow-up, evaluation and control.

The executing unit will also conduct studies to guide Project implementation, with support from other participating institutions.

2. Plan of Action

To reach the stated goals, the following plan of action is proposed:

- To establish the executing unit with the human and material resources needed to direct the Project
- To determine suitable zones for mangoes and assess the current status of producers, in order to identify areas of potential for new mango plantations and select plantations needing renewal

Studies will be conducted to determine the needs and potential of specific areas with a view to selecting new areas for planting and rehabilitating the crop.

— To determine the current status of collection centers used by producers' associations and conduct the economic and technical studies needed for designing the quarantine treatment plant.

— To upgrade the infrastructure of the collection centers during the first three years. The plant will begin operations during year four of the Project.

— To strengthen actions of the different institutions in support of marketing and market information, especially those by CENPRO, the Ministry of Foreign Trade, producer associations and private enterprise

— To strengthen the technology generation and transfer process for the purpose of maintaining field and post-harvest management technology up to date

Ongoing training will be provided through short courses, seminars and field trips. demonstration plots will also be used.

Training will be directed at producers, organized groups and specialists, in all technical and administrative aspects of mango production. Training will be an ongoing Project activity and will be conducted through field days, short courses and seminars. Demonstration plots will also be used.

3. Resources

The Project will be implemented with the human resources, infrastructure and counterpart financial resources of research programs and participating institutions in the region. The executing unit will consist of three agronomists, an administrator and a secretary.

Total resources for the four-year period are calculated on the basis of personnel needs, materials, equipment (two computers, two rugged-terrain vehicles and office equipment), operating and maintenance costs.

4. Participating Institutions

Several agricultural public-sector institutions will participate in the implementation of the Project. The Ministry of Agriculture and Livestock will supply 40 specialists and support personnel. The University of Costa Rica will provide 25 specialists and support personnel.

The private sector will play an active role in the Project through mango producers' associations, export companies and domestic marketing firms

The private sector will actively participate through six producers' associations operating in the principal mango-growing regions: export companies, the Pineapple Development Corporation (PINDECO) and the Lachner & Sanez Corporation; the Center for Exports Promotion (CENPRO); the National Learning Institute (INA); the Institute for Agricultural Development (IDA); the National Production Council (CNP); and the National Banking System (SBN).

IV. COSTS AND FINANCING

1. Costs

The total cost of the Project, estimated at US$17,175,100, is distributed by component as follows:

Total Project cost: US$17 million

Component	(US$ X 000)
1. Agricultural credit	***7,653.5***
Planting of new areas	4,075.1
Renewal	3,169.5
Farm labor	408.8
2. Quarantine treatment and marketing	***2 555.2***
Treatment	2,555.2
Collection infrastructure	2,055.2
Strengthening of marketing	500.0
3. Technological development and research activities	***4,541.5***
4. Executing unit	***900.0***
Infrastructure and human resources	700.0
Operating costs	200.0
5. Contingencies	***1,544.9***
Total	**17,175.1**

The investment/benefit ratio is US$13.6 million; it is estimated that each direct beneficiary has three dependents.

2. Financing

The Project's financial requirements for the four-year period include costs for initial planting, plantation renewal, collection infrastructure, quarantine treatment, Project operations and technological development.

External contributions are estimated at US$11.5 million. Local contributions will total US$5.4 million.

Stage	External	Local	Technical cooperation	Total (US$ X 000)
Agricultural	7 244.7	408.8		7 653.5
Post-harvest and marketing	2 555.2			2 555.2
Technology generation		4 341.5	200.0	4 541.5
Executing unit	700.0	200.0		900.0
Contingencies	1 049.9	495.0		1 544.9
Total	**11 549.8**	**5 445.3**	**200.0**	**17 195.1**

Funds for the planting and renewal of plantations will total US$7,244,700, which will enable producers to finance 100 percent of the costs per hectare of mango, with a grace period and a payment schedule based on the production cycle.

A total of US$2,555,200 will be allocated to the agroindustrial and marketing stages. This amount will cover costs to upgrade the physical infrastructure of collection centers, the construction of the treatment and mechanized packing plant, and actions to strengthen the marketing system.

The sum of US$200,000 in non-refundable technical cooperation funds will be requested for technology development, which will be made available to mango research programs.

V. ANALYSIS

1. Technical Analysis

An analysis of the Project indicates that it is technically sound. It has been designed to boost mango cultivation, with a view to increasing levels of production and productivity to meet domestic demand and provide a surplus for export.

The two regions where the Project is to be implemented are suited to mango cultivation, and production levels can be attained that will make mango cultivation profitable for small- and medium-scale producers. The Project's technical feasibility is to a great degree guaranteed by the experience of potential beneficiaries and projections of increased production to commercial, exportable levels.

2. Institutional Analysis

The institutional infrastructure will facilitate Project implementation and makes the securing of required counterpart funds very likely.

Participating institutions are set up to carry out research, technology transfer, credit, industrialization, and marketing activities. Although financial resources are limited, the existing institutional infrastructure

is suitable for implementation of the Project, making the securing of the required counterpart funds feasible.

3. Legal Analysis

The promotion of mango production is in line with legislation and decrees governing the participation of the Ministry of Agriculture and Livestock in research and extension activities, the University of Costa Rica in technology generation, and the National Banking System in providing credit to producers.

The legal framework is further complemented by an agreement between Costa Rica's Ministry of Agriculture and Livestock and the United States Department of Agriculture, which will allow on-site inspection of the fruit in Costa Rica.

4. Financial Feasibility

A financial study was conducted of each component and results indicate that the Project is profitable.

Component	FIRR (%)	B/C	NPV (US$ X 000)
A. Agricultural	37.2	1.57	1 237.0
Costs +30%	27.5	1.21	592.2
B. Agroindustrial	44.0		18 498.0
Costs +20%	34.1		10 121.0

5. Project Impact

The Project will generate an estimated US$9 million in foreign exchange by the 10th year.

In terms of employment, an estimated 660 persons will derive permanent jobs, while 1,500 temporary jobs, mostly during the harvest period, will be created.

The Project will create 660 permanent and 1,500 temporary jobs.

The Project will have a positive effect on the lives of the rural population, as it will directly benefit 420 producers who will make use of family labor. Rural migration to the cities should decrease as a result.

The growth planned for this activity, combined with a favorable credit program, will boost production and productivity in the Project area. Moreover, it will bring about a substantial improvement in the use of production resources and in the standard of living of producers.

Technology generation by the Ministry of Agriculture and Livestock and the University of Costa Rica will benefit from funds provided by the Project for research.

Industry will also benefit from research on processing, market information and the ongoing supply of quality mango fruit.

EL SALVADOR

PROMOTING THE CULTIVATION, PROCESSING AND EXPORT OF CASHEW NUTS

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

Commercial exploitation of the cashew, including the agricultural and agroindustrial phases, has been going on in El Salvador since 1979. Initially, the cultivated area covered 1,260 hectares; because of various problems this was reduced to 900 hectares -- the area which is presently being exploited. As many as 545 metric tons of processed fresh nuts are produced annually.

This Project is an investment proposal for reactivating cashew growing and for increasing plantation area to 3,745 hectares, for export purposes.

One of the Project's aims is to supply and reactivate the cashew nut processing plant owned by the La Maranonera Agrarian Reform Cooperative (CORALAMA), located in the province of San Miguel. The output resulting from rehabilitation of cashew plantations would permit the plant to operate at full capacity, producing as much as 4,500 metric tons of fresh nuts annually.

The production and export of cashew nuts has numerous comparative advantages.

At present, private-sector institutions are prepared to support the Project, and the government and the private sector have carried out research in support of it. The National Center of Agricultural Technology (CENTA) of the Ministry of Agriculture (MAG), has developed technological packages for the crop, while the private sector, through the Salvadoran Foundation for Social and Economic Development (FUSADES) and the Coordinating Committee for Economic Development of the Eastern Region (COMCORDE), provide technical assistance pertaining to planting, agricultural practices, harvesting and promotion of commercial exploitation.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Project

The economy of El Salvador is extremely dependent on the agricultural sector, with the four most important products of this primary activity being coffee, cotton, sugar and meat. Altogether, they represent a little more than 60 percent of total exports. The sector produces 25 percent of the gross domestic product and absorbs more than 50 percent of the economically-active population. Twenty-five percent of El Salvador's exports are placed in Central American markets.

The spectacular drop in the value of exports between 1980 and 1987, amounting to a decrease of US$500 million, has severely undercut the country's current account balance. During the same period, a deficit of more than US$1.2 billion was accumulated. This has resulted in the country's extreme dependence on grants and cooperation from abroad, as a result of which it has been able to maintain a certain degree of financial equilibrium.

New economic policy guidelines aim to decrease dependency through free competition, which can create favorable conditions for a recovery, over the medium term, of the same kind previously characterized by private investment in El Salvador.

Present strategy seeks to recover the competitiveness of agricultural exports.

In order to improve the country's position in the external sector, present strategy follows two basic guidelines: recovery of export competitiveness and progressive decrease in dependency on grants. The present Project fits in with this panorama.

During the next few years, private farmers producing nontraditional products for export will enjoy incentives and guarantees which have been established to foster economic reactivation and growth.

2. Analysis of Production Options and of the Technical Environment

Intensive soil utilization is becoming more important every day, since the agricultural frontier has reached its limit and the demand for agricultural products is on the rise. El Salvador has significant agricultural potential. However, factors extraneous to the economy have caused the soil resource to be under-utilized recently. The government has proposed that this under-utilized land be immediately brought back into production, in order to restore the confidence of farmers. At the same time, priority has been given to crop diversification for export purposes.

Studies have indicated that the Project area is suitable for the production of maguey fiber plant, sorghum and cashew.

The main problem in connection with maguey, which is raised for its fiber, is that synthetic fiber is taking its place in the international market. The current output is marketed locally, at low prices which are discouraging to farmers.

The advantage of sorghum is that it is an annual crop, and farmers can realize income without a long waiting period. In the Project area, sorghum has two disadvantages; it contributes to soil erosion and its profitability is low.

Available technology will ensure the success of new cashew plantations.

The advantages of cashew are the following: the climate and soils of the area are right for the crop; the technology required is accessible under the country's present conditions; the crop contributes to reforestation and agricultural diversification; and lastly, a processing

plant with an annual capacity of 4,500 metric tons of fresh nuts already exists. An exportable surplus will be generated, increasing the income of production units through a more favorable benefit-cost relationship. Present cashew output is sufficient for processing the nut during year one; the volume to be processed will increase, depending upon the speed with which new plantations are established.

The Project will be located in the southeastern part of the provinces of San Miguel and La Union, on land between 10 and 400 meters above sea level.

3. Socioeconomic Situation of Potential Beneficiaries

The beneficiaries can be divided into two large categories. The first, made up of small-scale farmers (less than two hectares), is characterized by subsistence agriculture, low cultural levels, lack of access to conventional credit sources, low levels of organization, and an average annual income estimated at US$480.

The second group, composed of medium-scale farmers (five to 50 hectares), is characterized by a more highly developed and diversified agriculture, a higher cultural level (most of the members of this group have some education), scant access to conventional sources of financing, and very little organization.

Potential beneficiaries have considerable experience in cultivating and exporting cashew nuts.

Potential beneficiaries have extensive experience in growing and exporting cashew nuts. The members of CORALAMA own production units measuring from seven to 25 hectares in size. Altogether, their land covers an area of 1,300 hectares. The technology they employ is traditional.

4. Institutional Conditions

The private sector will be responsible for promoting the Project among the farmers through the Coordinating Committee for Economic Development of the Eastern Region (COMCORDE), a private organization which presently promotes cashew growing in the eastern part of the country.

Private-sector institutions will be actively involved.

Nationally, the Project will be promoted by the Salvadoran Foundation for Economic and Social Development (FUSADES). Support will be provided by its Agricultural Diversification Program (DIVAGRO), which researches, disseminates and promotes agricultural crops.

5. Legal Framework

The legal framework presents no obstacles to the Project's operation. The outstanding factor in this respect is the position of the authorities, who encourage a greater participation of the private sec-

tor in economic activities, with a view to reducing government participation.

The legal framework supporting the Project is backed by laws pertaining to export reactivation and a system of free zones and tax incentives. In addition, a draft of a bill that encourages and guarantees foreign investment has been presented to the Congress for approval.

6. The Project in the Context of Regional Integration

Guatemala, Honduras and Costa Rica are striving to develop cashew production and processing of the nut for export.

Joint efforts between cashew producers and exporters will bring benefits to both.

Any joint effort on the part of countries presently working to expand this crop must be seen as a mechanism for developing regional components of the Project. Some of the most important of these are: the organization of marketing channels; information on new markets, prices and sales volumes; transportation; and the establishment of region-wide quality standards.

Regional organizations that could support the Project are SIECA, OIRSA and IICA.

II. PROJECT DESCRIPTION

1. Justification

The main justifications for the Project are:

The nut market is large and steadily growing.

- The availability of 34,000 hectares of land suitable for cashew growing. By nature, the cashew adapts easily to prevailing conditions, so that there are no obstacles to its cultivation in the Project area. In this zone (the southeastern part of San Miguel and La Union provinces), it is estimated that some 6,300 hectares of land are suitable for the Project's purposes.
- The availability of an abundant supply of qualified labor (existing crops would not be affected)
- Availability on the national market of sufficient quantities of other inputs necessary for agricultural and industrial production

- The existence of a processing plant within the Project area, with a processing capacity of 4,500 metric tons of fresh nuts annually
- The worldwide demand for processed cashew nuts, which maintains an upward trend. In the last five-year period, its growth in monetary terms reached US$67.3 million. World-wide output is estimated at 500,000 metric tons; over the last five years the trend has been upward, but always inferior to the demand.

2. Objectives

General

- To increase cashew output and productivity on existing plantations and to expand planted areas
- To process cashew nuts for export

Specific

- To improve existing cashew plantations, in order to increase productivity
- To increase the area planted to cashew, in order to make better use of operating processing capacity
- To modernize existing facilities at the plant
- To improve processing of the cashew nut, in order to place a higher-quality product on the export market
- To establish a flexible export marketing system

Objective: To improve the quality of exported nuts

3. Strategy

The strategy consists of three stages:

Stage 1. Promotion of the crop by COMCORDE and FUSADES

The aim is to integrate the production, processing and external marketing phases.

- Farmers receive training through seminars, courses and field activities where they are brought up to date on crop techniques and maintenance tasks.
- A special credit line is set up for Project beneficiaries.
- Certified seed is provided to participating farmers.

Stage 2. Modernization of the processing plant

- Remodeling takes place, equipment is purchased and machinery is installed.
- Plant technicians receive training on the industrial processing of nuts.

Stage 3. Marketing

- Surveys are made of new export markets.
- Marketing channels are improved.

4. Components

Component 1. Agricultural development

This contemplates replanting 455 hectares (of the existing 1,300 hectares) during year one, and expanding the cultivated area to 4,000 hectares over a period of five years. From year two to year six, 658 hectares will be planted annually until reaching the 4,000 hectares.

Increased yield of the plantations will guarantee the supply of raw material for the processing plant.

The schedule of expected yield per hectare as of year three is as follows: 36, 80, 130, 220, 400, 630, 720, and 810 kilograms from the eighth production year on. The output will be sold to the industrial plant at the price of US$518 per metric ton.

For setting up the plantations, the resources required will be manpower, organic and chemical fertilizers, pesticides and seed.

As regards manpower, the total of workdays required per hectare is 60 during the first year, 20 during the second, 19 during the third, and 21 from the fourth year on. The activities requiring manual labor are: pruning, delineation, hole-digging, fertilizing, planting, circling, trimming of basal shoots, phytosanitary control and harvesting.

The amount of organic fertilizer required is 2.2 metric tons per hectare. Only one application is necessary during the first year. The chemical fertilizer requirement is estimated at 45 kilograms per hectare during the first year, 79 kilograms per hectare during the second, and 45 kilograms per hectare during the third and fourth years. From the fifth year on, 137 kilograms per hectare is required.

From the first to the fourth year, the pesticide requirement is estimated at 0.5 kilograms per hectare; from the fifth year on, one kilogram per hectare is indicated.

The amount of seed needed is 2.72 kilograms per hectare.

On new plantations, the trees start producing after year three. Estimated yield per hectare in the first year of production is 36 kilo-

grams; the second, 80 kilograms; the third, 130 kilograms; the fourth, 220 kilograms; the fifth, 400 kilograms; the sixth, 630 kilograms; the seventh, 720 kilograms; and from the eighth year on, 810 kilograms.

Component 2. Industrial modernization

The industrial phase involves processing the fresh seed to produce the dry nut. This includes the following activities: delivery of raw material; classification; heating; extraction of oil; shelling; classification of kernel; packaging; and storage.

The false fruit is a byproduct of the industrial process, and it will not be processed during the initial phase. During the training period, research will be done to ascertain the best way to use it. The short-term approach will be to transport the false fruit outside the plant and deposit it in pits to make organic fertilizer.

While research is under way to determine how it will be used in the future, the false fruit will be used to produce organic fertilizer.

During this phase, the existing plant will be reactivated and its processing capacity boosted to 5,000 metric tons per year. The plant is the property of CORALAMA and is located in the canton of Tierra Blanca, in the district of Chillagua, San Miguel province.

The most important components of this phase are: material investment for the acquisition of machinery and equipment (including installation); and construction of new infrastructure for enlarging the plant (including storehouse for 5,000 metric tons of nuts in bulk, a metal shed, an area for personnel, an outer wall, inner courtyards, and a building for offices, etc.).

Operating costs include: advance payments on raw material; diesel oil; fuel; packaging; electricity; water; light; manual labor; and administrative expenses.

Included under the item of acquisition of raw materials is the purchase of 545 metric tons of cashew seed, currently produced by CORALAMA. In other words, the total volume of raw material will include both present output plus that of the new plantations.

The costs of technical training are included under technical assistance. This covers payment of consultants, as well as trips and courses for processing plant personnel, to be carried out in two stages. First, a technician specializing in the semi-mechanized process will be hired; secondly, the head of production will travel to Brazil for six months to acquire practical plant experience and receive training in managing the process. This person, in turn, will train the rest of the employees in the various operations.

Component 3. External marketing

The aim is to establish a network for export marketing by defining appropriate channels for reaching new markets. For this purpose, it

will be necessary to carry out a market survey in consumer countries.

A market survey will be conducted to obtain greater information on the market situation in consumer countries, which will serve as the basis for designing the marketing strategy.

The most important activities are: a market survey pertaining to cashew nuts and byproducts; technical assistance in establishing marketing strategy; and, fixed investment in machinery and equipment for marketing.

The marketing strategy, and all activities necessary for its implementation, will be based on resuits of the market survey.

Of the total weight of raw material processed, 25 percent becomes the industrial end product; this breaks down into 20 percent which is acceptable for the export market, and five percent which goes to the national market.

Sales prices of the finished product have been estimated at US$4,620 per metric ton for the export market, and US$3,420 per metric ton for the national market.

5. Goals

Objective: To rehabilitate and enlarge plantations and to modernize the plant

- To reactivate the existing 900 hectares during the first year and to incorporate the 3,100 remaining hectares over the next five years
- To reactivate the processing plant and have it operating at 90-percent capacity within an eight-year period
- To increase export earnings to US$504,000 during year one and reach US$2.8 million by year 10. During the Project's operation, export earnings will amount to US$11.3 million.

6. Project Beneficiaries

The number of farmers who will directly benefit from the Project is estimated at 200; they live in the southeastern part of the provinces of San Miguel and La Union. Indirect beneficiaries will be 1,000 agricultural laborers and 315 agroindustrial employees. Estimating three direct beneficiaries per participating production unit, the per-capita investment amounts to US$5,291.70.

7. Support Services for Production

Two private-sector institutions, COMCORDE and FUSADES, will participate in promoting the Project. DIVAGRO (FUSADES' Agricultural Diversification Program) will be in charge of research and development; this will cover research on varieties, as well as their development, and research on agricultural practices and dissemination.

Support will be given to the development of an international market survey, for establishing an export strategy. CENTA will participate in

technology transfer; the national financial system will manage credit.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

Executing unit: Cashew Growers' Cooperative, to be established at the outset of Project activities

In order to carry out the Project, a Cashew Growers' Cooperative will be created, bringing together the zone's cashew farmers, including CORALAMA, which is the present owner of the industrial plant and of 900 hectares planted to cashew.

The new organization will channel loans from the national financial system and the Central Reserve Bank for crop establishment. It will acquire the plant and assume the necessary obligations and commitments for operating it.

Raw material will be acquired through advance deliveries; at the end of the process, profits will be shared, according to the amounts delivered.

2. Plan of Action

During the first year of Project implementation, the following activities will be carried out:

Administrative

- Publicize the Project (COMCORDE and FUSADES)
- Establish the Cashew Growers' Cooperative

Technical

- Prepare the seed for the proposed area
- Replant 455 hectares
- Hire a technical manager for the plant
- Hire two technicians
- Enlarge the nut-processing capacity of the plant
- Install the machinery
- Train agricultural technicians
- Train plant technicians

During year two of the Project, the production-processing-export cycle will be set in motion.

From year two to year 10, the executing unit will be responsible for meeting production, processing and export goals.

3. Resources

Additional resources required by the executing institution are as follows: during the agricultural phase, an agricultural technician to be in charge of coordination; two field assistants in year one and two more in year four; four work vehicles and the means for their maintenance. This phase includes a training package for technicians who are hired. During the industrial phase, a training program will be necessary for the production manager and for subordinate personnel.

4. Participating Institutions

Participating institutions will be COMCORDE, FUSADES (through DIVAGRO) and CENTA, which will carry out promotional activities, technical research and technology transfer. The services of private institutions will be required by the executing unit and will be provided for in the Project budget under the heading of technical cooperation.

The financial system will be involved in the granting of credit, together with the executing unit.

IV. COSTS AND FINANCING

1. Costs

The Project has a total cost of US$3,175,300, of which US$2,200,900 will be disbursed in local currency and the rest in foreign currency. The breakdown is shown below:

The Project's total cost is US$3.2 million.

Category	Amount (US$ X 000)
Agricultural Phase	***780.8***
Land	468.1
Labor	780.7
Inputs	195.3
Administration	162.9
Contingencies (5%)	56.8
Technical cooperation	117.0
Industrial Phase	***1 286.1***
Machinery and equipment	789.5
Buildings	200.6
Working capital	296.0
Training	***26.0***
Market surveys	***82.4***
Total	**3 175.3**

2. Financing

The Project will be financed with external funds in the amount of US$2,707,200, to be solicited as loans.

Category	Local	External	Total
Agricultural phase	468.1	1 312.7	1 780.8
Industrial phase		1 286.1	1 286.1
Training		26.0	26.0
Market surveys		82.4	82.4
Total	**468.1**	**2 707.2**	**3 175.3**

V. ANALYSIS

1. Technical Analysis

The crop adapts suitably to agricultural conditions in the Project area

There is sufficient manpower in the area without affecting the needs of existing agricultural activities. Sufficient amounts of other inputs can be purchased on the local market. By its very nature, the crop is very adaptable to the agricultural conditions of the Project area, and soils do not present any problems. Technology for the agricultural phase is known and the size of participating farms has been shown to be profitable.

Technology used in the processing plant is known and experience has been acquired in managing it. Semi-mechanized equipment developed in Brazil will be incorporated, for which reason a training component has been included for the production manager and provisions have been made for hiring experts to train plant personnel.

2. Institutional Analysis

The private sector is expected to play an active role

CORALAMA is an integral part of the executing unit; in the past this institution has demonstrated its capacity to operate effectively in the agricultural and industrial phases.

The Center for Agricultural Technology (CENTA) will provide technical assistance related to the crop. Ten of CORALAMA's members have received specific training in this field.

The executing unit will receive support from private nonprofit organizations in the handling of the promotional phase.

The national financial system will be responsible for financing the agricultural, industrial and foreign and domestic marketing phases.

3. Legal Feasibility

From the legal standpoint, the Project is feasible. Salvador's Commercial Law guarantees free commerce of goods in the national market. As for foreign trade, there are no restrictions whatsoever.

4. Financial and Economic Feasibility

The financial analysis showed the Project to be profitable. The FIRR was found to be 25.7 percent; the benefit-cost ratio was 1.32 and the NPV was US$1.782 million at 12 percent. For the sensitivity analy-

sis, costs were increased by 10 percent and revenues were decreased by 10 percent.

Variation	FIRR (%)	B/C	NPV (US$ X 000)
Cost +10%	21.0	1.20	1 223.0
Revenues -10%	20.2	1.19	1 045.8

Additional parameters and scenarios

Additional scenarios were analyzed to facilitate economic and financial evaluation.

The following was considered for the financial analysis: revenues and costs at market price, 12-percent discount rate, 20-year useful life of the Project. Results were as follows: FIRR 24.8 percent, B/C ratio 1.44, and NPV US$3,308,800.

The following parameters were considered in the economic analysis: i) elimination of taxes, subsidies and all transfers; ii) 80-percent correction factor for skilled manpower. Under these conditions, the economic internal rate of return (EIRR) is 18.6 percent, the economic net present value is US$1,405,800, and the economic B/C ratio is 1.19.

Furthermore, it was calculated that the Project's contribution to the balance of payments situation will be US$4,397,600.

5. Project Impact

As of the Project's first year, more than US$500,000 in foreign exchange will be generated. This amount will reach US$2.8 million in year 10.

The Project will generate 27,300 work days in year one; from year eight on, that number will reach 88,500.

During the industrial phase, 38,700 work days will be generated in year one; this will increase to 58,000 by year five.

Ten permanent jobs will be generated in the administrative component.

Value added of the agricultural phase: 60 percent; of the industrial phase: 90 percent

The value added is approximately 60 percent of total production costs in the agricultural phase and 90 percent in the industrial phase.

In the first year, the estimated amount of additional revenues is US$51,000; distributed among the 200 direct Project beneficiaries, this amounts to US$256 per capita. By year five, overall benefits will be approximately US$111,000, or US$555 per beneficiary.

As for environmental benefits, the reforestation of 4,000 hectares will contribute to conserving soils and to protecting the area's flora and fauna.

EL SALVADOR

BANANA PRODUCTION AND INSTALLATION OF PACKING PLANTS IN LEMPA-ACAHUAPA

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

Of the tropical fruits, bananas have the highest demand in the world. In El Salvador, bananas are currently cultivated solely for the domestic market. However, the ministry of agriculture is promoting the planting of bananas for export and has set up demonstration plots in the Project area, in coordination with producers.

According to an analysis by FYFFES Group Ltd. (a distributor of agricultural produce in Europe), an increase in demand in the neighborhood of 142 million boxes is foreseen for Europe over the next five years.

Over the next five years the European demand for bananas will be 142 million boxes.

Project funds will be channeled through the Central Reserve Bank and the national financial system. The Ministry of Agriculture, through the General Irrigation Directorate, is constructing irrigation infrastructure in the Project area. For its part, the private sector, through the Agriculture Diversification Program (DIVAGRO) of the Salvadoran Foundation for Economic and Social Development (FUSADES), will provide technical assistance to farmers. Agricultural promotion and extension activities will be provided by the Ministry of Agriculture and Livestock (MAG), and the produce will be exported mainly to the European market.

I. FRAME OF REFERENCE

1. The Macroeconomic Setting and Its Impact on the Project

The general strategy of the present government is to bring the country out of the 1979-1989 crisis and to achieve sustained overall growth. A development plan emphasizing the establishment of a social market economy has been designed. Under this scheme, the State will play a regulatory role, through which it will assist in opening up the economy and achieving the conditions necessary to maintain sustained growth.

The Salvadoran state plays a regulatory role in support of the private sector.

This system rests on the principles of freedom, private property, a free market and competition. The government's economic strategy is based on four basic postulates:

— Private property is a necessary condition for production efficiency.

— A free market ensures the best allocation of resources.
— Competition guarantees the functioning of the market.
— The State plays a secondary role.

Policies to reorganize the economy: decrease dependency abroad; achieve a real rate of exchange; instill confidence among investors

In the medium-term, the aim is to establish policies to reorient the economy. The objectives envisaged are: less dependency on foreign aid through a foreign-trade policy that boosts exports and creates conditions that are attractive to foreign investors; establishment of a real rate of exchange to avoid exchange subsidies and make exports more profitable; adoption of a legal framework that clearly informs national and foreign investors of the conditions under which they will operate, with a view to building confidence for investments in production.

Security and confidence should be provided to the campesino family

With respect to these objectives, the MAG, through its Irrigation and Drainage Directorate and the Sectoral Agriculture and Livestock Planning Office, has established irrigation development as one of its specific policies. It is proposed that optimal use be made of water resources through appropriate technologies.

Government policy for the agricultural sector aims to build security and confidence for rural families, as well as for individual and cooperative beneficiaries of Phase I of the agrarian reform, by delivering property titles and providing support through the Land Bank project. Likewise, the execution of Legislative Decrees 895 and 896, which concern the appropriation of holdings larger than 245 hectares in size, and the transfer of State-owned lands suitable for agricultural activity to agrarian-reform beneficiaries, will be facilitated. Finally, cooperatives and agrarian reform beneficiaries will be able to choose the production model they desire.

Export-oriented projects are the most favored, principally those using inputs or resources of national origin. This Project falls within that context.

2. Analysis of Production Options and of the Technical Environment

The Lempa-Acahuapa No. 3 Irrigation and Drainage Agricultural Development project is located in the departments of Usulutan and San Vicente, 80 kilometers from San Salvador. It brings a total area of 2,616 hectares under irrigation. The works to be carried out under it are of particular importance to the execution of this banana production project.

Banana cultivation is one of the most profitable production options.

During the past three years, MAG has assessed the annual planting schedule of export crops in the Project area. A minimum of 600 hectares of bananas are included in this schedule and demonstration plots are currently being developed in coordination with farmers. Bananas show a high degree of adaptability to the conditions of the area and it is one of the most profitable production alternatives.

Production units are located in the departments of Usulutan and San Vicente, at an average elevation of 30 meters above sea level. Government agencies are providing support in upgrading the farmers' banana cultivation practices. Transfer of this know-how will subsequently take place through private enterprises and institutions.

The State is providing strong support for irrigation works.

MAG's General Directorate of Irrigation and Drainage provides support services for the promotion and supervision of the infrastructure works being carried out; it also supports training efforts. More specifically it works to upgrade irrigation units, machinery, equipment and buildings, as well as promote soil conservation, right of way, agricultural extension and marketing efforts. The total cost of MAG's investment in the Lempa-Acahuapa project is US$14.5 million.

Following, in order of importance, are the crops currently cultivated in the area: cotton (33.3%), corn (29.4%), sorghum (19.5%) and sugar cane (3%). This Project aims to develop banana cultivation for export.

3. Socioeconomic Situation of Potential Beneficiaries

The weighted average income in the Project area is 275 colons per month (3,300 colons, or US$440, per year). Some 60 percent of the population is literate. Dwellings are built mainly of adobe and palm (adobe 22.3%, palm 23.5%, combined 45.8%, others 8.4%). There is a hospital in San Vicente and other health units in the area. Population in the Project area stands at 4,000 inhabitants, in approximately 800 families.

There are 117 production units in the area, of which 52 percent are up to seven hectares in size. Farms from seven to 10 hectares make up eight percent of the total and cover two percent of the area. Farms from 10 to 50 hectares in size account for 22 percent of the total and cover 14 percent of the area. Large-scale farmers account for 15 percent of total producers and hold 43 percent of the land in the Project area. The remaining 37 percent of the area belongs to four cooperatives. The Project will benefit some 450 producers, organized mainly in cooperatives. Once the Project is started up, larger-scale private producers will be incorporated.

4. Institutional Conditions

Farmers receive business management training.

The government of El Salvador proposes to consolidate agrarian reform under its economic reorientation process. This will include guaranteed property rights and support for the farmers, through training in enterprise management capabilities.

The government coordinates agricultural extension services through institutions such as the National Center for Agricultural Technology (CENTA), the Agricultural Sectoral Planning Office (OSPA) and the Irrigation and Drainage Directorate (DGRD).

The Water Management program will also collaborate; it will organize the users, construct the basic infrastructure to carry the water to farming plots and, together with producers, will promote crops with demonstration plots in the Project area.

The private sector provides technical assistance in production and marketing.

Close communication exists with private-sector institutions (such as the Salvadoran Foundation for Economic and Social Development) which provide technical assistance in production, marketing and trade. The Central Reserve Bank will administer the funds.

5. Legal Framework

To establish a legal framework aimed at achieving an efficient economy, the government has submitted the following bills to the Legislative Assembly:

- Law to Reactivate Exports. Aimed at providing exporters with access to resources for which the country has a comparative advantage. It will establish a legal structure that fosters the competitiveness of national products.
- Law to Promote and Guarantee Foreign Investment and Technology Transfer. It is considered a requisite for modernizing the production apparatus and will guarantee legal security for foreign investors.

The aim is to encourage national and foreign investors and to instill confidence.

The government also aims to establish a legal framework that will promote foreign trade by providing national and foreign investors with information on the conditions under which they will operate, with a view to building confidence so they can invest with calculated risks.

6. The Project in the Context of Regional Integration

Historically, the Central American region has been an important banana exporter. After Ecuador, Costa Rica is the world's second largest exporter of bananas.

Advantage can be taken of the experience gained in other Central American countries.

The countries of Central America belong the Union of Banana Exporting Countries (UPEB), which is an example of how the negotiating capacity of producers can be improved vis-a-vis the importing countries. Banana cultivation technology and plantation management capabilities can be transferred from other countries in the region to El Salvador, through agreements between banana producers.

II. PROJECT DESCRIPTION

1. Justification

The main reasons justifying the Project, which point to success in cultivating the Grand Nain variety of bananas for export, generating foreign exchange and creating jobs, are:

- The existence of a market in Europe with a demand for a minimum output of 5 million boxes (18 kilograms each) per year, with a purchase price guaranteeing an attractive net profit for producers
- In the crop plan for the Project area, a potential area of 600 hectares has been identified for banana cultivation, based on technical studies. Irrigation works are under construction and will be completed in the short term in the Lempa-Acahuapa No. 3 Irrigation and Drainage Agricultural Development project.
- The use of technology in the demonstration plots resulted in a yield of between 2,200 and 2,500 boxes per hectare, meaning that the Project is competitive on the international market.

2. Objectives

General

To cultivate Grand Nain-variety bananas and install selection, grading and packing plants for export to the European market, in the area set aside for that purpose in the Lempa-Acahuapa No. 3 Irrigation and Drainage Agricultural Development project, which is under construction in the departments of Usulutan and San Vicente

Irrigation works are under construction in the Project area.

Specific

- To generate and transfer to farmers a package of appropriate technology for banana cultivation using sprinkler and drip irrigation
- To establish Grand Nain-variety banana cultivation for export, with sprinkler and drip irrigation in the Lempa-Acahuapa No. 3 District
- To install banana packing plants for export to Europe

3. Strategy

The installation of packing plants is of particular importance.

The Project strategy is aimed at establishing banana plantations with packing plants, for export to the European market. The elements of the strategy are defined below:

- Set up a system of modules and, through it, channel assistance services related to administration, production and marketing
- Provide support for establishing and strengthening associations of banana growers and channel all Project activities through them
- Establish three modules with a minimum of 200-hectares in order to justify the installation of one packing plant for each
- Formalize negotiations for exporting bananas through FYFFES Group Ltd. (firm operating out of London, England)

Project activities will be channeled through the farmers' associations

4. Components

The Project consists of two components: agricultural and agroindustrial.

Component 1. Agriculture

This will involve the establishment of 600 hectares of bananas at the rate of 200 hectares per year. Replanting will take place over a 10-year period. Some 500,000 meristematic plants will be planted annually; they will be placed in plastic bags containing inert matter treated with nutrients and fungicides. After two months they will be transplanted to the field with one planting per hole, in beds three meters wide by 30 centimeters deep, with a small drainage ditch on each side. The hexagonal planting layout for 2,225 units per hectare will be used. The cost per hectare for establishing the plantations is US$4,500 and includes agricultural investments only.

Cost of establishing the crop per hectare: US$4,500 (agricultural investments only)

The drip-irrigation system will be buried 15 centimeters deep and a minimum of two irrigation lines, 1.8 meters apart, will be used per hexagon. Fertilizers and chemicals will be, for the most part, soluble liquids and will be applied to the crop through the irrigation system. Dosing will be determined on the basis of foliar analyses. The plantings will be thinned out to leave the sword-shaped plants. Harvests will begin one year subsequent to the planting. Estimated yield is 2,200 to 2,500 boxes per hectare and transportation to the packing plant will be by cable car.

The Project is designed on the basis of minimum profitable production units, in order to generate a development area around the banana plantations. The idea is that the profitability of the minimum unit will have a multiplier effect. Technology transfer will be effected

gradually through national and international field consultants, supported by government and/or private institutions, as well as by FYFFES of London.

Component 2. Agroindustry

Agroindustrial component: selection, grading, fumigation, packing, container transportation

Processing begins with the reception and pre-selection of bananas which are then washed with water in tanks, in order to eliminate the latex, prior to final selection and grading. The fruit is then weighed on one-meter square plastic trays and 18-kilo bunches are fumigated with aluminum sulphate in order to dry the resin and prevent spotting. Trabendozole (fungicide) will be applied.

The produce is subsequently packed in cardboard boxes and moved to a cooling room where it is kept at 15° Celsius. Transportation will be in containers to Guatemala, where the produce will be loaded on ships for transport to market.

Each module will process 440,000 boxes annually.

The agroindustrial plant will be located on the lands adjoining the plantations, in order to reduce post-harvest handling problems. Plant capacity is sized to process the output of 200 hectares of bananas. An annual output of 440,000 boxes is foreseen for each production unit.

Marketing will be through the FYFFES Group Ltd of London, England, which guarantees minimum prices of US$3.50 F.O.B per 18-kilogram box.

5. Goals

- To plant 600 hectares of Grand Nain-variety bananas, over a three-year period, for export to the European market. Expected yield is from 2,200 to 2,500 boxes per hectare
- To establish three Grand Nain-variety processing plants, each with a capacity to process 440,000 boxes annually
- To train at least 30 technicians and 100 members of the enterprises to be established
- To generate 130,000 work days per year and export US$6 million annually, once the Project is established

6. Project Beneficiaries

The Project will benefit 450 people directly and 1,350 indirectly.

It is estimated that the Project will directly benefit 450 farmers and indirectly benefit 1,350 agricultural workers. Most of the potential beneficiaries are currently organized into cooperatives, and four organizations own 1,403 hectares.

There are also some individual farmers, with holdings ranging from 100 to 500 hectares in size who could join in the development of the Project.

Most of the cooperatives have successfully undertaken the cultivation of nontraditional crops, through demonstration plots, with technical assistance from the Ministry of Agriculture through the Water Management Project of the Irrigation and Drainage Directorate and from CENTA.

These producers have suitable resources for banana cultivation, the potential output of which is high. Farmer organizations are strong and the producers participate fully. Investment per production unit (three persons per unit) is US$7,585.

7. Support Services for Production

Good support is available in research and agricultural extension.

Research is carried out in the National Center for Agricultural Technology (CENTA), the National School of Agriculture (ENA) and the Agricultural Diversification Program (DIVAGRO-FUSADES).

Agricultural extension will be the responsibility of the Ministry of Agriculture through the General Irrigation and Drainage Directorate. Additional support will be provided by the Water Management Administration (GEMA). The participation of DIVAGRO-FUSADES is also required. Through specific agreements with the Project's cooperatives or associations, it will provide technical support.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

Executing unit: a private enterprise will be established specifically for this purpose.

The executing unit will be a private enterprise specifically established for that purpose. It will be in charge of executing both the agricultural and agroindustrial components of the Project. Furthermore, it will negotiate an agreement with FYFFES Group Ltd. of London, England, to guarantee marketing for the bananas.

The executing unit will also be responsible for following up on, evaluating and monitoring the Project. Furthermore, it will be the legal body responsible for financing the beneficiary farmers, in coordination with the national financial system. Cooperative members participating directly in production, will work closely with the technicians for subsequent advancement to positions of authority.

2. Plan of Action

The Project's plan of action to develop modules will involve scheduling of activities for each module, coupled with a comprehensive development plan.

- Stage 1. Beginning in year zero through the first half of year one. Once funding has been authorized, the Project's executing unit will be established.
- Stage 2. Beginning in January of year zero until September of year two. The following activities will be carried out: design of the irrigation system; layout of planting grids; construction of buildings; procurement of inputs, equipment and machinery; and procurement of meristematic plants.
- Stage 3. October-December of year one. Planting and development of the meristems for subsequent transplanting to the Project area, land preparation and installation, and testing of the irrigation system.
- Stage 4. January-December of year two. Planting of the first 200 hectares. Beginning of the harvest of the first module, picking, selection, grading, weighing, packing, cooling and marketing.
- Stage 5. Year three. Preparation of module two, 200 hectares, same as module one.
- Stage 6. Year four. Preparation of the third production module of 200 hectares and completion of the establishment of 600 hectares under the Project.

The Project will operate according to a detailed plan, and each module will have a specific schedule.

3. Resources

Each 200-hectare module will require the personnel described below. In the administrative area, the services of a general manager, a secretary, an accountant and an office boy will be necessary. Personnel requirements in the plant will be as follows: one packing supervisor; one person in charge of the cable track; one in charge of selection; one for weighing; one for storage; and one in charge of the warehouse. In the field, an agronomist and 10 technicians will be required. In addition, an international consultant will be necessary for managing production on the 600 hectares, and a FYFFES counterpart for control and logistics will work with a four-person team (national).

An international consultant will supervise production on the 600 hectares of the Project.

Field equipment required includes four centrifugal pumps, two filters, a fertilizer distributor, piping and fittings for irrigation, an irrigation line, thirteen tractors of different horse powers, a cultivator, two ditch-dredging machines, three heavy harrows, four light harrows, one truck leveler, two herbicide sprayers and one fertilizer distributor.

For the plant, the following will be required: six four-wheel-drive pick up trucks; one cable track; one emergency power plant; a packing and cooling plant; a communications system; and miscellaneous equipment.

4. Participating Institutions

THe MAG, through its support agencies (the General Irrigation and Drainage Directorate, CENTA, OSPA and others), will participate in providing the irrigation infrastructure needed. The agencies will be in charge of outreach and extension services for the crop and for the irrigation systems.

The private sector will actively participate in all stages.

For its part, the private sector will participate through DIVAGRO-FUSADES in selecting Project beneficiaries, in providing technical assistance and in supervising the design of the drip-irrigation systems, subsequent to an agreement with the government sector. Financial assistance will be handled by the Central Reserve Bank.

IV. COSTS AND FINANCING

1. Costs

Total Project cost: US$10.204 million

Total cost of the Project is US$10.204 million; US$2.692 million will be disbursed in local currency and US$7.512 million in foreign exchange. This is the investment determined for the 200-hectare minimum module. Funds for the agricultural phase will cover preparation of the land through harvest activities, as well as direct and indirect labor. Direct, indirect and administrative costs are included for the agroindustrial component. The following breakdown is given by category of expenditure:

Category	(US$ X 000)
Establishment of Agricultural plantations	2 692.0
Agricultural investments	4 122.0
Packing plant	3 300.0
Technical assistance	90.0
Total	**10 204.0**

The Project development period is 11 years, including year zero, which is when the infrastructure will be built (irrigation, machinery, cable track).

2. Financing

Local participation will total US$1 307 million.

The Project will be executed with US$9.357 million in external financing, including technical assistance in the amount of US$90,000. Local outlay will be US$1.307 million. The disbursement schedule calls for equal amounts of US$3.555 million for each of the first three years. External resources will be requested through a long-term loan under suitable terms for the country.

Category	Local	External	Total (US$ X 000)
Agricultural investments	600.0	3 522.0	4 122.0
Establishment of plantations	480.0	2 212.0	2 692.0
Packing plant		3 300.0	3 300.0
Technical cooperation		90.0	90.0
Total	**1 080.0**	**9 124.0**	**10 204.0**

V. ANALYSIS

1. Technical Analysis

There is sufficient skilled personnel in the country to ensure efficient Project execution.

The Project, with its two components, was designed on the basis of region-wide experience gained in the field. Projected yields with this technology are within the range of those evaluated in the region. Furthermore, trained human resources are available in the country to ensure efficient Project development. This has been achieved through an experimentation process carried out by DIVAGRO-FUSADES with international support.

2. Institutional Analysis

The creation of an enterprise to serve exclusively as executing unit for the Project ensures the efficient management of resources and optimal achievement of goals. This form of organization has functioned successfully in packing plants that have developed and expanded in different Latin American countries.

Control and follow-up by the enterprise serving as the executing unit is fundamental.

The assurance that the Project can develop on the basis of the proposed structure will depend on the follow-up, technical assistance and suitable and timely administration of the resources, combined with control and follow-up provided by the purchasing enterprise, once it establishes its office in the Project.

3. Legal Analysis

There is no legal impediment, nor are there problems in banking or commercial negotiations, that could jeopardize Project development. On the contrary, the country is actively seeking to revive its economy, following the stagnation that has severely undercut economic and social conditions over the past years. For this reason, the country offers all the necessary support to develop and accelerate the execution of investment projects in the different economic sectors, mainly agriculture and industry.

4. Financial and Economic Feasibility

The paramenters of the financial evaluation were acceptable.

Although somewhat conservative productivity indices were considered; acceptable parameters of evaulation were obtained. A 12-percent discount rate was used and the following results were obtained:

Net present value	US$1,463,400
Internal rate of return	23.3%
Benefit/cost ratio	1.19

Sensitivity analysis

	Variable	IRR (%)	B/C	NPV (US$ X 000)
Income	-10%	17.3	1.09	681.1
Costs	+10%	17.0	1.08	681.3

Additional parameters and scenarios

To complement the above analysis, the following additional scenarios are presented to facilitate financial and economic evaluation.

The following was considered for the financial analysis: income and expenditures at market prices; 12-percent discount rate; and a 20-year useful life for the Project. The results were: FIRR, 28.1 percent; B/C ratio, 1.40; and NPV, US$8,579,200.

The economic analysis considered the following parameters: elimination of taxes, subsidies and all transfers; an 80-percent correction factor for skilled labor. Under these conditions, the economic internal rate of return (EIRR) is 29.6 percent, the economic net present value US$9,112,500 and the economic benefit/cost ratio, 1.43.

In addition, it was estimated that the Project's contribution to the balance of payments situation will amount to US$2,728,300.

5. Project Impact

The Project will promote efficient use of the irrigation systems currently being developed by the government.

Beginning in year four, US$6 million in foreign exchange will be generated annually.

It will increase employment by nearly 130,000 work days annually, and increase earnings both for farmers and for the working population at large.

Net generation of foreign exchange will reach US$6 million annually, beginning in year four.

EL SALVADOR

MELON PRODUCTION AND INSTALLATION OF PACKING PLANTS IN COMALAPA

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

The export melon production system in El Salvador has made very good progress over the past 10 years, using modern techniques and a high degree of technology. Due to the dynamic nature of this sector, areas of great potential have been identified for expanding the export volumes of this crop.

A high degree of technology is used in cultivating melons.

For this purpose, the Salvadoran Foundation for Economic and Social Development (FUSADES), through its Agricultural Diversification Program (DIVAGRO), set up experimental plots and, more recently, has worked in coordination with individual farmers. Up to 1,500 boxes of export-quality melons per hectare have been obtained, far superior to previous harvests (1,200 boxes/hectare).

Project funds will be channeled through the Central Reserve Bank of El Salvador; technical assistance will be provided by FUSADES. The Ministry of Agriculture, through the Directorate of Irrigation and Drainage, and the Water Management Program, will be responsible for promoting and distributing validated technological packages, since melon production will come under the Comalapa Irrigation Project, currently executed by the government of El Salvador and funded by the Inter-American Development Bank (IDB).

The United States of America, given the advantages it offers through the Caribbean Basin Initiative, will constitute the main export market.

The Project will take advantage of the benefits offered by the Caribbean Basin Initiative.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Project

The current strategy of the government is to promote sustainable and integrated development, in order to pull the country out of its economic and social crisis. The objectives are to overcome the effects of 10 years of war; to apply stable economic policies, create favorable external conditions, solve the problems caused by the 1986 earthquake and to strive steadfastly to deal with the serious and growing social problems of the country.

The government of El Salvador has designed a development plan to establish a social market economy, in which the State plays a regulatory role, establishes policies to open the economy up to for-

eign trade and fosters conditions to bring about strong and sustained growth.

This system is based on the principles of liberty, private property, free markets and competition. The economic strategy of the government is based on four basic premises:

El Salvador is characterized by a social market economy.

- Private property is essential to efficient production.
- A free market ensures better allocation of resources.
- Competition guarantees the functioning of the market.
- The State's role is secondary.

The basic goals of the economic development plan, through the establishment of a social market economy, are: to reduce the leading role of the State, so that it will not compete with the private sector in production activities; and to encourage the full and efficient use of the country's resources.

In the medium term, the plan aims to establish policies to reorient the economy. The proposed objectives are:

The aim is to reduce dependence on external aid by increasing exports.

- To reduce dependence on external assistance, through a foreign-trade policy that increases exports and creates a favorable climate for foreign investments
- To establish an exchange-rate policy that sets a real exchange rate, to avoid subsidized exchange rates and make exports more profitable
- To establish a legal framework that builds confidence among domestic and foreign investors by providing them with information on the conditions under which they will work, thus creating a favorable climate for investments in production
- To provide efficient institutional support to agricultural production and to develop export-oriented thinking at all levels

Modern irrigation techniques which make optimum use of water are available.

With regard to these objectives, the Ministry of Agriculture and Livestock (MAG), through its Directorate of Irrigation and Drainage, and the Office of Agricultural Sector Planning, have designated irrigation as one of its specific policy objectives; the aim being to make optimum use of water resources with appropriate irrigation techniques. A more specific objective is to support research to create appropriate technology that can be immediately applied to the activities related to irrigated agriculture.

Investments that will boost exports will be favored, especially if they use domestic inputs and resources.

2. Analysis of Production Options and of the Technical Environment

The irrigation project currently under way will make it possible to execute the proposed activities.

The Comalapa region is located in the departments of La Paz and La Libertad and includes the following municipalities: Olocuita and San Luis Talpa, in La Paz; and, La Libertad, in the department of the same name. The irrigation project being executed in this area borders on the coastal highway to the north, the Pacific Ocean to the south, the Jiboa River to the east and the Tihuapa River to the west. It covers 17,447 hectares, of which 11,606 hectares constitute the total net area subject to irrigation.

The melon project will be developed in an area usually left fallow during the dry season because of a lack of irrigation infrastructure. Although melon technology is available, it has not been within the reach of all the producers in the area, who have had to base their activities on natural rainfall patterns.

In the Project's service area, 9,160 hectares (52.5%) are used as pasture lands, including natural varieties (31.7%) and cultivated pasture (20.8%). Other crops include maize (27.7%), cotton (12.3%) and, of lesser importance, sesame, millet and plantain. The Project will introduce melons on 575 hectares, which can subsequently be increased depending on the market's needs.

In this area, over the last three years, DIVAGRO-FUSADES has used research and commercial plots to evaluate the yields of certain export crops using drip irrigation, such as cucumbers, tomatoes, sweet peppers, melons, seedless watermelons, eggplant, onions and cabbage, among others. The best results were obtained with melons and watermelons; of the two, melons offer the best marketing possibilities.

Excellent sales opportunities exist abroad.

The Project area was selected for offering the best return on investments. Water for the Project will come from a deep well; the soils are classified as II and III, according to their potential for irrigation; and the crop is adaptable to the area, the climate and the growing season. The Project will promote the development of melon production enterprises between the municipalities of San Luis and La Libertad, on the coastal plains, at an average altitude of 100 meters above sea level, and on sandy soils, where surface irrigation is not recommended from a technical standpoint.

3. Socioeconomic Situation of Potential Beneficiaries

The Project will benefit approximately 400 to 500 families which currently do not receive additional income during the dry season. With the Project, additional income for these farmers is estimated at a little more than US$1,000.

Farmers in the Project area are divided into the following categories: 17 percent are private farmers owning up to 10 hectares; 21

percent are private farmers owning more than 10 hectares; and 62 percent belong to cooperatives of the reformed sector. Project beneficiaries fall within the last two categories.

Efforts will be made to standardize the use of technology.

Initially, the Project will focus on bringing the technology used by farmers belonging to cooperatives of the reformed sector, up to par with that of individual producers who use more advanced technology. It is important to standardize production in order to ensure standard quality of exportable goods.

4. Institutional Conditions

The government of El Salvador's efforts to reorient the economy, by establishing a social market economy, aim to strengthen the achievements of agrarian reform by fostering security and progress for rural families. This will be done to guarantee the rights of small farmers to property and to support, with a view to enabling them to become true agricultural entrepreneurs, with no limitations on private initiative or commercial freedom.

Farmers can choose the production model they prefer.

Government policy for the agrarian sector is geared to establishing conditions that promote security and confidence in rural families, by giving them land titles and support from the Land Bank project; recipients and cooperatives that benefited from Phase I of the agrarian reform will also receive support. The government will also expedite execution of Legislative Decrees 895 and 896, concerning the appropriation of areas in excess of 245 hectares and the transfer of rural state property with agricultural potential, to the beneficiaries of the agrarian reform. Finally, conditions will be established to allow agrarian reform cooperatives and beneficiaries to select the production models they prefer.

5. Legal Framework

Pursuant to its policy to create a more competitive economy, the Salvadoran government has enacted the following laws: Reactivation of Exports, which will establish a legal framework to help maintain and improve the competitiveness of commodities on national and international markets; Promotion and Guarantees for Foreign Investments and Technology Transfer; which provide legal security for foreign investors.

6. The Project in the Context of Regional Integration

Several elements of the Project will have a positive effect on regional integration

The Project can be used to develop regional components, such as shared transportation facilities, identification of market niches and a commercial price and market information system. Guatemala and Nicaragua can participate in these regional components, as they are currently promoting similar cantaloupe export projects. Costa

Rica has had positive experiences in cultivating and exporting melons.

Other regional components can include monitoring of products at their ports of destination, establishment of standard tariffs and a mechanism to coordinate the exportable supply, with a view to achieving better prices by volume and marketing opportunity.

The Federation of Private Entities of Central America and Panama (FEDEPRICAP) could participate positively in the aspects of the Project concerning integration, due to its vast experience in the field.

II. PROJECT DESCRIPTION

1. Justification

The following conditions justify Project execution:

Conditions are favorable for implementing the Project.

- There is a need to create jobs in the area and to boost foreign-exchange earnings for the country.
- There are 8,500 hectares that will come under irrigation in 1992, using a deep-well system.
- El Salvador has drip-irrigation technology that can be used in sandy soils.
- An external market exists for fresh melons six months a year, at good prices. Over the past 10 years, per-capita consumption in the United States increased from 2.31 kilograms to 4.45 kilograms. In Florida, average costs of the last four harvests increased from US$10.40 to US$14.90.

2. Objectives

General

To establish cantaloupe production for export, on lands that will be irrigated under the Comalapa Irrigation Project, and to install selection, classification, packing and refrigeration plants

Melons will be cultivated in the Comalapa Irrigation Project area.

Specific

- To update and apply the technological package for cultivating melons under drip irrigation and distribute same to producers

— To establish cantaloupe production for export, using the drip-irrigation system in the Comalapa area
— To install packing plants for export melons

3. Strategy

The packing and cooling plant will boost the Project's rate of return.

The Project strategy will be geared to establishing plantations for export melons, equipped with a packing and cooling plant. The strategy is divided into three stages:

Stage 1

Provide the institution responsible for the Project with qualified resources to execute the Project. This includes channeling credit to the beneficiaries through the Central Reserve Bank of El Salvador.

Stage 2

Establish the plantations, using one-week intervals and making two major plantings: the first of 23 hectares, over a five-week period; the second beginning on February 14 and concluding on May 10. This will provide two harvests a year, and will make it possible to take advantage of the external market over a longer period. The modules proposed in the Project will cover a minimum of 115 hectares; five production modules will be established.

Stage 3

Install cooling and packing plants, and train personnel responsible for operating these plants

4. Components

Component 1. Agricultural

This component aims to establish a production model for 115 hectares of available land, including two melon harvests and one rotation crop of corn, okra and soybeans. Drip irrigation will be used; the melon beds will be covered with plastic; the irrigation system will be used for fertilizing and applying agrochemicals.

During the rainy season, weeds will be identified; the soil will be evaluated, using the corresponding physical and chemical analyses; the land will be conditioned mechanically, using soil dressing and treatments to eliminate harmful weeds. During this period, the drip-irrigation system will be designed, windbreaks will be planted, washing sinks and storage facilities will be built, inputs will be purchased and agreements will be made with agents abroad.

The 115 hectares will be divided into five 23-hectare sections; melon beds will be prepared and covered with plastic; at the same time, the drip tape will be put down.

The well will be located in the center of the land; the main pipes will be of PVC; secondary and distribution pipes will be flexible and eight-millimeter irrigation tape will be used.

Fertilizers and chemicals will be used mostly in liquid and soluble form; they will be applied through the irrigation system. Dosages will be established through weekly leaf analyses.

Ten engineers will be hired during different stages of the Project, over two to three years, beginning with soil preparation and running through packing. They will be trained as specialists in melon production.

Ten engineers will be trained as melon production specialists.

Minimum production units will be established, which will be profitable from the technical-economic and marketing points of view, to create a development area for melon cultivation. It is expected that this minimum unit will have a multiplier effect because of the high rate of return. National and international field advisors, supported by DIVAGRO/FUSADES, will facilitate a gradual transfer of technology.

The recommended technological packages involve crop rotation. During the rainy season, crops will include baby corn, corn, soybeans, cowpeas and okra. During the dry season, cucurbitaceae (gourds) will serve as the rotation crop. It is important that crops used during the rotation cycle contribute to improving the fertility of the soil.

Crop rotation will be designed to improve soil fertility.

Component 2. Packing and agroindustry

This component includes washing, selection, classification, packing, pre-cooling and shipment in containers. The facilities for these activities will be located near the plantations in order to prevent post-harvest losses. The plant is designed to process 50-hectares' worth of net agricultural production.

Based on the outputs of the experimental farms, a net yield of 1,500 boxes of exportable melons per hectare, per harvest, is expected. This means that the 50 net hectare production unit (115 gross hectares) will produce 150,000 boxes a year, based on two harvests a year.

Some 150,000 boxes of melons will be produced per year.

Marketing will be carried out through three or four agents in the United States, who charge a 10 percent marketing commission on the sale price. The cost of freight, insurance and handling in the final port, is also deducted.

5. Goals

- To establish 575 hectares in cantaloupe production for export, over a minimum five-year period
- To install five cantaloupe processing plants
- To train a minimum of 20 technicians and 50 members of cooperatives
- To create 100,000 work days and generate US$6 million a year

6. Project Beneficiaries

Direct beneficiaries: 450 families belonging to cooperatives

Approximately 450 families, organized in cooperatives, will benefit from the Project, and approximately 1,500 farm laborers in the area will benefit indirectly. Thirty individual producers could subsequently join the Project, which would bring the total to 480 families.

Most of the cooperatives have begun to work with nontraditional crops. Their resources correspond to the crop grown and they have potentially high production capabilities. The organization is well-defined, and all of the producers participate fully in the cooperatives. Investment per capita (with approximately 3 members per family unit) is US$5,452.20. Estimated investment per hectare, including the agroindustrial component, is US$12,800.

7. Support Services for Production

FUSADES' Diversification Program will provide support for technology transfer

Technology transfer will take place through the Agricultural Diversification Program, (DIVAGRO) of the Salvadoran Foundation for Economic and Social Development (FUSADES), which will also participate through specific agreements, signed with cooperatives or associations involved in the post-harvest and external marketing stages. FUSADES will provide support services for coordinating maritime transportation, and monitoring the quality of the product upon arrival at the final port.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

Executing unit: a private enterprise, which will market the exportable melon supply

Two types of enterprises will be organized; first-degree organizations, or the specific melon-producing enterprises. The second will be a marketing enterprise, made up of all the production enterprises. This enterprise will also serve as the executing unit of the Project.

The executing unit will supervise the operations of the five packing plants. It will be composed of a general manager, a packing supervisor, two external marketing experts and an accountant. An advisory supervisor, an agricultural engineer and six technicians will be hired to work in the field.

Designated members of reformed-sector cooperatives will receive training to prepare them for subsequent incorporation into management positions.

The executing unit will be in charge of coordinating the credits granted to the beneficiaries through the Central Reserve Bank and the National Financial System. The unit will also set up an evaluation, follow-up and control system for the Project.

2. Plan of Action

The plan of action for the Project involves the development of modules, which makes it possible to schedule actions for each module and to design a subsequent development plan for the Project as a whole.

Stage 1

The following actions are included in years one and two:

- During year one, work will begin to drill the wells.
- During the first quarter of year two, the Central Bank and the executing unit will identify the associations, cooperatives or enterprises that will participate in the Project.
- During the third quarter of the same year, the following activities will be carried out: design of the drip irrigation system; planting of windbreaks; construction works (sinks, warehouses, packing plants); and the purchase of inputs, equipment and machinery. The land will remain fallow during this period, and subsequently prepared for cultivation. Interval planting will begin in the fourth quarter.

The first harvest will come at the end of the second year.

— Between November and December of year two, cultivation will begin. The harvest, picking, cooling, packing and marketing for the United States will begin.

Stage 2

During this stage, the second planting of melons will begin. it will include the following activities:

— Second planting of melons. February-April/year three. April-May/year three. Harvesting and marketing of the crop

— Planting and development of rotation crop. Preparation of inputs for the next melon planting; maintenance of irrigation system and processing plant. June-September/year three

On going training will be offered.

— First planting of melons. The program could begin earlier with one production model, and could serve as a training center for persons working the following modules, two will be executed each year, after the implementation of the initial module. October/year three

3. Resources

First-degree enterprises will have a general manager, a packing supervisor, two national technicians and an accountant.

An advisory supervisor, an agricultural engineer and six technicians will work in the field.

The collection and agroindustrial component will have a packing supervisor, two national technicians to serve as support technical personnel for the packing plant, an accountant, a mechanic and an assistant mechanic.

Investments in the agricultural component will be needed to purchase three vehicles, a four-wheel drive pickup truck and at least 10 communications radios, tractors, fumigators, lime distributors, harvesters, machine to lay out the plastic, seeder, harrows, tillers, cultivators and track fumigators. The industrial phase will require trailers to collect the harvests, an emergency plant, hoists, tools, trucks, warehouses, packing and cooling lines, workshop and other items.

4. Participating Institutions

The MAG, through its support entities (the General Irrigation and Drainage Directorate, CENTA, OSPA and others) will help equip the Project, drill wells and acquire the irrigation systems; an IDB loan will provide the financial resources. These entities will be responsible for the extension work related to the product and the irrigation systems.

Through DIVAGRO-FUSADES, the private sector will help select Project beneficiaries, as well as provide technical assistance and supervision. This will involve activities that range from designing the drip-irrigation systems to marketing, and will be arranged through an agreement with the public sector.

The private sector will actively participate in all stages of the process.

IV. COSTS AND FINANCING

1. Costs

The total cost of the Project is US$7,761,500; US$5,105 million will be disbursed in local currency and US$2,656,500 in foreign exchange. The Project will be executed over a period of six years, including the base year. The total cost of the Project was based on the cost of the minimum module, 50 net hectares (total of 115 hectares), of the five proposals. All resources have been identified and quantified for the agricultural stage, from preparing the land to harvesting it, including direct and indirect labor. The post-harvest stage includes direct, indirect and administrative costs.

Total cost of the Project: US$7,761,500

The following is a breakdown of costs, by category:

Item of Expenditure	(US$ X 000)
Agricultural investment	4 481.5
Agroindustrial investment	3 210.0
Technical cooperation (administration of the executing unit)	70.0
Total	**7 761.5**

2. Financing

Approximately US$7.36 million in external resources will be used to finance the Project, through a long-term soft loan. This includes US$70,000 for technical cooperation to cover the operations of the executing unit. The local contribution (US$400,000) will be provided by the farmers and includes the value of the land, preparing it and the cost of building local roads. The schedule of disbursements for the external loan will be US$1.472 million in year one; US$2.944 million in years two and three.

Financing *(US$ X 000)*

Item	Local	External	Total
Agricultural investment	401.5	4 080.0	4 481.5
Agroindustrial investment		3 210.0	3 210.0
Technical cooperation (administration of the executing unit)		70.0	70.0
Total	**401.5**	**7 360.0**	**7 761.5**

V. ANALYSIS

1. Technical Analysis

Trained human resources are available in the country to develop this Project

When formulating the Project (both components), the country's experience in melon production was taken into consideration. Projected yields are within the range achieved in the country, using available technology. El Salvador has trained human resources to efficiently develop this Project. The experience gained by DIVAGRO-FUSADES, with international support, is significant.

2. Institutional Analysis

The direct participation of the private sector in the executing unit will ensure efficient operations.

An enterprise will be set up to serve exclusively as the executing unit, thus ensuring the efficient execution of the Project. This type of organization has been successful in other countries of Latin America. The efficient development of the Project will be guaranteed by follow-up, technical assistance and the proper and timely administration of resources.

3. Legal Analysis

There are no legal impediments or problems with regard to bank and trade negotiations, that might endanger Project development. On the contrary, the country is seeking to revive the economy, following the economic stagnation that has severely undercut economic and social indexes over the past years. There is sufficient support available to develop and expedite investment projects in the different economic sectors, principally agriculture and industry.

4. Financial and Economic Feasibility

Studies indicate that the Project is profitable

Conservative production indexes were used; nevertheless, acceptable parameters of evaluation were obtained. A 12-percent discount rate was used, with the following results.

Net present value	US$428,200
Internal rate of return	22.0%
Benefit/cost ratio	1.09

Sensitivity analysis

Variable	FIRR (%)	B/C	NPV (US$ X 000)
Revenues -10%	13.0	1.01	48.0
Costs +10%	16.0	1.03	154.0

5. Project Impact

The Project will contribute to making efficient use of the irrigation systems currently promoted by the government.

The Project will create approximately 100,000 work days per year, and will generate net revenues amounting to US$6 million per year.

As concerns employment, more than 100,000 work days will be created.

Four hundred and fifty farmers will benefit directly from the Project, and 1,500 workers on the production units will benefit indirectly. Direct beneficiaries will increase their incomes by approximately US$1,200 per year.

EL SALVADOR

CITRUS PRODUCTION, PROCESSING AND EXPORT

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

El Salvador has close to 7,000 hectares of citrus groves which require support in order to modernize production for export purposes.

The agricultural public sector, through the National Center for Agricultural Technology (CENTA), has conducted research on propagation of plant stock, farming practices, improving varieties, and training in crop management.

Valuable research has been conducted on citrus technology.

Citrus growers recently created the Citrus Growers' Association (PROCITRICOS); the Fruit Growers' Limited Liability Association (COFRUTA R.L.) was created for mass marketing purposes.

In an effort to support COFRUTA, the United Nations Development Programme (UNDP), the Salvadoran government and PROCITRICOS financed a feasibility study (technical and economic) for the establishment of a citrus processing plant. However, financing has not yet been secured for implementing the Project in accordance with said study -- the main source for this profile.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Environment

The Salvadoran government's economic strategy consists of two major lines of action. The first -- short-term -- is the Stabilization Program which ends this year. The second -- medium-term -- seeks to reshape the course of the economy through the integrated management of the country's production structures; this is scheduled to end in 1994.

The Project is in keeping with government policy to encourage integrated management of the country's production structures.

The objectives of phase two are: to build a sound, strong, stable and competitive economy which stimulates growth; to reduce and overcome dependence on foreign aid (grants) by promoting foreign trade; to modernize production; and, to create the necessary conditions to enable the economy to fend for itself with its own resources and capabilities.

Increased exports and a modern production apparatus are sought.

It is extremely important for the country to cease its dependence on aid from abroad. At present, the Salvadoran economy relies heavily on assistance of this kind. However, a significant reduction in such aid could discourage expectations for economic growth.

In this context, activities aimed at increasing exports that primarily employ national raw materials, such as those proposed in this Project, are favored by government policy.

In recent years, national citrus production has fallen so dramatically that the country has been obliged to import in order to satisfy national demand. In 1988 alone, close to 12,000 metric tons of fresh fruit, valued at US$333,000, were imported from Guatemala and Honduras; that same year, imports of orange juice concentrate totaled 105 metric tons. This Project would help minimize this capital flight.

2. Analysis of Production Options and of the Technical Environment

The fall in exports and the continuously high level of imports, have left the country with a critical trade balance deficit. Employment in the rural sector is seasonal -- predominantly between October and January. The demand for labor falls radically during the rest of the year, creating widespread unemployment in the rural areas.

Serious efforts are under way to diversify agricultural production, so that nontraditional exports can become a major source of foreign exchange, long generated by a limited number of traditional products such as coffee, cotton, sugar cane and grains.

The agricultural phase will be integrated with the agroindustrial phase.

This Project will integrate the agricultural and the processing stages, diversify production, increase exports and create a permanent source of employment which will improve the living conditions of beneficiaries in the rural areas.

Analysis of the general characteristics of the Project area shows that production options there boil down to three: coffee; sugar cane; and citrus. The advantage of coffee is that it is a well-known crop which contributes to reforestation and currently receives financing. Its major disadvantage is that it promotes the country's dependence on a single crop.

The advantages of sugar cane are much like those of coffee, but sugar prices on the international market discourage exports; by the same token, increased sugar cane production will not help increase exports.

The third option (citrus), which is the focus of this Project, has several clear advantages: citrus growers already enjoy extensive experience; oranges can be exported as a final product and help reduce dependence on traditional crops; citrus production is compatible with reforestation objectives and is highly-adaptable to hillsides not suitable for crops requiring intensive mechanization; international juice concentrate prices have been on the rise in recent years.

The advantages of focusing on citrus production include production experience, competitiveness in the international market, and organizational support for entrepreneurs.

However, studies on citrus in El Salvador reveal that grove management is inadequate, plant protection plans are nonexistent, and fertilizers are not appropriately used.

Because citrus is a perennial crop and considered profitable, growers have access to lines of credit to maintain, but not expand, their production. This is because credit for this type of activity requires a grace period (four years) and generous repayment periods (10 years).

National orange production equals 2.4 million crates (97,000 metric tons) per year. The organized growers who will take part in the Project will contribute one-half of their output. This will guarantee the supply of raw material.

National orange output: 100,000 metric tons per year

The Project will be located in the municipality of Opico, department of La Libertad, a major orange-growing region. The following criteria were used for selecting the Project area:

- Good access roads for marketing purposes
- Proximity to market destinations
- Proximity to citrus-producing zones in Honduras, to facilitate the agroindustrial phase. Production would be exported out of Puerto Cortes on Honduras' northern coast.
- Land with access to water and electricity

During the 1977-1981 period, the physical volume of trade in fruit and vegetable juice rose by 30 percent, while the value thereof rose by 80 percent. The major importer is the United States. The sale price for frozen orange juice concentrate has risen by 300 percent over the last 17 years. The average for the last five-year period was US$1,300 per metric ton.

The international price for frozen orange juice concentrate is on the rise.

3. Socioeconomic Situation of Potential Beneficiaries

Project beneficiaries are a group of approximately 200 citrus growers, divided into small- and medium-scale growers. Small-scale growers own up to five planted hectares; medium-scale growers farm more than five.

Despite the difference in area planted, the two groups employ similar technology.

Small- and medium-scale growers to benefit from the Project have land and extensive experience.

The major characteristics of these two groups are as follows: average degree of education; relatively receptive or open to new crops and technologies; and a standard of living above the national average. Their strength lies in the fact that they own land suitable for orange production and have experience in this activity. Some are affiliated with COFRUTA, the unit which will be responsible for implementing the Project.

4. Institutional Conditions

COFRUTA was legally registered in 1986. It was created for the purpose of building and operating a plant to produce frozen orange juice and byproducts for export; expanding and mechanizing citrus production; and marketing and exporting lemons. Its members belong to the Citrus Growers' Association.

The public sector will support the Project with research and training

The Ministry of Agriculture, through the National Center for Agricultural Technology (CENTA), has also supported citrus production, promoting research and providing training to growers. It participates directly in policy-making concerning the sector and boasts a solid degree of institutional organization, despite financial constraints on the sector as a whole.

Other entities providing such services as marketing and technical assistance to Project beneficiaries are private institutions with extensive experience in this domain.

5. Legal Framework

The current administration favors the policy to establish a legal framework for production activities which encourage private-sector participation. The present legal framework of the Project consists of two legal instruments: a law to reactivate exports; and, a law governing free zones and tax incentives.

6. The Project in the Context of Regional Integration

The countries of Central America have a tremendous potential for citrus production. The Economic Commission for Latin America and the Caribbean (ECLAC) has published studies on the subject and supports the initiative to develop a regional program for citrus exports in Central America.

Regional integration will be strengthened by this Project, as long as the countries diversify their agroexports to third markets and join forces. Mass marketing; implementation of a price, product and market management information system; standardized quality control procedures; and entrepreneurial training, are some of the components for a regional framework for the Project.

II. PROJECT DESCRIPTION

1. Justification

The Project will encourage import substitution and will supply the local market with quality products at affordable prices. It will furthermore generate export earnings, given high international citrus prices.

Likewise, it will promote modernization of the agricultural sector, foster better use of land and soil resources, and support agroindustry through training programs and implementation of a fruit-processing plant.

The agroindustrial component contributes considerable value added to agricultural production.

The Project will provide steady employment for beneficiary farmers and strengthen their level of organization. It will also help increase their income.

2. Objectives

General

To generate additional foreign exchange by increasing exports and substituting citrus imports; improve the country's trade balance and, over time, help reduce dependence on foreign aid

Objectives: To substitute imports, generate foreign exchange, reduce dependence on foreign aid

Specific

— To improve existing citrus groves, raising their productivity levels

- To increase the area planted to citrus and the country's citrus supply
- To control tristeza disease of citrus
- To build and operate a processing plant for frozen orange juice concentrate (65° Brix), with a packing plant annexed thereto for selecting fresh fruit for sale
- To establish a system for exporting frozen orange juice concentrate to the United States

3. Strategy

The key elements of the strategy include:

- Hiring of consultants to prepare a market study on juice concentrate exports for the U.S. market
- Promoting the Project, through COFRUTA, among members of PROCITRICOS and citrus growers in general
- Providing Project beneficiaries with the certified plant stock to cover the proposed areas
- Supporting CENTA with the resources needed to implement a national program to control tristeza disease of citrus
- Providing training to growers through seminars and field training, transferring new technology for starting and maintaining new groves

Training for growers is considered a priority.

- Providing training to technicians from the processing plant in techniques required to ensure export-quality products

4. Components

Component 1. Agricultural production

This component seeks to establish 3,000 additional hectares of citrus groves by the end of the Project. The planting schedule includes a four-year establishment period, with 750 hectares planted each year. As of year four of the Project, yields are expected to reach 3.9 metric tons per hectare; by year seven this figure should level off to 21.2 metric tons per hectare.

Component 2. Agroindustrial processing

A processing and packing plant will be built.

This consists of orange juice concentrate production via the construction and implementation of a processing and packing plant. The plant will be located in the department of La Libertad, close to the groves, and be equipped with the basic infrastructure required to market the product without any major obstacles.

The selected plant will process a total of 6,000 metric tons of fruit the first year. As of year four, volume will increase to 20,000 metric tons. A total of 12,800 metric tons, yields 960 metric tons of juice concentrate. The remaining 7,000 metric tons will be channeled to the domestic market. The sale price of quality fresh fruit is estimated at US$9/crate (40.7 kilos); juice prices are US$1,200 per metric ton.

A plant protection program will be implemented to control the tristeza disease and thus ensure the success of the Project. Growers will receive the necessary training. The program will be implemented by CENTA and carried out over a five-year period.

Major impact in terms of plant protection

5. Goals

- To plant an additional 3,000 hectares of orange trees during the first four years of the Project
- To conduct technology research with a view to increasing citrus productivity levels
- To conduct annual training courses during the first five years of the Project
- To develop a Program to control tristeza disease of citrus
- To devise a strategy for marketing fresh fruit in year one of the Project
- To design a strategy for marketing orange juice as of year one of the Project
- To build and equip a plant for selecting and packing oranges for the domestic market
- To pack 4,000 metric tons the first year, and 13,200 by year six of production
- To build and equip the orange juice extracting plant and produce frozen orange juice concentrate
- To produce 950 metric tons of juice concentrate in year one of production, and as much as 2,722 metric tons by year nine

The Project will be producing as much as 2,700 metric tons of orange juice concentrate by year nine.

6. Potential Beneficiaries

Project beneficiaries are classified as either direct or indirect. Direct beneficiaries include 200 growers and close to 1,200 producers of raw materials for the processing plant. Indirect beneficiaries include 4,200 farm workers.

By the end of the Project, the new citrus groves will have created 7,000 new jobs (1.5 million worker/days). The production phase will create 1,800 permanent jobs; the agroindustrial component will generate 50 jobs.

Some 7,000 new jobs will be created.

The investment per beneficiary is US$9,855 during the implementation of the Project.

7. Support Services for Production

Technical assistance to growers, and implementation of the program to control tristeza disease of citrus, will be the task of the National Center for Agricultural Technology (CENTA). Project promotion and marketing support will fall to the Salvadoran Foundation for Economic and Social Development (FUSDES), through its Agricultural Diversification Program (DIVAGRO). Financial assistance will be made available by the National Financial System.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

Executing unit: COFRUTA R.L., highlights the important role of the private sector

Project implementation will be the responsibility of the Fruit Growers' Limited Liability Association (COFRUTA R.L.), which will, furthermore, be the owner of the orange processing plant. Other responsibilities will include marketing of the final product and securing credit to finance the agricultural and processing phases. In brief, COFRUTA R.L. will coordinate all phases of the Project.

2. Plan of Action

The feasibility study has been approved. The actions to be taken will include:

In the agricultural phase:

- Project promotion
- Design of training courses for citrus growers
- Hiring of technical and administrative personnel for the executing unit
- Training for the technical personnel of the executing unit
- Initial investments in the executing unit and purchase of equipment
- Obtaining plant stock: 117,800 per year, from certified private nurseries
- Planting 750 hectares each year to orange trees
- Launching and monitoring the program to control tristeza disease of citrus

Proposed activities include the procurement of quality plant stock

In the processing phase:

- Purchasing land
- Constructing and equipping the packing plant
- Launching the production process to select fresh oranges for sale
- Preparing a strategy for marketing fresh fruit
- Building the basic infrastructure and purchasing the machinery and equipment for the frozen orange juice concentrate plant
- Starting production of frozen orange juice concentrate according to the proposed production plan

The processing infrastructure represents an important basis for future activities.

3. Resources

Due to the Project's numerous elements, additional human and material resources must be secured. New personnel would include a general manager, responsible for coordinating the Project. This person, in turn, would supervise a technical manager, an administrative manager, three agricultural technicians and six persons in the administrative section. Staffing requirements are calculated on the basis of the coverage needed during the start-up period.

It is estimated that one technician is required for every 1,000 hectares planted; the technicians, in turn, require a technical manager and an administrative manager. The Project will also require support staff consisting of one accountant and four secretaries.

Investments include the purchase of the following equipment: four vehicles; furniture; computers; typewriters; and a training package for personnel.

4. Participating Institutions

The institutions participating directly in the Project are COFRUTA, FUSADES, CENTA, the Central Reserve Bank and the National Financial System. The program for controlling tristeza disease of citrus will be implemented with technical cooperation funds.

The plant protection program will be covered by technical cooperation funds.

IV. COSTS AND FINANCING

1. Costs

Total cost of the Project US$13.797 million

The total cost of the Project is US$13.797 million; US$11.47 million of this will be disbursed in local currency, the rest in foreign exchange. The costs by component are as follows:

Component	Amount (US$ X 000)
1. Agricultural	9 672.0
2. Agroindustrial (freezing and packing plant)	3 737.0
3. Program to control tristeza disease of citrus	278.0
4. Administration and implementation	110.0
Total	**13 797.0**

2. Financing

Long-term external assistance (US$10.797 million) will be requested under terms and conditions acceptable to the country. The local contribution is the estimated value of the beneficiaries' land; this includes leveling, internal roads, etc.

The Project will be financed as follows:

Component	Local	External	Total (US$ X 000)
1. Agricultural	3,000.0	6,672.0	9,672.0
2. Agroindustrial		3,737.0	3,737.0
3. Tristeza program		278.0	278.0
4. Administration and implementation		110.0	110.0
Total	**3,000.0**	**10,797.0**	**13,797.0**

V. EVALUATION

1. Technical Analysis

The Project will tap technology already available in the country

The agricultural technology for establishing orange groves is the same technology currently employed in the country and known to produce good results. The proposed production modules are in keeping with the domestic production capacity of the plant stock, and the investment plan will guarantee an adequate supply of all the necessary inputs. The Program to control tristeza disease of citrus

will guarantee expected production levels and benefit existing groves.

The processing plant will be designed, equipped and operated in accordance with the feasibility study entitled "Installation of a plant for processing citrus in El Salvador," prepared for COFRUTA by the firm CONSULTEC.

A feasibility study has been conducted on the installation of the processing plant.

2. Institutional Analysis

The hiring of sufficient personnel and the purchase of the proposed machinery and equipment will enable the executing unit to implement the Project efficiently. The administrative costs of the executing unit will be covered by the partners and this contribution will become part of company capital. In some instances, external funds can be used to cover these counterpart funds.

3. Legal Analysis

The Project is in line with the existing legal framework. In fact, the legal instruments which are in effect favor a project of this kind. The laws cited in Chapter I (Legal Framework) contain specific incentives for export promotion activities.

The executing unit meets all the legal requirements for its due operation, and, as such, can undertake the commitments and obligations entailed in the Project. A review of El Salvador's commercial code reveals no obstacles which could interfere with the smooth operation of the executing unit, as proposed in this document.

4. Financial and Economic Feasibility

Financial indicators suggest that it is feasible to implement the Project.

The Project is feasible in financial terms

Net present value (12%)	US$ 2 219 000
Internal rate of return	17.0%
Benefit/cost ratio (12%)	1.09

Sensitivity analysis

Variable	FIRR (%)	B/C	NPV (US$ X 000)
Income -10%	13.0	1.01	328.0
Costs +10%	13.0	1.02	484.0

Additional parameters and scenarios

For the economic analysis, the following parameters were used: elimination of taxes, subsidies and all types of transfers, and an 80-percent correction factor for skilled labor.

It was found that under these circumstances, the internal rate of return (EIRR) would be 16.5 percent.

5. Project Impact

- In year one the Project will generate US$40,000 in net foreign exchange; this figure will reach US$4.2 million by year thirteen.
- The agricultural component will create 7,000 new permanent jobs during the first seven years of Project implementation when the commercial groves are being established.
- During the agricultural production phase, the Project will create 1,800 jobs.
- From its inception to the time of its operation, the agroindustrial component of the Project will create 50 jobs.
- The Project will benefit the environment by reforesting land with perennial crops which promote soil conservation.

Orange juice exports will guarantee a return on investments

GUATEMALA

SUPPORT FOR FRUIT AND HONEY EXPORTS

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

Over the last decade, the government of Guatemala has attached priority to increasing exports by diversifying agricultural production, thus improving the country's position in the external sector. Despite such efforts, the trade balance between 1981-1989 was unfavorable, culminating in a US$360-million deficit in 1989.

In 1989, in response to this situation, the Ministry of Agriculture of Guatemala launched a project entitled Development of Orchard Farming. The Medfly Program, a joint initiative of Guatemala, Mexico and the United States to combat fruit flies, was selected to coordinate the Project.

Actions to support orchard farming are carried out in conjunction with other public agricultural sector institutions, especially the General Directorate of Livestock Services (DIGESEPE), the General Directorate of Agricultural Services (DIGESA) and the Agricultural Science and Technology Institute (ICTA).

In Guatemala, the public and private sectors agree on the need to promote nontraditional exports.

Both the public and private sectors are interested in promoting nontraditional exports. A number of joint actions have been taken:

a. In 1982, the Nontraditional Exporters Association was founded.
b. The National Export Council was founded. Its achievements include the creation of a single office where all Export Applications can be fully processed, and the approval of Decree 29-89 of the Congress of the Republic, the Law to Promote and Develop Exports, the Inbond Assembly Industry and Free Trade Zones.
c. The Ministry of Agriculture received support for diversification projects executed in 1989 and aimed at fresh and processed fruit and vegetable exports. The subprojects presented in this profile are an integral part of the comprehensive studies that the Medfly Program has conducted to date.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Project

Nontraditional agricultural exports, which accounted, on average, for three percent of Guatemala's foreign exchange earnings between 1983 and 1985, increased to 15 percent in the five-year period from 1985 to 1989. The official export promotion strategy is carried out through actions that seek "outward" development, in which the government facilitates targeted economic activities.

Macroeconomic measures now in effect, which are relevant to the Project, fit into a framework of: a) an exchange rate policy which seeks a realistic price for the quetzal; b) fiscal policies aimed at reducing the budget deficit, alleviating concerns over the exchange rate and averting increased inflation; and c) monetary and credit policies designed to correct financial imbalances, avoid unsupported printing of money and strengthen domestic credit.

Decree 29-89 of the Congress of the Republic supports the activities of this Project. For example, the sector enjoys such incentives as a tax exemption and tariff reduction on the import of machinery, equipment, parts, raw materials for packaging, labels and the like. Also, nontraditional agricultural commodities are exported tax-free.

Since 1988, the Bank of Guatemala has had access to funds to finance nontraditional agricultural exports, under the Agricultural Credit Program, IDB Loan 529/OC-GU, for an initial US$53 million. Additional grants were to be made over the two subsequent years, for a total amount available in 1990 of US$24 million. This funding is subject to certain restrictions, such as: a) a minimum investment floor of US$50,000, and b) requirements for the pre-investment studies of the projects.

2. Analysis of Production Options and of the Technical Environment

The goal of the Project is to generate foreign exchange, thus helping to correct the trade balance. The subprojects will expand domestic trade and bring about savings of foreign exchange by eliminating the need to import fresh fruit or fresh fruit by-products. They will also increase productivity, improving competitive levels on the world market, create sources of employment and support agricultural diversification.

Two alternatives to this Project were considered: a) improving productivity of traditional agricultural exports, and b) improving the productivity of subsistence crops in the western highlands of Guatemala. The former possibility offered only limited results because of the instability and downward trend of international prices. The latter was hindered by small farm size and the low degree of technological development in the sector. Thus an intermediate option was necessary.

In light of this situation, it was decided to execute projects for the production and processing of fruits and other nontraditional agricultural products for export. The outlook is encouraging because the consumption of fresh or processed fruits has been growing in the major markets of the developed countries. In addition, nontraditional agricultural goods have greater income and price elasticity than traditional commodities.

The Project will be executed in areas which enjoy comparative advantages in soils, climate and access roads, and where the farmers are somewhat specialized in the production process. The regions selected are the central highlands, the southwestern coast, the southern coast, the northeastern corner of the country, and the departments of Izabal, Peten and Alta Verapaz.

The Project will take place in areas which enjoy comparative advantages.

In most of the subprojects considered, traditional technology is currently being used. The priority programs sponsored by the MAGA have also brought technology packages which make it possible to produce crops that meet the quality standards of the export market.

Subprojects were selected on the basis of the Guatemalan land tenure pattern. Potential beneficiaries own farms classified as subfamily units (up to 7 hectares) and family units (7-45 hectares).

3. Socioeconomic Situation of Potential Beneficiaries

The Project will take place in several departments of the country. On-site research has already been done for the crops proposed.

The subprojects for the cultivation of blackberries and Anna apples will be located in the central highlands of the country, whose population is primarily native Indian and multilingual. For historical reasons, this region has the lowest concentration of land and the largest population, in absolute terms.

As a result, underemployment rates are high. This zone, along with the western highland zone, provides the principal reserve of seasonal labor for traditional export crops, especially coffee, sugar cane and cotton. The production structure is based on traditional technology. However, the zone has many small irrigation projects, which is beneficial for the Project.

Most of the remaining subprojects will be executed in the southern coastal region of the country, in the departments with the best agricultural lands and the most complete basic production infrastructure. The population's economic activities in this zone rely, to a great extent, on the production and export of traditional crops. Government health and educational services are considered acceptable.

The other regions where Project activities will take place are the Northern Transverse Belt (FTN) and the departments of Peten and Izabal. The FTN has been at the heart of official strategy (since the 1960s) to carry out agrarian reform by settling publicly-held lands; Peten and Izabal have low population densities.

The Project will benefit areas which previously received no comprehensive government support.

The residents of the zone produce crops for domestic consumption, except for Izabal, where transnational banana companies absorb much of the labor force. These regions have failed to receive comprehensive government services because of their geographic location, but actions are now underway to correct this situation.

4. Institutional and Financial Conditions

Orchard development has held high priority in national agricultural policy, but the government has faced financial hardships, and goals have remained elusive. Furthermore, the institutions of the public agricultural sector have failed to coordinate their activities.

The MAGA is currently modernizing fruit-related agroindustries, delegating this responsibility to the Medfly program. The fruit-growing project has had budgets of US$2.1 million in 1989 and US$0.7 million in 1990, since it was placed under the Medfly program.

5. Legal Framework

Nontraditional exports are protected by Decree 29-89, which will also serve as the legal foundation of the Project. Problems have arisen as a result of delays in the allocation of resources needed for providing the beneficiaries with appropriate technical and credit assistance. The budgets for operating and funding projects, such as that being proposed, have been cut back, due primarily to the lack of liquidity in the Ministry of Finance. This Project, and export activity in general, would benefit from a review of legislation governing sea and air transportation, as well as changes in the regulations, to encourage open competition in both modes of transportation.

6. The Project in the Context of Regional Integration

The six countries of the Central American region are trying to diversify and increase their agricultural exports. A number of activities under this Project are of interest to all the countries and include region-wide components. Such is the case of the components for helping farmers improve their business management, product marketing in order to avoid the transportation problems mentioned above, and other collateral support in technical and financial activities. This activity is receiving support at the regional level from CABEI, SIECA, IICA, INCAP, CATIE and OIRSA.

Diversifying and increasing agricultural exports: the Project will enhance the efforts of the countries toward this goal.

II. PROJECT DESCRIPTION

1. Justification

The Project responds to the country's need to diversify its export agriculture. Foreign-exchange earnings by traditional export crops came to a standstill in the early 1980s, which led to a considerable deficit in the balance of payments. The country has held up orchard development as an important strategy for reversing this trend.

Furthermore, the Project will give hundreds of farmers living in target areas, the opportunity for full-time employment, earning profits to raise their standard of living. At the same time, they will be able to modernize their farms, bringing production up to commercial levels and raising productivity rates. Finally, the Project emphasizes agroindustrial development, proposing the acquisition of six processing plants which will generate greater added value.

2. Objectives

General

To diversify agricultural production by establishing commercial-scale fruit orchards and processing the crop for export

Specific

- To increase commercial-scale production of blackberry, Anna apple, pineapple, orange, mango and cashew, for export
- To install six processing plants that will raise the added value of production

— To design and establish production modules for honey, royal jelly and propolis (bee glue), for export

3. Strategy

The Project will be divided into two main stages: the implementation, which will last two years, and operation, lasting eight years. Activities envisaged for the first stage are: i) final selection of crop areas; ii) market studies for each subproject; iii) selection of production and post-harvest technology; and iv) credit for production infrastructure.

Activities during the second stage will focus on: a) training and technical assistance for farmers; b) selection of technology for processing plants; c) credit to operate and maintain processing plants and to maintain plantations; d) installation of processing plants; e) selection of areas for placement of beehives; f) establishment of beehives; and g) assistance in marketing and market information.

4. Subprojects and Components

Subproject 1. Blackberry cultivation

The goal is to establish commercial-scale blackberry plantations over 10 years, reaching a total of 200 hectares; a packing plant will be acquired to export 4.4 million pounds over 10 years.

The goal is to establish blackberry plantations over a 10-year period, at the rate of 20 hectares per year, up to a total of 200 hectares. A packing plant will be acquired, with the capacity to prepare 4.4 million pounds of blackberries for export, over the 10 years of the Project. The plant will be located in Guatemala City, which has the basic infrastructure and marketing facilities necessary for the Project. Yield is expected to be 50 quintals per hectare, with a selling price of US$150 per quintal.

Subproject 2. Anna apple cultivation

The goal is to establish commercial-scale Anna apple plantations, up to a total of 200 hectares.

The country enjoys comparative advantages for producing this variety of apple. Since 1970, Israel has provided technical cooperation, based on studies on this crop, and has demonstrated its possibilities. Areas recommended for cultivation are located between 1,000 and 2,000 meters above sea level (average for the central highlands). The goal is to establish commercial-scale plantations at a rate of 20 hectares per year, for the 10 years of the Project (200 hectares). Yields will begin to attain commercial levels in the fourth year of the Project, with 200 quintals per hectare, rising to 500 quintals per hectare by the tenth year. Fifty percent of production will be sold in Central America, at a price of US$13.3 per quintal. Central America is a long-standing market for Guatemalan apples.

Subproject 3. Cultivation and processing of pineapple and orange

The subproject will establish commercial-scale orchards of pineapple (500 hectares) and orange (600 hectares). Two processing plants will be acquired to produce orange juice concentrate, pineapple juice and canned, sliced pineapples in syrup. The plants will be located in the departments of Izabal and Retalhuleu, near the country's major seaports (Santo Tomas de Castilla and Puerto Quetzal).

Commercial-scale pineapple (500 hectares) and orange plantations (600 hectares) will be established; two processing plants will be acquired to industrialize the fruit.

Over seven years, the subproject will export 6,395 metric tons of orange juice concentrate, 7,270 metric tons of pineapple juice concentrate and 6.3 million cans of sliced pineapple. Two hectares of the pineapple orchard will be used as a nursery, with 25,000 plants for grafting. The production cycle has been estimated to last 36 months, on average. Seventy-five percent of the first harvest will be suitable for export, 17 percent for processing and eight percent will be waste. For the second harvest, the figures will be 50 percent, 34 percent and 16 percent, respectively.

Subproject 4. Cashew cultivation

The subproject will establish commercial-scale cashew plantations on 1,500 hectares, at a rate of 300 hectares annually. A plant to process cashew nuts will also be set up in Peten near the plantations. The area already has infrastructure for operations by air.

Over the life of the Project, it should be possible to export 34,800 quintals of kernels at a price of US$21.30 per quintal. Study will also focus on the possibility of using the cashew apple to prepare dried fruit, and the shell of the kernel to produce cashew nutshell liquid as raw material for producing rust-resistant paint.

Subproject 5. Processing oranges in the Northern Transverse Belt

A plant will be acquired to process orange juice concentrate at 65° Brix. At the present time, there are 600,000 citrus trees, of which 80 percent are oranges. Much of the production is wasted because the only sales outlet available is the domestic market for fresh fruit.

A processing plant will be acquired to obtain orange juice concentrate.

The plant will be located in the Northern Transverse Belt, near the plantations. During the execution of the Project, production should reach 8,370 metric tons of juice concentrate, with 50 percent going to the external market and the rest for domestic consumption. For purposes of conversion, 14.2 metric tons of fresh fruit are estimated as necessary to produce one metric ton of juice concentrate at 65° Brix. The estimated sales price is US$1,350 per metric ton of juice concentrate.

Subproject 6. Mango cultivation and hot-water treatment

The Project will grow mango on 2,000 hectares; two hot-water dipping plants will be acquired to treat the fruit in accordance with United States' health regulations

The subproject will plant 2,000 hectares of mango at a rate of 200 hectares per year. Mango is currently under quarantine in the United States market. However, countries like Mexico and Haiti have solved this problem with the use of hot-water treatments.

This subproject will acquire two hot-water treatment plants, located in Escuintla and Zacapa departments, where the mango is produced extensively and which have suitable marketing infrastructure. Guatemala is almost finished processing its protocol for exporting treated mango to the United States. During the Project, 38,800 metric tons of mango will be treated.

Subproject 7. Production of honey, royal jelly and propolis

2,500 apiaries will be established to produce honey, and 500 for royal jelly and propolis; two collection centers and a laboratory for quality control will also be constructed.

The subproject will establish 2,500 apiaries to produce honey, and another 500 to produce royal jelly and propolis (bee glue). In addition, two collection centers will be constructed, with modules for raising queen bees and a laboratory to ensure the quality of the honey and to diagnose bee pathology.

The collection centers will be located in the departments of Retalhuleu and Santa Rosa. During the 10 years of Project life, fully 75 percent of all production is targeted for export: 151,800 quintals of honey, 85,400 kg of royal jelly and 1,100 quintals of propolis.

5. Goals

The Project will strive to meet the following goals:

- To plant 200 hectares of blackberry, yielding 50 quintals per hectare, and to export 80 percent of production
- To establish 200 hectares of Anna apples, yielding 500 quintals per hectare, and to export 50 percent to the Central American market
- To introduce commercial-scale plantations of pineapple (500 hectares) and orange (600 hectares), yielding 30 metric tons of pineapple and 113,628 oranges per hectare
- To install two pineapple and orange processing plants, with the capacity to produce 1,204 metric tons of pineapple juice, 1,015 metric tons of orange juice and two million cans of sliced pineapple
- To develop 1,500 hectares of cashew, yielding 45 quintals per hectare. The plant will process 3,872 quintals of cashew nuts.
- To open a plant for processing orange juice at 65° Brix, at a rate of 930 metric tons of juice concentrate per year, beginning the second year of the Project. Fresh fruit will come from the zone known as the Northern Transverse Belt.

— To establish commercial-scale mango plantations on 2,000 hectares. The two plants to be acquired (the first at the beginning of the Project and the second in the sixth year) will treat 30,240 metric tons by the end of the Project.

— To set up 2,500 apiaries for the production of honey and 500 for royal jelly and propolis; two centers will be opened for collecting honey, the first to be built at the beginning of the Project and the second, in the fourth year of Project activities

6. Project Beneficiaries

The Project will provide direct benefits to 755 five-member families, owning farms that average seven hectares in size. A further 44,881 jobs will be generated indirectly. By the end of the term, the Project is expected to have earned approximately US$56.5 million in net foreign exchange, equivalent to US$74,834 per family. This will directly raise their incomes and, of course, their standard of living. The per-capita investment for the Project will be US$28,681 over 10 years. The six plants will be acquired and fully owned by organized groups of farmers, which means that the communities where they are located will also benefit from development resulting from increased economic activity.

The Project will directly benefit 755 families owning farms averaging seven hectares in size; the Project will indirectly generate 45,000 jobs.

7. Support Services for Production

The executing unit will require institutional strengthening and technical assistance in the following areas: a) market studies; b) market intelligence; c) international marketing; d) agronomic practices for the fruits selected and the aplaries; e) management of packing plants, quarantine treatment plants and processing plants; f) administration of agroindustrial projects; and g) business management. Training and technical support for the Project can be obtained from regional organizations such as ICAITI, INCAP, IICA, CATIE and OIRSA. At the national level, support will be required from public and private institutions involved in foreign trade.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

The Medfly Program will be the executing unit of the Project; for the subproject on honey, royal jelly and propolis, it will share this responsibility with the General Directorate of Livestock Services.

By decision of the Ministry of Agriculture and Livestock, the Medfly Program will be the executing unit of the Project; the only exception is the subproject on the production of honey, royal jelly and propolis, for which the Medfly Program will share duties with the General Directorate of Livestock Services (DIGESEPE). The Medfly Program has operating capacity logistical facilities throughout the country, and will thus be able to follow up on Project activities properly.

The executing unit will be responsible for: i) complying with all loan requirements; ii) negotiating the trust fund with the central banking system, the National Agricultural Development Bank and private banks interested in joining the Project; iii) sharing in the selection of potential beneficiaries; iv) providing technical follow-up on Project achievements; and v) implementing an efficient system to provide administrative and financial control of Project funds. It will carry out the latter task in coordination with the central banking system, to ensure the annual flow of funds for subprojects. The executing unit will mesh its areas of expertise with those of other participating institutions, to optimize the contributions of each one.

2. Plan of Action

The executing unit will be involved in the Project for 10 years. Activities included in the plan of action are:

- Updating market studies and ensuring a market for the products, through the design of suitable strategies. Period: three months prior to initiation of Project
- Selecting, hiring and providing preliminary training for required technical and administrative personnel. Period: three months prior to initiation of Project
- Selecting beneficiaries of the subprojects for which a market is ensured. Period: first four months of each year (years 1-10)
- Formulating production and credit plans. Period: first four months of each year (years 1-10)
- Monitoring of goal achievement for establishing plantations and apiaries. Period: depending on crop and annual goal

- Monitoring the establishment of collection centers and plants for quarantine treatment, packing and processing
- In-service training of personnel
- Monitoring, follow-up and supervision (ongoing)

3. Resources

The requirements of the Project's plan of action can be met only if resources are available on time and are organized properly.

Technical personnel required for the Project

Subproject	Year and number of technical personnel 1 2 3 4 5 6 7 8 9 10	Description
1. Blackberry cultivation	1 2 2 2 3 3 4 4 5 5	Field technicians
Packing plant	0 3 3 3 3 3 3 3 3 3	Plant manager, accountant, mechanic
2. Anna apple cultivation	1 1 2 2 3 3 3 3 4 4	Field technicians
3. Pineapple nursery	1 1 1 1 2 2 2 2 3 3	Field technicians
Pineapple cultivation	1 1 1 1 2 2 2 2 3 3	Field technicians
Orange nursery	0 4 4 3 3 3 3 3 3 3	Plant manager, accountant, mechanic
Orange cultivation	1 1 1 2 2 2 3 3 3 3	Field technicians
4. Processing of cashew nuts	0 4 4 4 4 4 4 4 4 4	Plant manager, accountant, mechanic
5. Processing of oranges in the Northern Transverse Belt	0 4 4 4 4 4 4 4 4 4	Plant manager, accountant, mechanic, quality controller
6.Mango cultivation	1 1 1 2 2 2 3 3 3 3	Personnel
Hot-water treatment plant	0 3 3 3 3 3 3 3 3 3	Plant manager, accountant, mechanic
7. Production of honey, royal jelly and propolis	1 1 2 2 3 3 4 4 4 4	Field technicians
Collection centers, breeding of queen bees and laboratory	0 4 4 4 4 4 4 4 4 4	Center manager, accountant, mechanic, quality controller, biologist

Equipment and infrastructure required for the Project

Subproject	Year 1	2	3	4	5	6	7	8	9	10	Description
1. Blackberry cultivation	■	■	■	■	■	■	■	■	■	■	Irrigation equipment for 20 ha/year
Packing plant	■										Post-harvest infrastructure
2. Anna apple cultivation	■	■	■	■	■	■	■	■	■	■	Irrigation equipment for 20 ha/year
3. Pineapple nursery	■	■	■	■							Irrigation equipment for 1 ha/year for years 1-4
Pineapple cultivation	■	■	■	■	■	■	■	■			Irrigation and mechanization equipment, years 3-8
Orange nursery	■	■	■	■							Irrigation equipment, years 1-4
Orange cultivation	■	■	■	■	■	■					Irrigation and pest control equipment, years 2-6, for 100 ha/year
4. Processing of cashew nuts	■										1 processing plant
5. Processing of oranges in the Northern Transverse Belt	■										1 processing plant
6.Mango cultivation	■	■	■	■	■	■	■	■	■	■	Pest control equipment for 200 ha/year
Hot-water treatment plant	■					■					2 treatment plants
7. Production of honey, royal jelly and propolis	■	■	■	■	■	■	■	■	■	■	Small production equipment for 300 apiaries/year
Collection centers, breeding of queen bees and laboratory	■		■								Equipment and infrastructure for 2 centers

4. Participating Institutions

Several institutions will participate in the different components of the Project: a) national and private banks, providing credit; b) the National Agricultural Marketing Institute, monitoring international prices; c) the MAGA market studies program carried out under the CIPREDA-PRODAC Agreement, to support the components related to market studies, market intelligence and commodity marketing; d) ICTA, for generating and adopting technology packages.

IV. COSTS AND FINANCING

1. Costs

Distribution of Project costs

Item	US$ X 000
Irrigation equipment	2 130.0
Blackberry packing plant	285.0
2 pineapple and orange processing plants	6 674.0
Cashew nut processing plant	2 039.0
Plant for orange juice concentrate at 65° Brix	1 494.0
2 plants for hot-water treatment of mango	3 137.0
Technical assistance	316.0
Inputs and small production equipment	5 607.0
Total	**21 682.0**

The total cost of the Project is US$21,682,000, most of which (slightly more than US$13.6 million) will be used to acquire the six processing plants.

The Project will cost a total of US$21,682,000, of which US$13,600,000 will be earmarked for the acquisition of six processing plants.

2. Financing

External funding for the Project will total US$19,513,300 (including US$316,000 in non-refundable resources for technical cooperation), and local sources will provide US$2,168,200. It is hoped that these resources can be negotiated on terms favorable to the country, so that all obligations can be duly met. Local credits will be granted in accordance with current legislation, at market interest rates and with reasonable terms for repayment. These credits will be disbursed through a trust fund to be established with Bank of Guatemala, and other banks in the financial system interested in participating in the Project.

Most investments will be made during the first year of the Project (US$9.4 million, or 43 percent of the total), and in years four to six, when investments of US$7.6 million, or 35 percent of the total, will be needed to replace and acquire new machinery.

Financing *(US$ X 000)*

Item	Type	Short-Term	Long-Term	Total
Irrigation equipment	2		2 130.0	2 130.0
Blackberry packing plant	2		285.0	285.0
2 pineapple and orange processing plants	2		6 674.0	6 674.0
Cashew nut processing plant	2		2 039.0	2 039.0
Plant for orange juice concentrate at 65° Brix	2		1 494.0	1 494.0
2 plants for hot-water treatment of mango	2		3 137.0	3 137.0
Technical assistance	2		316.0	316.0
Inputs and small production equipment	1	2 168.0	3 439.0	5 607.0
Total		**2 168.0**	**19 514.0**	**21 682.0**

Type 1: Local.
Type 2: External.

V. ANALYSIS

1. Technical Analysis

Agricultural component

Promotion programs undertaken by the public and private sectors have provided experience in manoging the crops selected by the Project. Technical shortcomings will be overcome with short training courses.

Agroindustrial component

This component responds to the need to preserve or process a portion of the total crop of fresh fruit, using methods that will guarantee high enough quality to compete on regional and international markets. The risk involved in agroindustry investments is spread out over the first five to six years of the Project, so that measures can be taken as the Project progresses.

Technical and credit assistance component

Because technical and credit assistance are available, the Project can be executed comprehensively. This includes attention to farmers involved in the subprojects, and expeditious access to working capital for Project operations.

Training of technical personnel

In its plan of action, the executing unit calls for preliminary and in-service training. Such training is designed to give the participants the latest know-how consistent with their needs.

2. Institutional Analysis

Over the last two years, the executing unit has acquired the experience necessary to conduct the technical and administrative activities of the Project. External technical cooperation and farmer assistance will be closely coordinated. Loan funds will be administered by the Central Bank and other banks of the financial system, which ensures that capital will be supervised, disbursed and repaid correctly.

3. Legal Analysis

The Project is based on a sound legal foundation. The executing unit is part of the MAGA-Medfly Agreement, under which the Medfly Program is charged with the technical and administrative execution of the subprojects presented in this profile. These subprojects, in turn, are part of the multiple strategy for integrated pest management that the Medfly Program is implementing. Export activities will take place under the terms of Decree 29-89.

4. Financial and Economic Feasibility

Each subproject was submitted to a detailed financial analysis, at market prices. A discount rate of 12 percent was used for this analysis. The selected subproject performed acceptably; each one gives a positive net present value (NPV), an internal rate of return (IRR) greater than the discount rate, and a benefit/cost ratio of >1.

Financial feasibility. The subprojects perform acceptably: positive NPV; an IRR greater than the discount rate, and a benefit/cost ratio of >1.

The sensitivity analysis of the subprojects was performed by cutting income projections by 10 percent and raising cost estimates by 10 percent. All the subprojects were analyzed with the same percentage factor, except the orange and pineapple plant and the royal jelly and propolis subproject, which showed a benefit/cost ratio of 1.00 at 7 percent, considered acceptable.

Indicators of financial profitability and sensitivity

	NPV(US$)	FIRR (%)	B/C
Subproject 1			
Blackberry cultivation	4 507.0	37.6	1.15
Reduce revenues 10%	1059.0	18.6	1.04
Increase costs 10%	1 510.0	20.4	1.05
Blackberry packing plant	385 276.6	29.4	1.47
Reduce revenues 10%	265 222.0	24.5	1.33
Increase costs 10%	303 749.0	25.0	1.34
Subproject 2			
Anna apple cultivation	6 601.6	26.8	1.60
Reduce revenues 10%	4 841.4	23.5	1.44
Increase costs 10%	5 501.6	23.8	1.45
Subproject 3			
Pineapple cultivation	6 970.0	64.8	1.60
Reduce revenues 10%	4 350.9	44.7	1.23
Increase costs 10%	5 048.0	46.5	1.24
Orange cultivation	1 452.8	19.6	1.25
Reduce revenues 10%	729.0	16.1	1.13
Increase costs 10%	874.0	16.4	1.14
Orange and pineapple processing plant	1 552 298.6	24.5	1.09
Reduce revenues 7%	165 566.0	13.4	1.01
Increase costs 7%	275 275.0	14.2	1.01
Subproject 4			
Cashew cultivation	364.8	20.4	1.14
Reduce revenues 10%	69.4	13.7	1.03
Increase costs 10%	106.0	14.4	1.04
Cashew nut processing plant	903 206.1	22.7	1.15
Reduce revenues 10%	203 226.0	14.5	1.03
Increase costs 10%	293 547.0	15.3	1.04
Subproject 5			
Plant for processing oranges	616 883.5	22.4	1.15
Reduce revenues 10%	19 867.0	12.4	1.00
Increase costs 10%	81 556.0	13.3	1.01
Subproject 6			
Mango cultivation	628.3	26.4	1.35
Reduce revenues 10%	386.4	21.5	1.22
Increase costs 10%	449.0	22.0	1.23
Hot-water treatment plant for mango	770 113.1	37.9	1.14
Reduce revenues 10%	153 558.5	17.8	1.03
Increase costs 10%	203 570.0	19.8	1.04
Subproject 7			
Production of honey	1 747.4	30.7	1.22
Reduce revenues 10%	784.1	20.8	1.10
Increase costs 10%	959.0	21.8	1.11
Production of royal jelly and propolis	2 171.6	33.6	1.09
Reduce revenues 7%	232.8	14.6	1.01
Increase costs 7%	385.0	15.9	1.01
Collection center and laboratory	361 935.0	33.2	1.44
Reduce revenues 10%	244 629.8	26.7	1.30
Increase costs 10%	280 463.0	27.3	1.31

Additional parameters and scenarios

In order to facilitate financial and economic assessment of the Project, a further analysis was made, using alternate scenarios, which showed the following:

For the financial analysis, the following parameters were used: revenues and costs at market prices; discount rate, 12 percent; and useful life of the Project, 20 years. The following results were obtained: internal rate of return (FIRR), >100 percent; benefit/cost ratio (B/C), 2.14; and net present value (NPV), US$100,103,600.

For the economic analysis, the following parameters were used: elimination of taxes, subsidies and all types of transfers, and an 80-percent correction factor for skilled labor.

The following results were obtained: internal rate of return (EIRR), >100 percent; benefit/cost ratio (B/C), 2.14; and net present value (NPV), US$100,214,400.

5. Project Impact

Project impact: It will generate 45,000 jobs, mostly in rural areas; after 10 years of execution, it will earn US$57 million from exports.

The Project will generate 44,881 permanent jobs, primarily in the rural areas of the country. This will help stabilize income levels for farmers and cut underemployment in the zones selected for the Project.

At the conclusion of the 10 years of activities, the Project will have brought in US$56.9 million for exports, making a major contribution to the country's foreign-exchange earnings and improving the national trade balance.

The Project will help the environment by improving soil conservation and plant cover. The subproject on the production of honey and royal jelly will bring about a significant reduction in swarms of Africanized bees.

GUATEMALA

PROCESSING AND COLD-STORAGE FACILITIES FOR VEGETABLE PRESERVATION IN PRODUCTION CENTERS

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

This Project stems from an initiative by groups of vegetable farmers who would like to join forces, increase their numbers and improve their standards of living. They want to raise their production potential and play a more direct role in selling their produce on the external market.

In response to this initiative, the government of Guatemala, through the Ministry of Agriculture, Livestock and Nutrition, created the Program for Agricultural Diversification and Marketing (PRODAC). This program will support small- and medium-scale producers by focusing on business management, marketing and market development.

Small- and medium-scale producers can manage their businesses better and plan their role in the international market

PRODAC, in coordination with the Center of International Cooperation for Agricultural Preinvestment (CIPREDA), prepared preliminary studies as a first step toward obtaining financial resources with which to install and operate a freezing plant for fruits and vegetables in the municipality of Patzun, Chimaltenango. The AVEVE Cooperative in Belgium initially expressed interest in funding or cofunding Project implementation.

The subprojects for snowpeas and melon exports are already being considered for funding. A possible partner would be the Central American Bank for Economic Integration (CABEI), which has a Central American Agribusiness Program and a Program to Support Small- and Medium-scale Industry in Central America (CABEI/EEC-PAPIC); negotiations have not yet taken shape formally.

The overall concept of the Project is based on the need to diversify exports with products from small economic units working in some sort of collective association. Guatemala has already had two valuable experiences in this field. The ALCOSA company and the Cuatro Pinos Cooperative are both successfully exporting vegetables grown on small farms.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Project

Guatemala's exports of nontraditional products grew by 12.1 percent per year during the 1980s. The item "vegetables and legumes" (which includes the production of vegetables for export, as in this Project) nearly tripled its contribution during this period and moved into second place among all nontraditional exports. This positive trend reflects the favorable environment in which nontraditional exports have developed generally.

The private sector's export strategy enjoys the firm support of the Guatemalan government

In 1984, the Guatemalan government adopted economic policy measures (especially exchange-rate policies) designed to make its exports more competitive. A regulated market was created. The official exchange rate was depreciated 150 percent in 1985 and allowed to float freely in November 1989. Nontraditional exports were exempted from taxes.

Favorable credit policies have targeted nontraditional products. The Bank of Guatemala presently offers a line of credit for medium-sized companies, with a minimum loan threshold of US$50,000; the interest rate has also been decontrolled. Support services for many producers have been hindered because of these farmers' needs for financing.

The government's medium-term strategy to encourage small- and medium-scale producers of nontraditional products, has taken shape over the past two years through the Program for Agricultural Diversification and Marketing (PRODAC). This program operates under the Ministry of Agriculture and has received support from the United States Agency for International Development (USAID).

2. Analysis of Production Options and of the Technical Environment

The Project will boost vegetable production in areas where small- and medium-scale farmers are receiving PRODAC support. These areas had formerly been devoted to wheat production. When wheat became less profitable, the decision was made to diversify production, primarily with vegetables.

The purpose of the Project is to capitalize on production experience gained in recent years and to consolidate government support services. A secondary purpose is to launch a marketing program with direct producer participation.

The Project will be located in areas suited to vegetable production, where organized farmer groups have past experience in production, storage and marketing. With their know-how, these farmers can obtain products that meet export standards.

The subproject for the vegetable freezing plant is located in Patzun, Chimaltenango, an area whose temperate climate is favorable for vegetable production. The area has an average annual temperature of 18°C and an elevation of 2,235 meters above sea level.

The snowpea subproject is in Chirijuyu, Tecpan. The target area has a flat topography and is easily accessible. The temperate climate lends itself to vegetable production.

The subproject on melons is in Usumatlan, Zacapa, another area with a temperate climate. The annual precipitation averages 400 to 600 mm per year, most of which falls between August and October. The temperature ranges from 24°C to 26°C, and the land surface is flat.

3. Socioeconomic Situation of Potential Beneficiaries

Project beneficiaries work together in cooperatives, which gives a sounder footing to the proposed strategy

The potential beneficiaries are mostly small-scale farmers engaged in the Project's selected activities. The national classification system places this productive group under the heading of "microfarms" and "subfamily farms" (small holdings no larger than seven hectares). Selected beneficiaries have joined into cooperatives, and this will facilitate Project implementation and give greater stability to the economic unit.

These farmers are covered by the country's mini-irrigation systems and make relatively intensive use of fertilizers. The Project areas have a population estimated at 33,209 people, up to 90 percent of whom are indigenous, except in Zacapa, where mestizos are more common. They enjoy government health and education services.

4. Institutional and Financial Conditions

The Ministry of Agriculture has attached highest priority to the Program for Agricultural Diversification and Marketing (PRODAC), which is responsible for coordinating government services and policies. Even though the program has been assigned top priority, it is operating under financial constraints that prevent it from offering coverage and services to larger groups of vegetable producers.

PRODAC also maintains close working relations with the General Directorate of Agricultural Services (DIGESA). The two institutions conduct basic vegetable research and are active in the field of marketing – especially identifying external markets.

PRODAC has a technical and professional team specialized in business management, accounting, agronomy, economics and education. Staff member assignments are based on the geographic coverage needed. The program has five groups of field technicians; 40 supporting professionals active in the area of agricultural preinvestment, with a focus on marketing assistance and market development.

PRODAC budget trends

Year	Budget allocated (Q)	Equivalent (US$)
1989	Q 2 381 250	US$ 881 994.44
1990	Q 1 545 000	US$ 359 302.32

5. Legal Framework

Nontraditional products such as vegetables are exported in the framework of Decree 29-89, which grants highly favorable incentives and advantages. Companies are exempt from export taxes and may import raw materials, machinery and equipment, duty-free. The Ministry of Agriculture is currently being asked to restructure the Program for Agricultural Diversification and Marketing (PRODAC). Although Project implementation must await the restructuring, the negotiating process is already well under way. It should be complete by early 1991, when the Business Development and Management Project (PRODE) will be formally created.

6. The Project in the Context of Regional Integration

The five Central American countries are interested in diversifying their exports to outside markets. The relations among these neighboring countries are relevant to this Project on two levels: joint marketing and technical assistance. Several regional agencies are in a position to support the initiatives and are already moving in this direction: SIECA, the Central American Bank for Economic Integration (CABEI) and IICA.

II. PROJECT DESCRIPTION

1. Justification

The Project can be justified technically because the farmers are already well organized. They have standing marketing infrastructure and have achieved a good degree of technical development. Water, soil and climate resources are all suitable for producing the selected goods.

The Project can be justified economically because it will raise productivity on vegetable farms. Because sales will be oriented toward external markets, it will become possible over the medium term to ease the country's dependence on traditional exports and improve the national trade balance. The Project will also provide permanent sources of employment and extend its coverage toward other producer groups.

The Project will provide social benefits because it will strengthen grass-roots organizations through the orderly, well-planned provision of support services; it will also boost small-farmer profits.

2. Objectives

General

To create more sources of employment and to improve income among small-scale vegetable farmers by installing production infrastructure to support organized marketing centers. A further purpose is to generate export income by supplying the burgeoning demand for vegetables in the United States.

Central objective: more sources of employment, better income, supply the demand for vegetables in the USA

Specific

- To centralize vegetable freezing operations in the municipality of Patzun, Chimaltenango and to profit from the marketing experience of the Flor Patzunera Cooperative
- To encourage the village of Chirijuyu and communities bordering on the municipality of Tecpan to grow snowpeas for export
- To conduct direct overseas marketing of cantaloupes produced in the municipality of Usumatlan, Zacapa

3. Strategy

Strategy: set up production infrastructure, consolidate educational and cooperative systems, give technical and credit assistance

- Set up production infrastructure for organized groups of farmers who have marketing centers and who, in order to operate effectively, need additional equipment that will enhance their production capabilities
- Consolidate existing educational and cooperative systems
- Offer technical assistance in production, marketing, administration and business management, credit acquisition and implementation of the Project.
- Give credit assistance through the trust fund of the Program for Agricultural Marketing Centers, to cover approximately 20 percent of the fixed investment.

4. Subprojects and Components

Subproject 1. Installation and operation of a vegetable freezing plant

This subproject will have a capacity of 4,900 metric tons. It will receive produce from the municipalities of Patzun, Tecpan, Godinez and San Andres Semetabaj and process these vegetables for export to the United States. In order to calculate labor needs, production has been estimated at 0.15 metric tons per eight-hour shift.

Subproject activities will target the following areas: a) business development and management consultants will be hired to help with plant management and training of staff members responsible for processing; b) product marketing, both domestically (raw materials) and internationally (processed products); the focus will be on shipping, packaging, loading and unloading, as well as dock charges and handling; c) installation of a freezing plant with an area of 1,458 square meters under cover, to work with broccoli, green beans, snowpeas, cauliflower, melons, okra and Brussels sprouts.

Subproject 2. Snowpeas

The purpose of this subproject is to build two pre-chilling rooms to process 6,420 pounds per hour, and two refrigerated storage rooms holding 50,000 pounds at a temperature of 33-35°F and relative humidity of 90-95 percent. These facilities will be used to preserve 455 metric tons of snowpeas during the growing season (December-April) in the Chirijuyu valley of Tecpan.

The following components will be needed for this subproject: a) business development and management, through technical assistance in equipment handling, pre-grading and product packaging; b) marketing, both domestically and internationally; c) installation of a refrigeration system consisting of two pre-chilling rooms with a ca-

pacity of 6,420 pounds and two cold rooms holding 50,000 pounds of snowpeas.

Subproject 3. Melon exports

The melon subproject, located in the municipality of Usumatlan in the department of Zacapa, will market directly to the United States. The subproject covers an area of approximately 105 hectares. During the first two years, 49 hectares will produce 28,000 cases of melon for export. From year four to year six, the production area will increase to 63 hectares, exporting 37,000 cases per year. Production will stabilize after year six, when the full 105 hectares come into production, yielding 63,000 cases for export. Each case holds 45 pounds.

The subproject's component on business development and management will help farmers consolidate their organization. Farmers will be established as a juridical body, enabling them to act collectively.

Training will be provided through technical assistance and a government counterpart. A special program will teach product grading and preparation, and equipment management and maintenance.

5. Goals

- To increase vegetable exports to 4,348 metric tons by the end of the Project
- To boost snowpea export income to US$1.6 million by the final year of the Project
- To offer direct marketing of 63,000 cases of melon by year 10 of the Project
- To install and operate a vegetable freezing plant
- To build two pre-chilling rooms and two cold storage rooms

The Project will boost exports and install major infrastructure for vegetable chilling and freezing

6. Project Beneficiaries

The Project will benefit 30 farmer groups organized as businesses, cooperatives, associations and committees, by providing economies of scale for their production. It will directly favor 1,050 beneficiaries and bring indirect benefit to 3,150 farmers.

The Project will benefit 30 farmer groups representing over 1,000 people; indirect benefits will accrue to over 3,000

The overall productive investment will total US$2,339 per person and US$81,880 per organized group. The Project will raise beneficiary income levels by 74 percent.

7. Support Services for Production

Many cooperating institutions will provide support services to the Project. BANDESA will give credit assistance to farmers. ICTA will conduct research on adaptability, introduction of new species and improvement of cropping techniques in the area. DIGESA will be in charge of transferring the technology developed by ICTA and promoting new species that are suited to the area and hold market promise.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

The Ministry of Agriculture will designate the Program for Agricultural Diversification and Marketing (PRODAC) to execute the Project. The PRODAC Board of Directors is made up of representatives of each of the agricultural public sector institutions (ICTA, BANDESA, INDECA, DIGESA). This PRODAC framework will also embrace the Business Development and Management Project (PRODE), the unit that will implement the component carrying the same name. This entity has five organizational divisions -- two support units and three technical units. PRODAC will be responsible for follow-up and evaluation of the Project, via the PRODE, in coordination with the Follow-up and Evaluation Department of the Agricultural Sector Planning Office (USPADA).

2. Plan of Action

Project activities will take place in three stages: 1) preparation; 2) construction; and 3) implementation.

Phase One: Preparation

This will take place in year zero and will require many different activities:

- The legal foundation will be formulated, and an organizational entity will be designated to carry out the Project in the place selected.
- Bids will be received or updated for the fixed investment. This includes final engineering studies, purchase of land, construction, equipment, vehicles, etc.
- A training plan will be drawn up on business management, fresh produce handling and preparation, international market analysis, obtaining export licenses, etc.

- Personnel will be hired, especially experts in handling and use of the type of equipment that will be needed, as well as administrative staff and laborers for carrying out the Project.
- The production plan will be drawn up, with allowances for raw material supplies and package stock for shipping products.
- External market contacts will be made by contracting trade brokers or working directly with importers.

Phase Two: Construction and equipment

Construction of Project facilities will contribute to staff training and provide a means to multiply experiences of this type in the future

This will take place under the supervision of PRODAC-PRODE. When it is complete, the process will need to be tested and the equipment purchased.

Phase Three: Operating the plant.

Year 1: a) purchase and sell produce, process goods; b) continue the training program until at least the third year; c) put the production program into operation inside and outside the plant.

3. Resources

Project staff will need to specialize somewhat, given the nature of their duties. Thus it is important to maintain a stable group of experienced people and use temporary hires for peak periods.

The Project will need the following vehicles: three 10-ton trucks, four one-ton pick-ups, nine motorcycles (175 cc), a truck with a gross capacity of 10.5 tons and a truck with a gross capacity of three tons.

The heavy vehicles will collect produce at the farms and carry it to the plant. The motorcycles will be used by field technicians providing technical assistance and by Project agents developing delivery and payment contracts with farmers.

The following machinery and equipment will be needed: a cold room, laboratory equipment, office furniture and supplies, and auxiliary equipment. The investment will be made in the first year.

Produce will be picked up on the farms and taken to the plant in 15-kg plastic cartons. A total of 1,600 to 2,000 cartons will be needed per day.

4. Participating Institutions

The Program for Agricultural Diversification and Marketing (PRODAC), as executing unit, will work directly in many different facets of Project development. Technical assistance will be requested, for at least three years of Project activity, to consolidate plant installation, train the people responsible for processing fresh produce, and train those marketing the product.

PRODAC will also assume responsibility for the people who grade and prepare the produce and who handle and maintain the equipment. The government's credit, technology transfer and technical assistance services for the Project will take place in coordination with BANDESA, ICTA and DIGESA.

IV. COSTS AND FINANCING

1. Costs

Total Project costs, by subproject and other expenditures, will be:

Total cost: US$2,456,400

Subproject	US$ X 000
1. Freezing plant	1 630.6
2. Pre-chilling and cold rooms	228.0
3. Cantaloupe packing plant	35.0
4. Technical assistance	113.6
5. Working capital	449.2
Total	**2 456.4**

2. Financing

(US$ X 000)

Item	External	Local	Total
Freezing plant	1 612.1	18.5	1 630.6
Pre-chilling and cold rooms	215.2	12.8	228.0
Packing plant	35.0		35.0
Technical assistance	113.6		113.6
Working capital		449.2	449.2
Total	**1 975.9**	**480.5**	**2 456.4**

The local contribution will include US$42,000 from the Project's client cooperatives. The Project will request a long-term loan on favorable terms for the country.

Client cooperatives will contribute a major share of local resources

V. ANALYSIS

1. Technical Analysis

Patzun and nearby areas will have to keep 648 hectares under cultivation to meet the needs of the freezing plant. The land already under cultivation in the cooperatives is more than enough to supply the plant with most vegetables. The members of the Flor Patzunera Cooperative alone, grew nearly 90 hectares of snowpeas in 1988, as well as 10 hectares of broccoli and cauliflower. PRODAC studies have shown that the snowpea and cantaloupe subprojects are technically feasible.

2. Institutional Analysis

Farmers have demonstrated their confidence in the feasibility of the Project

PRODAC has already achieved excellent results and is fully supported by the government; thus, the Project is institutionally sound. There is no problem with local financial resources, as the organized farmers themselves are eager to contribute a share. This attitude demonstrates that farmers are confident in this Project's feasibility.

3. Legal Analysis

There are no legal hurdles to carrying out this Project. PRODAC is expected to be reorganized in early 1991, under the MAGA-CIPREDA-PRODAC agreement; ratification through administrative resolution is anticipated.

4. Financial and Economic Feasibility

Overall indicators show that this is a financially sound proposal. The Project will have a financial internal rate of return of 56.8 percent, with a benefit/cost ratio of 1.27 and a net present value of US$4,487,000 at 12 percent interest over a 10-year period.

Cost estimates were inflated by 10 percent for the sensitivity analysis, and income was depressed by the same percentage. The results clearly show that the Project is feasible:

Variable	FIRR (%)	NPV (US$ X 000)	B/C
Costs +10%	39.4	2 839.0	1.16
Revenues -10%	37.6	2 390.0	1.15

5. Project Impact

Impact: over 1,200 permanent jobs beginning in year one, higher farmer income; US$300,000 in export income as of the first year of plant operation.

The Project will provide 1,223 permanent jobs, beginning in year one. By raising farmer income (US$900 as of year three of implementation), it will also spark economic activity in the zone, providing an indirect benefit for other producers and for local commerce. The Project will also generate US$300,000 in foreign exchange for the country, beginning the first year the plants are in operation. The Project will have no harmful impact on the environment; the effects of the industrial process fall well within normal bounds.

HONDURAS

CHILLING PLANTS FOR AGRICULTURAL EXPORTS IN PUERTO CORTES AND THE RAMON VILLEDA MORALES INTERNATIONAL AIRPORT IN SAN PEDRO SULA

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

In 1988, the International Trade Centre (ITC), an agency of the United Nations Conference on Trade and Development (UNCTAD), carried out a study in Honduras to analyze the status of cold-storage facilities in the country and to propose alternatives for improving them, with a view to boosting agricultural exports.

The study found that the country does not have a modern cold-storage system that facilitates and contributes to increasing agricultural exports such as pineapples, ornamental plants, oranges, grapefruit, Persian limes, bananas, cantaloupes, cucumbers, and fresh and frozen shrimp -- the country's leading export products. Producers and exporters have expressed their concern over the losses and limitations stemming from the lack of an effective cold-storage system.

The cold-storage facilities proposed under the Project will contribute to boosting exports. They will be installed in two strategic points of the country.

The country's lack of facilities are particularly notable in the ports used for export, especially those handling bulk exports.

Research and interviews with businessmen indicate that numerous initiatives have been undertaken to provide such facilities. One such initiative was the setting up of a Development Committee for the Ramon Villeda Morales Airport, sponsored by the Chamber of Commerce and Industries of Cortes, whose activities will lead to the creation of the Cortes Airport Corporation. Another initiative is being implemented by the Honduran Board of International Transportation Users (COHUTI) and by the Federation of Agricultural and Agroindustrial Producers and Exporters of Honduras (FEPROEXAAH). These institutions are the most knowledgeable as to the condition of cold-storage installations to facilitate exports, and have shown the greatest interest in this regard.

This Project proposes the design, construction and equipping of cold-storage facilities at the port of Puerto Cortes and at the Ramon Villeda Morales Airport in San Pedro Sula.

Honduran government authorities view this Project as a means of making a significant contribution to stimulating exports of perishable agricultural products, and as a way to increase the influx of foreign exchange so urgently needed by the national economy, by making it possible to take advantage of favorable short-term factors related to off-season prices.

Private enterprises (exporters, users of international transportation) are extremely interested in the establishment of cold-storage systems.

The fundamental purpose of this Project is to help boost the export of perishable agricultural products from Honduras, which comprise almost the entirety of the country's exports.

I. FRAME OF REFERENCE

1. The Macroeconomic Setting and its Impact on the Project

The economy of Honduras depends mainly on agriculture and exports of agricultural products. Some 94.7 percent of the total value of Honduran exports, and 90 percent of the volume of exports over the past five years, were of agricultural origin.

The works to be constructed will enable the United States and European markets to be served throughout the year.

Seafood (lobster, crustaceans, shellfish and shrimp; livestock (meat); farm products (grapefruit, bananas, plantains, pineapple, cantaloupe, oranges, tangerines and other citrus fruit) require special treatment and care for export (packaging, crating, transportation and refrigeration), in order to prevent deterioration of quality. Such produce must be available throughout the year in order to take advantage of openings in the markets of the developed countries -- the United States of America and Europe -- in the winter season.

Honduras has not been able to commercially develop its agricultural potential because it lacks the advantages offered by a network of cold-storage facilities in the leading ports of shipment.

The needs to be met are enormous. At present, these export facilities are provided by businessmen or representatives of companies who own refrigerated transport facilities. This service is furnished between the production centers and the ports of shipment.

Exports could be carried out in a timely fashion without spoilage

According to information provided by the users, there are no modern and permanent cold-storage facilities in Puerto Cortes, the leading export shipping port. Refrigerated containers are used, which, upon arrival at the port facilities, are hooked up to the local electric power system to maintain refrigeration for the (brief) period of time that the container remains in the port terminal. For fruit exports (bananas and pineapple), railroad transportation is coordinated with the arrival of ships that carry the products to external markets.

The situation at the Ramon Villeda Morales International Airport in San Pedro Sula is even more precarious, and any attempt to export perishable produce from there is impossible. Private businesses must deal with many obstacles and have made numerous requests to government authorities to overcome these problems.

2. Analysis of Production Options and of the Technical Environment

Fundamentally, the cold-storage network should provide facilities linking the production centers with ports of destination, for use by agricultural exporters. Terminal facilities of the export network should be constructed in those ports of shipment where significant volumes of perishable export products are handled.

Technical and foreign-trade information point to the need to establish at Puerto Cortes and the Ramon Villeda Morales Airport (as the terminal points of the cold-storage facilities), refrigerated multi-purpose units with positive rooms (refrigerated +10° +14°) and negative rooms (cold -18° -25°) rooms. This would allow fresh vegetables to be stored from December to May, fruit from May to December, and meat and seafood, throughout the year.

Method to be used: multi-purpose units with positive and negative temperature rooms. Out-of-season products will be stored.

Access to these units would encourage increased production by small-scale farmers or cooperatives in nearby areas. The refrigeration services would generate significant savings in shipping costs, by ensuring the availability of large volumes of produce in stock at all times, and would extend preservation time of the products.

The importance, utility and profitability of cold-storage facilities becomes evident upon analyzing the statistics on the volume of goods arriving at Puerto Cortes for shipment abroad.

Over the past five years, an average of 63.8 percent of the total volume of products requiring refrigeration was shipped through Puerto Cortes. Freight volume shipped from the Ramon Villeda Morales International Airport is still small, because there are no adequate facilities for handling perishable freight.

Project execution will make it possible to plan all exports. This will result in transportation savings.

With modern cold-storage facilities, the airport could handle output from the Sula Valley. Not only could it serve as a point of departure for local products, but also as a regional (Central American) center for freight shipment on charter flights to the United States and Europe.

Although the shortage of cold-storage facilities in production areas is notable in the harvest period, the situation does not warrant costly cold-storage equipment, since it would be under-utilized a good portion of the year. Also, the possibility of leasing nearby facilities exists.

Current water-cooling and cold-room infrastructure in the country meets the basic needs of producers. The Project is aimed at eliminating the real bottleneck: the export centers.

In southern Honduras, a large-scale cantaloupe producer has four chilling rooms (two in Nacaome and one in Choluteca) with a capacity for 5,000 boxes each. One company, Productos Acuaticos y Terrestres, S.A. (PATSA), has seven packing plants with water cooling systems; SUAGRO has a cold room in Marcovia with a capacity for 30,000 boxes; the Hardex Company has two cold rooms in the Choluteca area with a capacity for 12,000 boxes each. In San Lorenzo there is a packing plant owned by Granjas Marinas San Bernardo that provides service to other shrimping concerns and, since it has increased its output, it is constructing three new packing plants that will have the capacity to meet the cold-storage needs of the region's producers.

In the Comayagua Valley, another important producer of perishable agricultural produce, the Agrointernacional company, has facilities with a capacity for 15,000 boxes, considered sufficient to meet the needs of the valley's producers. In addition to that company, the Naturas and Mejores Alimentos companies have operating cold-storage capacity.

In the Santa Cruz de Yojoa area no urgent needs exist for cold-storage facilities. However, in four to five years, a normal cold room will be needed with a capacity for 10,000 boxes of pineapples, since the Montufar variety of pineapple will be ready to be taken to market by then.

3. Socioeconomic Situation of Potential Beneficiaries

Beneficiaries of new cold-storage facilities at Puerto Cortes and the Ramon Villeda Morales International Airport, will be the producers and exporters of agricultural products currently not having access to such facilities. Furthermore, the lack of cold-storage facilities limits and/or discourages increasing production for export to foreign markets and is an impediment to producing more than one harvest a year.

As mentioned earlier, the businessmen are organized and working to have a cold-storage system installed at Puerto Cortes and the Ramon Villeda Morales Airport. In Puerto Cortes, two premises in the immediate vicinity of the wharf are available.

Two appropriate premises already exist at Puerto Cortes, with a capacity for a total of 375 containers.

The physical work on these two premises has been concluded. The first has a capacity for 75 40-foot containers, while the other can handle 300 containers.

The two warehouses are owned by the National Port Enterprise (ENP). If the cold-storage system envisaged under the Project is installed, the ENP could grant a 20-year concession to the Honduran Board of International Transportation Users (COHUTI) and the Federation of Agricultural and Agroindustrial Producers and Exporters of Honduras (FEPROEXAAH), since both these institutions have requested this service.

4. Institutional Conditions

The cold-storage installations proposed under this Project will come under the responsibility and direction of private businessmen (producers and exporters) who have expressed interest in the Project. The Puerto Cortes facilities will come under the supervision of the FEPROEXAAH, while those at the Ramon Villeda Morales Airport will be under the future Cortes Airport Corporation.

Producers and exporters represented in FEPROEXAAH consider it of great importance and have expressed their willingness to provide 10 percent of the Project's total investment needs.

FEPROEXAAH members will provide 10 percent of the Project's total cost.

Figures show assured investment profitability in Puerto Cortes since a significant volume of freight requiring refrigeration is exported through that port.

5. Legal Framework

No obstacles to installing this type of facility for agricultural exports exist in the legal framework in force in the country, nor are any difficulties foreseen. On the contrary, government authorities are interested in supporting this type of Project since one of the main points of the Law on Structural Organization of the Economy, is that exports are to be promoted to increase the influx of foreign exchange.

Another legal issue would invoive the organization of the enterprise to administer the cold-storage complex, which must be governed by the provisions of the Code of Commerce pertaining to variable capital corporations.

6. The Project in the Context of Regional Integration

The installation of the proposed cold-storage system opens up enormous possibilities for tapping regional export potential, especially in the case of Puerto Cortes.

Puerto Cortes is strategically located on the Atlantic coast of Central America and is very well suited for transporting agricultural exports produced in other Central American countries to the United States. For example, Nicaragua does not have an Atlantic port suitable for exporting agricultural products. Consequently, Honduran and Nicaraguan port authorities have jointly studied the possibility of transporting exports overland from Nicaragua to Puerto Cortes for re-export.

In the regional context, the proposed facilities will be of strategic importance since they will be able to handle exports from Nicaragua, El Salvador and Guatemala.

Another case in point is that of El Salvador, which has no outlet to the Atlantic Ocean. It presently exports to the Atlantic through Guatemala, but it would be more advantageous to export through Puerto Cortes. To this end, a so-called "dry canal" between El Sal-

vador and Puerto Cortes would have to be placed into operation to transport goods.

For producers in eastern Guatemala (bordering on the departments of Copan and Ocotepeque in Honduras), exporting agricultural and livestock products through Puerto Cortes and the Ramon Villeda Morales International Airports would be easier, as these ports of departure are more accessible than that country's Atlantic ports.

These installations will have a dynamic effect on transportation on the roads connecting Honduras with its neighboring countries.

It is therefore clear that installing a cold-storage system in Puerto Cortes would offer considerable benefits to Honduras, Nicaragua and El Salvador. To a certain extent, the new facilities would also benefit producers in eastern Guatemala.

II. PROJECT DESCRIPTION

1. Justification

The Project would foster increased agricultural exports from Honduras and also facilitate exports from Nicaragua and El Salvador, which lack the port facilities available at Puerto Cortes. These facilities would be further enhanced if a cold-storage system and other export installations were made available.

They will provide an an incentive for growing crops that have not been considered to date because of storage shortcomings for export.

The existence of these cold-storage facilities will encourage off-season production of products already being exported, and the cultivation of new crops or the expansion of others that have been curtailed due to a lack of adequate facilities for their export. These are highly-perishable items, requiring special care to maintain international standards.

According to information provided by FEPROEXAAH, the potential for nontraditional agricultural exports in Honduras will double between 1990 and 1995. The 22,640 hectares planted in 1990 will rise to 42,120 in 1995. This will mean that foreign-exchange earnings can rise from US$74 million to US$215 million, and direct annual employment can expand from 19,583 to 33,820 jobs, in five years. A large portion of that output would exit through Puerto Cortes, provided it had suitable facilities.

The Master Plan for Development of the Sula Valley, being implemented by the government, includes upgrading 20,000 to 30,000 hectares over the next three years in order to bring them under agricultural production for export. In addition, the efforts currently being undertaken by the enterprises in that area to improve their airport facilities, suggest that the Ramon Villeda Morales Airport will

acquire greater importance as a port of departure for agricultural exports in the near future.

The existence of cold-storage facilities would also enable the country to export not only to relatively nearby countries but to more distant markets as well, since they will facilitate storage for a much longer period of many perishable agricultural products.

The new cooling systems will make it possible to ship exports over greater distances.

2. Objectives

General

- To contribute to boosting the export of perishable agricultural products
- To foster the cultivation of perishable agricultural products very suitable to the conditions of the country, which can be harvested more than once a year, and which are produced in very limited volumes, due to the lack of cold-storage facilities

Specific

- To provide Puerto Cortes with modern cold-storage facilities in order to facilitate exports of bananas, meat, seafood, plantains, cantaloupes, watermelon, squash, pineapple and other perishable products
- To provide the Ramon Villeda Morales International Airport in San Pedro Sula with modern cold-storage facilities for exporting ornamental plants, plantains, processed cassava, flowers, beef, and citrus fruits, including Persian limes and grapefruit, as well as watermelon and pineapples grown in the Sula Valley and surrounding areas
- To diversify market destinations and facilitate export to more distant markets
- To encourage increases in the production of perishable agricultural exports by opening the possibility of storing products in Puerto Cortes and at the Ramon Villeda Morales International Airport, in order to take advantage of the winter market in the United States, Canada and Europe

Both Puerto Cortes and the Ramon Villeda Morales International Airport will become nerve centers of an intensive national and international network.

3. Strategy

The following strategy will be followed in order to achieve the proposed objectives:

Joint efforts between the public and private sectors will give impetus to an agricultural export program that will revive the country's economy.

- Obtain government support for securing the financial resources needed by private businesses for constructing the cold-storage facilities
- Involve in the Project, from the start, FEPROEXAAH, COHUTI, the Chamber of Commerce and Industries of Cortes, the National Port Enterprise (ENP) and the Development Committee of the Ramon Villeda Morales Airport (or the Cortes Airport Corporation, if by then it were legally established), in order to ensure their support
- Engage in talks with ENP authorities to guarantee access to either of the two premises currently available, for installing the cold-storage facilities
- Develop a working plan establishing close ties among producers, exporters and export promoters, in order to promote an agricultural export program in the short- and medium-term

4. Components

The facilities will consist of compartments, in line with the different cooling and freezing needs and the nature of the different products.

The Project components will consist of installing cold rooms for negative and positive temperatures at Puerto Cortes and the Ramon Villeda Morales International Airport.

According to the technical specifications set forth in the base study, the cold-storage facilities for Puerto Cortes should be of the multipurpose type and have the following features:

- They should have a storage capacity of 1,200 tons (6,000 cubic meters).
- They should serve to chill and freeze perishable export products moving through the port for export to foreign markets. The products can be grouped as follows:

Requiring cooling	Requiring freezing
Oranges	Seafood
Grapefruit	Meat
Plantains	Processed fruit and vegetables
Pineapples	Other products not currently exported
Cantaloupes	
Cucumbers	
Other vegetables	
Ornamental plants	
Strawberries	
Lemons	
Flowers	

Similar export products can be grouped together to facilitate storage. For example, oranges, grapefruit and limes can be stored in one room; plantains, pineapples, cucumbers, other vegetables, ornamental plants, flowers and strawberries in another; while in still another, and totally independent of the rest, cantaloupes can be stored. Finally, seafood, meat and processed fruit and vegetables would be stored in the freezer room.

The Project Annex lists the basic specifications for the facilities to be constructed.

- The optimum modular room should measure 12 by 16 meters wide, and be at least five meters high.
- The optimum modular room would have six rooms.
- The required accessories are electrical and water installations, a hoist station and scales.

The cold-storage facilities would be installed at the Ramon Villeda Morales International Airport in the short term.

The Chamber of Commerce and Industries of Cortes, the Ramon Villeda Morales Development Committee, and private enterprise in the region are highly interested in the Project, because it will significantly increase export possibilities of products such as fresh flowers, ornamental plants, limes, mangoes, peas, meat and other products, which are currently exported through Puerto Cortes.

There is space at the Airport for constructing the facilities. The feasibility study could be carried out in a maximum of three months, beginning on the date that a decision is made to construct the facilities and the financial resources become available.

Refrigerated transportation equipment will round out the cold-storage needs of the system.

It should be noted, however, that the installation of the two cold-storage systems is not sufficient to overcome the difficulties faced by producers and exporters. It is also necessary to have refrigerated transportation equipment to move freight from production centers to refrigerated collection centers (Puerto Cortes and the airport).

According to the information provided by the Honduran Board of International Transportation Users (COHUTI) and FEPROEXAAH, it is necessary to procure 120 cabs, 100 trailers and 200 flatbeds.

Therefore, it is suggested that the feasibility study consider the importance of procuring freight transportation equipment to move produce from production areas to the central cold-storage facilities.

The feasibility study should also take into account the acquisition of ground transportation equipment.

5. Goals

- To carry out the feasibility study of the proposed cold-storage system
- To construct cold-storage facilities at the Puerto Cortes and Ramon Villeda Morales International Airport
- To acquire the refrigeration equipment and its components
- To install the refrigeration equipment
- To secure freight and internal transportation equipment for the Puerto Cortes and Ramon Villeda Morales International Airport facilities

6. Project Beneficiaries

Project beneficiaries: farmers producing for export, not only in Honduras, but also in Nicaragua, El Salvador and Guatemala

Direct Project beneficiaries will be producers and exporters of citrus fruit, pineapples, cantaloupe, bananas, plantains, watermelon, shrimp, lobster, shellfish, ornamental plants and fresh flowers. In addition to national producers and exporters, producers in Nicaragua, El Salvador and eastern Guatemala can benefit, since Nicaragua does not have a suitable Atlantic coast port; El Salvador does not have an outlet to the Atlantic; and eastern Guatemala has difficult access to its Atlantic coast ports. It would therefore be advantageous for these countries to export their agricultural products through Puerto Cortes.

The inhabitants of Puerto Cortes and San Pedro Sula will also benefit, since new permanent job possibilities will be generated by these installations.

The country will benefit due to the strategic importance that the installations will acquire, and the economic movement that will be generated.

7. Support Services for Production

The institutions that will provide support services for the cold-storage system will be private sector enterprises engaged in the marketing, export, transportation and production of perishable agricultural and livestock products.

Support institutions: primarily export-oriented private associations and enterprises

FEPROEXAAH will play a key role in marketing and merchandising services and COHUTI will play a major role in the transportation of products from the production centers to the cold-storage facilities. Farmers' and exporters' organizations will also play an important role.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

The Project's executing unit for the Puerto Cortes facilities will be FEPROEXAAH. As an organization of producers and exporters, the Federation best represents the interests of its members.

Executing unit: Federation of Agricultural and Agroindustrial Producers and Exporters of Honduras (FEPROEXAAH)

With regard to the Ramon Villeda Morales Airport facilities, the executing unit will be the mercantile corporation set up by the Cortes Chamber of Commerce and Industries and the Airport Development Committee.

2. Plan of Action

The following activities make up the plan of action for the Project:

- Obtaining the funds necessary to carry out the feasibility study. This study can be co-financed by national entities (FEPROEXAAH and CCIC).
- Inviting bids from national and/or Central American consulting firms to carry out cold-storage facilities studies in Puerto Cortes and the Ramon Villeda Morales Airport
- Holding a public bid to construct and/or upgrade the cold-storage facilities at the Ramon Villeda Morales and Puerto Cortes Airport
- Holding a public bid to procure the cold-storage equipment and the equipment for transporting the cargo within the installations
- Ensuring, through FEPROEXAAH and COHUTI, the leasing of one of the premises available on the Puerto Cortes wharf for installing the cold-storage system

3. Resources

No physical or human-resource limitations are foreseen in carrying out the Project, since there is an abundance of labor, water, public electric power and various local materials for construction in Puerto Cortes and San Pedro Sula.

No physical or human-resource limitations are envisaged for executing the Project.

There may be some limitation with regard to technical personnel (engineers or mid-level personnel specialized in industrial refrigeration), but this could be overcome through specialized technical assistance.

4. Participating institutions

Primary participants are private businessmen engaged in the production and export of goods requiring refrigeration. FEPROEXAAH, COHUTI and the future Cortes Airport Corporation will play an important role.

IV. COSTS AND FINANCING

1. Costs

Total cost of the Project: US$4 million

The estimated investment for cold-storage facilities in Puerto Cortes and the Ramon Villeda Morales Airport totals approximately US$4 million. This amount can be broken down into three main items:

Preinvestment funds	US$ 3 000 000
Estimated investment	US$ 3 960 000
Technical assistance	US$ 10 000

Overall, the installations at Puerto Cortes will cost US$2.4 million and those at the International Airport, US$1.2 million.

Project investments are detailed in the following table. It is important to point out that, according to estimates made in preliminary studies, the amount of funds required to purchase cold-storage equipment for Puerto Cortes will amount to US$2.4 million.

Estimated investment for installation of cold-storage rooms for export products in Puerto Cortes and the Ramon Villeda Morales Airport (US$ X 000)

Item	Total investment	External resources	National contribution
1. For cold-storage facilities at Puerto Cortes		2 400.0	2 400.0
Imported equipment		300.0	300.0
Engineering works		1 500.0	1 500.0
Other expenses		600.0	600.0
2. For cold-storage facilities at the Ramon Villeda Morales Airport	186.0	1 014.0	1 200.0
Imported equipment	186.0	150.0	150.0
Engineering works		564.0	750.0
Other expenses		300.0	300.0
3. Contingencies for Puerto Cortes and Airport facilities (10% of total)		360.0	360.0
Estimated investment	546.0	3 414.0	3 960.0
Pre-investment			
Feasibility study		30.0	30.0
Technical assistance		10.0	10.0
Total	**546.0**	**3 454.0**	**4 000.0**

The local contribution will be used for completing the cost of cold-storage facilities at the International Airport and for contingency expenses at both installations.

Cost estimates were not made for the cold-storage facilities at the Airport, but their construction is vital for its development and for that of the Sula Valley as a whole. It is suggested that cold-storage facilities established at the Airport be half the size of those at Puerto Cortes, and that they be designed to facilitate expansion according to future needs. An estimated US$1.2 million is estimated for this component.

2. Financing

The Project will be carried with a loan in the amount of US$3.454 million with a 10-year term, a two-year grace period and a 19-percent interest rate.

Foreign investment required: US$3.454 million, over a 10-year term, with a two-year grace period, at 19 percent per year

Local share of the Project financing would consist of US$546,000, of which US$186,000 corresponds to the Villeda Morales Airport, and US$360,000 to the 10-percent contingency fund for Puerto Cortes and the Villeda Morales Airport.

V. ANALYSIS

1. Technical Analysis

According to the preliminary studies, the Project proposed herein for Puerto Cortes is technically sound, as can be seen in the technical specifications for a call for bids on a cold-storage chamber.

No advanced technical studies have been made yet for the Ramon Villeda Morales Airport facilities.

2. Institutional Analysis

The Honduran private sector places great importance on the Project.

Private businesses represented on the Chamber of Commerce and Industries of Cortes (CCIC), and on the FEPROEXAAH, are highly interested in the Project and place great importance on it. Thus, it does not seem that difficulties would arise in terms of institutional support.

3. Legal Analysis

The Law on Structural Organization of the Economy actively promotes, among other objectives, increased exports of those products which will contribute to boosting the influx of foreign exchange. The Project proposed herein does not propose production of agricultural exports per se, but it will contribute to boosting exports by providing cold-storage services. Thus, it is considered that Project implementation and development will not be impaired by legal factors.

4. Financial and Economic Feasibility

According to the estimates, the investment can be recovered in three years of operation.

It is not possible to calculate the financial indicators (IRR and NPV), since all the necessary information on expenses and income is not available. From the information obtained, however, the Project is found to be profitable. Through the use of services at the Puerto Cortes facilities, annual earnings in the neighborhood of US$10.3 million are expected, provided freight volumes and estimated potential activity remain steady.

5. Project Impact

Project impact in terms of direct employment will be limited, since very little personnel would be required for operating the cold-storage centers. Altogether, some 20 to 30 people, including freight handlers, administrative personnel and guards, may be employed.

Maintenance work would preferably be carried out by private concerns hired for that purpose.

The Project's greatest impact would stem from the fact that cold-storage facilities would stimulate production of perishable products for export, since they would allow fresh fruit and vegetables to be stored for shipment to winter markets in the United States and Canada. It would also increase Honduras' chances of competing on the European winter market, through exports by ship or by air with high profits for national producers and exporters.

Export-oriented production will be stimulated and losses due to lack of cold storage will be overcome; international markets will be served throughout the year.

ANNEX

BASIC SPECIFICATIONS IN BIDDING FOR THE MULTI-PURPOSE COLD-STORAGE CHAMBER TO BE INSTALLED AT PUERTO CORTES

1. General organization

The technical specifications cover all aspects of the works to be carried out.

1.1 Electric hoists for the rooms

1.2 Pallet trucks for other maneuvers

1.3 Storage pallets: 40" x 50" (101.6 x 121.7 cm), 100 x 120 centimeters and 80 x 120 centimeters

1.4 Weight per pallet is 400 kilograms for frozen items and 160 to 200 kilograms for fresh products

1.5 The height of two pallets is 3.6 to 4 meters.

1.6 Refrigerated storage temperature is a maximum of +14° C and a minimum of +4° C.

1.7 Frozen storage temperature is a maximum of -25° C and a minimum of -18° C.

2. Requirements of the plan

2.1 The height of the operating space is 4.4 meters, plus refrigeration system.

2.2 Total capacity is 6,000 cubic meters and the pallet loading area more than 1,200 square meters.

2.3 Truck unloading area is more than 2,000 square meters (width more than 35 meters) with special disembarking levels for each station.

2.4 Railroad connection

Land (roads and railroads), sea and air connections have been taken into account.

2.5 Ship unloading area from 1,550 to 2,500 square meters

2.6 Requirements for expansion of the main storage area: three-times the auxiliary areas: two-times

2.7 Layout of the machine room plus control area: depending on the bidder

2.8 Layout of the coolers: depending on the bidder

2.9 Arrangement of the condensers: depending on the bidder

2.10 Ambient refrigerator (optional): depending on the bidder

2.11 Electric substation plus switch room: depending on the bidder

2.12 Orientation of operating areas in relationship to site conditions

2.13 Frame and structure: reinforced concrete or metal with rooms inside the structure

2.14 Frost protection in refrigerated rooms: more than 0.60 meters of empty space

2.15 Doors to refrigerated or cold rooms: 2.0 to 2.4 meters wide (larger if necessary for occasional movement of the fixed equipment proposed by the bidder), with automatic sliding device and plastic closure strips

2.16 Inclination of room and platform: 1 percent minimum and 2 percent maximum

2.17 Insulation can shrink freely between counter-locking modular panels. For example:

Measurement of the insulation: 8 to 10 Kcal/square meter/hour

Loads on ground level:

- static 5,000 to 6,000 kilograms/square meter
- rolling 3,000 kilograms/square meter

2.18 Height of unloading platform for:

- trucks
- containers
- railroad (optional)

International standards for this type of facility have been taken into account. Many of the works and the estimate of their costs will be proposed by the bidders.

2.19 Number of unloading stations: 3

2.20 Width of gate: minimum 3.6 meters

2.21 Width of unloading platform: minimum 6 meters

2.22 List of civil engineering works: by the bidder

2.23 General plan of physical plant and detailed drawings: by the bidder (scale of 1/200 and 1/20)

2.24 Estimates of costs for:

- Site preparation: by the bidder
- Construction: by the bidder
- Special civil works: by the bidder
- Outdoor work: by the bidder
- Isolation storage: by the bidder
- Drainage: by the bidder

2.25 Type of insulation material, thickness, composition and guarantee: by the bidder

2.26 Building plan: by the bidder

3. Technical data (local conditions)

3.1 Thermal characteristics of products, specific heat

3.2 Humidity required in the storage room, 80-95 percent

3.3 Daily sunlight over one year

3.4 Minimum, maximum and average temperatures recorded in the Puerto Cortes area

3.5 Maximum and average humidity in summer

A complete survey of local conditions will be used to adjust the works to the climatological and other conditions of Puerto Cortes and San Pedro Sula.

3.6 Refrigerated water temperature, amount available, hardness and general quality, pressure, price

3.7 Site altitude: required sea level to determine the effect on hot air transmission equipment and optional cooling towers

3.8 Length of days and nights

3.9 Underground water level

3.10 Minimum, maximum and average precipitation

3.11 Extremes for drainage of rainwater

3.12 General atmospheric condition related to salt, seawater and sand corrosion, etc.

4. Machinery and energy

4.1 Room ventilation measurement

4.2 Cold freight and miscellaneous to be stored, with detailed calculations by the bidder

4.3 Disturbances in energy consumption (cooling, lighting, etc); by the bidder

4.4 Public energy: cost, KVA, voltage, reliability and distance for connection (possible stoppage or emergency installations to safeguard food and data processing)

4.5 Description of the electrical equipment and network: by the bidder

4.6 Description and reasons for which specific cold-storage equipment was chosen: by the bidder

4.7 List and cost of auxiliary equipment: by the bidder

4.8 Selection and cost of the water network: by the bidder

4.9 Selection and instrumentation control cost: by the bidder

4.10 Automation: depending on bidder

4.11 Assembly planning: by the bidder

5. General installations

5.1 Weighing bridge, security booth and security equipment

5.2 Administration office with installations

5.3 Employee welfare facilities

5.4 Switchboard and telephone network room

5.5 Fences and gates

5.6 Supervision office

5.7 Maintenance area with warehouse for spare parts and lubricants

5.8 Number of electric hoists and pallet trucks

5.9 Hoist loading room

6. Acceptance of work

6.1 Checking of civil works and equipment

6.2 Functioning guaranteed by the bidder and checked

6.3 Provisional acceptance conditions

6.4 First supervised handling tests

6.5 Final checking and testing

Final acceptance of the works will be subject to rigorous control.

HONDURAS

REHABILITATING CASHEW PLANTATIONS IN THE SOUTHERN ZONE AND INSTALLATION OF A CASHEW NUT AND FRUIT PROCESSING PLANT IN EL TRIUNFO, CHOLUTECA DEPARTMENT

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

Actions to boost the development of the cashew crop in Honduras started in 1972. A proposal entitled Development of the Cashew Crop was prepared by the Ministry of Natural Resources (SRN), the National Agrarian Institute (INA), and the former National Development Bank (BANAFOM), presently the National Agricultural Development Bank (BANADESA). On the basis of this proposal, in 1974, BANAFOM promoted actions to begin planting this crop on more than 1,500 hectares. The executing unit was the INA, with the SRN serving as the joint executing unit. Unfortunately, institutional limitations made it impossible to achieve the original goals, and the crop was established on some 300 hectares in the southern region of the country.

In 1978, efforts continued with the financial participation of the Central American Bank for Economic Integration (CABEI). INA received a loan to finance an expansion of up to 7,000 hectares. In 1981, the INA requested an increase in the CABEI line of credit, in view of increases in production costs. By mid-1983, over 5,580 of the 7,000 proposed hectares had been planted. Eleven years after the start of this activity, an assessment of the cashew crop demonstrated that, of the area under cultivation, approximately 3,400 hectares (60% of the total) had been lost due to fires, drought and excessive grazing. At present, cashews are grown on 2,180 hectares.

Cashews have been cultivated in Honduras for two decades. Accurate diagnoses are available, which have the support of the private sector.

The results of a 1989 diagnosis recommended that cashew plantations be rehabilitated and expanded, and that an industrial plant be installed for the processing of the cashew nut and the false fruit. The Honduran Federation of Agricultural and Agroindustrial Producers and Exporters (FEPROEXAAH, hereinafter FPX), encouraged by the outlook on the international market for cashews and cashew products, endorsed the study. Presently, the FPX exports the largest volume of cashew nuts from the southern region, and has a marked interest in consolidating the crop and upgrading and expanding the processing activities.

In spite of the limitations faced for the development of the plantations over the past six years, the campesinos, with the advice of the Industrial Development Center (CDI) and that of organizations abroad, to a certain extent take advantage of the false fruit of the cashew tree. In the village of Azacualpa, one cooperative processes this fruit and dries it for local consumption.

Joint efforts between government and private organizations, combined with technical assistance and timely credit, will bring about increased production and productivity.

With better and more technical and credit assistance, existing plantations can increase production and productivity levels in the short

term. At the same time, new cashew plantations can be planted. This is an attractive possibility, in view of the interest demonstrated by the private sector, international market prices, farmers' experience with the cashew crop, and the availability of large tracts of land suitable for the crop (some 5,000 hectares), which is the amount required to supply a processing plant.

This Project proposes to rehabilitate the 2,180 existing hectares, plant 2,500 new hectares, and install a semi-mechanized processing plant in the southern region for processing cashews nuts and byproducts on a large scale and in the short term.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Project

The Law on the Structural Organization of the Economy, enacted by the current administration, includes a program for upgrading the agricultural production structure, intended to activate exports, generate foreign exchange, and create more jobs. The country's difficult financial situation makes it indispensable that this type of project be implemented in the short term.

The following indicators illustrate the performance of the agricultural sector in the early 1990s: it contributes 31 percent of the overall GDP; it generates 75 percent of the value of the exports; and, it provides employment for 35 percent of the economically-active population (EAP). Due to the serious economic crisis, the agricultural sector must contribute by increasing its participation in the economy of the country.

Within the context of the country's difficult economic situation, the Project will boost foreign-currency receipts and generate employment opportunities in the rural area

The Project will contribute directly to increasing foreign-exchange receipts, boosting employment and strengthening Honduras' participation in the external market. It will also have a direct impact on raising farmers' incomes and improving the quality of life of the beneficiaries.

For these reasons, it is considered that priority should be given to rehabilitating the cashew plantations of southern Honduras, incorporating an additional 2,500 new hectares into production, and installing a semi-mechanized plant for obtaining high-quality cashew nuts and for processing the false fruit.

2. Analysis of Production Options and of the Technical Environment

Processing of the cashew crop will increase the value added.

After having analyzed the production options for the southern region, where the cashew tree plantations are established, it was de-

termined that three complementary actions were found to be most suitable for the country. Two of these are short-term actions and one is medium term: rehabilitating the existing plantations and planting the crop to new areas; replacing the primitive method for processing the cashew nut with a semi-mechanized processing plant; installing, in the medium term, an industrial plant for processing the output of the 5,000 hectares. In sum, two short-term alternatives emerge from this range of possibilities:

Option 1

Rehabilitation and new plantations. This proposes the rehabilitation of 2,180 hectares planted with cashew trees in the 1970s by the campesinos of the reformed sector, simultaneous with the planting of 2,500 new hectares to cashew, using modern cultivation and management practices. The plantations to be rehabilitated are located in Choluteca department, in the southern part of Honduras, 150 kilometers from the city of Tegucigalpa, in Nacaome (355 hectares), San Bernardo (1,285 hectares), El Triunfo (363 hectares), and Namasigue (180 hectares), very near the Pacific seaboard and the city of Choluteca, the department's principal city.

Option 2

Modernization of the industrial processing of the cashew nut. This option proposes the analysis of the size of the plant and the new technology for collecting the nuts. Under this option, two possibilities were examined: one industrial plant; and the installation of a semi-mechanized processing plant. The plant will be installed close to the major production centers in the southern region, near the municipality of El Triunfo. This is close to three of the four existing production centers, as well as to the areas where new plantations will be established, which will facilitate the supply of agricultural raw materials to the plant.

A key to the success of the Project is to determine the degree of modernization of the agroindustrial plant and adjust it to current levels of production of existing plantations. The two options studied would replace primitive methods currently in use in the southern region with improved technology that will upgrade the quality of the cashew nut (whole). This will make it possible to take immediate advantage of demand on the world market, where prices are quoted on the basis of quality and taste. In this respect, only Brazil and El Salvador provide better nuts than those selected and exported by Honduras.

Primitive nut extraction methods will be replaced by a more modern procedure.

At present, the primitive cashew nut processing method in use, produces a low-quality product; as a result, the income from such activity is low. In addition, the kernel/nut yield ratio is the lowest in terms of cashew nut quality standards. According to data provided by some processors using primitive methods, of the gross weight of

the nut, only 18 percent to 19 percent corresponds to the finished product. The data gathered locally also indicates that primitive methods produce only 35 percent to 40 percent unbroken nuts, which is considered quite low. The price paid for unbroken nuts is US$7.72 per kilogram, while that paid for broken nuts is US$5.06. In other words, because of low quality, there is a loss of US$2.66 dollars on each kilogram exported.

Better-quality nuts will fetch higher prices on the international market.

The kernel/nut ratio of utilization is 19 percent with primitive methods and 23 percent with industrial methods. That is, in the processing with primitive methods of 700,000 kilograms of raw materials per year, 28,000 kilograms of nuts are lost because they do not meet quality standards. It is under these circumstances that the Project proposes installing a plant for processing the nuts. A rough calculation shows that if the price applicable to these 28,000 kilograms of nuts is US$7.72 per kilogram, the loss of foreign exchange amounts to US$216,000 dollars per year.

The new technology proposed will improve the quality of the nuts produced by the primitive processing plants. It is expected that a kernel/nut ratio of 14 percent to 16 percent, and a high percentage of unbroken nuts will be obtained, and that nearly 75 new jobs will be generated by each plant installed.

The Federation will consider support in the amount of US$93,000 in technical assistance and Project administration for this option. Negotiations are already well under way with the supplier of the technology in connection with the design of the equipment, and technicians from an institute in the United States are scheduled to arrive shortly.

It is important to stress that the installation of a semi-mechanized plant is the best short-term option for exploiting the southern region's cashew nut output.

The installation of a plant to process Salvadoran and Honduran cashew output will contribute to strengthening regional ties.

The possibility of installing the industrial plant, with a view to processing output from both El Salvador and Honduras, should be considered. Should this proposal be suitable -- especially taking into account the proximity of the cashew producing areas of the two countries -- this would contribute to strengthening ties of cooperation, integration and development between both countries.

3. Socioeconomic Situation and Potential Beneficiaries

The socioeconomic situation of the cashew producers is a consequence of the poor farm management practices on the 2,180 hectares, and the methods used for processing the nut. The annual per-capita income of the farmers was estimated for 1988 at 1,500 lempira.

The Project to rehabilitate and expand cashew plantations, combined with the processing project, will contribute substantially to boosting income levels and to consolidating a stable source of

employment in the southern region for the entire year. This region is densely populated and there is a high unemployment rate because of periodic droughts.

The southern region of Honduras has dramatic socioeconomic indicators. Infant mortality and malnutrition are high; there is intensive migration to the cities. Numerous health and hygiene problems demand urgent attention. Malnutrition is the most severe in this part of the country, particularly in the rural sector. The average food intake level of nearly 40 percent of the rural population is 1,700 kilocalories, which means they exist at mere subsistence levels. Seventy-five percent of the region's population (416,000), which includes the departments of Choluteca and Valle, live in the rural areas; only 46 percent of the population is economically active, and illiteracy stands at 40 percent.

The Project area is densely populated and has high unemployment and underemployment indexes. Project impact will be felt rapidly.

4. Institutional Conditions

As has been seen, three institutions undertook in 1972 to develop a project for cultivating and processing cashews. This project was called the National Cashew Cultivation Project.

The outlook in 1990 is positive and indicates that, in the short term, the crop can be recovered. Damages to the plantations can be corrected because the crop has the capacity to survive for long periods in unfavorable agricultural conditions. The use of appropriate agronomical practices will improve current levels of production and productivity. As it stands now, farmers and technicians have ample experience in cashew crop management, and there is availability of land for extending the areas under cultivation. Furthermore, there is interest on the part of the organized, reformed-sector farmers and independent farmers, as well as on the part of the Federation of Producers and Exporters (FPX). Finally, there is an open external market and attractive international prices for cashew nuts.

Appropriate agricultural practices and clear policy guidelines will contribute to successful Project implementation.

5. Legal Framework

There are no legal obstacles to this Project, particularly as regards the land tenure situation. The new legal framework and incentives, provide benefits for farmers and exporters which directly favor Project implementation. Similarly, the country's new development strategy, which aims primarily to promote and diversify private-sector agricultural exports, ensures successful Project implementation to the benefit of the southern region.

The processing plant is of particular importance, since it is the center of the proposed activity. The aim is for the cashew growers to be the stockholders of this agroindustrial establishment.

It is important to point out that it will be necessary to design a proposal to regulate the contractual relationship between the cashew growers and the stockholders of the processing plant. One interesting possibility would be for the cashew farmers themselves to be stockholders of the processing plant, along with the FPX. In this way, the corporation would be ensured a guaranteed supply of agricultural raw materials; it would also have the technical capabilities of the FPX for organizing the corporation's operations and taking advantage of established commercial relations. Furthermore, it will also be important for the new corporation to negotiate the transfer of the patent for the industrial technology with the supplier, in order to secure the rights and royalties relative to the design and manufacture of the equipment.

6. The Project in the Context of Regional Integration

Since 1985, cashew nuts produced in the southern region have been sold to El Salvador and Guatemala, where processing plants are in place. This situation will continue until the El Triunfo plant comes into operation.

Another important activity would be to promote the exchange of regional experiences among farmers and technicians, in connection with cashew management practices, selection of varieties, industrial processing technology, quality control, and research on the industrial use of byproducts. It is equally important to think about the possibility of involving Central American companies in the industrial design, equipment manufacture and installation actions.

The trade, technical, and research exchanges included in the Project clearly show its place in regional integration. CATIE's participation will contribute to this process.

The research and training activities can be carried out at the Central American level and/or with the participation of specialized centers or experts. With respect to agricultural research, the Tropical Agriculture Research and Training Center (CATIE), with headquarters in Costa Rica, can be considered. It would also be appropriate to consider the possibility of establishing a multinational nut-processing corporation with the producers and processors of El Salvador, in order to take advantage of the operating capacity of the processing plants established in the countries.

II. PROJECT DESCRIPTION

1. Justification

Since the Project's objective is to contribute to diversifying and expanding nontraditional exports, which have been processed to

have greater value added, implementation is regarded of high priority by the government of Honduras.

Furthermore, the cashew crop adapts well to the agricultural conditions of the southern region. It is resistant to long droughts -- typical of the arid and semi-arid zones -- and can be grown suitably on soils which are not adequate for general agricultural and livestock purposes.

The characteristics of the cashew tree make it a suitable crop for arid and semi-arid areas.

Through industrial processing of the shell surrounding the nut, it is possible to extract a liquid with polymer-like properties containing 90 percent anacardic acid and 10 percent cardol. These are used in the chemical industry -- mainly in the manufacture of acid-resistant paints, resins for foundry use, black lacquers for the decoration of earthenware, a modifier producing high friction for brake pads, and others. Furthermore, the residues of the peel covering the nut, like the apple, can be used in the animal feed concentrate industry, in the preparation of organic fertilizers, and as inexpensive and high-caloric fuel for domestic use.

In the external markets, cashew nuts, kernels and oil have an attractive price, which will improve after the agroindustrial processing methods are introduced, and when better products are obtained.

The residues of the agroindustrial process can be used to make animal feed concentrates, organic fertilizers and a low-cost fuel.

2. Objectives

The Project aims to accomplish the following objectives:

General

- To contribute to diversifying and expanding the export of nontraditional products, by increasing production and productivity on cashew plantations
- To exploit cashew harvests to the maximum, by introducing improved agroindustrial processing, and replacing primitive methods for extracting the products and byproducts
- To generate productive employment, and improve the incomes of both cashew growers and the rural population in the Project's area of influence

The cultivation and processing of cashews, a truly nontraditional product, will generate methods and experiences that can be used in other areas.

Specific

- To rehabilitate the cashew plantations in existence in the southern region
- To extend cashew cultivation to new areas, with a view to making it possible to exploit the crop industrially
- To install a semi-mechanized plant for cracking cashew nuts and obtaining a better-quality product

— To start the production of byproducts on a small scale (rust-preventive paint)

3. Strategy

Credit is of particular importance. Given the clear export possibilities for cashews, banks can support production at a minimum risk.

The strategy proposes rehabilitating and modernizing the abandoned cashew plantations simultaneously with planting activities in new areas, and installing a semi-mechanized cashew nut processing plant. The following immediate actions are included:

— Encouraging the organization of independent farmers having an interest in cultivating cashews in the southern region

— Initiating actions for creating a line of credit (trust-fund type) to support the farmers, channeled through the banking system

— Encouraging, in the short term, replacement of the primitive cashew processing methods with an easily-operated and low-cost, semi-mechanized method which will produce a better end product and extract more unbroken nuts

The agroindustrial plant will start operations during year four of the Project, once output is sufficient.

— Initiating negotiations, either through the directors of FPX or any other interested organization, with countries that can supply an agroindustrial plant under the best possible terms. Installation would be made in year four of the Project, when its output would be sufficient to make profitable use of the plant's operating capacity

— Taking full advantage of the FPX's marketing and commercial information system, in order to ensure the Project's commercial success

4. Subprojects and Components

The Project can be divided into two subprojects:

Subproject 1. Credits for rehabilitation of existing plantations and planting of new plantations

Rehabilitation efforts will aim to renew existing plantations, through the transfer of the following technology:

Plantation density

It is vital to have sufficient output of nuts by year four; initially, density will range from 200 to 250 trees per hectare; after thinning, density will be 100-140 trees per hectare.

Replanting

This will include the a) replacement of trees lost to production, and b) replacement of under-developed trees or those that produce low yields of small nuts.

Application of the pre-plantation modality

Young trees from greenhouses will be transplanted to the field after the third month of growth. The number of plants to be replaced would depend on the tree population; care should be taken not to exceed 40 trees per hectare, on the average. This means that 20,000 plantlets will be required in year one, 32,000 in year two, and 35,320 in year three.

Rodent protection

Because of the large number of rodents, young trees must be protected with poisoned tallow. Regular plantation cleaning will be established, at which time trees will be spot checked for damages.

The planting of some 2,500 new hectares to cashews will be undertaken with the participation of medium- and large-scale producers, as well as with groups from the reformed sector with an acceptable level of corporate organization. The State will provide support by channeling resources to the banking system, and by providing technical assistance for the organization of both the planting activities and the producers. Skilled technical personnel will be hired to plant the new plantations. The size of the modules to be planted will range between 20 and 200 hectares, preferably in compact sections with roads between the parcels, in line with the cultivation plan and the selected densities.

The participation of experienced farmers and skilled technicians will ensure that Project activities unfold in a satisfactory manner.

Subproject 2. Modernization of the agroindustrial processing operations

Processing methods will be upgraded to meet the output of 2,500 new hectares planted to cashew, which will produce commercially as of year five. The determining factor for making the final selection between the two options studied for the processing component, was the size of the processing plant. The first option considered the installation of an industrial plant with the capacity to process a minimum of 20,000 quintals of cashew nuts per year (more than 900 metric tons of raw materials per year). By virtue of current low output, this plant would operate considerably below full capacity for at least four to five years. The second option, and the one finally proposed by the Project, consists of installing, in the short term, a small semi-mechanized plant, capable of profitably processing a portion of the cashew output currently produced in the zone (nearly 10,000 quintals; approximately 450 tons per year).

The local metal-works industry will receive appropriate assistance to enable it to manufacture the machinery required for the agroindustrial plant.

These plants can be equipped locally by the country's metal-works industry, in accordance with the design provided by the American Technologic Institute (ATI) of the United States of America. This system will be used to improve the output of eight primitive cashew nut

processing plants currently operating in El Triunfo, which process 25 percent of the cashew harvest for the domestic market.

In addition to producing cashew nuts, the agroindustrial plant will also be able to manufacture rust-protective paint and cashew oil.

In stage two, this industrial subproject will involve the acquisition, installation and setting into motion of a plant to commercially process and extract the nut, and the production of rust-preventive paint, on a small scale. The second stage, which has not yet been planned, will include oil extraction.

Agroindustrial processing will invoive intermediate technology which requires, in year one, approximately 19 percent of current cashew output as raw material. Once the processing plants go into operation, 100 percent or more of current cashew production will be required. The main objective is to improve the quality of the final product (kernels) by using mechanized methods, particularly for cracking the nut. A number of pieces of equipment can be manufactured locally, and a study will be made of the system used to pack the commercial product.

Investments in equipment will be amortized. An interesting range of byproducts will be generated for use in the country and for export in the future.

The plant will be designed to process 172 metric tons during the first year (14.3 tons per month, 13 quintals per day) and to produce 24 metric tons of nuts per year (two tons per month, 1.8 quintals per day). The plant will operate 288 days per year. The output of rust-preventive paint will be approximately 9,000 gallons per year, or 30 gallons per day, if the plant operates 300 days per year. The proposal advises to obtain an amortization term of five to six years for the investments in plant equipment. The useful life of the facility is estimated at 10 years.

5. Goals

Rehabilitation of existing plantations and planting of new plantations

	Year					
	1	2	3	4	5	6-15
Training of current farmers (N)	150	100	100			
Rehabilitation of plantations(ha)	500	800	880			
Promotion and organization of new farmers (N)	40	120	150			
Planting of new plantations (mt)	500	1 000	1 000			
Output of cashew nuts (mt)				645	1 877	31 132
Output of false fruit (mt)				3 000	8 800	146 800
Annual paint output (gallons/year)				6 000	6 000	6 000

6. Project Beneficiaries

The 84 cooperatives which are already growing this crop will transfer their experience to the new farmers.

Project beneficiaries are the farmers in Nacaome, San Bernardo, El Triunfo and Namasigue, including the 84 cooperatives which already cultivate cashews. It is expected that the new areas will be cultivated primarily by medium- and large-scale producers; coop-

eratives showing an appropriate level of corporate organization may also be included. This is because of the amount of land available, the requirement for a greater degree of technological development, and the need to have the capacity to adopt management practices.

During the initial phase (the first three years) the Project will generate 490 direct jobs per year; a total of 16,500 jobs will be generated during the 30 years of useful life of the plantations.

In addition to the indirect jobs created during the production phase, a considerable number of families will benefit from the work arising from the marketing of the product, from installing the industrial plant, and from the packing and transportation of the products.

7. Support Services for Production

Initially, the INA would provide technical assistance related to plantation rehabilitation and installation. It will also contribute to promoting the crop and to organizing and training Project beneficiaries, in collaboration with private-sector organizations such as FPX, FECORAH and others. The marketing is currently handled by FPX.

Credit assistance from the Project will be channeled through the banking system to the farmers, through lines of credit in trust. Once the plantations are installed, the farmers will hire professionals to provide technical assistance. The agroindustrial phase requires that a corporation be set up, formed by cashew growers, the FPX and other types of entrepreneurs. It will be governed by an administration board structured along corporate lines.

A company will be organized for the agroindustrial phase, which will bring together farmers and investors not necessarily involved at present in sectoral activities.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

The executing unit responsible for the Project will be the FEPROEXAAH (FPX), which is already working with the cashew growers in the southern zone, and which has expressed an interest in co-financing the Project.

The executing unit is the Federation of Agricultural and Agroindustrial Producers and Exporters of Honduras.

Promotional activities and farmer training will require that a joint team be set up with INA, the FPX and the farmers themselves. This team will conduct a survey to select the farmers who will participate in the activity. After farmers are selected, a trading company will be established, with stockholders from the cashew growing and processing sector. INA and IDECCOP will provide training and help them consolidate the business. Once founded, the trading will appoint a manager and a technical team for implementing the Project; this will bring together the agricultural, industrial and marketing

sectors. Later, the Project can be managed by the owners of the industrial plant; stockholders can be the owners of the primitive processing plants operating in the area.

2. Plan of Action

The immediate plan of action to be implemented is as follows:

- During the first semester of 1991, the loan will be negotiated, and all funding requirements will be met; by August 1991, resources will become available for making the first disbursements.
- Also during the first semester of 1991, work will begin to organize farmers and to promote the crop.
- Planting areas will be selected and the installation of the greenhouses begun.
- The strategy will be defined for selecting beneficiaries and for beginning credit operations as necessary to channel Project resources.
- The company will be established and technical assistance organized for the selected farmers.
- Equipment for the plant will be manufactured, the facilities will be fully outfitted and the equipment will be installed.
- Follow-up must be provided, and an evaluation made of the results of the first year of Project operations.

3. Resources

Abundant suitable land is available for expanding the crop. Additionally, the area's unemployment and underemployment levels ensure labor availability.

As regards the agricultural subproject, no difficulties are envisaged in terms of availability of land, since there is an abundance of land suitable for the cultivation of cashew trees in the southern zone. Selecting the 2,500 hectares to be cultivated will not represent any problems to the Project. In addition, unemployed or under-employed labor is largely available in the Project area, which will facilitate implementation.

With respect to the agroindustrial subproject, FEPROEXAAH (FPX) has expressed its desire to participate. The negotiations already under way concerning the design of the plant and the manufacture of its equipment by the metal-works industry, also indicate the Project's feasibility.

4. Participating Institutions

The following private-sector institutions will play an important role in Project implementation:

- Federation of Agricultural and Agroindustrial Producers and Exporters of Honduras (FEPROEXAAH, or FPX)
- Industrial Development Center (CDI)
- Federation of Savings and Loan Associations of Honduras (FACACH)

The responsibility of implementing the Project lies primarily with the private sector. Government agencies will provide support, especially in technical matters.

Public-sector agricultural institutions will participate by providing specific support in promoting the crop and in providing training for farmers in updated technologies for cashew plantation management.

The regional organization which will participate in Project implementation is the Tropical Agriculture Research and Training Center (CATIE). It is important to highlight the participation of the American Technologic Institute (ATI) of the United States, which will help design the equipment.

IV. COSTS AND FINANCING

1. Costs

Total cost of the Project is estimated as follows, based on the two components:

Total cost of the Project: almost US$3 million

Item	Amount (US$)
Rehabilitation of 2,180 hectares at US$110 per hectare	252 000
Planting of 2,500 new hectares at US$735 per hectare up to year three	1 837 880
Mechanized plant (fixed investment, working capital, external and domestic technical assistance, other expenditures)	604 650
Expenditures relative to training, promotion organization and selection of (new and current) farmers, selection of areas, and technical assistance	96 510
Total cost of the Project	**2 791 040**

2. Financing

The terms sought for Project financing are as follows: a 12-year loan with a four-year grace period and an interest rate of 19 percent.

In addition to the items already cited, the local contribution to financing the Project will cover the expenditures incurred in managing and administering the plantations, and will include the value of the 2,500 hectares of land for the new plantations. The country's difficult economic situation makes it impossible to provide a cash counterpart contribution.

The local contribution will amount to US$330,000.

The external funds required total US$2,461,970.

Rehabilitation	US$ 252 000 for five years
New plantations	US$ 1 837 880 for three years
Semi-mechanized plant	US$ 372 090

The local contribution to the Project will include the following:

Semi-mechanized plant	US$232,560
The training, promotional and organizational activities, selection of (new and current) farmers, selection of new areas and technical assistance, which amounts to	US$96,510.

V. ANALYSIS

1. Technical Analysis

Extensive cashew-growing experience ensures farmer capabilities and the technical feasibility of the Project.

Analysis of the Project shows that it is technically sound. The area's conditions are favorable for modernization. Agricultural conditions in the southern region are appropriate for the cashew crop; cashew cultivation is amply known throughout the zone, and current cashew growers have experience managing commercial plantations.

The technical coefficients used for projecting the results indicate that the goals of improving production and productivity can be obtained. The technology recommended for rehabilitation works consists of a set of simple practices which can be easily adapted and adopted by the farmers.

2. Institutional Analysis

The private organizations and the new company will provide the counterpart resources. The State will contribute by promoting the crop and providing training.

The private sector will play a leading role in implementing the Project. Organizations of the private sector, such as the FEPROEXAAH (FPX), the Federation of Savings and Loan Cooperatives of Honduras (FACACH), and the new company to be created, can make a local counterpart contribution. The institutions of the public agricultural sector will participate by providing support for promoting the crop and for training the farmers in updated cashew plantation management technology.

3. Legal Analysis

The new Law on the Structural Organization of the Economy ensures the feasibility of this Project. Its incentives foster Project profitability

through advantages provided for the export of nontraditional products.

4. Financial and Economic Feasibility

The internal rate of return (IRR) and the net present value (NPV) show the following results

Subprojects	NPV	FIRR (%)
Subproject 1. Agricultural	5 240.0	60.3
Subproject 2. Agroindustrial	19 173.2	69.6

The sensitivity analysis provided the following results:

Subproject 1. Agricultural

Annual increase in agricultural costs	10%
Internal rate of return	55.4%
Project total (1+2) With a 10% increase	**55.8%**

5. Project Impact

The Project will have the following impact:

- It will generate 490 direct jobs and approximately 550 indirect jobs.
- It is estimated that the annual incomes of present-day farmers who rehabilitate their plantations will rise to US$350, and that of farmers establishing new plantations, to US$700.
- The Project will generate foreign exchange in the amount of US$60 million during the useful life of the cashew plantations.
- The net income expected from the plantations, per rehabilitated hectare, as of year four, will amount to US$196; by year five, the amount will be US$593.
- Profits of the mechanized plant will begin to show in year two, in the amount of US$9,860.
- The cultivation of cashew represents a viable alternative because of its resistance in dry periods prevalent in the zone.

Nearly 500 direct jobs will be created, and more than that will be generated by indirect activities. The Project will generate US$60 million in foreign currency. The net income per hectare will increase threefold.

NICARAGUA

DEVELOPING MELON PRODUCTION AND EXPORT

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

This Project comes under the strategy set forth in the National Program to Promote Nontraditional Exports, presented by the Inter-institutional Commission in April of 1990, and prepared with the support of the RUTA II Project (Regional Unit for Technical Assistance, World Bank).

The Ministry of Agriculture and Livestock (MAG), the Nicaraguan Investment Fund (FNI) and the Ministry of Economy and Development (MEDE) are the institutions which have been most active in promoting this activity since the Commission was established in May 1989.

The private sector is actively promoting increased melon output for export

A group of private Nicaraguan farmers, organized into the Association of Exporters of Nontraditional Products (APENN), provided the technical information for this profile in coordination with a State agency.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Project

Between 1980 and 1988, Nicaragua's export total decreased by US$215 million, dropping from US$450.5 million in 1980 to US$235 million in 1988. In contrast, imports increased at an accelerated pace; as a result, during the 1985-88 period, the accumulated trade deficit rose to US$2.223 billion and the current account deficit totaled US$3.138 billion. In less than 10 years, the foreign debt grew to more than US$6 billion and Nicaragua became one of the most indebted countries per capita in the world.

The Project will boost efforts to increase the export of nontraditional products, which almost doubled in 1989

In 1988, the government adopted a series of measures to restore economic and financial order; the resulting economic adjustment was effective. From 1984 to 1988, the fiscal deficit averaged 25 percent of the gross domestic product; in 1989, it had dropped to five percent. The inflation rate, which exceeded 30,000 points in 1988, fell to 1,689 percent in one year. The exchange rate was adjusted to the actual value of the currency and a single market was established.

Under these circumstances, exports took an upward turn, reaching US$300 million in 1989, representing a 26-percent increase over 1988. Traditional exports increased by 15 percent, influenced by the increase in sales of sugar (125.3%) and meat (112%), while nontradi-

tional exports increased by 93.5 percent. At the same time, imports dropped to US$710 million in 1989.

The government, in an effort to restore the private sector's confidence, has begun to implement an economic adjustment program; recovery in the external sector has been given priority. In order to support the economic reactivation process, it is necessary to increase export production over the short and medium term.

Expand the range of Nicaraguan exports, in order to avoid dependence on a limited number of products

The strategy encompasses two parallel approaches: the first involves rehabilitation of traditional exports as well as the recovery of traditional levels of production and productivity; the second concerns initiation of a process to promote nontraditional agricultural exports which, over the medium term, will reduce dependency on a limited number of traditional products. This Project constitutes the first effort under the second approach.

2. Analysis of Production Options and of the Technical Environment

The possibility of exporting melons has been under consideration since 1985, when pilot projects were set up to evaluate production conditions and potential demand on the international market. The main problems encountered were of a technical nature, especially because of the crop's extreme susceptibility to disease. There were also financial problems (limited funds) and marketing problems (difficulties involved in placing the product on distant markets).

At present, because of experience acquired in the care of seedlings, the recent availability of financial resources and the opportunity offered by the Caribbean Basin Initiative, these problems have, for the most part, been resolved.

The Project can serve as an excellent demonstration effort

Up to now, results have been relatively encouraging. In the Project area, the cultivation of melons has turned out to be a good alternative, when compared to other crops which are in a state of stagnation and have been losing profitability, especially cotton. The area's largest plantation grew sorghum and rice; in recent years the profitability of these crops -- especially rice -- has fallen. Furthermore, the large-scale production of melons has two advantages: it introduces a new profitable crop, and it will generate foreign exchange within a short time frame.

The Project will be located in the townships of Nagarote and Sebaco. In the former, 306 hectares will be exploited. The land there is suitable for the crop; it is flat and at a low altitude (50 meters above sea level). It is adjacent to a highway between Managua and Leon, the second largest city in Nicaragua. The temperature range is from 28° to 35° Centigrade.

In Sebaco, 350 hectares have been selected. Three of the Project's four production units are located in this township's central valley -- a

plateau at 450 meters above sea level with a mean annual temperature of 23° Centigrade.

This valley is 90 kilometers from Managua's airport and 110 kilometers from Puerto Corinto, the main seaport on the Pacific coast; three of the country's main asphalt highways go through it; furthermore, it has the irrigation and energy infrastructure needed for the crop.

3. Socioeconomic Situation of Potential Beneficiaries

In the Project's area of influence, the economically-active population is mainly employed in agricultural activities. Some 75 percent have a good educational background and there is a good coverage of State-provided health and educational services. Income levels in recent years have been influenced by the seasonal nature of the labor demand.

The four medium-scale irrigated rice-growing companies participating in the Project (3 private and one from CORNAP) have long-term experience and have dedicated the last four years to cultivating melon, with successful results.

The four participating production units, in this first phase, are medium-scale irrigated rice growing companies who have already incorporated a considerable degree of technology into their operations. Three of these firms have been operating for more than 20 years and one for 10 years.

In the last four years these firms (three privately-owned and one State-owned (CORNAP)) have gone into the melon-growing business with relative success, given the difficulties of the country's trade limitations. This experience made it possible to identify the bottlenecks obstructing successful production and placement of melons on the foreign market.

Farmers in the Project area have good experience in intensive crops; their organization into enterprises gives them the necessary backing for operating as creditworthy economic units.

A farmers' orgnization ensures creditworthiness

4. Institutional and Financial Conditions

The strategy for promoting nontraditional agricultural exports is executed by the ministries of agriculture and the economy, as well as the central banking system. These three institutions are the hub of the Inter-institutional Commission created for this purpose early in 1989.

The MAG, through the General Agricultural Transference Office (DATA), provides support to the farmers in research and technology transfer. The Bluefields Experimental Center provides support to fruit production for export.

The Ministry of the Economy (MEDE), through the General Directorate for Export Promotion, boosts the participation of the industrial, agroindustrial, crafts and agricultural export sectors (in this order of

The government supports the presence of Nicaraguan products in international fairs

priority), in international fairs, obtaining trade contacts and providing trade information services.

This promotional activity is backed by the General Directorate of Foreign Trade (a department of MEDE), which is responsible for foreign-trade policy and international trade negotiations.

The Nicaraguan Investment Fund (FNI) is an organization operating under the Central Bank's vice president for investments. It participates in the Inter-institutional Commission as administrator of investment resources for the production of nontraditional exports, as a second resort bank.

The Nicaraguan Investment Fund serves as the liaison between nontraditional exporters and foreign investors

Early in 1990, the FNI had contracted for approximately US$16 million in foreign loans for export projects; of this amount, approximately US$6.7 million actually entered the country. These credits are mainly oriented toward medium-scale industrial and agroindustrial firms.

5. Legal Framework

Existing laws on nontraditional export promotion aim primarily to boost industrialization of production, within the framework of Central American economic integration, begun in the sixties. This is the case with the Temporary Import Law and the Law to Create the Free Industrial Export Zones.

The Inter-institutional Commission for Nontraditional Export Promotion recommended the creation of a General Promotion and Development Law, as a legal framework for such activities. The proposal is oriented toward granting incentives to Nicaraguan producers and exporters, similar to those in effect in other Central American countries.

These incentives include the following: exemption of import duties on raw materials, intermediate products and machinery; exemption from export duties on intermediate goods, general ad valorem, and selective on intermediate consumer goods; guaranteed access of producers to 100 percent of the foreign exchange generated by their exports.

Within the framework of the General Law, export agreements will be drawn up to guarantee the benefits granted under the Law. However, no agreement will be necessary for exportation of the melon crop. The General Law includes the incentive plan proposed in regional agreements and in GATT agreements.

6. The Project in the Context of Regional Integration

Nicaragua, Guatemala and El Salvador are working to boost melon production for export purposes. From the technical point of view, the crop is extremely delicate, so cooperation and reciprocal assis-

tance between countries will be important for raising production levels and reducing risks.

Marketing is an important component of the Project that can be handled at the regional level. One of the main difficulties affecting Central American products on the international market is the inability to supply the volume demanded by purchasers. A joint enterprise would benefit the countries, by guaranteeing and enlarging the market. Other benefits obtained would be higher prices because of improved quality and assurance of a good supply. Regional organizations which can provide cooperation in relation to initiatives such as those proposed in this Project are SIECA, IICA and OIRSA.

IICA, SIECA and OIRSA support joint trade transactions of the countries of the region with the clear idea of boosting integration

II. PROJECT DESCRIPTION

1. Justification

During the last five years, solid agronomical experience in melon cultivation practices was acquired with a view to producing that crop for export. The main problems identified involved marketing and these have been solved by the reopening of trade with the United States and the hiring of specialized brokers.

The reopening of trade relations with the United States and the hiring of specialized marketing brokers provide an excellent opportunity for investing in melon production for export

The Project will contribute to boosting the influx of foreign exchange and to generating a stable demand for labor. It will also consolidate the first organization of nontraditional farmers; the growth resulting from this organizational effort will depend upon the success achieved in the market.

2. Objectives

General

To increase the production of melons for export and to initiate execution of the National Program for Promotion of Nontraditional Agricultural Exports. Also, to consolidate the private sector's role in the recovery of the external sector

Through the Project, the role of the private sector in export recovery is strengthened

Specific

- To improve existing infrastructure by changing to a drip-irrigation system, thus making it possible to grow melons by the staggered planting method
- To acquire the necessary additional machinery and agricultural equipment and to share the equipment effectively among more than one crop. This will be necessary to guarantee quality and punctuality of shipment.

— To improve melon packing facilities and technology, in order to reduce post-harvest losses through discards, inferior quality and/or appearance

The facilities and the packing technology will be upgraded on an ongoing basis

— To obtain working capital for the operations through specialized brokers, and to have access to appropriate and timely transport services for the product

3. Strategy

The strategy consists of five stages:

Stage 1

Before the effective disbursement of the loan, the General Law of Promotion and Development of Nontraditional Exports will be passed, providing a framework for the successful development of the Project.

Stage 2

Fixed investments will be made for soil preparation and installation of the drip irrigation system. Similarly, the machinery and agricultural equipment needed to ensure optimal operation of the Project's four units will be installed to complement the farms' existing infrastructure.

Stage 3

The fixed investments will cover establishment of packing plants and cold-storage units for three of the four participating firms, as well as acquisition of the necessary materials for transportation, communications, offices and measuring.

Stage 4

The FNI will channel working capital directly to the firms so that they can go into operation as of year one.

Stage 5

The Inter-institutional Commission, as a government organization, will use the Project's experience to promote the organization of other associations of nontraditional export producers.

4. Components

The Project comprises three different but complementary components.

Agricultural component

The Project is composed of three components: agricultural; agroindustrial; and commercial

This component will aim to produce 14,770 metric tons of melons on 657 hectares, involving a physical area of 505 hectares with a plot rotation rate of 1.3 times. The crop will be harvested during the first 17 weeks of each of the Project's five years. Drip irrigation will be used.

Agricultural component. Production area (in hectares)

Firms	Area irrigated	Area under cultivation	Participation (%)	Location
Betania S.A.	235	306	47	Nagarote
Hansell y Cia, Ltda. 100	100	130	20	Sébaco
Nicarroz	100	130	20	Sébaco
Hannon y Cia, Ltda.	70	91	14	Sébaco
Totals	**505**	**657**	**100**	

Agroindustrial component

Particular importance is placed on the two packing plants and the two cold-storage units that will be installed through the Project.

The two packing plants and cold-storage rooms to be installed by the Project are of particular importance. This includes construction of buildings, acquisition of machinery and equipment, and construction of cold-storage units for selection of, and packing, the fruit. The operating capacity for packing will be 656,000 18-kilogram boxes of melons. Shipments of 38,600 boxes each will be made weekly. It is estimated that 20 percent of the harvest will not qualify for export; half of this will be selected and packed for the domestic market. Two packing plants and two cold-storage rooms, to be located in Sebaco and Nagarote, will be installed.

Commercial component

The aim of this component is to ensure satisfactory export performance through trade agreements with previously-designated brokers. For this purpose, a communications and transportation unit will be established and a marketing manager will be hired.

5. Goals

Goals: To increase per-hectare yields, to increase the production of fresh fruit (for export and for the local market) and to improve the balance of payments situation.

Goals: to increase yield per hectare, to increase output of fresh fruit (for foreign and domestic market), and to improve the balance of payments situation

- To obtain a yield of 22.5 metric tons of melon per hectare, ensuring a timely market supply, in the amounts called for in the Project
- To achieve an annual output of 14,770 metric tons of fresh fruit, of which 11,816 metric tons will go to the export market and the rest to the domestic market
- To generate export earnings equivalent to US$8.2 million

6. Project Beneficiaries

The Project targets organized farmers. The three private firms (Betania, Hansell and Hannon) belong to medium-scale farmers

beginning to work with economies of scale, who have established their enterprises throughout the entire industrial rice chain. The other direct beneficiary, the Oscar Benavides firm, belongs to Nicarroz, a State corporation. Between the four firms, some 4,500 jobs are generated throughout the year, reflecting seasonal needs. Fixed Project investments amount to US$1,654,900.

The agricultural component will generate a demand for more than 70,000 work days, concentrated in the three intensive months of planting and harvesting activities

The agricultural model to be used in the Project requires 108 work days/hectare during an eight-month cycle of activity. All in all, it will generate a demand for 71,000 work days. Manpower requirements are concentrated during three intensive months of planting and harvesting activities, when 73 work days/hectare (or three workers per hectare) are needed.

Melon handling and packing will generate 60 jobs in agroindustry between December and April of each year, in addition to another 50 administrative and maintenance jobs in the plants. Overall, an estimated 17,500 work days/year will be required by the agroindustrial component.

7. Support Services for Production

The Project will receive technology-transfer services from the General Directorate for Agricultural Transfer, which has experience in this regard. In addition, the executing unit will have funds for hiring private technical assistance. The Development Bank will provide support to the credit component, and will be responsible for channeling funds to the firms.

External marketing efforts will receive assistance from the Ministry of the Economy in the form of trade information on the performance of fruit on the international market. It will also promote Nicaraguan melons in fairs and search for new markets.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

Following recommendations of the National Program for Nontraditional Export Promotion, it will be necessary to create a specialized technical unit (UTE) to be directly in charge of Project execution, and of coordinating the activities of the four firms, in accordance with the proposed production schedule and export goals.

The UTE will be an autonomous institution owned by the four firms, under financial control of the Nicaraguan Investment Fund (FNI) and, at the same time, subject to evaluation and monitoring by the Export Promotion Fund. The FNI will be responsible for debts, on behalf of the Nicaraguan government. The executing unit will be referred to by the acronym IPMN, and it is conceived as the starting point of the proposed Nicaraguan Institute for the Promotion of Nontraditional Exports.

The executing unit will be an autonomous organization composed of the Project's four participating firms.

The executing unit will be located at the headquarters of the Export Promotion Fund (FOPEX), of the Nicaraguan Investment Fund. FNI's General Credit Committee will be responsible for the allocation of credits from FOPEX. This committee is also responsible for evaluating Project development.

FOPEX, coordinated by an Evaluation and Monitoring Committee, is made up of representatives of the following: the Central Bank of Nicaragua (BCN), the Ministry of Economy and Development (MEDE), the Ministry of Agriculture and Livestock (MAG), and the Ministry of Finance (MIFIN). These same representatives make up the Inter-institutional Committee for Nontraditional Export Promotion.

2. Plan of Action

The term of the Project will be five years, to be counted according to the agricultural year, from July through June.

Year 0

- Passage of the General Law for Promotion and Development of Nontraditional Exports
- Advancement of negotiations for the external loan, as well as of disbursement conditions
- Legal constitution of the specialized technical unit for the Project's execution
- Obtainment of the necessary commercial licenses and advancement in negotiations for export agreements
- Hiring of marketing manager and coordinating agronomist
- Advancement of negotiations with intermediaries and other possible sources of specialized technical assistance

Export agreements will be established as a contractual framework guaranteeing placement of the product

Year 1

- Execution of fixed investments

Years 2 to 5

- The annual investment schedule for working capital is repeated.

3. Resources

Additional resources required for the Project's execution are listed under four headings: human resources, agricultural machinery and equipment, agroindustrial equipment, vehicles and office equipment.

In addition to almost 2,000 seasonal workers and 100 others involved in packing and office work, permanent experienced staff members will manage the executing unit and the packing plant

Human Resources. Permanent specialized staff members are needed for the management of the UTE, as well as for technical management of the packing plants. The central office will be directed by a marketing manager supported by a coordinating agronomist, an official responsible for administration and finances, and four assistants. The hiring of temporary personnel for agricultural and agroindustrial work will be concentrated in January-March during each of the Project's five years. In those months, 1,970 field workers will be needed, as will 100 employees for the packing plants and offices.

As for *agricultural machinery and equipment,* the following must be purchased: 11 tractors; 24 trailers; one subsoiler; 24 portable sprayers; and other small farm equipment. This is important for avoiding the problems experienced in the past by some of the participating firms when equipment had to be used for more than one crop. Under the heading of agricultural equipment comes the investment for installing the irrigation system, as well as operating expenses for replacing hoses.

As regards *agroindustrial equipment,* it is necessary to build two large sheds, one in Sebaco and another in Nagarote, for installing machinery and equipment: two cold-storage rooms will also have to be established. Agroindustrial equipment includes the yearly acquisition of such materials as cardboard boxes, wax, materials for pallets and labels.

The success of the agroindustrial component will have a dynamic impact on similar efforts with other products, or on the same product in other parts of the country

As for *vehicles and office equipment,* the following are needed: two automobiles; a motorcycle; telephones and a two-way radio; a facsimile machine; a microcomputer; basic furniture; and measuring equipment for field offices.

4. Participating Institutions

The Nicaraguan Investment Fund will provide advisory services related to investment strategy. The institutions represented on the evaluation and monitoring committee of the Export Promotion Fund (FOPEX), especially the Ministry of Finance, are important sources of support for ensuring the Project's successful development. The Central Bank will manage the Project's foreign loan.

This support will be especially important during the first years that the General Law for Promotion and Development of Nontraditional Exports is in effect.

The Institute for Promotion will also play a key role in promoting this experience among other small farmers and cooperatives that meet the technical and organizational requirements for undertaking similar projects.

The model will be promoted among small farmers and cooperatives in a position to undertake an effort of this nature

The Foreign Trade Training Institute (ITSMO), a division of MEDE, is another agency of support which will participate directly in Project activities. ITSMO will train officials, and mid-level cadres of beneficiary firms, in export management and managerial strategy.

IV. COSTS AND FINANCING

1. Costs

The total cost of the Project is US$4,494,100. The amount disbursed in local currency will be equivalent to US$1,528,700. The rest will be in the form of foreign exchange. The breakdown by component is as follows:

Total cost of Project: US$4.5 million. One third of this will be disbursed in local currency

Category	(US$ X 000)
Agricultural Component	2 830.0
1. Fitting out of plantations	1 799.2
2. Agricultural implements and machinery	511.6
3. Irrigation systems	478.5
4. Soil preparation	30.4
5. Measuring equipment	10.3
Agroindustrial Component	1 568.9
1. Packing plants and cold-storage units	570.5
2. Vehicles and communications	50.3
3. Improvement of buildings and constructions	3.3
4. Plant operations	944.8
Administration and execution	95.2
Total	**4 494.0**

2. Financing

The Project will be financed by an external source in the amount of US$3,172,300 which will need to be obtained as a soft long-term loan. The beneficiary firms will contribute US$82,500 and the national financial system will contribute US$1,239,300. The breakdown is shown below:

Financing *(US$ X 000)*

Component	Local	External	Total
1. Agricultural	1 185.0	1 645.0	2 830.0
2. Agroindustrial	136.7	1 432.1	1 568.8
3. Administration and execution (technical cooperation)		95.2	95.2
Total	**1 321.7**	**3 172.3**	**4 494.0**

The fixed capital investment amounts to US$1,654,900. It will be made during the first six months of year one of the Project.

V. ANALYSIS

1. Technical Analysis

Firms participating in the Project have from 10 to 25 years of experience in intensive cultivation of various crops, especially irrigated rice. The owners of the firms are farmers using superior levels of technology, by national standards. They have a special background in the mechanization and irrigation components and are oriented toward an integrated agroindustrial activity. These firms have gone into the melon business in the last four years.

It is envisaged that the most delicate aspects of post-harvest management of the fruit, as well as of external marketing, will be carried out with the technical assistance of a leading marketing firm in the United States' melon market; negotiations are in progress concerning its participation with commercial capital in the Project.

2. Institutional Analysis

The Central Bank, as negotiator and allocator of loan funds, guarantees the Project's institutional and financial feasibility. In recent years, in spite of the country's severe economic crisis, export credits were the least affected by government policies. Furthermore, the FNI has a particular interest in the Project's execution, as it is seen as an experience that can be transferred to other nontraditional export activities.

There is an explicit political disposition on the part of the government to support undertakings of this type by private organizations. Joint enterprises between the private sector and State concerns are favored by the Constitution of the Republic, which contemplates a mixed economy. This provides a sound institutional backing which

will facilitate expeditious solutions of any problems which may arise in the course of Project activities.

Finally, the participation of the Inter-institutional Commission -- a coordinating forum already in existence -- guarantees promptness and efficiency in decision-making relevant to the Project's development. Through the Commission, MAG and MEDE, two key institutions (in addition to the FNI), will be actively invoived in the Project.

3. Legal Analysis

With the passage of the General Law of Promotion and Development of Nontraditional Exports, the last encumbrances to this type of activity will be removed.

4. Financial Feasibility

The IRR, the NPV and the benefit/cost ratio ensure the Project's financial feasibility. According to all preliminary indicators, the Project is financially feasible. The internal rate of return is 89.1 percent with a benefit-cost ratio of 1.11 and a net present value of US$3.609 million, at 12 percent. These indicators will be corroborated in the feasibility study. According to the sensitivity analysis, the Project's safety margins are satisfactory, as shown below:

The IRR, NPV and benefit/cost ratio assure the financial feasibility of the Project.

Variable	FIRR (%)	B/C	NPV (US$ X 000)
Income	23	1.02	6419.7
Costs	26	1.03	9306.9

Additional parameters and scenarios

Additional scenarios were analyzed with a view to facilitating financial and economic analysis.

The following was considered for the financial analysis: income and costs at market prices, 12 percent discount rate, and 20-year life of the Project. The results were: FIRR, >100 percent, B/C ratio, 1.26 and NPV, US$9,902,100.

The economic analysis considered the following parameters: i) elimination of taxes, subsidies and all transfers, ii) 80-percent correction factor for skilled labor.

Under these conditions, the economic internal rate of return (EIRR) is >100 percent, the ENPV is US$7,909,100 and the economic B/C ratio is 1.20.

Furthermore, it was estimated that the Project's contribution to the balance of payments situation will be US$6,436,100.

5. Project Impact

At the end of year five, a balance of more than US$12 million in foreign exchange will have been an accumulated. The number of jobs created will be equally impressive. The value added will exceed US$2.5 million annually.

The Project's impact can be estimated on the basis of its capacity to generate foreign exchange, employment and income. Melon exports will generate a gross annual income of US$8.2 million. After meeting financial obligations, the balance in foreign exchange is estimated at US$2.5 million annually, for a cumulative balance of US$12.4 million by the end of year five.

The Project will generate a value added of slightly more than US$2.5 million yearly. An amount equivalent to US$415,000 will correspond to salaries and workers' benefits. Income tax generated will amount to more than US$600,000 and the net profit is over US$950,000.

As to employment, the Project will create a new agricultural job for every two hectares, during eight months of the year. The job supply will be concentrated in three of these eight months (January through March). From December through April, 60 more agroindustrial jobs will be created, in addition to 50 positions in administration and plant maintenance.

New employment opportunities generated in the Project area will amount to more than 70,000 new agricultural work days. Some 1,750 additional work days will be developed in the agroindustrial and administrative activities.

NICARAGUA

REHABILITATION OF COFFEE CULTIVATION

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

Over the past thirty years, the government of Nicaragua has worked to provide a favorable investment environment for coffee growers. In the mid-1960s, the Nicaraguan Coffee Institute was created (now known as the Nicaraguan Coffee Enterprise, ENCAFE); in 1966, the National Bank of Nicaragua implemented the Coffee Program; in 1975, the Special Development Fund (SDF) began operation, and from 1976-1980 a coffee rust eradication program was in operation, concentrated in the southeastern region of the country. At the same time, a research and technology generation program began, mainly in the northern area of the country. By the time the program ended in 1982, both production and productivity had increased significantly.

These programs introduced high-yield varieties, notably Caturra, making coffee the most important crop in the country today. In 1989, the Coffee Rehabilitation Program was formulated, with technical assistance from RUTA II; the feasibility study carried out for that Program served as the basis for preparing the present profile.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Project

Coffee is Nicaragua's main agricultural export crop.

Historically speaking, coffee has been the main agricultural export commodity in Nicaragua. In 1988, it accounted for 39 percent of total exports and 51.2 percent of agricultural exports. In 1982, coffee production peaked at 1,568,400 quintals, with the highest average yield, 807 kilograms per hectare (12.5 quintals per square meter), in the history of the country's coffee cultivation. Nevertheless, due to a variety of domestic and external aspects of the crisis of the 1980s, productivity fell off and there was a sharp drop in coffee production, as well as a severe decrease in foreign exchange revenues and employment opportunities.

During 1988, an economic adjustment plan was put into effect in an attempt to stem the deterioration of the economy. The country had entered into a period of hyperinflation that affected all production activities. Measures were taken to curb the fiscal deficit by reducing public spending, and by efficiently managing credit activities and investments.

Efforts were made to bring exchange rates to real levels, which led to the elimination of subsidies on imported commodities. As a result, in 1989, there was a 30-percent increase in export production.

The exchange rate policy sought to reduce the gap between the different rates in the economy and to seek a real exchange rate that would provide an incentive for private production. In 1990, efforts are still being made to unify the exchange rates. It is hoped that the new gold cordoba will restore confidence and bring about sustained economic reactivation.

Since 1988, lending policies have also undergone changes. Currently, efforts are being made to establish a real interest rate, in accordance with the level of inflation, to eliminate subsidies. The interest rate for the agricultural sector is 15 percent a year for short-term loans, 10 percent for rural credit, and between eight and 12 percent for investment loans for more than 18 months.

The aim of current government fiscal policies is to reduce taxes on agricultural production. Income taxes have been reduced from 40 percent to 38.5 percent, which is favorable for the Project.

2. Analysis of Production Options and of the Technical Environment

In Nicaragua, coffee is grown in five of the nine regions of the country. There is a long tradition with regard to production techniques, and coffee is the principal export commodity. The rehabilitation of existing coffee plantations, by increasing the level of technology used in production, is vitally important to efforts to reactivate the national economy.

Sixty percent of the country's coffee production takes place in the selected area.

Sixty percent of the national coffee crop is produced in the northern region of the country, where soil and climate conditions are best for growing coffee, half of which has been produced by small- and medium-scale farmers for decades. In the Project's target area, forests follow coffee in importance, followed by crops such as corn and beans, then pasturelands.

The Project is located in the north-central area, in Region VI (a political-administrative division), between 86°14' and 85°07' longitude east and between 12°39' and 13°37' latitude north (departments of Matagalpa and Jinotega), and Region I, between 13°25' latitude north and 86°17' longitude east (municipalities of Esteli, Nueva Segovia, Yali and San Rafael del Norte).

The total area covered by the Project is 177,608 hectares. Of this area, 145,910 hectares are in Region VI, and 31,690 hectares in Region I. Of the total surface area, 51,408 hectares are planted in coffee; 44,022 hectares of these (37%) are the best-suited for coffee cultivation. Coffee plantations in the Project area are distributed as follows: 69.6 percent are in Region VI and 30.4 percent are in Region I.

Climatic conditions of the selected zone are appropriate for the production and development of coffee cultivation. Average precipitation varies from 1,800 to 2,100 mm, with temperatures between 22° and 23° Centigrade, and relative humidity that ranges from 75 percent to 82 percent. Physically, the area is made up of the northern sierras, which totally cover the two regions. The Dipilto mountain range, with altitudes that vary from 1,200 to 2,107 meters above sea level, is in Region I; in Region VI, altitudes vary from 1,200 to 1,750 meters above sea level. Within the selected area, there are low-lying areas (400 meters), although plantations considered for purposes of the Project are located at altitudes above 700 meters. Most of the terrain is rugged, with loamy to clayey-loam top soils that reach a moderate depth and contain a high density of organic matter.

Research, technology transfer and training services are provided by the Ministry of Agriculture and Livestock, through the Coffee Development Program, which has representatives operating in the regions and local small-farmer development centers. Research and technology transfer services are also provided by the National Coffee Center, located in the Project area, which has appropriate facilities and trained personnel to carry out these activities.

Project activities related to coffee research, technology transfer and training will have a dynamic effect.

ENCAFE has had good results in organizing the marketing of coffee on the futures market, although efforts will be made to promote greater competitiveness by liberalizing foreign trade. Currently, the producer is paid in accordance with the prevailing international price; the closing price in the "C" market of the New York Stock Exchange is used as the benchmark price. After deducting taxes, which were recently reduced for agricultural production, processing, handling and transportation, the producer receives 75 percent of the international price, a basic price agreed upon at the time the coffee is delivered, and a final liquidation at the time of exportation.

3. Socioeconomic Situation of Potential Beneficiaries

The total population of the Project area is 129,000 inhabitants (73 inhabitants per kilometer); 49 percent are between 0 to 14 years of age. The rural population represents 82 percent of the total population. The literacy rate is 25 percent; the economically-active population is 38,000 (of these, 8,875 are unemployed or underemployed, and 6,908 are from the rural area).

Project activities will make a positive contribution to the socioeconomic situation, since more than 20 percent of the economically-active population in the Project area is unemployed or underemployed.

The social structure of production is divided into four parts: the public sector, with 10 enterprises that cover 22 percent of the production activities and employ 13,000 farm laborers; the large-scale private production sector, with 210 owners, accounting for 31 percent of the output; cooperatives, responsible for 4 percent of the production; the sector of small- and medium-scale individual farmers and those organized into credit cooperatives, accounting for 43 percent of total production.

Three levels of technology are in use: modern, mainly on large farms (state and large-scale private farms); intermediate or semi-modern, particularly on medium-sized farms; and traditional, practiced by the majority of small-scale coffee growers.

4. Institutional Conditions

CONCAFE is made up of representatives of the private sector, the government and rural workers.

The National Coffee Commission (CONCAFE) was created by Presidential Decree 347, published in La Gaceta No. 85, of May 6, 1988. It has due legal standing and is of unlimited duration. The Minister of Agriculture presides over this Commission, which also includes the Minister of Economy and Development, the presidents of the Central Bank and the National Development Bank, six farmers' representatives, one from the field workers labor union, and the executive president of the Commission.

The principal functions of CONCAFE are to enforce technical regulations for coffee; identify problems that arise with relation to this crop and propose measures to solve them; incorporate production agents into the activity, in order to make it more efficient; and recommend specific policies and programs.

CONCAFE is organized as a national technical agency, coordinated by an executive president and concentrating on four areas of work: economics, production, administration and information. It also has regional committees, presided over by members of the national production team.

CONCAFE has six technicians, five of whom are specialized agricultural engineers, and six administrative and support personnel. The Commission's headquarters is located in Managua. Funds for the CONCAFE budget come from a US$0.25 tax per quintal of green coffee produced.

Producers are organized at all levels.

Currently, 80 percent of the producers, including small- and medium-scale farmers, as well as cooperative members, belong to the National Farmers and Cattle Ranchers Union (UNAG). Large-scale coffee farmers are organized in UNCAFENIC, associated with UPANIC (Nicaraguan Agricultural Producers' Union).

5. Legal Framework

The Project fits in with the existing legal framework, the functioning of the national bank, as well as technical, regulatory and operating aspects of coffee production and marketing.

The banking system of Nicaragua was nationalized by decree on July 25, 1979. By a decree of August 23, 1985, which established the specialized banks, it was agreed that coffee growing activities would be the sole responsibility of the National Development Bank. It would operate through its regional offices and branches, in ac-

cordance with a decree issued on July 19, 1982 that regionalized the banking system.

Coffee investments are made through the Nicaraguan Investment Fund, under the office of the vice president of the Central Bank of Nicaragua, which functions as a second-degree bank.

The Ministry of Agriculture is in charge of the technical and regulatory aspects of coffee activity. This is based on the National Coffee Program -- through the Ministry's regional and territorial offices -- and research and technology activities carried out by the National Coffee Research Center, which is financed by the Technological Development Fund. The operation, follow-up and evaluation of coffee activity as a whole are carried out by the National Coffee Commission (Presidential Decree 347 of May 6, 1988). The Nicaraguan Coffee Enterprise (ENCAFE) is responsible for marketing the product abroad, pursuant to the law which created it on September 19, 1979.

Specialized agencies exist that conduct research and technology transfer.

6. The Project in the Context of Regional Integration

The expectations of successful Project execution are based on the very positive results of similar projects in Costa Rica and Honduras, and the prospects of other projects currently under way in Guatemala and El Salvador. Coffee growing is a crop common to the region; all the countries of the area produce and export coffee, their main agricultural export commodity.

The numerous elements shared with similar projects in other countries will help promote integration in Central America, particularly through research, training, technology transfer and technical assistance, for which it will be possible to establish cooperative ties.

Another important possibility is joint coffee marketing. If the countries of the area come together as a bloc in trade agreements, in contracts, publicity and general trade agreements, Central American coffee will achieve greater strength at the international level.

Coffee is an important crop in all of Central America. The Project is based on successful experiences, and will help establish better ties between farmers and marketing agents in the region.

II. PROJECT DESCRIPTION

1. Justification

The decision to execute the Project is based on the importance of coffee for the national economy, where it represents 37 percent of total exports. Coffee plantations are currently in a state of deterioration (the average yield dropped from 12.5 quintals green coffee per hectare in 1982 to 9 quintals green coffee per hectare in 1988).

This activity is the mainstay of the small-farm economy in the production areas.

Coffee exports make an important contribution to the balance of payments situation.

Coffee is the main product and export commodity of the agricultural sector and the national economy. Since its introduction into Nicaragua in 1848, it has grown in importance as a generator of foreign exchange. Coffee output increased from 4,181 metric tons in 1890 (92,000 quintals green coffee) to 71,200 metric tons in 1982 (1,568,400 quintals). The value of coffee exports peaked in 1980, when coffee generated US$167.5 million in foreign exchange, representing 36.8 percent of national exports and 55.8 percent of total agricultural output.

The social importance of coffee stems from the many jobs it creates, particularly for a broad sector of the rural population; more than 115,000 people work in the agricultural and related tasks of coffee cultivation, and coffee provides the main source of income for more than 40,000 farmers. In spite of its social and economic importance, coffee cultivation is in a clear state of deterioration, due to inadequate levels of technology and limited technical assistance and financial services.

The activities will serve as the foundation for future efforts to expand to larger areas.

The area to be rehabilitated through the Project represents approximately 25 percent of the total surface under cultivation in the country. The Project will be replicated in a larger area if the expected results are achieved.

2. Objectives

General

To restore previous levels of productivity and production in coffee, and to halt deteriorating standards of living among the rural population by increasing the incomes of small- and medium-scale coffee producers. At the same time, to help increase coffee exports and generate more foreign exchange for the country.

Specific

- To apply the level of technology used by more developed sectors in each of the proposed systems (renewal, replanting and upgrading)
- To increase production and productivity by applying appropriate technological packages, and to set up an efficient research and technology transfer and training system
- To upgrade the structure of producers' organizations and service agencies involved in the Project, in order to maximize the use of resources

Once coffee output in Nicaragua returns to previous levels, efforts will focus on increasing the incomes of small- and medium-scale farmers

3. Strategy

The strategy of the Project is based on the following:

- Design and execution of technological packages based on the research carried out by the National Coffee Center (CNC), and the experience of highly productive state farms. Use of mechanisms that facilitate adoption of advanced technologies used by other countries in the area, particularly those related to breeding, seed production and methods for planting in nurseries and seedbeds, in order to decrease the cost of coffee rehabilitation
- Establishment of specific lines of credit for the implementation and execution of the proposed systems, for the execution of technological programs and for organizational strengthening
- Institution building related to research and technology transfer, to ensure the success of the Project
- Training of technicians and farmer leaders, who will subsequently serve as multiplier agents for technical know-how. Establishment of an agreement to coordinate the entities responsible for Project development
- Immediate allocation of funds for purchasing selected seed from the harvest and preparing seedbeds
- Creation of a technical administrative and execution unit for the Project, with the necessary human, material and financial resources

The training component will upgrade the skills of the country's technical personnel and farming community leaders.

4. Components

The Project has six components: credit; administration and execution; research and technology transfer; training; follow-up and evaluation; and preinvestment studies.

Component 1. Credit

This is the most important component of the Project, and will be used to finance investments and cover operating costs on target coffee farms. It is called for in the eight different production models designed for the Project. This component includes the following activities:

- Seed production and preparation of seedbeds. Designed to ensure suitable germ plasm banks and seedbeds, which are required for renewing and replanting coffee farms. In absolute terms, the total amount of seed needed during the life of the Project is 1,365 quintals.

Germ plasm banks and the establishment of seedbeds are included in the methods to renew and replant coffee farms.

- Modernization of plantations. This consists of applying three specific technological systems for rehabilitation, in a total area of 20,788 hectares.
- Purchase of agricultural equipment. Based on the needs of most of the credit beneficiaries, this activity will supply the equipment needed.

Component 2. Administration and execution

The National Coffee Commission (CONCAFE) will be responsible for coordinating the administration and execution of the Project.

Component 3. Research and technology transfer

The National Coffee Center conducts research in coffee breeding, crop management, plant protection and nutrition. It also conducts important tests to assess and validate high-yield varieties.

Component 4. Training

The Project's training program aims to upgrade the technical skills of 70 extension agents. It will also target 450 small-scale farmers, cooperative and community leaders, who will be given technical training for crop development and farm management.

Component 5. Follow-up and evaluation

An international expert will be hired to provide institutional strengthening in these matters. Over a period of six months, this person will design and install a follow-up and evaluation system for the executing unit, the Directorate of Credit Programs of the National Investment Fund (FNI), and the General Directorate of Planning (DGP) of the Ministry of Agriculture (MAG).

Component 6. Preinvestment studies

Resources must be secured to conduct studies on the execution of a second stage of coffee rehabilitation. Funds must also be obtained for a study on coffee processing capacity in the country.

5. Goals

- To rehabilitate 20,641 hectares and increase yields. This area will be worked as follows:

Renewal of 2,861 hectares, 65 percent of which will increase the current production from 6.5 to 30 quintals green coffee per manzana (.7 hectare)

Replanting of 4,487.9 hectares; average yields will increase from 11 to 25 quintals green coffee per manzana

Improved farming practices and appropriate plant protection control on the remaining 13,587.8 hectares of farms not renewed or replanted, to boost productivity from 13 to 20 quintals green coffee per manzana

More than 20,000 hectares will be rehabilitated through improved cropping methods to increase production.

- To increase current production in the Project area by 92 percent, from 342,400 quintals green coffee to 657,700 after seven years, at which point output will stabilize
- To upgrade research and technology transfer efforts by hiring 35 technicians to work in the communities. An equal number of motorcycles will have to be purchased to ensure full coverage by the services.
- To provide training for the 35 new technicians and 35 members of the current staff (42% of the total), who will support the execution of the component. Fifteen agricultural engineers will also receive training in coffee cultivation practices. Training will also be provided for 450 campesino leaders (8.5% of the Project's total direct beneficiaries), to ensure a multiplier effect for the technical assistance.
- To create the technical unit to organize and execute the Project

6. Project Beneficiaries

The number of direct beneficiaries of the Project was determined by identifying the type of farm and more specific selection criteria (size, currently under cultivation, levels of technology). A total of 5,282 producers were identified as direct beneficiaries of credit to rehabilitate their coffee plantations. Project investment per capita is US$6,600.

Direct beneficiaries: more than 5,000 farmers who will receive loans to rehabilitate their coffee plantations

Most of the potential beneficiaries are small-scale farmers organized into credit and service cooperatives. Approximately 20 percent of these farmers have formed other types of associations. The Project also includes all the farmers organized in collective agricultural cooperatives.

7. Support Services for Production

The Ministry of Agriculture and Livestock, through the General Directorate for Agricultural Technology (DGTA), is responsible for research, technology transfer and direct technical assistance to farmers. The Technological Development Program for Coffee has the final responsibility for research and technology transfer.

farmers. The Technological Development Program for Coffee has the final responsibility for research and technology transfer.

Domestic and external marketing will be managed by ENCAFE, which has agencies in the Project area. They receive the dried parchment coffee (one quintal of parchment is equivalent to one half quintal green coffee) for final processing.

The FNI and the National Development Bank (BND) will disburse credit directly to the Project beneficiaries.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

Executing unit: The National Coffee Commission (CONCAFE)

The National Coffee Commission (CONCAFE) will be responsible for coordinating Project execution and administration. To this end, it will create a technical execution unit, headquartered in the area covered by the Project.

CONCAFE will be the general coordinator; it will be responsible for the direct coordination of all Project activities. The technical executing unit (TEU) will include an executive director, an administrative/financial assistant, two territory directors for each region covered by the Project and 15 coffee specialists, who will coordinate the work of the community technicians.

The FNI's General Directorate of Credit Programs, which has a follow-up and evaluation system, will be responsible for Project follow-up and evaluation, to be coordinated with the MAG's General Planning Directorate. A compatible follow-up and control system will be installed; the technical executing unit will prepare quarterly reports.

2. Plan of Action

The Project will begin with the creation of the technical execution unit within the National Coffee Commission and with the appointment of the executive director of the Project. Twenty-five professionals and mid-level technicians will be hired during the first year; 25 more will be hired in the second year.

The Project's technical activities will be followed by the TEU and contracts will be drawn up for each agency providing services for production. Contracts will be made with the National Coffee Center for research and technology transfer.

Some 240 people will receive training during the first year, 445 during the second year and 535 during the third year.

Seed production and the preparation of seed beds will begin during the first year (40% of total capacity for each). During the second year 40 percent will be completed and in the third year, 20 percent. This reflects the pace at which beneficiaries and plantations are incorporated into the Project.

During the first year, the follow-up and evaluation system will be installed. During the second year, the preinvestment studies on the second phase of the Project will begin, as will industrial processing, which will conclude in the third year.

3. Resources

In order to execute the Project, 58 additional employees will be needed: 23 will operate out of the TEU, and the rest out of the Small-farmer Development Centers. Of the 23 TEU employees, 18 will be professionals. Fifteen of these will work directly in the Project area, and three will serve as support personnel. The 35 mid-level technicians will work directly in the Project area.

Locally, activities will be coordinated through the Small-Farmer Development Centers.

It will be necessary to refurbish 110 m^2 in office space in the regions for technicians and the activities related to Project administration and execution. Nineteen four-wheel drive vehicles and 36 motorcycles are needed -- 97 percent of which will be for the professionals working directly on Project activities. It will also be necessary to acquire office equipment for the same number of technicians; basically, desks, chairs, three microcomputers for Project follow-up, files and office supplies.

4. Participating Institutions

The principal institutions participating in the Project, in addition to CONCAFE, are:

- The Nicaraguan Coffee Enterprise, which has the capability to market the Project's increased output
- Various enterprises that supply inputs and equipment to farmers and that have offices and agencies in the Project area
- The National Development Bank, which will provide credit

The institutions to receive direct technical cooperation will be the FNI's Directorate of Credit Programs and the DGP of the MAG, all of which will provide follow-up and evaluation for the Project. In terms of preinvestment studies, the DGP will receive external consultant services for a total of 18 professional/months during the first two years of the Project.

IV. COSTS AND FINANCING

Cost of the Project: US$34,847,500. Foreign-exchange component: 43 percent of the total

1. Costs

The total cost of the Project is US$34,847,500, of which US$14,997,500 (43% of the total amount) will come in the form of foreign exchange. A total of 87.5 percent of costs will be absorbed by the credit component, amounting to 91 percent of the foreign exchange.

Summary of Project costs *(US$ X 000)*

Component	Total cost	Local currency	Foreign exchange
1. Credit	30 442.8	16 811.3	13 631.4
2. Administration and execution	1 933.6	1 306.2	627.4
3. Research, technology transfer	2 082.2	1 590.1	492.2
4. Training	66.7	28.3	38.4
5. Follow-up and evaluation	117.0	89.0	28.0
6. Preinvestment	205.2	25.2	180.0
Total cost	**34 847.5**	**19 850.0**	**14 997.4**

2. Financing

External contribution: 63 2 percent of the total cost; local contribution: beneficiaries, 11 percent; participating institutions, 25 8 percent

External sources will be used to finance 63.2 percent of the total cost of the Project; beneficiaries will contribute 11 percent and participating institutions will provide the remaining 25.8 percent.

External agencies will finance 62.4 percent of the credit component (the largest component of the Project); the National Development Bank will finance 25.1 percent; and the farmers will provide 12.5 percent of the total of this component.

Financing for the eight farm models included in the Project is based on the following criteria: 12 percent interest rate on credits; total costs that can be financed is 70 percent; maximum grace period of five years; and fifteen years to repay the loan. Payments of interest will begin in the second year of the loan.

Financing

Component	Domestic financing		External financing		Total (US$ X 000)	
	Amount	(%)	Amount	(%)	Amount	(%)
1. Credit	11 452.3		18 990.5		30 442.8	
2. Administration and execution	560.8		1 372.8		1 933.6	
3. Research, technology transfer	672.3		1 409.9		2082.2	
4. Training	20.0		46.7		66.7	
5. Follow-up and evaluation	83.8		33.2		117.0	
6. Preinvestment	25.2		180.0		205.2	
Total	**12 814.4**	**36.8**	**22 033.1**	**63.2**	**34 847.6**	**100.0**

V. ANALYSIS

1. Technical Analysis

This type of Project has been implemented successfully in other countries because it is based on production practices used by other sectors, in areas similar to those covered by the Project.

The Project is based on experience gained in the region with similar activities carried out successfully in Central America.

The technological systems proposed in the Project will be applied to the existing coffee crop; suitability was tested on eight farm models. The technology considered draws on experience gained in the Central American region.

The Project will operate in an area having State-owned farms and other large farms that obtain yields of 30 quintals of green coffee per square meter (between 0.9 and 1.3 metric tons per hectare). This is much greater than the yields obtained by small farmers and is due mainly to new production practices incorporated in recent years. The Project proposes to transfer these improved practices to the beneficiaries.

The design and execution of the technological packages were based on the experience of the National Coffee Commission and of highly productive farms in the area.

2. Institutional Analysis

The Project will be executed by a new executing unit, to be situated in CONCAFE, an agency which brings together all agencies in some way involved with coffee. This will ensure the participation of each

of these agencies in the execution and follow-up of the Project. The other participating institutions are currently carrying out activities within their area of competence in the Project area; this will ensure continuity.

The Central Bank is the depositary and general administrator of the resources and, through the FNI, will handle the financial needs of the Project. It will provide direct support to the TEU for the administration of the financial resources of the Project components, except for direct credit for production. This will be provided by the BND, which, together with the TEU, will approve and administer the resources.

The BND will cover five percent of counterpart funds by means of a direct government contribution through the Central Bank: Twelve percent will come from the producers themselves. The BND contribution is in line with existing regulations and can be absorbed by the current portfolio of the Bank, since the Project targets existing coffee plantations and will not increase the area under cultivation. With regard to administrative components, the counterpart contribution refers to existing personnel and equipment of the institutions that will be used for Project activities.

3. Legal Analysis

The Project fits in with the existing legal framework. Proposals are currently being drawn up to improve the operation of some of the institutions that enforce coffee-related laws and regulations.

4. Financial and Economic Feasibility

A financial analysis reveals that the Project is financially feasible.

FIRR	22.6%
NPV:	US$ 17162 200
B/C:	1.33

The sensitivity analysis was based on 10 percent of the price of coffee, the most critical value of the Project.

FIRR	18.7%
NPV	US$ 10 250. 000
B/C:	1.17

The eight farm models proposed in the Project (four renewal and four replanting) reflect similar profit increases, which go from 48 percent to 70 percent. The models remain attractive even with a 10-percent drop in the price of coffee.

*Farm Models: Financial Indicators**

Farm Models	Without sensibility NPV(1)	FIRR (%)	B/C	Sensibility[1] NPV (1)	FIRR(%)	B/C
MC-1	28.3	17.8	1.2	11.3	14.4	1.1
MC-2	122.5	21.0	1.3	70.8	17.4	1.2
MC-3	296.1	21.8	1.3	177.7	18.2	1.2
MC-4	3472.2	50.7	1.9	2737.2	43.6	1.6
MC-5	35.8	22.9	1.4	22.4	19.2	1.2
MC-6	145.2	26.0	1.5	101.7	22.3	1.3
MC-7	339.3	24.4	1.4	230.8	20.9	1.3
MC-8	3552.5	54.6	2.0	2837.1	47.2	1.7

(*) Considering a 10-percent reduction in the price of coffee.
(1) The net present value (NPV) is presented in millions of cordobas.
Exchange rate: C235,000 = US$1.00.

The adjustment of the market price for the accounting price of coffee, and the inputs and capital goods used by the Project, was based on the method used to calculate shadow prices, prepared for the FAO/NIC/86/003 project. At 12 percent, the Project provides an incremental economic net present value (ENPV) of US$59,434,000. The economic internal rate of return (EIRR) is 45.8 percent, and the benefit/cost ratio is 22.45 percent, with a cost of 0.29 per unit of foreign exchange produced.

5. Project Impact

For calculating the balance of foreign exchange produced by the Project, it is considered that 85 percent of the annual coffee crop will be exported. A total of US$17,100,000 in foreign exchange would be generated without the Project. During the first three years a slight decrease will be registered, due to plantation renewal and replanting. Increases will be seen as of year four, and will stabilize at US$33 million annually, in year seven of the Project, representing an increase of 93 percent per year.

Once the Project has been executed, coffee exports will increase more than 90 percent a year. A maximum of 18,000 workers will be employed.

The Project will generate a large number of rural jobs as of year two, because it will create a need for more labor. Maximum demand is estimated at 18,000 workers, 7,000 more than currently employed.

PANAMA

PROMOTING THE PRODUCTION OF NONTRADITIONAL EXPORT CROPS

(Project)

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

TABLE OF CONTENTS

INTRODUCTION

Efforts to diversify export production in Panama date back to the early 1980s. In 1981, the Foreign Trade Office of the Ministry of Commerce and Industry conducted a study of the country's exportable supply. It also carried out other market research for exporting fresh and processed fruit to the Caribbean, Europe and the United States. Shortly thereafter, this same Office submitted a document entitled "Study of Export Policies for Nontraditional Agricultural Products" for the consideration of the highest-ranking authorities in the sector.

The basic data contained in this Project profile draws heavily on the "Feasibility Study of the Nontraditional Exports' Project," prepared by the government of Panama with the technical support of the Inter-American Institute for Cooperation on Agriculture (IICA). This study was completed in 1987 and important data has been updated for this profile.

The Project is the culmination of 10 years of research into nontraditional export crops.

I. FRAME OF REFERENCE

1. The Macroeconomic Setting and Its Impact on the Project

In 1981, Panama's gross domestic product (GDP) was US$1.8188 billion. That same year, agricultural value added was US$188.1 million, or 10.3 percent of GDP. Purely agricultural production totaled US$126.4 million, 67 percent of agricultural and livestock production. The country's most important agricultural products, measured in terms of area and production, were rice, corn, sugar cane, coffee and bananas. The last three are considered traditional exports. The agricultural sector is the major source of employment, engaging an average of 28 percent of Panama's economically active population.

Despite the economic crisis, agricultural and livestock exports during the 1983/87 period remained constant, varying only modestly from US$150.7 million to US$150.3 million. Ninety-three percent (93%) of these exports were agricultural products. While nontraditional exports have not met with growing success, technological packages developed in recent years have brought about a notable increase in production levels of tropical fruit, such as melon, watermelon and pineapple, as well as vegetables.

During the 1970s, State action sought to provide basic infrastructure and credit to campesino settlements and to strengthen the agricultural public sector. Over the course of the next 10 years, these actions were governed by policy guidelines which the government set forth in a National Agricultural Development Plan.

These guidelines were designed to promote the production of fruit and vegetable exports. A line of credit was established for selected items (nontraditional) targeted for export.

The National Bank of Panama (BNP) and the Agricultural Development Bank (BDA) undertook to finance a considerable portion of the agricultural activities of small- and medium-scale producers. By 1986, the BDA had financed 24,300 agricultural loans.

The public and private sectors work together to market nontraditional products abroad.

Regarding the marketing of nontraditional exports, the Ministry of Agricultural Development (MIDA), an exporting company, and the Panamanian Foreign Trade Institute (IPCE), banded together to help farmers market their products abroad and to identify other market options.

2. Analysis of Production Options and of the Technical Environment

In recent years there has been an appreciable increase in nontraditional exports.

A total of 1,700 farmers nationwide produce nontraditional agricultural products. Close to 400 do so for export (hot peppers, cashew nuts, ginger, watermelon, melon, squash and plantains). In 1983, these exports were valued at approximately US$82,000; by 1987, their value had increased substantially, reaching US$10.866 million.

The crops to be promoted and processed under this Project were selected on the basis of market opportunities, technical experience and the country's soil and climatic conditions.

The following is a list of the selected crops and the respective areas where they will be produced:

Melon	Cocle and Capira
Squash	Herrera and Capira
Pineapple	Chiriqui and Capira
Watermelon	Herrera, Cocle, Chepo and Los Santos
Papaya	Capira and Chepo
Ginger	Chiriqui, Veraguas, Cocle and Capira
Cashew nuts	Chiriqui, Veraguas, Cocle and Capira
Mango	Cocle, Capira and Los Santos
Hot peppers	Capira, Chepo and Los Santos
Plantains	Chiriqui, Chepo, Bocas del Toro and Darien

The areas were selected on the basis of the following factors and criteria:

- Soil, temperature and rainfall levels
- Area presently devoted to agricultural production
- Serviced locally by the Ministry of Agricultural Development
- Their distance from the country's major markets

3. Socioeconomic Situation of Potential Beneficiaries

According to the 1980 Agricultural Census, in that year there were 151,238 farms occupying 2,276,300 hectares. A total of 87,887 farms, with a surface area of 240,900 hectares, reported growing seasonal crops, while 113,361, with a surface area of 119,900 hectares, reported growing perennial crops. The distribution of the population for the 1982/1985 period was as follows:

Approximately one-half of the Panamanian population live in the countryside.

	Population		Economically active	
Year	Total	Rural	Total	Agricultural
1980	1 831 399	888 090		554 000
1982	2 043 653	1 015 028	146 378	561 064
1985	2 180 489	1 063 743	185 241	613 937

4. Institutional Conditions

The Ministry of Agricultural Development (MIDA) coordinates actions with the Agricultural Research Institute (IDIAP), the Agricultural Marketing Institute (IMA) and the Agricultural Development Bank (BDA) -- all of which will be directly involved in the Project.

The Foreign Trade Institute (IPCE), a State entity which does not operate directly under MIDA, will also collaborate in the implementation of the Project. At present, these State agencies are financially sound and have qualified human resources in their employ.

The Panamanian Foreign Trade Institute will collaborate with other State-run and private agencies in implementing the Project.

5. Legal Framework

The Project has a suitable legal framework which has been in the making since 1962 when the Agrarian Code first went into effect. One of the objectives of the Code was to grant farm workers rights to plots of land. In January 1973, Law No. 12 creating MIDA was promulgated and the Agricultural Development Bank was established.

In 1980, Law No. 20 was promulgated, which established a system of preferential interest rates for agricultural production. In 1985, Law No. 19 was promulgated, which prioritized promotion of agricultural production. In 1986, a legal framework was created establishing in-

centives for diversifying agricultural production, with preferential rates for electricity and investments in irrigation.

6. The Project in the Context of Regional Integration

The basic strategy behind reactivation of the agricultural sector in Central America is to diversify production to include nontraditional crops, generate employment, increase foreign-exchange earnings, promote agroindustry and gain access to new international markets.

The Project's regional components could begin with:

With an eye to Central American integration, the Project will work to establish a price and market information management network, pursue joint marketing efforts and provide intraregional training on these matters.

- Participation in a price and market information management network for major products
- Joint marketing efforts, which assure greater supply and more stable demand, granting investors better opportunities to negotiate the price of their products
- Intraregional training activities in matters relating to market intelligence and business management capabilities.

II. PROJECT DESCRIPTION

1. Justification

The Project's focus on nontraditional products will help diversify exports, generate foreign exchange and increase employment.

The Project aims at promoting the export of nontraditional products, by motivating and assisting private farmers in the production, agroindustrial and marketing process. The Project is entirely in keeping with the country's objective to diversify agricultural exports. It will increase the sources of foreign-exchange earnings by supporting successful experiences with the 10 aforementioned crops, and promote socioeconomic development in the country's major agricultural areas by creating steady employment and directly improving the income levels of 869 families.

2. Objectives

General

Work will center on 10 crops melon, squash, pineapple, watermelon, papaya, ginger, cashew nuts, mango, hot peppers and plantains.

To promote the development of the agricultural sector as an integral part of the national economy, by diversifying and increasing production and productivity of 10 crops, with a view to bringing about a noteworthy increase in nontraditional exports

Specific

- To support the production of nontraditional crops, in an effort to establish an agricultural export program
- To promote the production of export products having comparative advantages, and which do not currently figure in the credit portfolios of agricultural banking institutions
- To promote the integrated development of agroindustry in Panama, as one way to take advantage of production and production surpluses
- To create new sources of employment in the rural areas and maintain current sources of employment in order to reduce internal migration

3. Strategy

The Project will be implemented by way of three subprojects, each one with its own components. The subprojects concern promoting agricultural production, agroindustry and marketing.

The three subprojects are designed to cover the entire process: production, agroindustry and marketing.

During the initial stage, the Project will focus on 10 crops; based on the success rate, this figure could go as high as 33 at a later date.

A team will be created which will be given sufficient authority, decision-making power and administrative freedom to assume responsibility at all levels for Project implementation. The organization of beneficiary producers will be promoted and pertinent advisory services will be made available.

A special line of credit will be opened to promote production, agroindustry and marketing.

Special emphasis will be placed on training for technical personnel and producers in matters related to production, exports and agroindustry. A daily national and international market information system will also be designed and implemented.

4. Subprojects and Components

The Project consists of three subprojects with three components. The subprojects concern the action of the agricultural public sector, which will be strengthened by the government so the Project can be implemented efficiently. The components are concerned directly with production and account for somewhat more than 75 percent of total Project cost.

Subprojects

Subproject 1. Promoting agricultural production

This subproject aims at diversifying agricultural production and increasing the production and productivity levels of the selected crops, to bring about a net increase in foreign-exchange earnings and, more importantly, to create more jobs.

Subproject 2. Agroindustry

This subproject will strengthen the agroindustrialization process for those products targeted in the Project. It will develop those agroindustries which are less vulnerable to the risks inherent in the production of fresh produce or perishables; it will furthermore work to solve production surplus problems.

Subproject 3. Marketing

A processing plant for cashew nuts will be set up, in addition to four fruit-packing plants, nine storage centers, five refrigerated centers and nine automated production lines.

This refers basically to the exporting process and includes: assistance to producers and exporters; help in identifying markets for nontraditional products; and, in ensuring the delivery of reliable and up-to-date information on prices, freight, insurance, markets, international technical standards and generally-accepted packing and packaging practices of foreign trade.

Components

Component 1. Credit

This is the Project's most important component. It will finance three basic items: production of export crops; agroindustrial infrastructure; and, marketing infrastructure.

Financing for agroindustrial infrastructure includes the purchase of a plant to process cashew nuts, the construction of four fruit-packing plants, and small equipment and inputs for the packing plants. Under the "marketing" item, the component will finance the construction of nine storage centers, five refrigerated centers and nine automated production lines (hoses, conveyors and tables).

Component 2. Research, training and technology transfer

This includes the purchase of inputs to set up experimental plots in 30 production modules, and the purchase of small equipment and a small tractor. It will finance five short graduate courses and two year-long Master's degree studies for training technical personnel responsible for extension work. This will make it possible to adequately disseminate the technological package tested and proven in the research process.

Component 3. Project administration and implementation

This includes the additional human and physical resources required to administer the Project efficiently. Support will also be provided by external consultants assigned to carry out specialized studies.

5. Goals

- To finance the production of the 10 selected crops, to increase their productivity for export purposes
- To establish commercial operations on 869 farms covering an area of 3,572 hectares
- To install and operate a cashew nut processing plant in year one of Project implementation
- To build and operate four fruit-packing plants in year one of Project implementation
- To design and build nine storage centers, five refrigeration centers and nine automated production lines in phase one of the Project
- To generate US$13,546,400 in export earnings by year 10 of Project implementation

Commercial operations will be established on more than 800 farms covering approximately 3,600 hectares.

Crop	Area (ha)	Yield (mt/ha)	Exportable production (mt)
Melon	1367	11.3	15 450
Squash	307	18.0	5 532
Pineapple	90	60.0	5 396
Watermelon	554	18.0	9 980
Papaya	87	27.2	1 432
Ginger	32	20.0	638
Cashew nuts	1 000	1.0	1 000
Mango	40	18.1	720
Hot peppers	88	11.3	1 000
Plantains	7	7.5	556

6. Project Beneficiaries

The Project will benefit 869 producers directly, and more than 3,000 farm workers indirectly. The investment per beneficiary, taking into consideration the credit component (which accounts for 75% of the Project cost), will total US$16,300 over the five-year implementation period.

The Project will benefit more than 800 producers directly and more than 3,000 farm workers indirectly; investment per beneficiary is US$16,000 over the five-year implementation period.

The subprojects to promote agricultural production, agroindustry and marketing will indirectly benefit those farmers who normally receive services from the agricultural public sector. Current coverage is estimated at 84 farmers.

The marketing subproject seeks to directly benefit 10 local agroexporting companies.

The agroindustry subproject aims specifically to upgrade small- and medium-scale agroindustrial enterprises, by promoting technological development in agroindustries that can help satisfy some of the country's needs.

7. Support Services for Production

The Agricultural Research Institute (IDIAP) will provide the beneficiaries with agricultural research assistance to identify new varieties with export potential. This will be achieved through technology generation, testing and transfer. Training will be carried out with the participation of the National Training and Agricultural Extension Office. It will focus on training and refresher courses for technical personnel who will be providing direct technical assistance to the farmers.

The Agricultural Marketing Institute will provide counseling on matters related to domestic marketing; the Panamanian Foreign Trade Institute will support export activities.

Marketing at the domestic level will be effected with the support of the Agricultural Marketing Institute. The Panamanian Foreign Trade Institute (IPCE) will support the Project with advisory services and technical assistance for exporting companies.

Credit will be made available by the Agricultural Development Bank, which will channel financial resources to the beneficiaries. The National Agroindustry Office will provide support for the products included in the Project. The Agricultural Insurance Institute will help set up agricultural insurance services to give farmers the confidence and security they require.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

The executing unit will be set up within the framework of the MIDA and enjoy the active participation of other public and private agencies.

The executing unit will be the responsibility of the Ministry of Agricultural Development (MIDA). It will be headquartered in Panama City and be co-directed by a technical coordinator and a financial and administrative coordinator. The two coordinators will be jointly designated by the Ministry of Agricultural Development and the funding agency, with support from other offices (Agroindustry and Agricultural Assistance). An advisory committee made up of executives from participating institutions and organizations will also serve the Project.

The Committee will be presided over by the Minister of Agricultural Development. It will furthermore enjoy the active participation of the Agricultural Research Institute, the Agricultural Marketing Insti-

tute, the Panamanian Foreign Trade Institute and the Agricultural Development Bank, which will also be involved in the Project.

Follow-up and monitoring of Project implementation will be subject to rigorous supervision:

The participation of farmers' organizations in the executing unit will help forge the necessary link with the private sector.

- Periodic reports (at least quarterly) must be submitted to the funding agency.
- Periodic reports must be submitted to the National Office for International Technical Cooperation.
- Annual evaluations will be conducted to ascertain achievement of objectives and goals, and of Project impact; they will be carried out by the National Office for International Technical Cooperation, in coordination with the Project's executing unit.

2. Plan of Action

The major activities for starting up the Project during the first three years include:

From the beginning of the Project, efforts will be made to obtain expeditious and timely lines of credit.

- Negotiation of financing
- Establishment of a line of credit, by component, in the Agricultural Development Bank
- Selection of beneficiaries
- Preparation of the public agricultural sector for participation in Project implementation
- Training for technical personnel and producers
- Implementation of subprojects and components

3. Resources

The following resources are required to implement the Project:

The Project will install basic infrastructure for processing and marketing.

Elements	Total	Years 1	2	3	4	5
Cashew nut processing plant	1	1				
Fruit-packing plants	4	4				
Storage centers	9	9				
Refrigerationcenters	5	5				
Automated production lines	9	5				
Typewriters	18	16	1		1	
Audiovisual equipment	7	6	1			
Computers	3	3				
Small equipment	4	2	1	1		
Technical personnel	250	250	250	250	250	250*
Support staff	50	50	50	50	50	50
Vehicles	68	56	8	4		

*Local technical and secretarial support personnel

4. Participating Institutions

The participation of sectoral institutions in Project implementation will be arranged through agreements with the executing unit. The institutions taking part directly in the Project will be:

There is guaranteed support from State agencies involved in research, agricultural development, insurance, marketing and exports.

- Agricultural Research Institute (IDIAP)
- Agricultural Development Bank (BDA)
- Agricultural Insurance Institute (ISA)
- Agricultural Marketing Institute (IMA)
- Panamanian Foreign Trade Institute (IPCE)

IV. COSTS AND FINANCING

1. Costs

The total cost of the Project is estimated at US$18,802,200. The following is a breakdown by subproject:

Item	(US$ X 000)
Promoting agricultural production	13 195.7
Agroindustry	1 398.8
Marketing	3 916.7
Executing unit	291.2
Total	**18 802.4**

Total cost of the Project: US$19 million, with investments focusing on actions to promote agricultural production (US$13 million)

2. Financing

The Project will be financed with external resources for the sum of US$12.811 million and a local contribution on the order of US$5,991,400. Disbursements will be effected over a five-year period.

Category	Local	External	Total (US$ X 000)
Subprojects			
Agricultural assistance	704.0	1 662.2	2 366.2
Agroindustry	83.9	114.9	198.8
Marketing	504.2	302.4	806.6
Components			
Credit	4 272.2	9 968.0	14 240.2
Research	279.6	619.8	899.4
Executing unit	147.5	143.7	291.2
Total	**5 991.4**	**12 811.0**	**18 802.4**

Two-thirds of the costs will be covered with external resources.

V. ANALYSIS

1. Technical Analysis

The Project is technically sound. The farmers have experience in producing the proposed crops and the Ministry of Agricultural Development has developed technological packages to increase productivity. Crop selection was based on marketing and agroindustrialization opportunities. The zones where the Project will be implemented were selected on the basis of: crop zoning studies; the

The Ministry of Agricultural Development has successfully established technological packages to increase productivity.

fact that MIDA has offices in the areas where production will actually take place; and, the distance between these areas and the marketing centers.

2. Institutional Analysis

The success of the Project depends on efficient organization and implementation of activities at the very outset. This responsibility will fall to the executing unit. The degree of inter-institutional participation, and the number of components in each subproject, require that the unit be established sufficiently in advance to guarantee suitable organization, planning and implementation. Moreover, the government is prepared to provide counterpart funds for the Project; this will guarantee a timely channeling of funds.

3. Legal Analysis

The State, through MIDA, has undertaken to grant the executing unit sufficient authority, decision-making power and administrative freedom, to ensure that Project resources are used exclusively for the Project and effectively reach the beneficiary.

4. Financial and Economic Feasibility

The financial analyses show that the Project is profitable.

The Project is financially feasible. The financial indicators are as follows:

FIRR:	>100%
NPV:	US$68,947,500

Sensitivity Analysis

Variable	FIRR (%)	NPV
Costs +10%	>50	67,718,900
Benefits -10%	>50	60,824,200

5. Project Impact

Expected results: Substantial increases in employment, increase of US$10 million in the country's foreign-exchange earnings from exports, improved soil conservation methods

Implementation of this Project will substantially improve employment levels in the target areas. Moreover, it will raise the income of 869 new producers and indirectly benefit more then 3,000 farm workers to be involved in the proposed activities.

As of year three of its implementation, the Project will increase the country's foreign-exchange earnings by US$10 million, through export earnings.

Soil conservation techniques will be improved and the country's reforestation efforts will be supported by the planting of fruit trees.

FECHA DE DEVOLUCION

Autor

Título Regional program on intra-regional trade and exports to third

Fecha Devolución	Nombre del solicitante