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

2

IMPORTANCE OF THE AGRICULTURAL SECTOR. TECHNICAL AND FINANCIAL ASSISTANCE. SUMMARY OF PROJECT PROFILES

PEC/AS/91/2
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 readi[redacted]cooperating governments and institutions. The [redacted]ts are:

Executive Summary

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

Docu[redacted]to 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 Biotechnology.

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

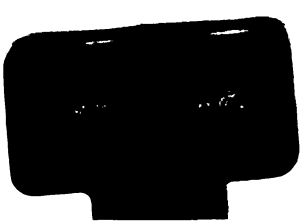
PEC/AS/91/7: Program on Agroindustrial Development.

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

2 IMPORTANCE OF THE AGRICULTURAL SECTOR. TECHNICAL AND FINANCIAL ASSISTANCE. SUMMARY OF PROJECT PROFILES

PEC/AS/91/2
PROJECT CAM/90/002
SPECIAL PLAN OF ECONOMIC COOPERATION
FOR CENTRAL AMERICA

DOCUMENT CONTENTS

I. INTRODUCTION

The Special Plan of Economic Cooperation for Central America (PEC) was prepared in support of the Esquipulas II accords by which the presidents of the Central American countries launched the peace process in the region. The fundamental objective of the Plan is to undergird peace and stability in the region by mobilizing resources from the international community. It will provide a framework in which to carry out projects that encourage integration and development in the sectors that hold high priority for the Central American governments.

At the same time the PEC went into effect in 1988, a mechanism for intra-regional coordination was approved.

The PEC went into effect in September 1988, when the vice-presidents of the Central American countries proposed a mechanism for coordinating its activities. This mechanism was endorsed by the United Nations General Assembly in Resolution 43/210. At the same time, the vice-presidents also approved a mechanism for coordination among the countries, with the participation of the governments and institutions of Central America.

The First Meeting of Central American Governments with Cooperating Governments and Institutions in the framework of the PEC, took place from July 4 to 6, 1989, in Geneva, Switzerland. It was the first formal encounter of a general nature in which the governments of Central America could inform the cooperating governments and institutions of the region's needs for financial and technical assistance. The donor community also delineated its own priorities, by sector and by topic, for assisting Central America. The delegates of the governments and the institutions agreed that the PEC provided a frame of reference that accurately reflected the region's priorities for international assistance.

The task of the regional sectoral forums is to present the community of cooperating governments and institutions with portfolios of projects

In response to the meeting in Geneva, and at the recommendation of the United Nations General Assembly (Resolution 44/182), it was agreed to pursue the process further by holding sectoral meetings where the assistance community could receive full project portfolios, sector by sector. The ministers and deputy ministers assigned to work with the PEC (Managua, August 1989) developed a procedure for arranging these meetings with the cooperating governments and institutions, making each regional sectoral forum fully responsible. The agricultural sector was selected as one of the first, because it is the foundation of the Central American economies. Furthermore, this sector already has a clear orienting framework for the region, set forth in the Plan of Joint Action for Agricultural Reactivation, approved by the ministers of agriculture of the countries of the isthmus (April, 1989).

The documentation was prepared under the leadership of government agricultural officers, with support from the Project CAM/90/002/ PAHO/ UNDP, and in close cooperation with the Secretariats of CORECA and GISA

The technical documentation for the agricultural sector meeting was prepared under the leadership of government agricultural officers, with the cooperation of specialized international and regional organizations from the Inter-Institutional Group of the Agricultural Sector (GISA), and with constant support from Project CAM/90/002/PAHO/UNDP. This project worked closely with the Secretariat of CORECA, which coordinated the preparation of technical documents in the countries, and with the Secretariat of the GISA, which coordinated document preparation by participating organizations.

The general guidelines approved for the documentation called for every country to organize an ad hoc committee presided over by the deputy minister of agriculture. These committees guided the process of formulation and approval of investment projects for each country. Sitting on the committees were representatives of the agricultural planning offices, ministries of planning, ministries of the treasury and the economy, and central banks. National experts were hired, with the support of the Project CAM/90/002/OPS/UNDP, to work with members of the ministries of agriculture in drawing up project profiles. A region-wide team of project writing specialists was also hired to provide direct support to each country and to consolidate the documentation for the entire isthmus. The ministers of agriculture met on three occasions to evaluate and approve the contents of the technical documents.

The basic tenets are consistent with the Antigua Declaration and the Plan of Action for Central America

The work done so far upholds the spirit of statements made by the presidents of the Central American countries in their Antigua Declaration (June 17, 1990). It is also consistent with the Economic Plan of Action for Central America (PAECA), in which the presidents instructed the pertinent ministers to "(...) prepare a coordinated agricultural policy that will bring about swift recovery and expansion of traditional exports, as well as greater food security for the region and a steady supply of industrial inputs, thus forging productive linkages." They also asked the ministers to "(...) open negotiations to expedite international financial assistance for rebuilding the economies and for consolidating democracy, peace and product processing, with an emphasis on joint programs for region-wide action."

In response to these instructions, the ministers of agriculture of the Central American countries met in Honduras in July, 1990 and in El Salvador in September, 1990. They agreed to implement the PAECA in the agricultural sector. They stressed harmonizing policies in strategic fields to reactivate agriculture in the countries, ensure food security and develop intra-regional trade and extra-regional exports.

The mandates of the presidents and the agreements of the ministers of agriculture all serve to reaffirm and narrow the focus of the guidelines approved in the Plan of Joint Action for Agricultural Reactivation in the Central American Isthmus.

The Plan of Joint Action for Agricultural Reactivation in the Central American Isthmus will be bolstered.

The project profiles in this document are a first step in this new effort to develop and integrate the Central American isthmus, beginning with the agricultural sector.

II. THE POTENTIAL OF THE AGRICULTURAL SECTOR TO REACTIVATE THE ECONOMY

A. General Characteristics of the Region

1. The PEC will be working in six countries: Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica and Panama* Lying in the tropical zone of the northern hemisphere, the area measures 508,894 km2. Nicaragua is the largest country, covering 27.3 percent of the land in the region, while El Salvador is the smallest, with 4.1 percent. Figure 1 shows the relative sizes of the six countries.

The PEC area covers an area of 500,000 km2.

2. Over 30 million people inhabit the isthmus. Guatemala is the most populous country, while Panama is the smallest (see Figure 2). Central America has a mean population density of 54 people per km2, ranging from 26 in Nicaragua to 240 in El Salvador.

3. Central America is commonly treated as a small, homogeneous region best handled with a region-wide development strategy undifferentiated by country. In fact, demographic, political, educational and social characteristics vary sharply from one country to another. The differences were heightened during the 1980s, as the war and adjustment policies exerted an uneven influence on the different countries.

Demographic and cultural differences distinguish the countries of the area, although all share a similar agricultural base.

4. However, the countries share a similar production base. Agriculture merits special attention as one of the key factors in the economy, with strong inter-sectoral relationships. It plays a powerful role in gross domestic product, job creation, exports and tax revenues.

---

* Belize is not included; it benefits from the PEC only in regard to assistance for refugees, repatriated and the displaced .

GDP declined throughout the region in the 1980s.

5. During the 1980s, per-capita GDP declined in all the countries of the area. Real per-capita income in Nicaragua has plummeted to the levels of 15 years ago, while figures in El Salvador and Guatemala are near 1978 levels. The 1989 per-capita GDP in Costa Rica and Panama failed to achieve 1980 levels, while it just equaled the 1980 mark in Honduras.

6. Many factors contributed to this state of affairs. Chief among them was the performance of total exports from the region, which declined from US$7.164 billion in 1980 to US$6.397 billion in 1988 (constant 1980 prices). During this period, only Costa Rica and Honduras managed to expand their exports somewhat. Meanwhile, the foreign debt soared from US$9.572 billion in 1980 to US$22.381 billion in 1988. The ratio between foreign debt and annual exports (at current prices) swelled from 107 percent to 262 percent, as the burden on the countries grew heavier.

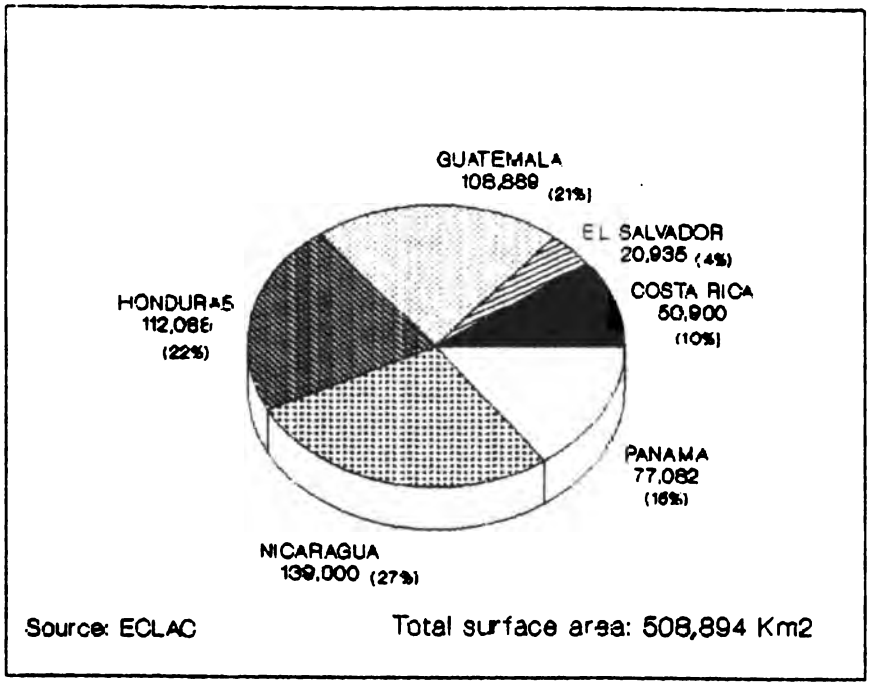


Figure 1. Central American Isthmus. Land surface area (in km²)

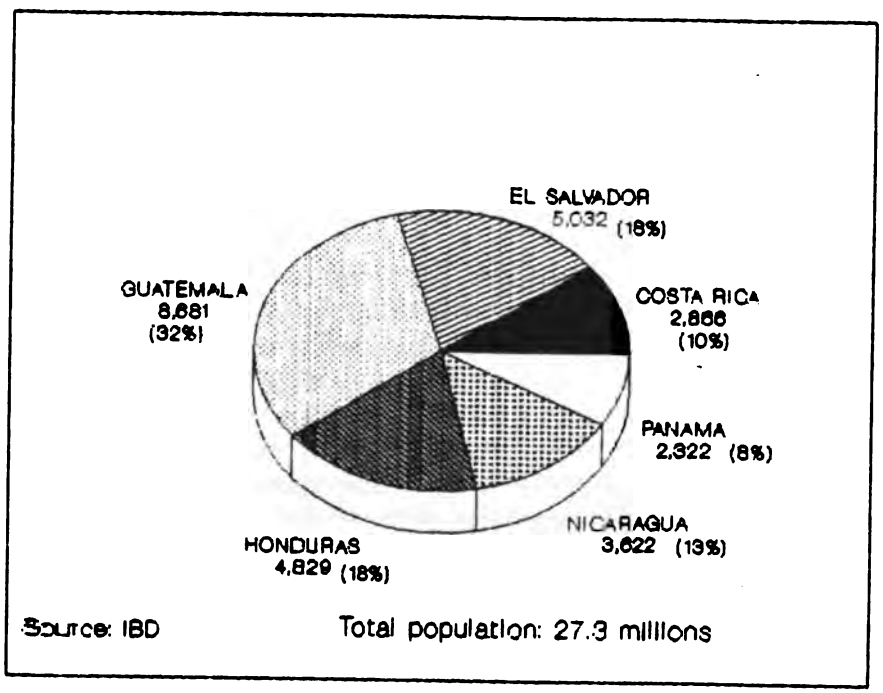


Figure 2. Central American Isthmus. Total population, 1988 (in millions)

B. The Performance of the Sector

1. Before the crisis

The agricultural sector continues to be a driving force in the economy of the countries.

7. The agricultural sector made a major contribution to economic growth in the member countries of the Central American Common Market from the end of World War II until the close of the 1970s, especially in the form of agricultural exports. Initially, a substantial portion of the surplus generated by agricultural exports was plowed back into the sector, invested in the service sector and in construction, or used to develop major agroindustrial companies (sugarcane mills, meat packing plants, cotton gins, coffee mills, etc.). Later, part of the surplus was used to industrialize the economies for import substitution in the framework of economic integration. The agricultural export sector, by earning foreign exchange, also helped finance imports of the raw materials, semi-processed goods and capital goods needed for industrialization.

The import substitution strategy was not successful in the region.

8. The region made major progress under these programs and was able to diversify its exports somewhat. However, the process led to a number of problems; some stemmed from endogenous factors inherent to the development model the countries had selected, while others were exogenous in nature, deriving from conditions in the international environment. In the first place, the import substitution strategy adopted in the 1960s failed to build a foundation of sustained development or to generate enough foreign exchange to pay for the imports the region needed and bolster the process of accumulation. In the second place, in all the countries expect Costa Rica, the development process retained an exclusory air characterized by unequal distribution of income and persistent poverty among much of the population of Central America. As the crowning blow, the unfavorable performance of the international economy drastically depressed the prices of the region's exports.

Central American economic integration in the 1950s and 1960s was most successful in promoting the trade of manufactured goods.

9. The economic integration process of the 1950s and 1960s actively promoted trade inside Central America. It was more successful with the trade of manufactured goods than of other items. The trade liberalization agreement for the region covered 215 agricultural products, but the volume of commerce remained small because staple grains, especially corn, rice, beans and sorghum, were left outside the realm of the agreement, subject to special protocols. The countries continued trying to liberalize the trade of these grains, eventually signing the Limon Protocol, but were hamstrung for a number of reasons. One of the thorniest issues was the reluctance of the governments to expose their farmers to competition from neighboring countries. Furthermore, a number of foreign aid programs, such as the PL-480 system from the United States, subsidized agricultural imports at prices that could not be matched by Central American producers. Meanwhile, governmental institutions striving to guarantee low prices on staple grains were increasingly

interested in acquiring such subsidized goods. Despite all this, agriculture has come to account for about 15 percent of the trade among the countries of Central America, giving some countries the opportunity to complement one another's production.

2. The crisis and adjustment policies

10. The international environment began to grow unfavorable in the early 1980s, with inflation, falling prices for traditional exports, breakdown in the terms of trade, oil shocks and rising interest rates. These factors combined with political and military disturbances in the region and a looming debt crisis, transforming the slowdown into complete stagnation and, later, a frank decline in productive activities. The Central American countries found themselves in difficult straits that knew no precedent; it became clear that they needed a new development strategy.

The unfavorable international economy, coupled with political and military disturbances in the region, along with the debt crisis, turned the slowdown into full stagnation.

11. The governments of the Central American countries have responded to these complex conditions by adopting adjustment policies with varying degrees of intensity. The measures typically include exchange-rate adjustments, credit restrictions, cutbacks in public expenditures, tariff reductions, and financial liberalization. It is difficult to quantify the direct effect of these composite policies on the agricultural sector, as the consequences of many measures are not clear. An example is the case of currency devaluations, which boost local-currency earnings for exporters, but raise the domestic cost of inputs. For producers selling on local markets, the devaluation deals a double blow: it raises the price of inputs, while contracting domestic demand. When these devaluations occur in an inappropriate macroeconomic setting, they feed inflationary expectations that actually drive up the cost of credit.

12. The governments adopted policies to develop and support traditional exports and encourage export diversification. These efforts, however, were hampered by the stubborn problems of war, which had the following effects: a) production and marketing infrastructure was abandoned and destroyed; b) the economically active population was repeatedly displaced from rural conflict zones; and c) economic resources and labor were diverted to meet the emergency needs of the war instead of contributing to production. These were the direct adverse consequences of political turbulence; the countries also suffered indirect effects, as recession ate into intra-regional trade and sales plummeted to a third of the levels achieved at the beginning of the decade. Another indirect consequence was the flow of refugees. All this clearly reveals how closely interdependent the countries are, and how strongly these region-wide factors influence economic and social development in each country.

War on the isthmus has interfered with the normal allocation of resources

Even in the face of the crisis, major efforts were made to modernize agriculture.

13. Despite all this, the economic crisis provided a compelling incentive to modernize agriculture. New varieties of coffee and cotton were planted, and crop management practices were improved for a number of different products. New crops were introduced, and some countries upgraded livestock management. In general, a major effort was made to usher in technical progress for agriculture. Examples can be found in bananas, plantains and melons in Honduras, vegetable crops in Guatemala and various fruit crops in Costa Rica. At the same time, important lessons were learned about marketing.

14. Notwithstanding these encouraging examples, the economic crisis generally stymied the efforts of the ministries of agriculture, which should properly be setting the policies that most affect the agricultural sector. Instead, they found themselves subordinated to other authorities, especially central banks and economic councils. Specific plans, policies and programs inside the sector also suffered from a loss of political and technical coordination.

C. The Role of Agriculture in the Region's Economic Development

15. Agriculture can play a key role in economic development on the isthmus. It represents a major share of the region's overall production and is an effective provider of foreign exchange. It also has important linkages with other sectors of the economy.

Around 50 percent of the region's economically active population work in the rural areas

16. The relative weight of the agricultural sector in the Central American economies is clearly revealed by available figures. The sector currently employs nearly 50 percent of the economically-active population in Central America, generates from 26 to 30 percent of the GDP, produces around 60 percent of all extra-regional exports, and represents from 10 to 15 percent of the trade inside the area.

17. When the crisis of the 1980s reached its most critical point, agricultural production in the area continued to register slight growth. Specifically, from 1980 to 1987, the sector still managed to grow, albeit at a real rate of barely 0.1 percent, revealing its role as the backbone of the economy. In the aggregate, agriculture has proven to be more resistant to the crisis than other sectors.

The dynamic, multiplying role of the agricultural sector has come to the forefront.

18. It is generally agreed that agriculture, particularly on the Central American isthmus, should no longer be regarded merely as a primary sector producing crops and animals; instead, attention should focus on its close input-output relations with the tertiary sectors of industry, science and technology. As agriculture modernizes, it will grow increasingly interdependent with the industries that manufacture its inputs and that mill or process the raw materials it produces. The industrialization of the raw materials of agriculture arises as part of the necessary process of technological change, urban development and international trade relations. For example, with most of

today's population living in the cities, the trend is to consume processed, mass-produced foods made of wheat and other grains, dairy products and edible oils. Pasta, evaporated milk, bottled cooking oil and fruit juices are good examples.

19. All these facts and trends corroborate the statement made so explicitly in the Plan of Joint Action for Agricultural Reactivation in Latin America and the Caribbean (PLANLAC), that agriculture, through a process of modernization, can become one of the most effective means of reactivating national economies as part of a region-wide strategy. This must be done by deliberately strengthening the process with carefully designed programs to encourage modernization of agricultural production, agroindustrial processing and services, providing the sector with the technology it needs at every phase of the production process. It is also important to ease the sector's entry into the international marketplace, with products that can compete in both price and quality.

III. THE NEW POLITICAL SETTING AND THE CHALLENGES OF REACTIVATION

A. The New Political Setting

Since the Esquipulas agreements were signed, the region has found the tensions of war diminishing.

20. Following a decade of economic, political and military crisis and difficult adjustment, which wrought major setbacks in the standard of living for the Central American population, a number of factors have converged to cast the future of development in a more optimistic light. The most important change is that a process of peace and democratization has been under way ever since the presidents of the Central American countries signed the Esquipulas II accords in August, 1987. Political tension has slackened and resources that had gone into the war effort have been freed up. Normalcy has been gradually restored to production, shipping services and transportation, and joint efforts can now be launched for investment and for receiving assistance.

21. The experiences of this past decade have helped Central America realign its development strategy and revive the idea of integration. No longer is integration seen simply as the route to a new market large enough to sustain more dynamic growth in the region's production; now it is also understood as a point of departure whereby the Central American economy can fit better and more efficiently into the international marketplace.

The goal is to fit the region's economy into the international market.

22. It was against this backdrop that the presidents of the Central American countries held a top-level forum for the region in June 1990, and approved the Antigua Declaration. In this vitally important document, they stated: "(...) we see integration as a means to development, and we aspire to a Central America linked to the rest of the world on the foundation of a fruitful, respectful interdependence." They adopted the Economic Plan of Action for Central America (PAECA), through which they agreed to undertake "(...) an analysis and study of the legal and institutional instruments of integration, for the purpose of creating for it a new legal and operating framework (...) and to promote a program for building and restoring physical infrastructure in support of projects for shipping lanes, communication channels, customs, ports and the generation and transmission of electric energy, with an eye to integrated development, focused both inward and outward."

Coordination of discussions and joint participation in GATT have been encouraged.

23. The chief executives of Central America also gave guidelines for the Program to Dismantle Obstacles to Trade within Central America. They expressed the need for "(...) multilateral intra-regional trade pacts" and stated that the countries should coordinate their contacts and initiate joint negotiations with GATT or with other countries, concerning approaches to commercial, technical and financial cooperation.

24. Under this new approach, a very important role was attached to the agricultural sector. The ministers of agriculture received explicit instructions to "(...) prepare a coordinated agricultural policy tailored to this Plan, especially in matters of production, support services and technology, that will bring about swift recovery and expansion of traditional exports and an increase in nontraditional exports, as well as greater food security for the region and a steady supply of industrial inputs, thus forging productive linkages." Finally, the presidents expressed the need to coordinate the economic adjustment programs, which they asserted were "(...) necessary to promote appropriate development in the countries, and would bring direct benefits to the well-being of the peoples of Central America."

There is a growing awareness of the importance of developing border zones.

25. All these statements and guidelines were then translated into resolutions at the meeting of vice-presidents of Central America, also held in June, 1990. These resolutions reiterate the countries' interest in developing border zones to help maximize the region's economic power and aid in protecting and conserving the environment. They also underscore the vital importance of agriculture and agroindustry in the process of reactivating the region's economy, and reiterate the importance of investment projects to make this happen.

26. In accordance with the mandates given in the meeting of the presidents, the ministers of agriculture and natural resources met in Tegucigalpa, Honduras from July 19 to 20, 1990 and in El Salvador from September 12 to 13, 1990. They issued a statement and approved a series of resolutions reflecting this same desire to pursue the process of regional cooperation as a means to reactivate agriculture and agroindustry in Central America. The purpose is to bring about a transformation of production by which the region can advance in its process of integration, its products can obtain easy entry into international markets, and food security will be assured for the local population.

27. Resolution II-CE-04 identifies high-priority fields and sets out a basic procedure for initiating the process of policy harmonization. In general, the statement and resolutions of the ministers of agriculture reaffirm and further elaborate on the ideas approved by the ministers of agriculture and natural resources when they adopted the Plan of Joint Action for Agricultural Reactivation in Latin American and the Caribbean (PLANLAC) in October, 1989.

The endeavor to revitalize agricultural production as the driving force of the economy has spread throughout the region.

B. Major Challenges for Agricultural Development in the Region

1. International competitiveness, equity and the environment

28. An in-depth look at the nature of the crisis in all the countries of Central America reveals how strategically important it is for all of them to expand and diversify their exports. External trade has generally been much freer in Central America than in the rest of Latin America. In most of Central America, the sum total of imports and exports has tended to exceed 30 percent of the GDP. This situation is combined with highly-concentrated exports that depend above all on two agricultural products (coffee and bananas), causing the economies of Central American countries to be highly vulnerable.

29. The quest to earn more foreign exchange on traditional products is perfectly compatible with the desire to aggressively pursue nontraditional exports. Traditional agricultural exports still need to be encouraged, not only because these commodities account for a high percentage of total exports, but also because they are products in which the countries have become quite competitive internationally.

30. The countries of Central America are already engaged in an incipient process of diversifying nontraditional agricultural exports. The process gathered force in the 1980s and is based on sectoral and general incentives. New opportunities on external markets, under the United States government's Caribbean Basin Initiative and the European Generalized System of Preferences, have furthered these efforts to promote exports.

The process of diversifying nontraditional agricultural exports has already begun.

The subsidies and protectionist barriers in international trade have placed a ceiling on export growth for the region.

31. The international trade of agricultural commodities continues to labor under acute distortions, particularly in the form of subsidies and protectionist barriers. These distortions place a ceiling on the region's export potential and threaten local producers with unfair market competition. Even if developed countries should do away with export subsidies and protectionist barriers, however, the region would still find itself operating at a disadvantage unless technical progress is introduced into production. This is a complex, multifaceted process. In the first place, it means that the region's exports must meet the quality requirements and health specifications of the international marketplace. The harmonization of health regulations throughout the region would thus serve a dual purpose by promoting intra-regional commerce based on more stringent standards, and easing entry into external markets. In the second place, the technologies to be adopted must reinforce existing comparative advantages and generate greater added value, as will be seen below.

Central America's natural resources are being destroyed as the processes of pollution advance.

32. Finally, technical progress will provide an essential means to halt the degradation of the environment caused by outmoded agricultural practices. In effect, the region's natural resource base has been severely damaged as productive activities have taken a heavy toll on the once-fertile volcanic soils, abundant forest resources, fresh water, and coastlines rich in fishing resources. The land has been degraded by deforestation; livestock and inappropriate crops have spread; mangroves have been destroyed, and overfishing is common. The intensive use of pesticides has further dirtied waters already polluted with agroindustrial waste.

33. It is also important to bear in mind that the developed countries are increasingly concerned with the environment, and this could lead to reprisals in the form of economic measures, such as shutting off markets or withholding financial aid unless the abuse of natural resources is stopped. The region already has scientific and technological knowledge of plants, demonstrating how integrated pest control can reduce the use of chemicals in farm production; experiments with livestock management have shown that herds can be raised more intensively if they are fed better varieties of grasses and new forms of silage.

One of the basic problems is to incorporate technology into agriculture in an equitable fashion.

34. Scientific and technological advances in agriculture can be compatible with a more equitable form of rural development; they need to fit the real conditions in the agricultural sector if they are to be widely disseminated. This is an important issue because, as was already noted, the exclusionary nature of the development process was one of the sparks that ignited the crisis of the 1980s. Fortunately, Central America already has successful experience in combining the transformation of production with equity. Such programs require differentiated actions to provide small-scale farmers with access to the benefits of science and technology, with complete packets

that include the selection of practices and varieties, technical assistance, training and financing.

35. The countries of the region are faced with an international market that demands higher levels of technology; but because their financial resources are limited, they have found it difficult to improve productivity, quality and efficiency in their production processes. The countries of Central America are too small to maintain separate physical infrastructure and the type of research teams needed to modernize agriculture quickly. Because producers in the various countries operate in similar ecological zones and under similar socioeconomic conditions, joint research into shared problems could reduce per-country costs, while spreading the benefits of research more widely.

36. Cooperation within the region can give the countries greater bargaining power on the international market, while obviating the type of competition among neighbors that can glut the market and depress prices. The Central American countries face the challenge of working together to assess present opportunities and risks on the international agricultural commodities market, gradually strengthening the region's ability to navigate the increasingly complex waters of marketing these commodities, and identifying market niches. Only if they rise to the challenge can they hope to compete vigorously in the new international economic setting.

The countries of the region understand more clearly than ever how important it is to present a united front on the international market

37. The market strategy must also focus on the linkages that derive from agricultural and agroindustrial development, for the purpose of reinforcing comparative advantages and generating greater added value. This can be achieved by industrializing agricultural commodities or by upgrading existing processes with the direct application of science and technology. Such a strategy also requires an excellent command of marketing techniques.

38. The development of irrigation agriculture must play a key role in modernizing agricultural production and improving international competitiveness. Irrigation can provide a solution to the common Central American problem of frequent droughts that destabilize the production of foodstuffs and other export lines. The market for fresh, high-priced agricultural produce is at a premium during the winter months in the northern hemisphere (December through April), when the dry season is in full swing in Central America. During this period, irrigation is essential if the countries are to tap the high seasonal demand in markets such as the United States, Canada and Europe. An estimated 2.2 million hectares of land with irrigation potential could be used more effectively as a basis for diversifying nontraditional exports. Despite resource limitations in Central American countries, new investments in small-scale irrigation systems, along with maintenance and rehabilitation of existing irrigation systems and projects, are highly warranted.

Irrigation agriculture is particularly important for the development process.

2. *Food security*

The countries have lost their ability to produce food and to distribute it equitably.

39. In the wake of the crisis, the countries of the Central American isthmus find themselves increasingly hard pressed to feed their people. To begin with, the region began losing its food-production capabilities due to the convergence of a number of factors. Chief among them were the war, stubbornly low prices, contraction of credit, declining investments in infrastructure and technical services, and technical packages whose price was driven up by currency devaluations. The countries then found that the food distribution process had grown sluggish and geographically unbalanced. Finally, the problems of poverty intensified with the crisis and the military conflicts which, in turn, interfered with the efforts of many resource-poor groups to obtain food.

40. Large population sectors in the region live under conditions of chronic food insecurity, unable to meet their nutritional needs and live a healthy, productive life. Many Central Americans are born and live out their days in a permanent state of malnutrition, ranging from protein and energy deficiencies to severe deprivation of specific nutrients, such as vitamin A and iron. The implications are very serious for certain high-risk population groups, such as children, pregnant and nursing women, the displaced, refugees and other groups with similar problems. The result is poorly-educated children who suffer from learning disabilities, and unskilled workers able to sustain only low levels of productivity.

Problems of food insecurity require comprehensive solutions.

41. The complex causes of food insecurity defy simplistic analysis. Possible solutions must look beyond any sectoral viewpoint or strictly technical arguments. More than the problem of any one sector, it is an intricate web of social, economic, technical and political factors that demand a comprehensive approach.

42. The expansion of basic food production in Central America has lagged behind population growth in recent years. The countries have found themselves obliged to import more and more foodstuffs and to receive food aid. The governments of Central America face difficult decisions on how to handle food gifts. Such aid certainly is not to be rebuffed, as it has an immediate impact on a pressing social need; however, donated foods undeniably compete with local products and provide a real disincentive to produce.

3. *Modernizing and streamlining the public sector and attracting private-sector participation*

The crisis has accentuated the difficulties of the public sector, which lacks of its own resources

43. The countries of the isthmus found their public-sector woes multiplying as the economic and political crisis contracted fiscal revenues and imposed ever greater military expenditures. The governments face the pressing need to cut expenditures, especially on investments and social services. In a break from the past, government coffers presently lack even enough resources to meet commitments for local counterpart contributions to carry out projects funded with international loans.

44. Changing conditions in Central America and around the world demand a new approach to relations between the public and private sectors. Because the public sector is under severe financial constraints and has little maneuvering room, the government must be selective if its interventions are to have a real impact. At the same time, as the world economy becomes increasingly integrated and competition intensifies, the need for dialogue and mutual support between the public sector and the private sector can no longer be ignored. The private sector must now be responsible for supporting the selective interventions of the government. A number of examples can be cited, in the context of this analysis, as areas where this could take place: education, infrastructure, foreign trade and science and technology. The mechanisms and procedures for such a complex interaction cannot be arbitrary; they will arise only from experience based on a deliberate strategy of fostering cooperation.

An essential task is to encourage dialogue between the public and private sectors and to strengthen the private sector

45. The task now is to develop more appropriate mechanisms for dialogue between the public and private sectors, both nationally and across the region, so that public investments flowing into agriculture can produce true multiplier effects. In particular, if the organizations that represent producers, processors and distributors of agricultural goods throughout Central America participate actively, the countries of the isthmus will be able to adopt common, mutually advantageous positions in the world economic system. The private sector must be fully involved as an essential part of this new mechanism for dialogue at the regional level.

C. Regional Agricultural Development Programs

Agriculture and downstream industrial processing are the keys to Central American development

46. All these arguments point to the same conclusion: the Central American isthmus has a technical awareness and a high-level political consensus that agriculture and agroindustry should play a central role in the process of transforming production and reactivating the region's economy. The reactivation of agriculture and agroindustry is the overriding objective that should steer all joint efforts and actions, according to the Tegucigalpa Declaration (July, 1990) given by the ministers of agriculture of Central America.

47. The ministers of agriculture also articulated a strategy to meet the objective of reactivating agriculture and agroindustry, based on three fundamental points:

1. Strengthening intra-regional trade and promoting traditional and nontraditional exports
2. Developing food production in agriculture, oriented toward food security in the region
3. Providing a type of socioeconomic development that will cushion the impact of free-trade policies

48. These strategic points cover different fields of action, some of which are directly relevant to the ministries of agriculture. Decisions on other facets of the strategy, particularly those having to do with macroeconomic policy, are made in a different venue or forum, and the sector must pursue close, systematic interaction with these other players, both in the countries and in the overall region.

49. The governments of Central American countries will need three key weapons, if they hope to carry out their strategy and meet the objectives they have set themselves:

The governments of the Central American countries must harmonize their policies and bolster technical assistance.

- A program for harmonization of policies on agriculture
- A program to develop and strengthen institutional mechanisms for cooperation and regional integration
- A program of investment and technical assistance in high-priority fields in the agriculture sector

50. The PLANLAC set the basis of the program to harmonize policies and investments in the region, in the form of a project for standardization of agricultural policy in the CORECA countries. In September, 1990, the ministers of agriculture adopted Resolution II-CE-04, identifying fields of action and laying out a basic procedure for tackling the process of policy harmonization.

The basic formula: institutional modernization with the active participation of the private sector

51. The second basic instrument for meeting the objectives described above is the program to strengthen institutional systems, both nationally and regionally. This program can facilitate efforts to carry out coordinated policies and help decision makers outside the sector to consider more closely the specific interests of agriculture when they set macroeconomic policy. An efficient, modernized institutional organization in the region and in each country, with the participation of the private sector, is a basic requisite for integration and for adopting coordinated agricultural policies in the Central American isthmus.

52. The third program offers a mechanism to prepare specific projects for preinvestment, investment, and technical and financial assistance in high-priority fields. This will help the countries of the Central American isthmus negotiate external resources that they can combine with their own local resources to assure that national

and regional projects are implemented as the backbone for the strategy.

53. The governments of the Central American countries, in accordance with the established strategy, have already set this last program in motion. They have agreed to prepare and carry out, as a first step, an initial portfolio of regional and national projects covering the following high-priority areas:

- Agroalimentary development
- Irrigation, drainage and land leveling
- Development of biotechnology
- Agroindustrial development
- Intra-regional trade and exports to third countries
- Strengthening plant and animal health services
- Development of border areas
- Strengthening and consolidating rural enterprises

In recent years, Central America has been the site of major efforts at recovery, with external contributions and matching national efforts.

IV. ANALYSIS OF CURRENT PROJECTS IN THE PUBLIC SECTOR OF AGRICULTURE *

A. General Information

54. This section will describe the general features of projects that the public agricultural sector is presently carrying out, with international support, in the areas defined as holding high priority. With this information, the governments of the Central American countries will be able to approach assistance agencies with project proposals that will dovetail with, reinforce or redirect new investments, in accordance with acquired experience and with today's needs.

55. The public sector of agriculture, with the support of various international organizations, is currently addressing high-priority areas through 99 investment projects for a total of US$1.0841 billion, and 76 technical cooperation projects for US$111.7 million. These sums reflect total project costs, consisting of both external contributions and national counterpart allocations. This is not to suggest, however, that this much money is actually available; in fact, the projects are in different states of advance.

Ninety-nine investment projects are currently being carried out in Central America along with 76 technical cooperation projects.

* This chapter is based on information from a document prepared by RUTA II in July, 1990, giving a comparative study of public-sector agricultural projects in the Central American region and in each country. Since the study does not cover the Republic of Panama, this chapter does not include any data on that country.

The projects take place at the national level, with bilateral loans.

56. Table 1 synthesizes information on projects -- how many, what type, and the amount of money involved -- for each area of high priority in the Central American region. The list does not include investment projects of regional scope, but only national projects that take place under loans negotiated bilaterally. There is no recent experience with joint investment projects involving shared payment obligations.

By contrast with investment projects, many of the technical cooperation projects (26 of the 76) are regional in scope. They are generally funded with grants and are promoted and carried out by international and regional organizations.

*Table 1. Projects in progress with international contributions, by high-priority area**

HIGH-PRIORITY AREA	INVESTMENT PROJECTS				TECH. COOP. PROJECTS				TOTAL		
	Regional**		National		Regional		National				
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	%
Agroalimentary development			12	24.8	2	2.3	9	9.7	23	36.8	3.1
Irrigation, drainage and land leveling			25	183.8			3	2.5	28	186.3	15.6
Development of biotechnology			6	111.0	14	43.0	19	15.9	39	169.9	14.2
Agroindustrial development	1	10.0	7	175.9			5	1.0	13	186.9	15.6
Intra-regional trade and exports to third countries	1	10.0	4	19.3			1	0.2	6	29.5	2.5
Strengthening plant and animal health services			6	85.9	9	11.1	5	9.7	20	106.7	8.9
Development of border areas			1	8.5			2	0.3	3	8.8	0.7
Strengthening and consolidating rural enterprises			36	454.9	1	n.d.	6	16.0	43	470.9	39.4
TOTAL	2	20	97	1064.1	26	56.4	50	55.3	175	1 195.8	100

*In millions of US$. Refers to total project costs, both external contribution and local counterpart.

**The two regional investment projects that appear in Table 1 pertain to credit programs carried out by the Central American Bank for Economic Integration (CABEI) to promote investments in each of the Central American countries.

B. Projects by Area of Priority

1. Irrigation, drainage and land leveling

The area of irrigation, drainage and land leveling has 25 investment projects and 3 technical cooperation projects.

57. Twenty-five investment projects in the area of irrigation, drainage and land leveling are receiving a total of US$183.8 million, while three technical cooperation projects account for US$2.5 million. There are no multinational projects of either type in this area. Table 2 shows the number, type and value of irrigation projects taking place in each country.

Table 2. Irrigation, drainage and land leveling projects (US$ X 000,000)

	INVESTMENT		TECHNICAL COOP.	
COUNTRY	Nº	MONTO	Nº	MONTO
Costa Rica	5	48.6		
El Salvador	4	40.5		
Guatemala	13	54.5	3	2.5
Honduras	2	34.3		
Nicaragua	1	5.9		
Regional				
TOTAL	**25**	**183.8**	**3**	**2.5**

58. These projects are taking place with the support of a number of different international assistance agencies, as can be seen in Table 3. AID and the IDB together are funding 75 percent of the total sum of the projects, which also include a component of technical cooperation oriented toward training.

AID and the IDB are funding 75 percent of all the irrigation projects.

Table 3. Sources of external assistance for irrigation, drainage and land leveling projects (US$ X 000,000)

	INVESTMENT		TECH.COOP		TOTAL	
DONOR	No.	Amount	No.	Amount	No.	Amount
AID	13	55.1	3	2.5	16	57.6
AID/Italy	1	0.3			1	0.3
AID/Japan/Italy	1	18.8			1	18.8
Germany	1	0.4			1	0.4
CABEI	1	4.2			1	4.2
IDB	4	20.4			4	20.4
IDB/FIV	1	44.4			1	44.4
Denmark/Netherlands	1	5.9			1	5.9
UNDP	1	33.0			1	33.0
n/a	1	1.3			1	1.3
TOTAL	**25**	**183.8**	**3**	**2.5**	**28**	**186.3**

In addition to infrastructure projects, special attention has focused on training technicians and farmers.

59. A majority of the investment money in the five countries is being used to build nine new large- and medium-scale irrigation projects, with fully 55 percent of the total resources going for this purpose. Another 30 percent of the investment money is in eight projects to improve irrigation infrastructure by rehabilitating existing systems. The remaining 15 percent is for building eight new mini-irrigation projects, each costing an average of US$1,600 to US$1,800 per hectare. The cost of the large and medium-sized projects ranges from US$3,000 to US$5,000 per hectare.

60. The most successful public investments, in terms of both agricultural production and structural operation and maintenance, have been in the mini-irrigation systems covering from 30 to 60 hectares each; with these projects, the most appropriate areas can be selected for developing intensive agriculture. Because such systems serve only a small number of users, farmers can more easily be organized and trained in the new techniques. This type of irrigation system offers many other advantages as well. It can be installed

Mini irrigation projects have proven to be the most successful public investments in this area.

quickly, and maintenance is easy and affordable by comparison with large-scale projects, which usually require major government outlays for maintenance and operation.

61. For all these reasons, and under the present circumstances when public resources for investment are limited, mini-irrigation projects appear to be the most appropriate type of investment for the countries of the region. The same is true for investments to rehabilitate and improve the use of presently existing irrigation infrastructure.

No technical assistance projects are backing the large investments in irrigation; nor does this area have multinational projects or horizontal cooperation.

62. Another important point is that there are no regional-level technical cooperation projects designed to undergird the high investments in irrigation. The multinational approach and horizontal cooperation are best suited to projects for training technicians and farmers, joint research among countries, upgrading legislation, setting irrigation standards, institutional improvements to help the private sector develop irrigation agriculture and organizing users.

2. Development of biotechnology

Thirty-nine projects are under way in development of biotechnology.

63. The public sector of agriculture in the countries of the region is presently engaged in development of biotechnology, using US$169.9 million to carry out a total of 39 projects with the support of the donor community. Table 6 shows the geographic coverage and types of projects involved.

Table 4. Projects for development of biotechnology (US$ X 000,000)

	INVESTMENT		TECHNICAL COOP.	
COUNTRY	**No.**	**Amount**	**No.**	**Amount**
Costa Rica	1	38.0	4	4.3
El Salvador			2	0.1
Guatemala	5	73.0	3	1.5
Honduras			3	2.8
Nicaragua			7	7.2
Regional			14	43.0
TOTAL	**6**	**111.0**	**33**	**58.9**

Two projects stand out for their large infusions of international support: technology generation and transfer in Guatemala and raising agricultural productivity in Costa Rica.

64. Only Costa Rica and Guatemala presently have internationally supported, high-cost investment projects. The two largest are Guatemala's Technology Generation and Transfer Project (PROGETTAPS, US$67.8 million) and Costa Rica's Project to Improve Agricultural Productivity (PIPA, US$38 million).

The region has experience with joint technology development projects based on international assistance: PROMECAFE, PROCACAO, Staple Grains

65. This area stands out for its technical cooperation projects, both nationally and regionally. These projects are taking place in all five countries, focusing on many diverse lines of action. This is also the area with the greatest emphasis on multinational technical cooperation projects, in terms of both number (14) and resources (US$43 million), revealing the region's past experience with joint technological development projects receiving international assistance. Re-

gional research networks are in operation for specific products, such as coffee (PROMECAFE) and cocoa (PROCACAO). The Central American Project to Strengthen Agronomic Research in Staple Grains recently began operation as well.

66. Table 5 shows how much support the countries are receiving from international assistance agencies. Over 90 percent of the resources come from IDB/IFAD, IDB, AID, EEC and FAO.

Table 5. Sources of external assistance for development of biotechnology projects (US$ X 000,000)

	INVESTMENT		TECHNICAL COOP.		TOTAL	
DONOR	No.	Amount	No.	Amount	No.	Amount
AID	4	5.1	9	22.4	13	27.5
Germany			1	4.0	1	4.0
ASDI/NORAD			1	3.5	1	3.5
IDB	1	38.0			1	38.0
IDB/IFAD	1	67.8			1	67.8
EEC			1	16.2	1	16.2
CIAT			1	0.2	1	0.2
COSUDE			1	0.3	1	0.3
FAO			8	5.9	8	5.9
HEIFER			1	0.02	1	0.02
Netherlands			1	0.5	1	0.5
IBPGR			3	0.5	3	0.5
IDRC			1	0.4	1	0.4
IICA			1	0.03	1	0.03
JICA			1	0.05	1	0.05
Japan			1	2.0	1	2.0
Chinese Mission			1	0.05	1	0.05
UNCDF			1	3.0	1	3.0
TOTAL	**6**	**111.0**	**33**	**58.9**	**39**	**169.9**

67 The national technology research and transfer institutions possess certain basic physical resources; however, in all the countries, they are faced with major operating constraints and generally undergoing similar institutional and methodological crises.

Research and technology transfer institutions are not immune to the crisis.

68. Under these circumstances, there is a pressing need for more international assistance to ensure greater strength and continuity for development of biotechnology in the region. This assistance should be oriented toward helping the countries to:

- Work more effectively with producers, and engage the private sector
- Set research priorities and provide coordination across the region, so that resources can be used more effectively and duplication of efforts can be avoided

International assistance can play a key role in this area.

— Strengthen, redirect and coordinate the region's efforts to tap the potential of biotechnology, introducing practical techniques into agricultural modernization

— Bolster existing regional research networks and create new networks for key commodities not yet covered (nontraditional exports, plantains, fruits, oilseeds). It will become necessary to improve coordination among these networks, which can be done by setting up a central research network for the region.

3. Development of border areas

Two preinvestment projects with international technical assistance are taking place to develop border areas: the Trifinio Plan and the San Juan River Valley (Costa Rica-Nicaragua).

69. Central America currently has two preinvestment projects receiving international technical assistance for developing border areas. The first is the Trifinio Plan, an initiative by Guatemala, Honduras and El Salvador to spark a process of development that will tend to integrate their common border area, a place where resources are limited and investment projects, nearly non-existent. A full complement of projects has been prepared for the Trifinio Plan; the first pilot project is now under way, funded partially with international assistance to promote campesino development in Trifinio, the border area.

70. Another technical cooperation or preinvestment project is located in the watershed of the San Juan River, separating Costa Rica from Nicaragua. The purpose is to identify fundable projects for integrated border development.

71. The development of border areas is a means of defusing and eliminating tensions between neighboring countries by making social and economic structures in these geographic areas more interdependent. The projects will improve living conditions for border populations, groups which are usually poor because they lie far distant from capital cities and major urban centers. Such projects also make it easier to identify and implement activities on a scale too large for individual countries to take on alone.

Projects for the development of border areas require international cooperation

72. International assistance and support are essential for this type of project. The following matters need immediate attention: a) financing the implementation of investment projects for which technical studies have already been prepared, such as the binational Costa Rica-Panama project and the Trifinio Plan; b) consolidating the technical expertise the region has already acquired, so that studies and projects can take place in other border zones.

International technical assistance could help in distributing border zone project formulation activities equitably. Thus all the countries could benefit over the medium term from development of the many international border areas in the isthmus.

4. Strengthening plant and animal health services

73. Table 6 shows that the Central American governments are implementing six investment projects with external funds totaling US$85.9 million, to address the area of plant protection and animal health. Moreover, 14 technical cooperation projects are under way, nine of them multinational.

Nine multinational technical cooperation projects in the region are financing plant and animal health activities.

Table 6. Projects for strengthening plant and animal health services (US$ X 000,000)

	Investment		Technical Coop.	
COUNTRY	**No.**	**Amount**	**No.**	**Amount**
Costa Rica	1	39.0	3	1.9
El Salvador			2	7.8
Guatemala	4	35.6		
Honduras	1	11.3		
Nicaragua				
Regional			9	11.1
TOTAL	**6**	**85.9**	**14**	**20.8**

74. Large amounts of resources are going into investment projects to improve animal health in Costa Rica, Guatemala and Honduras. A similar project in El Salvador, on livestock development and animal health, was completed in 1989 for a total of US$28.8 million.

75. Various national-level technical cooperation projects are under way in Costa Rica, El Salvador and Guatemala, with nearly all the resources going into plant protection. The region also has nine multinational technical cooperation projects for a total of US$11 million, of which five (US$7.8 million) address plant protection and the remaining four (US$3.2 million) focus on animal health.

A number of international organizations are working in this area: OIRSA, CATIE, IICA, FAO.

The large number of regional-level technical cooperation projects can be attributed to the very nature of agricultural health activities. In order to be effective, such work must take place in a number of different countries. Examples include pest and disease control activities, health campaigns, customs controls, health regulations and quarantine measures. Also contributing to this prevalence of multinational projects is the presence of various specialized regional organizations supporting the countries in this area (OIRSA, CATIE, IICA, FAO).

76. Table 7 shows how much international support the countries are receiving in this area. The IDB accounts for fully 75 percent of these resources, while AID, Germany and Italy together contribute another 23 percent of total project funds.

Table 7. Sources of external assistance for strengthening plant and animal health services projects (US$ X 000,000)

	INVESTMENT		TECHNICAL COOP.		TOTAL	
COOPERANTE	No.	Amount	No.	Amount	No.	Amount
AID			1	6.8	1	6.8
AID/Italy	2	4.7			2	4.7
Germany			2	9.3	2	9.3
IDB	3	77.2	1	2.6	4	79.8
FAO			3	0.7	3	0.7
Netherlands			1	0.1	1	0.1
IICA			2	0.6	2	0.6
Italy	1	4.0			1	4.0
OICD			3	0.3	3	0.3
TOTAL	**6**	**85.9**	**14**	**20.8**	**20**	**106.7**

Institutional innovations should enjoy the active participation of the private sector.

77. Under present circumstances, any additional international assistance in the area of strengthening plant and animal health services for the countries of Central America should be directed at: a) developing institutional innovations with the participation of the private sector, to make more efficient use of available infrastructure, especially in animal health; b) harmonizing health control methods to encourage exports and prevent unnecessary restrictions on intra-regional trade; c) standardizing methods and programs for surveillance, detection, control and eradication of pests and diseases; d) information systems on pests and diseases (prevention, incidence and distribution), legislation, toxic residues and tolerances.

5. Strengthening and consolidating rural enterprises

Thirty-six investment projects and 7 technical cooperation projects focus on agricultural development, cooperatives, land use and improving productivity, all of them designed to help campesinos get ahead

78. The governments of the Central American countries are working for strengthening and consolidating rural enterprises with the support of US$454.9 million in external funds for 36 investment projects. Seven technical cooperation projects are also in progress for US$16 million, but only one is regional in scope (see Table 8). The largest projects under this heading are Costa Rica's project on agricultural development of the Atlantic zone (US$43.6 million), El Salvador's project to finance agrarian reform cooperatives (US$60 million), the agricultural development program in Guatemala (US$62.1 million) and the Honduran project on land use and improving productivity (US$50 million).

Table 8. Projects for strengthening and consolidating rural enterprises (US$ X 000,000)

	INVESTMENT		TECHNICAL COOPERATION	
COUNTRY	No.	Amount	No.	Amount
Costa Rica	13	94.8	1	0.1
El Salvador	2	70.5	3	7.6
Guatemala	5	76.6	1	0.05
Honduras	9	153.2		
Nicaragua	7	59.9	1	8.2
Regional			1	n.d.
TOTAL	**36**	**454.9**	**7**	**16.0**

79. This portfolio of projects is being conducted with the support of various organizations and donors. As Table 9 shows, external resources for strengthening and consolidating rural enterprises derive primarily from AID, the EEC and IFAD.

The top contributors to strengthening and consolidating rural enterprises are AID, the EEC and IFAD.

Table 9. Sources of external assistance for projects on strengthening and consolidating rural enterprises (US$ X 000,000)

	INVESTMENT		TECHNICAL COOP.		TOTAL	
DONOR	Nº	MONTO	Nº	MONTO	Nº	MONTO
AID	12	179.3			12	179.3
AID/Italy	2	1.55	1	0.05	3	1.6
IDB	1	0.5			1	0.5
IBRD	1	43.6			1	43.6
EEC	8	97.6			8	97.6
Canada	1	16.0			1	16.0
COSUDE	1	6.4			1	6.4
Spain			1	1.2	1	1.2
IFAD/IDB	1	22.5			1	22.5
IFAD/CABEI	3	55.5			3	55.5
IICA			1	n.d.	1	n.d.
Italy			1	6.3	1	6.3
Japan	2	9.5			2	9.5
UPEB/FID	1	6.6			1	6.6
WFP	1	10.5	1	8.2	2	18.7
Switzerland	1	3.6			1	3.6
UNIFEM			2	0.2	2	0.2
Miscellaneous	1	1.9			1	1.9
TOTAL	**36**	**454.9**	**7**	**16.0**	**43**	**470.9**

80. The volume of these investments demonstrates that the governments are very concerned with strengthening and consolidating rural enterprises and, with international support, are giving preferential attention to this area. The final goal is to narrow the gap between urban sectors and rural areas by raising farmer income.

A look at the sources of external assistance for projects on strengthening and consolidating rural enterprises reveals that donor countries and organizations are very interested in these issues.

81. Despite this high level of interest by the governments, international support in this field needs to be continued and even augmented, for a number of reasons: a) the investments appear to be high in absolute terms, but they are not enough if they are compared with the size of the rural population, which is the majority in the region; b) from the socioeconomic standpoint, it is important to

ensure continuity in this type of project, as final success depends on a sustained effort over time; c) it is necessary to consolidate advances already made under agrarian reform programs in the region (the isthmus has over 5,900 settlements, which are home to 287,700 campesino families and own approximately 2.4 million hectares of land).

Additional international support should stress the development of rural settlements, with greater participation by the private sector.

82. In view of the constraints imposed by today's crisis, any new international support in this field should stress the development of rural settlements that have potential to consolidate themselves as truly productive businesses; emphasis should also be placed on gradually cutting these settlements loose from government institutions and on obtaining greater participation from the private sector.

6. Agroalimentary development

83. The donor community is supporting the governments of Central America in agroalimentary development through 23 projects for a total of US$36.8 million. Table 10 shows how many projects are taking place in each country, along with resource totals. As can be seen, Nicaragua and Guatemala are the largest recipients of external resources to support domestic food production. Additionally, two regional-level technical cooperation projects are helping the countries with institutional development and training in food security.

Table 10. Projects for agroalimentary development (US$ X 000,000)

	INVESTMENT		TECHNICAL COOP.	
COUNTRY	No.	Amount	No.	Amount
Costa Rica	1	0.1	3	2.7
El Salvador			1	0.05
Guatemala	7	9.8	2	0.6
Honduras	1	1.7	1	0.5
Nicaragua	3	13.2	2	5.9
Regional			2	2.3
TOTAL	**12**	**24.8**	**11**	**12.05**

Twenty-three projects are in progress for agroalimentary development

84. External resources for agroalimentary development projects derive primarily from the EEC, Italy, Switzerland, UNICEF and AID. Together, these donors are supporting 75 percent of all the projects, as can be seen in Table 11.

Table 11. Sources of external assistance for agroalimentary development projects (US$ X 000,000)

	INVESTMENT		TECHNICAL COOP.		TOTAL	
DONOR	No.	Amount	No.	Amount	No.	Amount
AID	4	4.4	1	0.1	5	4.5
EEC	1	6.0	1	1.2	2	7.2
EEC/France			1	1.1	1	1.1
COSUDE			1	0.5	1	0.5
FAO			2	1.8	2	1.8
Netherlands	1	2.4			1	2.4
Japan	1	1.7			1	1.7
Italy	4	5.5	2	0.6	6	6.1
OPS			1	0.05	1	0.05
WFP			1	1.5	1	1.5
Switzerland	1	4.8			1	4.8
UNICEF			1	5.2	1	5.2
TOTAL	**12**	**24.8**	**11**	**12.05**	**23**	**36.8**

85. Any additional support from the international community for agroalimentary development should stress the following points: a) setting up funds that would be available to the countries on very short notice, to deal with temporary shortages of staples; b) increasing access to credit from development banks for production of staples; c) supporting the development and modernization of the livestock sectors, especially dairy production, to make better use of abundant forage resources and byproducts available in the region.

Priorities: set up funds to resolve shortages of staples; increase production credit; support modernization of livestock production

7. Agroindustrial development

86. Thirteen projects for agroindustrial development are receiving international support totaling US$186.9 million. Table 12 shows how these projects are distributed among the countries.

Agroindustrial development: 13 projects in action

Table 12. Agroindustrial development projects (US$ X 000,000)

	INVESTMENT		TECHNICAL COOP.	
COUNTRY	No.	Amount	No.	Amount
Costa Rica	1	48.0	5	1.0
El Salvador				
Guatemala	1	5.8		
Honduras				
Nicaragua	5	122.1		
Regional	1	10.0		
TOTAL	**8**	**185.9**	**5**	**1.0**

87. Nicaragua stands out as receiving the largest amount for agroindustrial investment projects. Costa Rica also has a heavily-funded project; the executing unit is in the public sector, and beneficiaries are farmers on settlements organized by the Agrarian Development Institute. The regional-level project is the CABEI Central American Agribusiness Program, which offers credit to help develop agroindustries in Central American countries.

Pilot projects in rural agroindustry, now taking place in Costa Rica, have special appeal for the region.

88. Costa Rica also has technical cooperation projects, including pilot projects that can serve as models for rural agroindustry, with possibilities of expansion.

89. Table 13 details the support that each cooperating government or institution is giving to the public sector of Central American countries to carry out agroindustry projects.

Table 13. Sources of external assistance for agroindustrial development projects (US$ X 000,000)

	INVESTMENT		TECHNICAL COOP.		TOTAL	
DONOR	No.	Amount	No.	Amount	No.	Amount
AID	1	5.8				1 5.8
CABEI/Japan	1	10.0			1	10.0
IDB/COC	1	48.0			1	48.0
Bulgaria	1	20.0			1	20.0
Cuba/USSR						
France/Spain	1	72.5			1	72.5
Netherlands	2	28.0			2	28.0
OAS			2	0.1	2	0.1
OAS/Germany			1	0.7	1	0.7
Germany	1	1.6			1	1.6
Sweden			2	0.2	2	0.2
TOTAL	**8**	**185.9**	**5**	**1.0**	**13**	**186.9**

Direct government participation in large-scale agroindustrial projects has not been successful.

90. For the most part, the region has had little success with large-scale agroindustrial projects in which the government participates directly in the production process. Future international assistance should be directed toward helping the countries obtain credit with which to finance private initiatives to develop agroindustry. Similarly, support in the form of technical assistance should be oriented toward: a) joint studies and formulation of projects for agroindustrial reconversion; b) development of export agroindustry in rural areas, with the participation of small-scale farmers; c) research to solve shared problems in the agroindustrial process.

8. Intra-regional trade and exports to third countries

Six projects target agricultural trade

91. The roster of projects shows very few activities directly geared toward exports. The six projects now in progress total US$29.5 million, of which US$10 million fall under a regional credit program to promote nontraditional exports. Table 14 gives information on the number and value of projects, by country.

Table 14. Projects for intra-regional and extra-regional trade and exports to third countries of agricultural products (US$ X 000,000)

	INVESTMENT		TECHNICAL COOPERATION	
COUNTRY	**No.**	**Amount**	**No.**	**Amount**
Costa Rica			1	0.2
El Salvador				
Guatemala	3	12.0		
Honduras				
Nicaragua	1	7.3		
Regional	1	10.0		
TOTAL	**5**	**29.3**	**1**	**0.2**

92. The projects in Table 14 receive support from AID (US$12 million), CABEI/Japan (US$10 million), Italy (US$7.3 million) and FAO (US$0.2 million).

93 The small number of public-sector projects in this field can be attributed to the fact that these activities, by their very nature, tend to be in private hands. Under the circumstances reigning today, the role of the public sector is to create macroeconomic conditions that will facilitate export development by the private sector.

Private-sector activity predominates in the field of intra-regional and extra-regional trade.

94. Any new support from donors should go into helping the governments provide better access to credit resources for the business sector. Technical assistance projects should support market studies useful for all the countries; establish information systems available to the private sector; conduct technological research on packaging, shipping and storage; encourage an exchange of experiences; and help set up region-wide enterprises for collective exporting.

C. Institutional Constraints on Project Implementation

95. As a result of the economic crisis, certain limiting factors are curbing and interfering with the implementation of internationally-supported government projects to foster agricultural development. The principal limitations are the lack of counterpart resources, due to cutbacks in public budgets, and difficulty meeting certain requirements before funds can be disbursed.

96. Because of real budgetary constraints, external assistance for the public sector will need to be mobilized selectively so projects can be truly productive and will not require a steady stream of government subsidies. International assistance can help to modernize and streamline the public sector through such means as redefining the sphere of action of the state; improving planning, coordination and communication with the private sector; and encouraging better management of publicly-funded investments.

International assistance can contribute to modernizing and streamlining the public sector, especially with a multinational approach

97. External resources invested in agriculture must also emphasize support for the private sector, without neglecting certain substantive matters that the public sector must continue to handle. International technical assistance should not be squandered on a plethora of small national projects for technical assistance, lasting a short time and difficult to coordinate. Instead, the multinational approach should provide a conduit for technical assistance and exchange of experiences benefiting all the countries in areas that are essential for agricultural development.

V. TECHNICAL SUMMARIES OF PROJECT PROFILES TO BE SUBMITTED TO THE FIRST AGRICULTURAL SECTOR MEETING WITH COOPERATING GOVERNMENTS AND INSTITUTIONS

Included below are the technical summaries, wich contain basic characteristics, a brief description, costs, financing and results of the evaluation of the profiles of the eight Regional Programs and the investment projects that correspond to their national components.*

* The first profile corresponds to the Project on Strengthening Institutional Capabilities for Harmonizing Agricultural Policies and Projects, prepared to ensure the follow-up and promotion of sectoral activities by CORECA and GISA.

ELECTRONIC PROFILE INDEX

CENTRAL AMERICA

Project Profile: Strengthening Capabilities for Harmonizing Agricultural Policies and Projects

I. BASIC INFORMATION

Project Headquarters:	Costa Rica
Duration:	Four years
Executing Unit:	Coordination Secretariat of CORECA
Regional Support:	Technical Secretariat of GISA
Cost:	US$6,831,800

II. PROJECT DESCRIPTION

Introduction

In the mid-1960s, the General Treaty on Central American Economic Integration established free trade of agricultural products, with the exception of traditional exports. However, the scheme was never implemented due to various reasons, including the lack of coordinated production and price policies at the regional level. Therefore, in spite of its strategic importance, the agricultural sector has not fully participated in the integration process.

In 1980, the Regional Council for Agricultural Cooperation (CORECA), and its respective Coordination Secretariat, was created in an effort to improve the countries' capabilities to coordinate their activities. Subsequently, this body became the highest level decision-making forum for the agricultural sector in the region. In 1988, the Special Commission of Ministers of Agriculture of Central America (CORECA-6), whose field of action targeted specifically the countries of the isthmus: Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama.

In 1989, the Central American ministers of agriculture and vice presidents approved the Plan of Joint Action in Support of Agricultural Reactivation and Development in the Countries of the Central American Isthmus and the Dominican Republic (PLANLAC). The Plan was prepared with the collaboration of the Inter-American Institute for Cooperation on Agriculture (IICA) and other regional organizations.

The Inter-Institutional Group of the Agricultural Sector (GISA), made up of CABEI, CADESCA, CATIE, ECLAC, CORECA, CIPREDA, FAO, IICA, INCAP, OIRSA, UNDP, RUTA, SIECA, and other organizations of the agricultural sector in the Central American region, also participated in efforts to boost regional coordination. SIECA serves as the technical secretariat of GISA.

During the meeting of Central American presidents, held in Antigua, Guatemala in June 1990, the Plan of Economic Action for Central America (PAECA) was approved, which called on the ministers to make every effort to coordinate policies to reactivate the agricultural sector, in accordance with the new emphasis on economic integration of the region as set forth in the Declaration of Antigua and the PAECA itself.

With regard to the agricultural sector, the presidents ratified and called for a further specification of the guidelines previously approved at the regional level by the ministers of agriculture within the context of the PLANLAC.

Compliance with this mandate will involve a substantial increase in coordination activities among the countries, and will complement agricultural reactivation with the benefits of renewed integration efforts.

This profile summary describes the financial requirements for developing technical cooperation and preinvestment activities, the objective of which will be to upgrade the operating and managerial capabilities of the ministries in the countries, and to improve coordination with regional organizations by strengthening the Coordination Secretariat of CORECA and the Technical Secretariat of GISA.

Justification

The following justify this proposal:

-There is a need to strengthen and institutionalize the operating capacity to coordinate policies.

-The CORECA-6 Special Commission for the Central American Isthmus should be established as a sectoral body, with an appropriate legal framework for handling agricultural matters in the regional economic integration process.

-It is advisable to increase coordination efforts with regional member organizations of GISA, in order to be able to pool efforts in preparing projects, programs and policies.

Objectives

To support the governments of Central America in their efforts to reactivate and develop the agricultural sector.

Strategy

CORECA's strategy is to support agricultural reactivation in Central America in the following manner:

-It will contribute to upgrading capabilities for analyzing and harmonizing agricultural policies.

-In compliance with resolution I-CE-07 of CORECA's Special Commission for Central America, issued during its meeting of July 1990, a ministerial-level technical committee will be set up in each member country, under the coordination of the deputy minister of agriculture. The Coordination Secretariat of CORECA will hire an expert to support each technical committee.

-At the regional level, a Regional Policy Analysis and Harmonization Unit will be established under the direct responsibility of the CORECA Secretariat. Its function will be to comply with the guidelines issued by the presidents, vice presidents and ministers of agriculture and of the economy, concerning the harmonization of national and regional agricultural policies.

Horizontal Cooperation

-An increased exchange of knowledge and experiences will be fostered between small-scale farmers and technical experts of the public agricultural sector through an ongoing cooperation mechanism. This will include technical assistance missions between the countries, including courses, seminars and workshops. In the past few years, CORECA's experience in this field has been encouraging.

Specific Studies

-Specific studies requested by the ministers will be conducted through a study and preinvestment fund. These studies will be carried out in the short term, and will make it possible for the countries to make timely and appropriate decisions regarding the harmonization of policies and to rank agricultural development projects and programs.

Increased Operating Capacity of CORECA and GISA

-The Secretariat of CORECA will continue to coordinate meetings of the public agricultural sector of the countries at three levels: ministers, deputy ministers and directors of agricultural planning. It will also strengthen its links with the Inter-Institutional Group of the Agricultural Sector (GISA) and support the technical secretariat in upgrading its managerial capabilities. Both secretariats will promote sectoral and intersectoral coordination among the countries and the regional agencies.

The strategy is to: lend support to the execution of the PLANLAC; implement the guidelines for harmonizing policies, as proposed by the ministers of agriculture in the Declaration of Tegucigalpa in September 1990; and provide follow-up for the regional programs to be presented during the First Agricultural Sector Meeting of the Central American Governments with Cooperating Governments and Institutions.

Subprojects and Components

The Project will develop technical cooperation and pre-investment activities.

The Technical Cooperation Component has two subprojects:

1. Policy Harmonization Network

2. Reciprocal Technical Cooperation (COTER)

The Preinvestment Component includes:

1. Creating a fund for preinvestmentstudies and projects

2. Strengthening CORECA's Coordination Secretariat and the Technical Secretariat of GISA

Technical Cooperation Component

Subproject 1. Policy Harmonization Network

The ministers of agriculture, in resolution II-CE-01 of September 13, 1990, agreed to work together to harmonize policies. The guidelines set forth by the sectoral forum refer to:

Policies directly pertinent to the ministers of agriculture, and including:

-Norms, regulations and procedures related to animal health and plant protection

-Technological development in agriculture

-Quality standards having a bearing on intra- and extra-regional trade

Policies of shared responsibility, including:

-Agroindustrial development

-Promotion of exports

-Investments, infrastructure and transportation

-Intraregional trade of agricultural commodities and differentiated policies on same

Six experts, one for each country of the Isthmus, will be hired to serve as ministerial advisors in matters related to agriculture, economy and integration. They will also participate on the national technical committees. Their reports will serve as the main source of information for the Policy Analysis and Harmonization Unit.

The execution of the regional programs will generate quantitative information and important analyses on trade and exports, agroindustrial development, animal health and plant protection, irrigation and agroalimentary production. The technical secretariat of CORECA will be connected to this multiple-source information system, which will be used in the analyses made to support the harmonization of policies at the national and regional levels.

Subproject 2. Reciprocal Technical Cooperation (COTER)

This consists of implementing a mechanism for promoting reciprocal technical cooperation among the countries of Central America. The objective is to promote and coordinate technical assistance in support of public agricultural institutions and small-scale farmers involved in agricultural projects and programs of national scope.

The subproject will include two types of activities:

Technical assistance. This will support the formulation of institutional policies as well as projects and programs of joint action which respond to requests from the ministries of agriculture and livestock of the region.

Training and exchange of experiences. This consists of region-wide courses, seminars and workshops and includes the exchange of specialists among national institutions where they can share and take advantage of experiences and know-how acquired in connection with agricultural reactivation.

During the four years of the subproject's life, 264 events will be carried out, as follows: 168 technical assistance missions, 72 missions for the exchange of experiences, four international technical cooperation missions, four regional courses, eight regional seminars and eight regional workshops.

Preinvestment Component

Subproject 3. Studies and Projects Fund

CORECA's Coordination Secretariat will manage the financial resources and will provide effective support to the ministers of agriculture of the countries as relates to their specific and specialized studies needs. This subproject will receive support from GISA's regional member agencies that specialize in agricultural pre-investment.

Subproject 4. Strengthening CORECA's Coordination Secretariat and the Technical Secretariat of GISA

This subproject will upgrade the operating, management and analytical capabilities of the CORECA Secretariat in carrying out its coordination activities. CORECA will be institutionalized as a dynamic forum promoting regional agricultural integration.

The Technical Secretariat of GISA will be strengthened, in order to upgrade, harmonize and provide follow-up on the work of GISA, which began operations in 1988. The analytical capabilities of the Secretariat will be boosted and it will focus its activities on: 1) updating its portfolio of projects; 2) helping to secure technical and financial resources for new initiatives; and 3) organizing GISA's regular meetings.

Improved management capabilities at CORECA's Coordination Secretariat and at the Technical Secretariat of GISA, within the Permanent Secretariat of the General Treaty for Central American Economic Integration (SIECA), will facilitate follow-up on the regional programs presented during the First Agricultural Sector Meeting of the Central American Governments with Cooperating Governments and Institutions.

Executing Unit

The executing unit of the Project will be CORECA's Coordination Secretariat, which will coordinate actions with the Technical Secretariat of GISA to ensure the orderly participation of regional agencies that support agricultural development in the countries.

Decision-making authority at the regional level will lie with CORECA's Special Committee of Ministers of Agriculture of Central America, which will be the regional body responsible for guiding agricultural integration, on its own initiative or together with other integration bodies in the case of shared responsibility. It will receive support from an Executive Committee made up of the deputy ministers of agriculture.

III. COSTS AND FINANCING

Costs

The total cost of the proposal is US$6,831,800, broken down as follows:

Subproject	US$ X 000)
A. Technical Cooperation (1+2)	**3 561.3**
1. Harmonization of Policies	1 870.3
2. Reciprocal Technical Cooperation	1 691.0
B. Preinvestment (1+2)	**3 270.5**
1. Studies and Preinvestments Fund	1 895.0
2. Strengthening CORECA and GISA Secretariats	1 375.5
Total (A+B)	**6 831.8**

Financing

Financing will be provided as follows (a detailed breakdown of resources can be found in the Appendix):

Subproject	Country	CORECA	External	Total (US$ X 000)
A. Technical Cooperation (1+2)	**1041.7**	**341.7**	**2 177.9**	**3 561.3**
1. Harmonization of Policies	343.8	151.8	1 374.7	1 870.3
2. Reciprocal Technical Cooperation	697.9	189.9	803.2	1 691.0
B. Preinvestment (1+2)	**560.7**	**522.6**	**2 187.2**	**3 270.5**
1. Studies and Preinvestment Fund	218.6	122.6	1 553.8	1 895.0
2. Strengthening CORECA and GISA Secretariats	342.1	400.0	633.4	1 375.5
TOTAL (A+B)	**1 602.4**	**864.3**	**4 365.1**	**6 831.8**

APPENDIX

COSTS AND FINANCING FOR TECHNICAL COOPERATION AND PREINVESTMENT COMPONENTS

Technical Cooperation
Subproject 1.
Technical CooperationHarmonization of Policies

ITEM	Country	CORECA	External	Total (US$ X 000)
Technical advisor, 48 person/months			144.0	144.0
CORECA regional team, 288 person/months			864.0	864.0
International consultants, 48 person/months			144.0	144.0
Technical counterparts, 336 person/months	288.0	48.0		336.0
Support personnel, 96 person/months		48.0		48.0
Meetings			48.0	48.0
Training and regional coordination			45.4	45.4
Missions			91.3	91.3
Equipment and materials			38.0	38.0
Contingencies and operating expenses	55.8	55.8		111.6
TOTAL	**343.8**	**151.8**	**1 374.7**	**1 870.3**

Subproject 2

Reciprocal Technical Cooperation (COTER)

ITEM	Country	CORECA	External	Total (US$ X 000)
Technical advisor, 48 person/months			144.0	144.0
National consultants, 120 person/months	240.0			240.0
Technical counterparts, 240 person/months	240.0			240.0
Support personnel, 96 person/months		48.0		48.0
Training and regional coordination			170.2	170.2
Missions			456.0	456.0
Equipment and materials	24.0	8.0	9.0	41.0
Promotion and publications	60.0		24.0	84.0
Contingencies and operating expenses	133.9	133.9		267.8
TOTAL	**679.9**	**189.9**	**803.2**	**1 691.0**

Preinvestment

Subproject 3

Studies and Preinvestment Fund

ITEM	Country	CORECA	External	Total (US$ X 000)
Technical advisor, 48 person/months			144.0	44.0
International consultants, 24 person/months			96.0	96.0
National consultants, 72 person/months	144.0			144.0
Support personnel, 96 person/months		48.0		48.0
Meetings			48.0	48.0
Training and regional coordination			45.4	45.4
Missions			182.4	182.4
Equipment and materials			38.0	38.0
Contingencies and operating expenses	74.6	74.6		149.2
Initial fund for studies and projects			1 000.0	1 000.0
TOTAL	**218.6**	**122.6**	**1 553.8**	**1 895.0**

Subproject 4

Strengthening CORECA and GISA

ITEM	Country	CORECA	External	Total (US$ X 000)
CORECA support personnel, 432 person/months	144.0	72.0		216.0
GISA regional consultants, 144 person/months			360.0	360.0
Secretarial staff GISA, 48 person/months			24.0	24.0
Meetings, ministers and deputy ministers			25.0	25.0
Meetings, GISA regional agencies		128.0		128.0
CORECA missions			30.4	30.4
GISA missions			30.0	30.0
CORECA equipment and materials			93.0	93.0
GISA equipment and materials			30.0	30.0
1 work vehicle GISA			20.0	20.0
4 computers GISA			10.0	10.0
International communications GISA			11.0	11.0
Contingencies and operating costs	198.1	200.0		398.1
TOTAL	**342.1**	**400.0**	**633.4**	**1 375.5**

a/The countries cover part of the costs of the CORECA Coordination Secretariat and the GISA Technical Secretariat. These figures are not reflected in the table.

b/GISA's contribution is included in the meetings with regional agencies.

CENTRAL AMERICA

Regional Program: AGROALIMENTARY DEVELOPMENT

I. BASIC INFORMATION

Project Headquarters:	Guatemala
Duration:	Three years
Executing Unit:	SIECA
Regional Cost Component:	US$3.6 million

This Regional Program contains a proposal for organizing support for the execution of six investment projects selected by the countries to increase agroalimentary production. This support will be provided by regional agencies, which will help achieve greater efficiency and economy in the use of investment resources that are obtained. The Regional Program will directly benefit the economies of the countries in their efforts to increase their food security.

The Regional Program was based on investment projects of interest to the countries. It also calls for a series of joint technical cooperation actions, through which regional agencies will supplement national efforts, and various cooperation and integration mechanisms to be used to transfer benefits among the countries. Firstly, this will boost the impact of the selected projects at the national level. Secondly, the new investments and the technical cooperation related to food security will facilitate the transfer of the benefits to all the member countries.

II. REGIONAL PROGRAM DESCRIPTION

Justification

The Regional Program is justified on the following grounds:

-The region has great potential as a producer of foodstuffs which can be translated into increased food security.

-Regional agencies have the institutional capabilities required to promote increased growth and efficient use of agroalimentary products.

-Greater efficiency in administrative management and a highly- profitable investment portfolio will promote specialized agricultural production in the region.

Objectives

-To propose solutions for food-security-related problems affecting high-risk sectors of society

-To increase agroalimentary production and productivity and to improve the efficient use of output

-To modernize the food industry with a view to meeting the food needs of the lower-income sectors of the population

-To promote regionalization and specialization of national outputs, in accordance with comparative advanteges

Beneficiaries

The actions of the regional component are geared mainly to the lower-income sectors of the population of the region. These groups make up the target population.

The different technical proposals for the regional component are based on the general concept of poverty. Within the target population, the various levels of poverty will be identified, based on the different possibilities they have for meeting their nutritional requirements.

The groups to be characterized among the beneficiaries of the regional component are:

-Families who, although they spend their entire incomes on food, are unable to purchase the basic necessities of the family food basket, estimated at 1,600 calories/day.

-Families who, although they spend their entire incomes on food, are unable to meet their nutritional needs, estimated at 2,400 calories/day.

-Families who, although they spend only 60 percent of their incomes on food, will not be able to fully satisfy their nutritional needs.

III. COSTS AND FINANCING

Costs

Projects	Amount (US$ X 000)
1. Regional Food Security Committee	300.0
2. Management Information on Food Security	300.0
3. Research and Technology Transfer Services for the Food Industry	400.0
4. Regional Quality Standards for Food Products	177.8
5. Reciprocal Technical Cooperation	822.2
6. Harmonization of Investment Policies and Food Security Project Profiles	1 100.0
7. Regional Private-Sector Organizations	300.0
8. Study to Expand Services for Joint Purchases of Agricultural Inputs	100.0
9. Study on Food Security Fund	100.0
Total	**3 600.0**

Financing

Project	External	Internal	Other contributions	Total (US$ X 000)
1. Regional Food Sec. Committee	294.0	6.0	0	300.0
2. Management Info. on Food Sec.	282.0	18.0	0	300.0
3. Res/Transf. Techn. for Food Ind.	389.2	10.8	0	400.0
4. Regional Standards	165.8	12.0	0	177.8
5. Reciprocal Tech. Coop.	798.2	6.0	18.0	822.2
6. Harmon. Pol/Food Sec. Projects	1 088.0	12.0	0	1 100.0
7. Reg. Private Sect. Orgs.	219.0	6.0	75.0	300.0
8. Study on Joint Purchases	94.0	6.0	0	100.0
9. Study Food Sec. Fund	94.0	6.0	0	100.0
Total	**3 424.2**	**82.8**	**93.0**	**3 600.0**

IV. ANALYSIS

Regional Program Impact

The Regional Program will have an impact at two levels:

First, at the national level, there will be specific investment projects to increase food production. Short-term results of a macroeconomic nature will be obtained through the national component, and will involve closing the gap between the staple foods produced by the countries and those imported. This is closely tied to exploiting the agricultural potential, making more efficient use of production resources, and generating and saving foreign exchange to boost the economies of the countries.

The second level is regional, and will seek to contribute to solving socioeconomic problems. It includes cooperation and integration actions aimed at finding effective and direct solutions to the food-security problems of high-risk sectors of the population, through the joint efforts of two or more countries. The successful outcome of these regional actions will help solve socioeconomic problems, thus improving income structures, decreasing inflationary pressures on food items, and increasing the purchasing power of the lower-income sectors of the population.

EL SALVADOR

Project Profile: FULL REACTIVATION OF DAIRY ACTIVITIES

Regional Program: AGROALIMENTARY DEVELOPMENT

I. BASIC INFORMATION

Location:	National
Duration:	Six years (two stages)
National Executing Institution:	Nongovernmental Organizations
Local Responsibility:	Nongovernmental Organizations
National Support Agency:	Ministry of Agriculture and Livestock

II. PROJECT DESCRIPTION

Justification

The Project will work to remove obstacles that hinder the integrated development of dairy activities in the country, and to incorporate the traditional livestock sector. It will implement mechanisms to integrate and develop the four main processes: production, collection, marketing and processing. Initial actions will focus on the traditional livestock sector.

The technical, social and economic reasons that fully support and justify the development of this Project are to make the country self-sufficient with regard to milk production. It seeks food security, as well as incentives and guarantees for the production sector.

Objectives

To reactivate dairy activities in all its aspects; to achieve food security for the population; to encourage and provide guarantees to farmers; and to achieve self-sufficiency in milk. El Salvador will become a milk-producing country.

Subprojects

-Technology transfer and training

-Reproduction and genetic breeding

-Milk marketing and processing

-Credit

Goals

To reach a production volume of 143.5 million liters of milk and 28,000 tons of meat on the hoof

Specific goals are based on the principal subprojects:

Subproject 1. Transfer and training

-To provide credit to establish 3,000 to 4,000 production and training modules for family-owned farms

-To provide training to 2,000 county leaders

-To provide training to 2,000 school children

-To establish 18 forage propagation centers

Subproject 2. Reproduction and breeding

-To diagnose and provide reproductive follow-up on 30,000 to 40,000 cows

-To evaluate the semen of 9,000 to 10,000 sires

-To conduct 80 courses on artificial insemination in order to equip 680 livestock farmers to conduct artificial insemination

Subproject 3. Marketing and processing

-To install 50 cheese production centers, each of which will process 450 liters of milk daily

-To install 13 refrigeration centers, each with the capacity for 11,000 liters in the first and second years, and 16,000 liters as of the third year

-To install two processing plants, each with the capacity to process 60,000 liters of milk daily, working double shifts

Subproject 4. Credit

-To finance 3,000 to 4,000 livestock farming modules, 50 cheese production centers and two processing plants

-To provide the funds needed for the collective purchase of 500 forage harvesters and motors

Beneficiaries

Approximately 4,000 to 5,000 livestock farmers will benefit directly from the Project, and approximately 7,500 will benefit indirectly.

III. COSTS AND FINANCING

Costs

Local currency:	US$21.648 million
Foreign currency:	US$6,202,500
Total:	US$27,850,500

Financing

The following is the proposed financing structure for the Project:

Item	External	Internal	Grant	Total (US$ X 000)
Updated study			12.0	12.0
50 cheese production centers	717.0	40.0a/	45.0b/	802.0
13 storage centers	4 469.0	32.5a/	11.7b/	4 513.0
Two processing plants	3 532.0	8.0a/	50.8b/	3 591.0
Herd improvement	12 930.0		652.7c/	13 853.0
Ampoules of semen/d			1 000.0	1 000.0
Animal health laboratory			65.5	65.5
Technical cooperation			603.0	603.0
Operating costs and costs of executing unit		1 098.0e/	2 583.0	3 681.0
Total	**21 648.0**	**1 178.5**	**5 024.0**	**27 850.5**

a. Land
b. Contribution to the executing unit
c. Insemination equipment, 48 vehicles, production centers and contribution to the executing unit
d. A total of US$200,000 in ampoules will be needed per year, for a period of five years.
e. Counterpart of the Ministry of Agriculture and Livestock; staff assigned to the Project

IV. ANALYSIS

	IRR (%)	NPV (US$ X 000)	B/C
Cheese production centers	17.29	2.40	1.01
Storage centers	23.08	187.60	1.02
Processing plants	42.16	2 605.97	1.09
Herd improvement	50.12	35.41	2.20

Cheese production centers (sensitivity analysis)

Variable	IRR (%)	NPV (US$ X 000)	B/C
Price of cheese 13.0 colons/lb; Price of pot cheese 3.25 colons/lb	14.76	1.24	1.0

Processing plants (sensitivity analysis)

Variable	IRR (%)	NPV (US$ X 000)	B/C
7% decrease in sale price	18.15	391.7	1.01
Purchase price of cold milk 1.90 colons/bottle	30.84	1 387.0	1.05

The sensitivity analysis of dairy herd improvement was based on an increase in milk production from 2.5 to 4 liters/cow, instead of from 2.5 to 5 liters/cow, as assessed in the Project. The following results were obtained:

Internal rate of return (IRR)	32.48%
Net present value (NPV)	US$16.31 million
Benefit/cost ratio (B/C)	1.55

Additional Parameters and Scenarios

Additional analysis of the Project indicates other scenarios that facilitate further financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate, and a useful life of 20 years for the Project. The following estimates of profitability indicators were obtained: FIRR, 31.50 percent; B/C, 1.2; and NPV, US$12.583 million.

-The analysis of economic indicators was based on the following parameters: elimination of taxes, subsidies and all types of transfers; an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 31.2 percent.

Project Impact

During year one, year two and year three of the Project, 1,000, 3,000 and 1,000 farmers, respectively, will benefit from training, herd improvement and financing, for a total of 5,000 farmers.

By year five, improvements in the coefficient of the herds, will boost milk production to 32 million liters. By year 10, production will have increased to 82 million liters of milk and 703,000 metric tons of meat (live weight).

The Project will indirectly promote a five percent annual increase in technology incorporated, and an increase in the number of farms reached from 3,700 in the fifth year to 7,500 in the 10th year.

Herd improvement will reinforce food security through increased quantities of milk and meat. As of years three and four, increases will amount to 19 million liters of milk and 2,000 metric tons of meat on the hoof, and as of year 10, 124.5 million liters of milk and 26,000 metric tons of meat on the hoof.

The Project will save US$60 million through a 95-percent reduction of dry milk exports, thereby strengthening the national economy. The increased value of the herd benefiting from the Project will be US$31.5 million.

The Project will promote the reclamation of at least 100,000 hectares of hillside lands that have been lost to erosion. With regard to employment considerations, the Project will improve the efficiency of farm labor, which accounts for millions of permanent work days a year. Some 150 employees will be hired for the 50 cheese production centers, for a total annual income of US$222,000, and 117 employees will be hired for the 13 refrigeration centers, for a total annual income of US$162,800. The establishment of two processing plants in year one of the Project will generate 118 jobs, for a total annual income of US$514,600. This will increase to US$1.26 million by year eight of the Project.

GUATEMALA

Project Profile: SUPPORT FOR THE DEVELOPMENT OF FOOD PRODUCTION IN AGRICULTURE

Regional Program: AGROALIMENTARY DEVELOPMENT

I. BASIC INFORMATION

Location:	National
Duration:	10 years
National Executing Institution:	Ministry of Agriculture, Livestock and Food in collaboration with the private sector
Local Responsibility:	Ministry of Agriculture, Livestock and Food in collaboration with the private sector
Regional Support Agencies:	CADESCA
National Financial Agency:	Bank of Guatemala

II. PROJECT DESCRIPTION

Justification

The Project responds to the urgent need to improve the alarming food and nutrition indexes in the country.

Objectives

To increase the availability of basic foodstuffs, in the quantity and quality needed by the population, by increasing and stabilizing the supply of agricultural products.

Subprojects and/or Components

Support to agricultural production

-Production of dual-purpose cattle

-Intensive vegetable production modules

-Fish farming in gabions

Post-harvest management for foodstuffs

-Small-scale rice processing plan

-Family silos

-Solar driers for vegetables and fruits

Marketing

-Collection centers

Goals

-To increase milk production to 14.4 million liters by Project conclusion

-To increase meat production by 100,000 quintals by the end of year five

-To produce 10,650 quintals of fish meat in gabions

-To process 19,750 quintals of unhulled rice

-To install family silos for a total maximum capacity of 21,000 metric tons

-To process 277,200 metric tons of solar-dried vegetables

-To pack and handle 215 metric tons of foodstuffs through the storage centers

Beneficiaries

Type of producer Direct Indirect

Small- and medium-scale farmers 21,610

Workers 65,000

Total investment per beneficiary is estimated at US$1,366

III. COSTS AND FINANCING

Costs

Local currency:	US$8,122,800
Foreign currency:	US$8,254,300
Total:	US$14,377,100

Financing

Component	Total (US$ X 000)
1. Dual-purpose livestock production	***6,766.1***
2. Intensive vegetable production model	***1,012.6***
3. Production Caged Fish	***239.2***
4. Rice processing plants	***1,038.3***
5. Vegetable and fruit driers	***253.5***
6. Family silos	***1,235.2***
7. Collection centers	***1,083.7***
8. Project management and execution	
-Investments	245.5
-Operating expenses	1,195.8
-10% contingencies	1,307.1
Total cost	**14,377.1**

IV. ANALYSIS

Indicators

Component	FIRR (%)	B/C	NPV (US$ X 000)
Cattle production	73.50	1.45	3017.71
Vegetable production	>100.00	1.81	2687.04
Fish production	>100.00	1.58	642.41
Rice processing plants	>100.00	1.19	2242.60
Family silos	48.08	1.02	260.06
Fruit and vegetable driers	>100.00	1.36	405.66
Collection centers	>100.00	1.50	866.87

Sensitivity Analysis

The sensitivity analysis was made with the following parameters for the components: -25 percent on milk production; -25 percent on vegetable production and 15 percent on the cost of pesticides; -25 percent on the value of fish production; -5 percent on the value of rice production; -15 percent on fruit and vegetable production; 25-percent increase in the cost of the storage centers.

Component	FIRR (%)	B/C	NPV (US$ X 000)
Cattle production	48.10	1.19	1565.81
Vegetable production	>100.00	1.22	1066.90
Fish production	>100.00	1.13	205.30
Rice processing plants	>100.00	1.13	1581.73
Fruit and vegetable driers	>100.00	1.13	176.80
Collection centers	>100.00	1.32	627.68

Project Impact

The Project will generate 400,000 work days, equivalent to US$750,000 in wages.

The Project will provide basic foodstuffs to more than 20,000 families.

HONDURAS

Project Profile: FOSTERING DAIRY PRODUCTION AND PROCESSING

Regional Program: AGROALIMENTARY DEVELOPMENT

I. BASIC INFORMATION

Location:	National
Duration:	Six years
National Executing Unit:	National Executive Committee
Local Responsibility:	Regional and Local Committees
National Support Agency:	National Directorate of Livestock
Regional Support Agency:	Tropical Agriculture Research and Training Center (CATIE)
National Funding Agency:	Central Bank of Honduras

II. PROJECT DESCRIPTION

Justification

-Replacement of imports of milk and dairy products

-Improvment of livestock capital, to increase productivity

-Reduction in production costs through better livestock management techniques and adoption of technologies designed to reduce on-farm costs

-Installation of milk storage equipment on the farms and a modern system of collection centers located at selected sites throughout the major milksheds in the country

-Stabilization of monthly milk production in the principal milksheds, with the use of improved pastures and improved facilities

-Study of the possibility of installing a milk-drying plant to process and store excess milk in the peak season, for delivery to the local market in the low season

Objectives

-To promote and increase milk production in order to meet domestic demand without resorting to imports, thus achieving a greater degree of food security in the country

-To encourage greater per capita milk consumption.

Subprojects

-Improved cattle nutrition and feed

-Provision of improved breeding stock

-Improvement of milk storage and collection circuit

-Organization and training of producers

-Private technical assistance

-Study on milk processing

Goals

Description		Goals to 1996
1. Feed and nutrition. Improved pastures	Manzanas	24 200
Construction of silos (Capacity 50 mt)	Silos	2 130
2. Acquisition of breeding stock	Head	4 000
3. Private technical assistance (PTA) Creation of PTA enterprises	Units	27
4. Milk production in 1996	Million liters	106.0
5. Gross value of milk production	US$ million	42.5
6. Milk storage and collection		
Refrigeration tanks (capacity 1,200 liters/day)	Tanks	30
Collection centers		
Capacity 30,000 liters/day	Centers	2
Capacity 20,000 liters/day	Centers	1
Capacity 10,000 liters/day	Centers	1
7. Milk drying plant	Study	1

Beneficiaries

Direct beneficiaries: farmers supplying milk to processing plants, located within the plants' collection circuits (small- scale, 1,530; medium-scale, 380; large-scale, 210)

Indirect beneficiaries: major urban centers

III. COSTS AND FINANCING

Costs

Local currency:	US$18,108,700
External currency:	US$17,906,500
Total:	US$36,015,200

Financing

External short- and long-term financing requirements

Item	Short term	Long term	Total
Investment	***9 910.8***	***3 995.7***	***13 906.5***
Improvement of pastures	2 524.2	0	2 524.2
Construction of silos	1 275.6	0	1 275.6
Technical assistance 1	6 111.0	0	6111.0
Breeding stock	0	2 400.0	2 400.0
Technical assistance 1	0	599.4	599.4
Refrigerator tanks	0	996.3	996.3
Preinvestment		***4 000.0***	***4 000.0***
Drying plant equipment	0	4 000.0	4 000.0
Total external funding	**9 910.8**	**7 995.7**	**17 906.5**

Note: The cost of the feasibility study, as well as the construction and installation of the drying plant are not included (US$2 million).

Domestic short- and long-term financing requirements

Item	Short term	Long term	Total
Preinvestment	***0***	***2 000.0***	***2 000.0***
Study, construction and installation of drying plant	0	2 000.0	2 000.0
Operations	***16 108.8***	***0***	***16 108.8***
Milk production	13 210.2	0	13 210.3
Technical assistance 3	2 667.0	0	2 667.0
Project management	231.6	0	231.6
Total domestic funding	**16 108.8**	**2 000.0**	**18 108.7**

IV. ANALYSIS

Indicators

Milk production

Net present value	NPV	US$2,180,100
Internal rate of return	IRR	28%

Sensitivity Analysis

Variables	IRR (%)
- Ten percent (10%) annual increase in operating costs	24.1
- Twenty percent (20%) annual increase in operating costs	19.7
- Twenty percent (20%) annual increase in operating costs and five percent (5%) increase in income	24.6

Project Impact

Some 2,126 farmers will see an increase in their incomes, to an estimated total of US$32.4 million, as a result of increased milk production on their farms over the six-year period.

A total of 1,280 jobs will be created on the beneficiary farms, as will 120 jobs for professionals who will provide private technical assistance.

Foreign-exchange savings will be realized by replacing milk imports. Regarding food consumption: there will be increased availability of foods high in protein.

HONDURAS

Project Profile: AGRICULTURAL DEVELOPMENT IN THE JAMASTRAN VALLEY AND THE WATERSHEDS OF THE PATUCA AND COCO RIVERS

Regional Program: AGROALIMENTARY DEVELOPMENT

I. BASIC INFORMATION

Location:	Southeastern and Northeastern Regions
Duration:	Four years
National Executing Institution:	National Secretariat of Natural Resources in collaboration with the private sector
Local Responsibility:	Regional Agricultural Committee and the private sector
National Support Agency:	General Directorate of Agriculture
National Financial Agency:	Central Bank of Honduras

II. PROJECT DESCRIPTION

Justification

-It is necessary contribute to bringing an immediate halt to shifting agriculture, the use of range livestock activities and the indiscriminate extraction of timber from natural forest reserves by lumber companies.

-Immediate action must be taken to conserve renewable natural resources in those areas of the two river basins which have not yet been affected.

-The soil and climate conditions in the selected areas are appropriate for accelerating, in the short term, integrated livestock activity, modernized coffee production and exploitation of fauna and flora resources.

-The Project will create a more efficient and economically sound agricultural base in an area bordering with Nicaragua, which could later become a development area through cooperation between the two neighboring countries.

Objectives

-To promote land organization in the Patuca and Coco river basins

-To incorporate the region's output into the national economy

-To discourage shifting agriculture and range livestock activity

-To produce more dairy and meat products for the urban population

Subprojects

-Development of dual-purpose livestock activities

-Modernization and renewal of coffee plantations

-Reforestation with multi-use tree species

Goals

Subproject 1. Livestock development		
Upgrading production and milking infrastructure	Farm	425
Improvement of fences	Km	2 415
Installation of water-supply equipment s	Farm	425
Improvement of pastures	ha	17 545
Cattle for breeding		
-Bulls	Head	605
-Heifers	Head	3 025
Subproject 2. Renewal of coffee plantations		
Renewal of coffee plantations	Parcel	120
	ha	1 000
Coffee processing plants	Number	50
Wooden shed, motor, fermentation tanks, water collection tanks and machines	Capacity/qq	2 178
Subproject 3. Reforestation		
Installation of nurseries	ha	75
Leucaena plantations	ha	3 000

Beneficiaries

Direct: 1,275 medium-scale cattle ranchers, 300 coffee growers and 360 small- and medium-scale farmers

Indirect: 89,000 inhabitants of the southeastern and northeastern regions of the country

III. COSTS AND FINANCING

Costs

Local currency:	US$6.927 million
External currency:	US$9,852,700
Total:	US$16,779,700

Financing

A total of US$9,852,700 for a four-year period is being requested in external funding. The external funds would be distributed to the subprojects as follows:

Subproject	(US$ X 000)
1. Livestock development	4 976.0
2. Coffee	2 676.1
-Renewal of coffee plantations	2 369.1
-Coffee processing plants	307.0
3. Reforestation Leucaena	2 200.6
Total	**9 852.7**

Local financing to be provided for the Project amounts to US$6.927 million.

IV. ANALYSIS

Indicators

Description	IRR (%)	NPV (US$)
Livestock subproject	20.75	1 013.8
Coffee plantation subproject	18.08	4 801.8
Coffee processing subproject	22.17	2,384.0

Sensitivity Analysis

1. Livestock subproject

Variable	IRR (%)
50-ha farm	
(10 percent annual increase in operating costs, and US$0.25 increase in milk prices)	19.68
100-ha farm	
20 percent interest on investment loans	19.76
Annual increase in operating costs	17.27

2. Coffee subproject

Variable	IRR (%)
10% annual increase in operating costs	7.55
20% interest on the medium-term loan	11.15
(15% increase on the short-term loan)	

Coffee processing plants

Variable	IRR (%)
Coffee processing plants	
10 percent annual increase in operating costs	21.32
20 percent interest on the medium-term loan	19.5

Additional Parameters and Scenarios

Additional analysis of the Project, with other scenarios, facilitates further financial and economic assessment of investments.

For the financial analysis of the Project as a whole, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates of profitability were obtained: FIRR, 33.9 percent; B/C, 1.7; and NPV, US$23.153 million.

Economic indicators were calculated for each of the subprojects having an economic assessment of investments. The conditions examined were based on the following parameters: elimination of taxes and subsidies, 80 percent correction factor for skilled labor and a 20-year useful life.

Under these conditions, the results were as follows:

Description	EIRR (%)	B/C
-Livestock development	25.4	1.4
-Rehabilitation of coffee farms	39.6	1.3
-Coffee processing plants	66.8	2.4

Project Impact

Livestock subproject: value of milk production, US$3.1 million; sale of livestock for breeding purposes and for slaughter, US$1.6 million

Coffee subproject: on-farm coffee production, US$3.2 million

Some 262,500 work days will be generated as a result of coffee activities.

Foreign exchange will be saved as a result of reduced milk imports. Increase in coffee exports: US$4 million

The destruction of softwood and latifoliate forest reserves will be contained.

HONDURAS

Project Profile: PRODUCTION OF BACTERINS AGAINST HEMORRHAGIC SEPTICEMIA AND SYMPTOMATIC ANTHRAX

Regional Program: AGROALIMENTARY DEVELOPMENT

I. BASIC INFORMATION

Location:	Nueva Aldea, Francisco Morazan Department
Duration:	Five years
National Executing Unit:	Secretariat of Natural Resources with collaboration from the private sector
Local Responsibility:	Honduran Veterinary Research Institute
National Support Agency:	General Directorate of Livestock
Regional Support Agency:	Inter-American Institute for Cooperation on Agriculture (IICA)
National Financial Agency:	Central Bank of Honduras

II. PROJECT DESCRIPTION

Justification

-In the short term, imports of bacterins into the country will be substituted. In the medium term, exports will be made to the Central American market.

-The Project will spur technological development for the production of biologics in Honduras and in the countries of Central America.

-Conditions are favorable for preparing a high-quality veterinary product that will be well-received by cattle ranchers.

-The Project will guarantee the domestic market a better, safer and more-economical supply of veterinary products than those obtainable through imports.

-Fewer additional financial resources will be required.

Objectives

-To produce bacterins on a commercial scale to meet local demand in the short term, and, in the medium term, to export to the Central American market.

Goals *(Thousands of doses)*

Year	Domestic demand	Domestic supply	Production of bacterins	Previous year balance	Imports	Exports
1	3 700	2 600	0	0	2 600	0
2	3 900	5 200	2 400	0	2 800	0
3	4 000	6 100	4 800	1 300	0	0
4	4 100	6 900	4 800	2 100	0	0
5	4 300	8 200	7 200	2 800	0	0
6	4 400	2 000	7 200	5 700	0	8 500
7	4 500	4 500	13 000	0	0	8 500
8	4 700	4 700	13 200	0	0	8 500
9	4 800	4 800	13 300	0	0	8 500
10	5 000	5 000	13 500	0	0	8 500

Components

-Organization of the management structure and the administrative-accounting system

-Expansion and remodeling of installations and buildings for breeding

-Advisory services and training for technical personnel

-Production of bacterins

-Promotion of the product on the domestic market

-Promotion of the product for the Central American market

Beneficiaries

Direct

Cattle ranchers in the country by 1996 98,000

III. COSTS AND FINANCING

Costs

Local currency: US$169,580

External currency: US$864,820

Total: US$1,034,400

Financing

Source	Short term	Long term	Total
External	0	864 820	864 820
Local	169 580	0	169 580
Total	**169 580**	**864 820**	**1 034 400**

IV. ANALYSIS

Indicators

Internal rate of return (IRR)	45.01%
Net present value (NPV)	US$3,323,233
Benefit/cost ratio (B/C)	1.4%

Sensitivity Analysis

Variable	IRR (%)
1. 20% increase in total costs and 10% decrease in benefits (pessimistic)	22.3
2. 10% increase in total costs and 10% decrease in benefits	28.6

Project Impact

Septicemia and anthrax will be controlled. Employment will be generated for 15 skilled technical personnel.

The country will save US$912,600 in foreign exchange from years three to six, increasing to US$3,187,500 from years six to 10.

In total, the Project will net US$3,296,600 in foreign exchange.

NICARAGUA

Project Profile: LIVESTOCK REHABILITATION AND AGROFORESTRY PROTECTION

Regional Program: AGROALIMENTARY DEVELOPMENT

I. BASIC INFORMATION

Location:	Regions II, V and VI. Departments of Leon, Chinandega, Boaco, Chontales, Matagalpa and Jinotega
Duration:	Five years
National Executing Institution:	Nicaraguan Investment Fund with collaboration from the private sector

II. PROJECT DESCRIPTION

Justification

-Relative abundance of livestock production resources

-Possibility of achieving significant increases in production and productivity

-Severe decline in this activity in recent years

Objectives

To contribute to the reactivation of cattle production, promote the partial recovery of exports and boost domestic consumption of beef and milk, taking full advantage of the natural resources on the country's cattle ranches

Subprojects and Components

Credit

-Farm investment plans

-Livestock associations

-Municipalities

-Genetic enterprises

Production support programs

-Pastures

-Animal health

-Technology transfer

Environmental conservation and recovery

-Reforestation for firewood production

-Reforestation for forest production

Preinvestment studies

-Agricultural cadastral census

-Diagnosis of agroindustrial beef and milk processing activity

-Livestock study, phase II

Goals

-To effect farm investments over a three-year period: 444 farms (22% of the total) in year one; 1,000 (50%) in year two, and 556 (28%) in year three, for a total of 2,000 units.

-To aim production support programs at improving productivity levels of 2,000 cattle herds over a five-year period, 59 of which are for breeding and fattening, 89 for breeding, 312 for dual-purpose (beef) and 1,540 dual-purpose (dairy).

-To improve production levels through the farm investments and support programs by raising the calving rate from 45 to 70 percent; reducing calf mortality from 10 to 4 percent; halving the adult mortality rate from 2 to 1 percent, and increasing the pasture carrying capacity from 0.8 to 1.3 animal units per hectare.

-These improvements in the production units benefiting from the Project should make it possible to:

-produce an additional 444.9 million liters of milk over 15 years;

-produce an additional 53,240 tons of beef over 15 years; and

-increase the national herd by 643,100 head over 15 years.

Beneficiaries

Small-scale livestock producers	1,540 direct
Medium- and large-scale producers	300 direct
Cooperatives	160 direct

III. COSTS AND FINANCING

Costs

Local currency:	US$12,087,700
External currency:	US$38,905,800
Total:	US$50,903,500

Financing

Disbursement schedule

Year	(US$ X 000)
1	6 942.3
2	13 274.3
3	15 592.5
4	11 076.0
5	4 109.5
Total	**50 993.5**

Sources of Project funding

Contributions	(US$ X 000)
External resources	***30 795.0***
Long-term loan	29 054.6
Technical cooperation	1 740.4
Producers	***8 065.5***
National financial system	***4 022.2***
Donation	***8 110.8***

IV. ANALYSIS

Model	FIRR (%)	NPV % (US$ X 000)	B/C
I	29.9	9 089.4	1.38
II	26.5	13 340.5	1.33
III	31.9	26 198.3	1.42
IV	35.4	47 434.6	1.15
V	19.9	63 093.2	1.26
Project total	**30.2**	**20 500.4**	**1.44**

Project Impact

-An increase in milk production of 448.4 million liters and 53,550 metric tons of beef over a 15-year period

-Where restocking is concerned, the Project will increase the national herd 33.8 percent, by contributing 643,100 head.

-Likewise, during the investment period, the Project is expected to generate the equivalent of 47,478 worker/months annually. Once stabilized, this will total 32,792 worker/months per year or the equivalent of 2,732 permanent jobs.

CENTRAL AMERICA

Regional Program: IRRIGATION, DRAINAGE AND LAND LEVELING

I. BASIC INFORMATION

Project Headquarters:	Honduras
Duration:	Three years
Executing Unit:	CABEI
Cost of Regional Component:	US$8,073,100

The development of irrigation infrastructure and the rehabilitation of existing irrigation systems, are important elements of the agricultural development strategy of the Central American countries. By modernizing lands that can respond positively to irrigation, and by upgrading current agricultural infrastructure, it will be possible to stabilize agricultural production and productivity increases in Central America in the short and medium terms.

The Regional Program consists of two components, the first containing the profiles of the national investment projects for expanding and rehabilitating irrigation systems. The second consists of technical cooperation and preinvestment projects that will serve to complement the national efforts.

II. REGIONAL PROGRAM DESCRIPTION

Justification

The Regional Program on Irrigation, Drainage and Land Leveling is justified for the following reasons:

-There is a need to incorporate new irrigated areas into the production process in the Central American countries.

-There is a high irrigation potential in Central America, which could be used and exploited at a relatively low cost.

-The topography in most of the countries of Central America, makes it necessary to prepare the land in such a way as to facilitate agricultural modernization which makes as efficient a use as possible of the soil, through good irrigation management and suitable leveling and drainage works.

-The positive results and efficiency achieved with small-scale irrigation systems are encouraging, and can serve as models for similar works.

Objectives

-To increase agricultural production and productivity by expanding the cultivated area under irrigation, through the construction of small- and medium-scale irrigation projects

-To diversify crops, which will contribute to supplying the local food market and to boosting the export of nontraditional products

-To update and harmonize water-related legislation in the countries of Central America, to ensure a rational use of irrigation water

Beneficiaries

The Regional Program identifies five types of beneficiaries:

Some 2,529 farmers, under the national projects (Honduras, Nicaragua, Costa Rica and Panama)

Farmers benefiting from the feasibility projects requested by the Central American countries of the CABEI (Guatemala, El Salvador, Honduras and Costa Rica)

Technicians and professionals (48) from the institutions involved in implementing the national projects

Some 360 farmers with leadership roles in existing projects, to equip them to transfer the skills they acquired through training to other irrigation beneficiaries

Users of the irrigation systems in Central America, who will profit from updated and amended legislation on the use of water for irrigation

III. COSTS AND FINANCING

Costs

Component	Amount (US$ X 000)
Component 1	
Inventory and study of documentation on irrigation projects	**50.0**
Component 2	
Feasibility studies and final design of irrigation projects	**7 500.2**
2.1 Irrigation project of Costa Rica	2 000.0
2.2 Irrigation project of El Salvador	1 100.2
2.3 Irrigation project of Honduras	1 400.0
2.4 Irrigation project of Guatemala	3 000.0
Component 3	
Irrigation legislation and norms	**61.5**
Component 4	
Training	**268.9**
Component 5	
Information system (executing unit)	**192.5**
Total	**8 073.1**

Financing

Component	US$ X 000		
Item	**Local**	**External**	**Total**
Component 1			
Inventory and study of documents on irrigation projects	25.0*	25.0	50.0
Component 2			
Project feasibility studies			
2.1 Irrigation project of Costa Rica	200.0	1 800.0	2 000.0
2.2 Irrigation project of El Salvador	110.0	990.2	1 100.2
2.3 Irrigation project of Honduras	140.0	1 260.0	1 400.0
2.4 Irrigation project of Guatemala	300.0	2 700.0	3 000.0
Component 3			
Irrigation legislation and norms		61.5	61.5
Component 4			
Training		268.9	268.9
Component 5			
Information System (executing unit)	40.0	152.5	192.5
Total	**815.0**	**7 258.1**	**8 073.1**

IV. ANALYSIS

Regional Program Impact

The feasibility studies of small- and medium-scale irrigation projects will facilitate negotiations aimed at making agricultural production more modern and efficient.

The implementation of the four irrigation projects will contribute to expanding the amount of land under irrigation in Central America.

The monitoring and evaluation system for small- and medium-scale irrigation projects will help set priorities for investments that can have great economic and social impact.

The training of professionals, technicians and farmers will contribute to the success of the national projects, and will provide for a more efficient use and conservation of existing and future irrigation infrastructure.

The modernization of legislation on water resources will give protection and security to the investments made in irrigation infrastructure, by bringing water resources into the domain of the State.

COSTA RICA

Project Profile: DESIGN AND CONSTRUCTION OF IRRIGATION INFRASTRUCTURE IN THE REGION OF BARRANCA, PROVINCE OF PUNTARENAS

Regional Program: IRRIGATION, DRAINAGE AND LAND LEVELING

I. BASIC INFORMATION

Location:	Region of Barranca, in the province of Puntarenas
Duration:	Eight years
National Executing Institution:	National Service of Subterranean Waters, Irrigation and Drainage (SENARA) and the private sector

II. PROJECT DESCRIPTION

Justification

Extend the agricultural area under irrigation and improve current management conditions

Introduce technology for fitting out lands suitable for irrigation

Make better use of land and water resources through the application of intensive agriculture, which will generate a considerable number of jobs in an economically-depressed area

Reduce unemployment through land distribution and to promote labor-intensive activities and technologies

Objectives

To promote economic and social development in the Barranca area of the province of Puntarenas, through a more efficient exploitation of land and water resources, for purposes of contributing to agricultural diversification, to increasing nontraditional exports, and to developing and expanding the use of irrigated agriculture

Components

1. Design and construction of irrigation infrastructure
2. Leveling and development of plots
3. Acquisition and distribution of land

Goals

-To increase the area's agricultural output by 400 percent by the target year, as compared with the present situation

-To place 1,943 hectares under irrigation within a period of two years. This includes designing and building diversion works, primary, secondary and tertiary canals and the drainage canal network.

-To establish a population center in the Project zone. This would mean the urbanization of one hectare.

-To build 55.6 kilometers of roads parallel to the main canal and the network of secondary canals

-To introduce new crops and increase production, according to the proposed cropping plan

-To establish 200 agricultural production units, with an average size of 10 hectares per beneficiary

-To distribute at least 1,000 hectares among IDA plotholders, so that 50 percent of irrigable land is in the hands of small-scale producers

Beneficiaries

Direct:

Small farmers 200

Large firms 4

Indirect:

Agricultural workers 612

III. COSTS AND FINANCING

Costs

Local currency	US$4,731,200
External currency	US$5,002,100
Total	US$9,733,300

Financing (US$ X 000)

Item	External	Local	Total
1. Development of infrastructure	3 950.5	983.5	4 933.8
Studies	112.4		112.4
Final designs	43.2		43.2
Irrigation works	2 824.3	350.9	3 175.2
Drainage works	444.0	444.0	888.0
Roads	99.2	99.2	198.4
Production center	68.1		68.1
Contingencies	359.3	89.4	448.5
2. Development of plots	681.2	2 952.0	3 633.0
Purchase of land		2 705.0	2 705.0
Works at plot level	572.3	246.4	818.9
Storage and post-harvest management center	108.9		108.9
3. Executing unit	99.5	1 066.7	1 166.2
Total	**4 731.2**	**5 002.1**	**9 733.4**

IV. ANALYSIS

The financial analysis of farm models 1 and 3 showed the following results:

	Model 1	Model 3
Net present value (NPV) (US$ X 000)	13.1	125.00
Benefit/cost (B/C) ratio	1.53	6.00
Internal rate of return (IRR)	>50.00%	>50.00%

Project Impact

The Project will have a positive impact on the area's economy. It will create 525 work stations; generate approximately US$5 million a year in foreign exchange; promote trade activities; and support production.

With regard to the environment, controls must be established to avoid the following: the intensive use of agrochemicals, the depletion of soils, and the deterioration of water quality and public health. All these matters should be evaluated periodically, with a view to identifying or preventing any negative effect, thus guaranteeing sustained development during the useful life of the Project.

HONDURAS

Project Profile: AGRICULTURAL DEVELOPMENT IN THE COMAYAGUA VALLEY: REHABILITATION AND IMPROVEMENT OF THE IRRIGATION SYSTEM OF THE LAS FLORES DISTRICT

Regional Program: IRRIGATION, DRAINAGE AND LAND LEVELING

I. BASIC INFORMATION

Location:	Central-western region
Duration:	Three years
National Executing Institution:	Secretariat of Natural Resources with collaboration from the private sector
Local Responsibility:	Technical assistance and agricultural development enterprises and the private sector
National Support Agency:	National Directorate of Water Resources
National Financial Agency:	Central Bank of Honduras

II. PROJECT DESCRIPTION

Justification

-Technological modernization based on improvement of the irrigation system will be promoted as a means of achieving more stable agricultural development.

-Problems related to the irregularity and instability of yields and production, resulting from deficiencies in the irrigation infrastructure, will be overcome.

-High priority will be assigned to the rehabilitation of the El Coyolar dam, and to the rehabilitation and expansion of the Las Flores irrigation district in the Comayagua Valley.

-The Comayagua Valley makes an important contribution to domestic supply. Approximately 86 percent of the tomatoes, 72 percent of the peppers, 39 percent of the cucumbers and 41 percent of the onions come from that region.

Objectives

-To increase and stabilize the incomes of farmers of the Comayagua Valley

-To increase agricultural production and productivity by increasing the efficiency of irrigated agriculture in the valley

-To diversify agricultural production in the valley by introducing export crops that will generate more foreign-exchange earnings

-To replace imported agricultural commodities with products from the Comayagua Valley

Goals

The proposed goals of the Project are:

-To rehabilitate the El Coyolar dam, the spillway, the water intakes, and the temporary access, which will make it possible to expand the area under irrigation by as much as 4,400 hectares during the rainy and dry seasons

-To rehabilitate the main and side canals (42 km) of the Las Flores irrigation district

-To produce annually 12,000 metric tons of staple grains; 18,000 metric tons of vegetables; 72 metric tons of tobacco; 160 metric tons of coffee; 4,000 metric tons of fruits; 180 metric tons of meat; and 685 metric tons of liquid milk

-To assist 450 independent farmers, and 11 small-farmer groups comprised of 116 families

-To generate 1,160 permanent jobs per year as of the fifth year of the Project

Subprojects

1. Repair of the El Coyolar dam and of major irrigation infrastructure
2. Rehabilitation and expansion of the Las Flores district irrigation system
3. Credit for agricultural production
4. Technical assistance and marketing services

Beneficiaries

	Direct	Indirect	
1. Independent producers	450		Rural and urban inhabitants of the central-western region
2. Farmers' groups	11		

III. COSTS AND FINANCING

Costs

Local currency:	US$810,000
Foreign currency:	US$7.280 million
Total:	US$8.09 million

Financing

Annual disbursements were calculated on the basis of the timetable for execution. They are as follows:

	Years			
Item	**1**	**2**	**3**	**Totals (US$ X 000)**
Investment	1 992.4	3 414.9	537.6	5 874.9
Operation	1 500.0	715.1	0.0	2215.1
Total	**3 422.4**	**4 130.0**	**537.6**	**8 090.0**

IV. ANALYSIS

Indicators

Internal rate of return (IRR)	29.4%
Net present value (NPV)	US$2 865.300

Sensitivity Analysis

Variables IRR

Variables	IRR
Annual increases in operating costs 10%	26.0%
Annual increases in operating costs 20%	19.8%
Annual increases in operating income 5%	33.2%

Additional Parameters and Scenarios

Additional analysis of the Project using other scenarios facilitates the financial and economic assessment of investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates of profitability were obtained: FIRR, >100 percent; B/C, 2.7; and NPV, US$25.057 million.

-Economic indicators were based on the following parameters: elimination of taxes, subsidies and all types of transfers; an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was >100 percent.

The Project's contribution to the balance of payments situation will be US$5.8 million.

Project Impact

-The income levels of direct beneficiaries will increase 2.8 times.

-Some 1,160 new jobs will be generated.

-Exports will increase by US$1.5 million per year.

-The supply of raw materials will be ensured.

NICARAGUA

Project Profile: REHABILITATION AND IMPROVEMENT OF IRRIGATED AGRICULTURE IN THE SEBACO VALLEY

Regional Program: IRRIGATION, DRAINAGE AND LAND LEVELING

I. BASIC INFORMATION

Location:	Sebaco Valley
Duration:	10 years
National Executing Institution:	Irrigation and Drainage Unit with collaboration from the private sector

II. PROJECT DESCRIPTION

Justification

-Irrigation infrastructure is under-utilized.

-It is necessary to reactivate irrigated agriculture.

-A national irrigation program is planned for execution.

-Existing agroindustrial capacity in the Sebaco Valley will be used.

Objectives

To begin to rehabilitate and modernize irrigated agriculture in Nicaragua, by refurbishing irrigation infrastructure to increase the volume of production, improve farmer incomes and provide increased inputs for processing plants.

Subprojects

Modernization subproject

Rehabilitation subproject

Goals

-To rehabilitate 413.7 hectares of irrigated farmland

-To upgrade irrigation systems; gravity and sprinkler irrigation will be replaced with drip irrigation on 1,194.1 hectares

-To regain previous levels of efficiency in irrigated agriculture for rice, tomatoes, corn, beans and vegetables and, to raise productivity by obtaining 2.5 to 3 crops per year, beginning in the second year of the Project

Beneficiaries

Private owners	214 direct
Cooperatives	49 direct
State enterprises	2 direct

III. COSTS AND FINANCING

Costs

Local currency:	US$613,400
External currency:	US$3,457,300
Total:	US$4.07 million

Financing (US$ X 000)

Item	Type	ST	LT	Total (US X 000)
Engineering and Administration	1	206.9		206.9
Rehabilitation	2		882.4	882.4
Improvement	2		2 454.9	2 454.9
Technical assistance	2		120.0	120.0
Allowance for inflation	2		172.9	172.9
Financial costs	1	233.6		233.6

Type 1: Local Type 2: External ST: Short-term LT: Long-term

IV. ANALYSIS

Indicators		
IRR		53.30%
NPV		US$16 953 600
B/C		1.13
Sensitivity Analysis		
Raise costs 10%	IRR	19.97%
	NPV	US$3 919200
	B/C	1.03
Decrease revenues 10%	IRR	16.97%
	NPV	US$2 223 900
	B/C	1.02

Project Impact

The project will rehabilitate 413.7 hectares and improve 1,194.1 hectares. Rehabilitation should make it possible to harvest 2.5 crops per year, while the improved component could bring in up to three crops per year. The production model proposed for rehabilitation will generate 56,925 work days per year, taking into account that production levels today are extremely low. The improved model is expected to provide 145,000 additional work days every year. In this case, the land is already producing, and the Project will raise productivity to three harvests per year.

PANAMA

Project Profile: REHABILITATION OF THE EL CANO, GUARARE AND LA HERRADURA IRRIGATION SYSTEMS

Regional Program: IRRIGATION, DRAINAGE AND LAND LEVELING

I. BASIC INFORMATION

Location:	El Cano, province of Chocle; La Herradura, province of Chocle; Guarare, province of Los Santos
Duration:	One year
National Executing Institution:	Ministry of Agricultural Development (MIDA) with collaboration from the private sector
Local Responsibility:	National Directorate of Rural Engineering of the MIDA and the private sector
National Financial Agency:	Central Bank of Panama

II. PROJECT DESCRIPTION

Justification

-Technological modernization will be promoted through improvement of irrigation infrastructure, with a view to achieving more stable agricultural development in the three systems.

-Problems related to variability and instability in yields and production levels, resulting from shortcomings in the irrigation systems, will be overcome.

-Irrigation will be expanded in production areas affected by periods of drought, located in what is known as the "Dry Arch" of the country (Chocle and Los Santos).

Objectives

-To increase and stabilize farmers' incomes

-To increase agricultural production and productivity through more efficient irrigated farming

Subprojects

Subproject 1. Rehabilitation of the El Cano irrigation system

Subproject 2. Rehabilitation of the Guarare irrigation system

Subproject 3. Rehabilitation of the La Herradura irrigation system

Goals

Description	Goals
Rehabilitation of irrigation systems	
1. El Cano	551 ha
2. Guarare	81 ha
3. La Herradura	94.5 ha
Installation of the portable sprinkler irrigation network	1
Installation of pumping station	2
Training in irrigation (farmers)	153

Beneficiaries

Direct beneficiaries: 660 people

III. COSTS AND FINANCING

Costs

Local currency:	US$1,296,840
Foreign currency:	0
Total:	US$1,296,840

Financing

External funds:	US$1,006,505
Local funds (executing unit):	US$290,335
Total:	US$1,296,840

External support for rehabilitation

Subproject	External support (US$)
Guarare	291 924
La Herradura	210 581
El Caño	504 000
Total required	**1 006 505**

Local contribution

Item of expenditure	Local contribution (US$)
Technicians	166 260
Per diem	9 000
Vehicles	90 000
Fuel	6 750
Lubricants	500
Replacement parts	2 000
Stationery, office equipment and supplies	2 000
Subtotal	276 510
Five-percent contingency	13 825
Total local contribution	**290 335**

IV. ANALYSIS

Indicators

Subproject 1. El Cano

The total value of production will increase annually from US$187,800, under current circumstances, to US$565,249 under the rehabilitation project. Other indicators are:

-Net income per family will rise to US$16,660.

-The FIRR is estimated at 150 percent and the EIRR at 122 percent.

Subproject 2. La Herradura

The value of production will increase from US$71,533 to US$463,925. Other indicators are:

-Net income per family will rise to US$4,924.

-The FIRR is estimated at 180 percent and the EIRR at 157 percent.

Subproject 3. Guarare

The value of production will increase from US$136,778 to US$474,600 annually. Other indicators are:

-Net income per family will rise to US$8,895 under the Project.

-The FIRR is calculated at 65 percent and the EIRR at 84 percent.

Project Impact

The Project to rehabilitate the three irrigation systems will:

-generate employment within the Project area throughout the agricultural year;

-contribute to better preparing farmers to maintain the rehabilitated infrastructure; and

-stabilize production in the areas under irrigation.

CENTRAL AMERICA
Regional Program: DEVELOPMENT OF BIOTECHNOLOGY

I. BASIC INFORMATION

Program Headquarters:	Costa Rica
Duration:	Three years
Executing Unit:	CATIE
Regional Cost Component:	US$3,057,800

The principal objectives of this Regional Program are to transfer micropropagation technology to the six countries of the Central American isthmus and to begin to harmonize technology policies in the region. This region-wide effort, which began as an experiment by the Tropical Agriculture Research and Training Center (CATIE), will make it possible to test and validate commercial-scale micropropagation, which is seen as a permanent solution to limited availability of high-quality seed, a major limitation to modernization and expansion of certain priority crops in the countries of the region.

The Regional Program will be carried out on two levels. The first is at the country level, while the second involves all of them and includes technical cooperation and preinvestment projects. The second level contains a proposal for establishing an integration mechanism designed to facilitate and promote technology transfer, to encourage private and public-sector investments and joint ventures aimed at producing high-quality asexual seed, to increase trade of such seed among the six countries of the Central American isthmus and to establish a service for the removal of viruses from food crops.

Basically, the Regional Program is a model for transferring technology to national institutions and private seed-producing enterprises in the countries from a regional scientific center (CATIE). It is also an attempt to harmonize technological policy. This Regional Program includes investment projects for each of the countries, and technical cooperation and preinvestment projects administered at the regional level, and is the result of the scientific and technological work carried out by a regional agency on behalf of farmers in its member countries. It is sufficiently based in the scope needed to help modernize production in the region, and is aimed at achieving the common objective of reactivating agriculture and trade with third countries.

II. REGIONAL PROGRAM DESCRIPTION

Justification

The Regional Program is justified because it will:

-promote the use of biotechnology as a solution to the problem of limited availability of high-quality seed, and supply farmers in the region with plants obtained through tissue cultures which have proven to be superior to those obtained through conventional means;

-have access to the know-how generated by CATIE, IICA and other institutions, to advisory services provided by their technical personnel, to laboratory services they offer and to the germ plasm they possess, all of which will make it possible to provide technical personnel and entrepreneurs with modern technological training at a lower cost;

-facilitate and foster public and private investment in biotechnology for the commercial production of seed in the six countries of the Central American isthmus;

-facilitate and promote intra-regional trade by harmonizing technological policies. The institutions and enterprises that will make up the Network will set criteria for determining the economic efficiency of investments, establish the levels of profitability and produce information on seed prices, in terms of their behavior on the regional market; and

-promote a process of technology transfer and adoption that will be less costly to the countries, but which will last long enough to establish the plants. This transfer process will be carried out parallel to efforts to create a technological center like CATIE. At the same time, the consolidation of private and public-sector joint efforts at the country level will result in more efficient use of national resources by eliminating unnecessary expenditures, preventing a duplication of efforts and avoiding a repetition of mistakes.

Objectives

-To make high-quality plants available in the short term to the countries of the isthmus, especially plants considered to be the most important economically and which are difficult to reproduce

-To establish a regional network for technology transfer and for the promotion of investments which will facilitate the commercial production of germ plasm, the harmonization of national technological policies and the establishment of private enterprises for multiplying plants through micropropagation

-To facilitate intra-regional trade of seed from asexual plants

-To promote the establishment of private seed enterprises throughout the region which use micropropagation

Beneficiaries

Direct and indirect Regional Program beneficiaries are:

Country	Farmers (direct)	Farmers (indirect)	Totals
Costa Rica	950	2 850	3 900
El Salvador	600	1 800	2 400
Guatemala	1 000	3 000	4 000
Honduras	500	1 500	2 000
Nicaragua	600	1 800	2 400
Panama	500	1 500	2 000
Regional Program	**4 150**	**12 450**	**16 600**

III. COSTS AND FINANCING

Costs

Projects and subprojects	Amount (US$ X 000)
Project 1. Technology Transfer and Investment Promotion Network for the production of plants through micropropagation	1 928.9
Subproject 1. Administration of the Network	1 165.2
Subproject 2. Equipping and maintenance of germ plasm banks	200.0
Subproject 3. Central laboratory for tissue culture of meristematic tips	200.0
Subproject 4. Expansion/equipping of central diagnostic laboratory	363.7
Project 2. Region-wide Norms for the Technology Transfer and Investment Promotion Network	**52.8**
Subproject 1. Design of technical standards for construction of laboratories	26.4
Subproject 2. Protocols and quality standards for the marketing of plants on the intra-regional market	26.4
Project 3. Reciprocal Technical Cooperation	**586.2**
Subproject 1. Fund for training at specialized centers	26.4
Subproject 2. Scholarships for advanced studies	284.0
Subproject 3. Short refresher courses and apprenticeships	192.0
Subproject 4. Meetings between entrepreneurs and technical personnel	**83.9**
Project 4. Harmonization of Investment Policies	**155.5**
Subproject 1. Incentives for the formation of seed companies	26.4
Subproject 2. Facilities for the importation of equipment not manufactured in the countries of Central America	26.4
Subproject 3. Establishment of lines of credit for producers to purchase the micropropagated plants	26.4
Subproject 4. Registration of patents of seed companies	26.3
Subproject 5. Support for harmonizing national monitoring standards	50.0
Project 5. Private National Enterprises and Regional Organizations	**334.4**
Subproject 1. Promotion of national associations of private-sector seed companies	179.4
Subproject 2. Promotion of a regional association of private-sector seed companies	155.0
Total	**3 057.8**

Financing

Project	External	Country	Other	Total (US$ X 000)
Project 1. Technology Transfer Network	1 328.9	0	600.0	1 928.9
Project 2. Region-wide Norms for Network	40.8	12.0	0	52.8
Project 3. Reciprocal Technical Cooperation	562.2	24.0	0	586.2
Project 4. Harmonization of Investment Policies	131.5	24.0	0	155.5
Project 5. Regional Private-Sector Organizations	214.4	120.0	0	334.4
Totals	**2 277.8**	**180.0**	**600.0**	**3 057.8**

Regional Program Impact

The results expected from implementation of the Regional Program are:

-Support to governments in connection with policies for modernization of agriculture

-Decreased expenditure of foreign exchange on imports of propagules for nontraditional plants

-Involvement of private sector in micropropagation of priority plants

-Increased exports of better products

-Increased production of crops covered by the Network

-Improvement in the quality of products for local consumption and for export

-Development and application of appropriate technology; technical personnel will have the opportunity to learn about, generate and apply advances in biotechnology

-Improved use of genetic resources

COSTA RICA

Project Profile: MICROPROPAGATION FOR COMMERCIAL PRODUCTION OF PLANTAINS AND PINEAPPLE

Regional Program: DEVELOPMENT OF BIOTECHNOLOGY

I. BASIC INFORMATION

Location:	National
Duration:	Three years
National Executing Institution:	National Banana Corporation (CORBANA) with collaboration from the private sector
Local Responsibility:	National Banana Corporation (CORBANA) with collaboration from the private sector
National Support Agency:	Ministry of Agriculture and Livestock
Regional Support Agency:	Tropical Agriculture Research and Training Center (CATIE)

II. PROJECT DESCRIPTION

Justification

-Expansion of Costa Rica's role in international markets with agricultural commodities that will generate foreign exchange for the country in the short term

-Production of the plantain and pineapple seed needed for rapid expansion. Micropropagation will be used to obtain more and healthier plants than those obtained with conventional methods of propagation.

-Reduction in the need to spend foreign exchange on seed from abroad

-Farmers will also benefit from increased yields and larger areas under cultivation with high-quality, high-yield seed with good market potential.

Objectives

To increase production of high-quality plantain and pineapple plants through micropropagation, for the purpose of achieving commercial production of seed in the short term that will produce healthier and less-expensive propagules than those obtained currently by producers

Goals

-To produce, on a commercial-scale, 1 million plantain, and 200,000 pineapple, propagules by the third year of the Project

Year	Plantain plants	Pineapple plants
1	100 000	20 000
2	300 000	80 000
3	1 000 000	200 000
4	1 000 000	200 000
5	1 000 000	200 000

-To transfer the technology necessary for commercial production of propagules by private enterprises

-To support the establishment of three private seed enterprises in the third year of the Project

-To support the founding of an association of private seed enterprises

Subprojects

Subproject 1. Commercial module for micropropagation of plantain

Subproject 2. Commercial module for micropropagation of pineapple

Beneficiaries

The beneficiaries of the Project will be some 500 pineapple producers, and about 450 plantain producers in the Atlantic zone.

The technical personnel involved in establishing the Project's experimental modules will also benefit directly.

III. COSTS AND FINANCING

Costs

Local currency: US$266,500

External currency: US$594,000

Total: US$860,500

Schedule of Investments

Item	Year			
	1	2	3	Total
1. Salaries of technical personnel	61.9	61.9	61.9	185.7
2. Equipping of installation and laboratories	41.3			41.3
3. Laboratory equipment multiplication unit	53.0			53.0
4. Reagents and inputs	18.0	3.0	2.0	23.0
5. Cost-installation of multiplication unit	240.0			240.0
6. Furniture and equipment for installations			21.0	
7. Maintenance of multiplication unit	12.0	12.0	12.0	36.0
8. Technical cooperation and consultancies	30.0	20.0	40.0	90.0
9. Experimental trials	5.0	10.0	10.0	25.0
10. Technical and trade missions	12.0	12.0	20.0	44.0
11. Training of personnel	7.5	7.5	7.5	22.5
Subtotal	501.7	126.4	153.4	781.5
Executing unit	26.3	26.3	26.4	79.0
Total	**528.0**	**152.7**	**179.8**	**860.5**

Financing

Source	Short term	Long term	Total (US$ X 000)
External		781.5	781.5
Internal	79.0	79.0	
Total	**79.0**	**781.5**	**860.5**

IV. ANALYSIS

Indicators

Regarding the financial feasibility of the Project, the internal rate of return (IRR), the net present value (NPV) and the benefit/cost ratio (B/C) indicate that the investment is profitable. On the basis of a 12-percent interest rate, the results are:

Net present value	NPV	US$1,039,000
Internal rate of return	IRR	44.3%
Benefit/cost ratio	B/C	1.99

Sensitivity Analysis

The sensitivity analysis reveals profitability even if prices decline and costs rise:

Variables	NPV	IRR	B/C
1. Increased costs +10%	893.5	35.6%	1.82
2. Reduced revenues -10%	644.1	26.4%	1.63

Additional Parameters and Scenarios

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates of profitability were obtained: FIRR, 52.3 percent; B/C, 1.87; and NPV, US$1,649,400.

-Economic indicators were based on the following parameters: elimination of taxes and subsidies, 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 51.3 percent.

Project Impact

-Modernization of agriculture. More attention will be given to biotechnology, which will make it possible to use micropropagation on other crops of importance to the Costa Rican economy.

-Increased supply of better-quality commodities for export, which will generate and save foreign exchange

-Increased and more uniform production of both crops, and their improvement, for both the domestic and foreign markets

-Development of biotechnology in Costa Rica, by sharing technological advances with technical personnel from the Costa Rican Technological Institute (ITCR) and other organizations

-Better use of genetic resources

-Consumers on the international market will benefit from better-quality products.

EL SALVADOR

Project Profile: MICROPROPAGATION FOR COMMERCIAL PRODUCTION OF PLANTAINS AND POTATOES

Regional Program: DEVELOPMENT OF BIOTECHNOLOGY

I. BASIC INFORMATION

Location:	National
Duration:	Three years
National Executing Institution:	Center for Agricultural Technology (CENTA) with collaboration from the private sector
Local Responsibility:	Center for Agricultural Technology (CENTA) with collaboration from the private sector
National Support Agency:	Ministry of Agriculture
Regional Support Agency:	Tropical Agriculture Research and Training Center (CATIE)

II. PROJECT DESCRIPTION

Justification

Through the use of biotechnology, it is feasible for El Salvador to produce large quantities of plantain and potato plants that are healthier than those obtained with conventional propagation methods.

This will make it possible to overcome a serious limitation: the lack of high-quality seed in the short term.

Micropropagation on a commercial scale will lead to reduced expenditure of foreign exchange on imported seed.

Objectives

To increase availability of high-quality potato and plantain plants through micropropagation, in order to achieve commercial production of seed in the short term which will be healthier and less expensive than those currently obtained by producers.

Goals

-To produce potato and plantain seed on a commercial scale

Year	Potato (plants)	Plantain (plants)
1	100 000	100 000
2	400.000	300.000
3	1 000 000	1 000 000
4	1 000 000	1 000 000
5	1 000 000	1 000 000

-To transfer technology for commercial production to the private sector

-To promote the establishment of three private seed enterprises

-To encourage the creation of an association of private seed enterprises

Subprojects

Subproject 1. Commercial module for micropropagation of plantain seed

Subproject 2. Commercial module for micropropagation of potato seed

Beneficiaries

The principal beneficiaries of the Project will be individual potato and plantain farmers and groups of such farmers, who will receive disease-free propagation material.

Also, scientists and technical personnel involved in the Project will benefit.

III. COSTS AND FINANCING

Costs

Local currency:	US$268,200
External currency:	US$430,400
Total:	US$698,600

Financing

Source	Short term	Long term	Total (US$ X 000)
External		626.1	626.1
Internal	72.5		72.5
Total	**72.5**	**626.1**	**698.6**

IV. ANALYSIS

Indicators

The financial feasibility for the Project in terms of net present value (NPV), internal rate of return (IRR) and benefit/cost ratio (B/C) reveals that it is highly profitable. Calculations were based on a 12-percent interest rate:

Net present value	NPV	US$1,543,800
Internal rate of return	IRR	> 100%
Benefit/cost ratio	B/C	2.8

Sensitivity Analysis

The sensitivity analysis reveals that the Project will be able to withstand certain changes:

Variables	NPV	IRR	B/C
1. Increased costs +10%	1 447.5	> 100%	2.6
2. Reduced prices -10%	1 196.8	> 100%	2.3

Additional Parameters and Scenarios

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates of profitability were obtained: FIRR, >100.0 percent; B/C, 3.10; and NPV, US$3.734 million.

-Economic indicators were based on the following parameters: i) elimination of taxes and subsidies and all types of transfers; ii) an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was greater than 100 percent.

Project Impact

-Modernization of agriculture

-Reduced expenditure of foreign exchange on imported seed from third countries

-Increased availability of better-quality products for the local and export markets

-Development and application of appropriate biotechnology. CENTA technical personnel will have the opportunity to learn about, create and apply technological advances.

-Better use of genetic resources

-Uniform commercial output

GUATEMALA

Project Profile: MICROPROPAGATION FOR COMMERCIAL PRODUCTION OF BANANAS AND POTATOES

Regional Program: DEVELOPMENT OF BIOTECHNOLOGY

I. BASIC INFORMATION

Location:	National
Duration:	Three years
National Executing Institution:	Agricultural Science and Technology Institute (ICTA) with collaboration from the private sector
Local Responsibility:	Agricultural Science and Technology Institute (ICTA) and the private sector
National Support Agency:	Ministry of Agriculture
Regional Support Agency:	Tropical Agriculture Research and Training Center (CATIE)

II. PROJECT DESCRIPTION

Justification

-The country will be equipped to multiply large quantities of banana and potato plants which are superior in quality to those that can be obtained with traditional propagation methods.

-This will make it possible to overcome one of the most serious limitations: limited availability of quality seed in the short term.

-The use of micropropagation on a commercial scale will reduce foreign-exchange outlays.

Objectives

To increase availability of high-quality potato and banana plants through micropropagation, in order to achieve commercial production of seed in the short term which will be healthier and less expensive than those currently obtained by producers

Goals

-To produce potato and banana seed on a commercial scale

Years	Potato (plants)	Banana (plants)
1	100 000	65 000
2	400 000	250 000
3	1 000 000	1 000 000
4	1 000 000	1 000 000
5	1 000 000	1 000 000

-To transfer technology for commercial production to the private sector

-To promote the establishment of three private seed enterprises

-To encourage the creation of an association of private seed enterprises

Subprojects

Subproject 1. Commercial module for micropropagation of banana seed

Subproject 2. Commercial module for micropropagation of potato seed

Beneficiaries

The principal beneficiaries of the Project will be individual potato and banana farmers, and groups of such farmers, who will receive disease-free propagation material.

Also, scientists and technical personnel involved in the Project will benefit.

III. COSTS AND FINANCING

Costs

Local currency:	US$268,200
External currency:	US$430,400
Total:	US$698,600

Financing

Source	Short term	Long term	Total (US$ X 000)
External		626.1	626.1
Internal	72.5		72.5
Totals	**72.5**	**626.1**	**698.6**

IV. ANALYSIS

Indicators

Net present value	NPV	US$1,508,200
Internal rate of return	IRR	> 100%
Benefit/cost ratio	B/C	2.8

Sensitivity Analysis

The sensitivity analysis reveals that the Project will be able to withstand certain changes:

Variantes	NPV	IRR	B/C
1. Increased costs +10%	1 411.9	> 100%	2.6
2. Reduced prices -10%	1 164.9	> 100%	2.3

Additional Parameters and Scenarios

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, an annual 12-percent discount rate and a useful life of 20 years for the Project. The following estimates of financial profitability were obtained: FIRR, 100 percent; B/C, 3.10; and NPV, US$3.698 million.

-Economic Indicators were based on the following parameters: elimination of taxes and subsidies, 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was more than 100 percent.

Project Impact

-Modernization of agriculture

-Reduced expenditure of foreign exchange on seed imported from third countries

-Increased availability of better-quality products for the local and export markets

-Development and application of appropriate biotechnology. ICTA technical personnel will have the opportunity to learn about, create and apply technological advances.

-Better use of genetic resources

-Uniform commercial output

HONDURAS

Project Profile: MICROPROPAGATION FOR COMMERCIAL PRODUCTION OF BANANAS AND PINEAPPLE

Regional Program: DEVELOPMENT OF BIOTECHNOLOGY

I. BASIC INFORMATION

Location:	National
Duration:	Three years
National Executing Institution:	Honduran Agricultural Research Foundation (FHIA) with collaboration from the private sector
Local Responsibility:	Honduran Agricultural Research Foundation (FHIA) with collaboration from the private sector
National Support Agency:	Secretariat of Natural Resources
Regional Support Agency:	Tropical Agriculture Research and Training Center (CATIE)

II. PROJECT DESCRIPTION

Justification

-To cover the need for banana and pineapple seed in the coming years (estimated at 20 million plants), it will be necessary to use micropropagation techniques, which are seen as the best means of meeting these requirements in the short term.

-To ensure seed availability, a commercial-scale micropropagation module will be installed for each plant, in order to eliminate the need for imported plants and reduce the expenditure of foreign exchange.

-Seed production for bananas (Honduras' most important crop economically) must be ensured. In addition, Honduran agriculture will be diversified and modernized through the micropropagation of better pineapple plants.

Objectives

To increase the availability of high-quality banana and pineapple plants by means of micropropagation, with a view to producing seed on a commercial scale in the short term. The seed will be healthier and less expensive than those the producers can obtain at the present time.

Goals

To commercially produce banana and pineapple propagules

Years	Banana	Pineapple
1	100 000	50 000
2	500 000	150 000
3	1 000 000	500 000
4	1 000 000	500 000
5	1 000 000	500 000

-To transfer technology for commercial production to private-sector enterprises

-To support the establishment of three private-sector seed enterprises

-To support the founding of an association of private-sector seed enterprises

Subprojects

Subproject 1. Commercial module for micropropagation of banana seed

Subproject 2. Commercial module for micropropagation of pineapple seed

Beneficiaries

More than 500 farmers will benefit directly from the Project. They will receive banana and pineapple seed which is superior in quality to what they themselves have been able to propagate, and similar in quality and quantity to imported seed. They will also benefit from lower prices for the plants produced by the modules.

The FHIA will benefit from the adoption of new technology, as will its technical personnel, who will learn to apply these processes.

III. COSTS AND FINANCING

Costs

Local currency:	US$272,500
External currency:	US$556,400
Total:	US$828,900

Financing

Sources	Short term	Long term	Totals (US$ X 000)
External		737.4	737.4
Internal	91.5		91.5
Totals	**91.5**	**737.4**	**828.9**

IV. ANALYSIS

Indicators		
Net present value	NPV	US$ 1 662.200
Internal rate of return	IRR	> 100%
Benefit/cost ratio	B/C	2.5

Sensitivity Analysis

Variables	NPV	IRR	B/C
1. Increased costs +10%	1 520.200	> 100%	2.2
2. Reduced revenues -10%	1 212.100	> 100%	2.0

Additional Parameters and Scenarios

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates of profitability were obtained: FIRR, 80.8 percent; B/C, 2.40; and NPV, US$2.513 million.

-Economic indicators were based on the following parameters: elimination of taxes and subsidies and all types of transfers; an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 78.4 percent.

Project Impact

-Diversification and modernization of agriculture

-Reduced expenditure of foreign exchange

-Participation of private sector in biotechnology

-Increased exports of better products

-Increased production of better bananas and pineapple for both the domestic and export markets

-Application of appropriate biotechnology to practical problems in Honduras, and participation of FHIA technical personnel in modern technological processes

-Better use of genetic resources

-Uniform commercial output

NICARAGUA

Project Profile: MICROPROPAGATION FOR COMMERCIAL PRODUCTION OF BANANAS AND PLANTAINS

Regional Program: DEVELOPMENT OF BIOTECHNOLOGY

I. BASIC INFORMATION

Location:	National
Duration:	Three years
National Executing Institution:	National Plant Production Center with collaboration from the private sector
Local Responsibility: National Plant Protection Center	
National Support Agency:	Ministry of Agricultural Development
Regional Support Agency:	Tropical Agriculture Research and Training Center (CATIE)

II. PROJECT DESCRIPTION

Justification

-The demand for banana and plantain seed is estimated to be more than 10 million. To meet this demand, it will be necessary to install a commercial-style laboratory which can guarantee the availability of large quantities of seed. At the present time, conventional propagation methods are used, with no guarantees as to the quantity or quality of seed, or plants are imported from abroad at high prices.

-The installation of a meristematic tip tissue-culture laboratory in the country will make it possible to stop importing such materials and will ensure better use of available genetic and economic resources.

-Furthermore, the laboratory will evaluate the most promising materials, with a view to promoting agricultural modernization in Nicaragua.

-Musaceae producers will have the opportunity to increase production of crops with plants genetically superior to those used traditionally.

Objectives

To increase availability of high-quality banana and plantain plants through micropropegation, in order to achieve commercial production in the short term of seed which is superior to that currently obtained by the farmers

Goals

-To commercially produce 1 million plantain and 500,000 banana propagules, to stabilize in the third year of the Project

Years	Plantain plants	Banana plants
1	100 000	50 000
2	500 000	200 000
3	1 000 000	500 000
4	1 000 000	500 000
5	1 000 000	500 000

-To transfer technology for commercial production of propagules to private enterprises

-To support the formation of three private seed enterprises by the third year

-To support the founding of an association of private seed enterprises

Subprojects

Subproject 1. Commercial module for micropropegation of banana seed

Subproject 2. Commercial module for micropropagation of plantain seed

Beneficiaries

The direct beneficiaries of the Project will be some 600 farmers, who will receive plants/seed of better quality and in greater quantities than they can obtain currently.

Technical personnel from the National Plant Protection Center CENAPROVE, who participate in the Project, will also benefit.

III. COSTS AND FINANCING

Costs

Local currency:	US$244,500
External currency:	US$577,600
Total:	US$822,100

Financing

Source	Short term	Long term	Total (US$ X 000)
External		739.6	739.6
Internal	82.5		82.5
Totals	**82.5**	**739.6**	**822.1**

IV. ANALYSIS

Indicators		
Net present value	NPV	US$1,522,500
Internal rate of return	IRR	> 100%
Benefit/cost ratio	B/C	2.82

Sensitivity Analysis

Variables	NPV (US$)	IRR	B/C
1. Increased costs +10%	1 387.6	> 100%	2.1
2. Reduced revenues -10%	1 100.4	> 100%	2.0

Additional Parameters and Scenarios

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates of profitability were obtained: FIRR, 88.8 percent; B/C, 2.67; and NPV, US$2.93 million.

-Economic indicators were based on the following parameters: elimination of taxes and subsidies; an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 86.6 percent.

Project Impact

-Modernization of agriculture

-Increased production of banana and plantain

-Increased exports of better-quality products

-Development of appropriate technology for Nicaragua, which will make such techniques available for application to other crops

-Reduced expenditure of foreign exchange on seed purchases

-Increased availability of better products for the local and export markets

-Better use of genetic resources

-Uniform commercial output

-Consumers on international markets will benefit from better products.

PANAMA

Project Profile: MICROPROPAGATION FOR COMMERCIAL PRODUCTION OF BANANAS AND CASSAVA

Regional Program: DEVELOPMENT OF BIOTECHNOLOGY

I. BASIC INFORMATION

Location:	National
Duration:	Three years
National Executing Institution:	Panamanian Institute for Agricultural Research (IDIAP) with collaboration from the private sector
Local Responsibility:	Panamanian Institute for Agricultural Research (IDIAP) and the private sector
National Support Agency:	Ministry of Agricultural Development
Regional Support Agency:	Tropical Agriculture Research and Training Center (CATIE)

II. PROJECT DESCRIPTION

Justification:

-The Project will use state-of-the-art technology which will make it possible to produce, in the short term, high-quality, disease-free banana and cassava plants, contributing to the development of small- and medium-scale farmers and the national economy.

-Through the adoption of micropropagation techniques by private enterprises, it will be feasible to produce very large quantities of plants which are healthier than those obtained with conventional methods, and less expensive than those imported.

-The availability of abundant, high-quality seed would do much to eliminate the most serious limitation to banana and cassava plantation expansion.

Objectives

To increase production of high-quality banana and cassava plants through micropropagation, in order to achieve commercial production in the short term of seed which will be healthier and less expensive than those currently obtained by producers

Goals

-To commercially produce 1 million banana plants through micropropagation by the third year. In the case of cassava, to stabilize production at 400,000 plants, also in the third year.

Years	Banana plants	Cassava plants
1	40 000	50 000
2	160 000	150 000
3	1 000 000	400 000
4	1 000 000	400 000
5	1 000 000	400 000

-To transfer technology for the commercial production of propagules to private enterprise

-To support the formation of three private seed enterprises by the third year

-To support the founding of an association of private seed enterprises.

Subprojects

Subproject 1. Commercial module for micropropagation of banana

Subproject 2. Commercial module for micropropagation of cassava

Beneficiaries

Direct beneficiaries of the Project will be banana producers, estimated at 60 to 70, and cassava producers, whose numbers may reach 40,000. The Project will lead to the commercial production of banana and cassava plants which will be superior to those currently available to farmers.

Technical personnel who participate directly in the Project will also benefit.

III. COSTS AND FINANCING

Costs

Local currency:	US$254,000
External currency:	US$582,500
Total:	US$836,500

Financing

Source	Short term	Long term	Total (US$ X 000)
External		744.5	744.5
Internal	92.0		92.0
Totals	**92.0**	**744.5**	**836.5**

IV. ANALYSIS

Indicators

Net present value	NPV	US$1,385,500
Internal rate of return	IRR	> 100%
Benefit/cost ratio	B/C	2.3

Sensitivity Analysis

Variable	NPV	IRR	B/C
1. Increased costs +10%	1 247.9	> 100%	2.1
2. Reduced revenues -10%	971.8	> 100%	1.9

Additional Parameters and Scenarios

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates of profitability were obtained: FIRR, 60 percent; B/C, 2.21; and NPV, US$2.17 million.

-Economic indicators were based on the following parameters: elimination of taxes and subsidies and all types of transfers; an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 59.1 percent.

Project Impact

-Modernization of agriculture

-Reduced expenditure of foreign exchange on seed imports

-Increased availability of better products for both the domestic and exports markets

-Better use of genetic resources

-Uniform commercial output

-Consumers on the international market will benefit from better products.

-Biotechnology will be promoted through its application on a commercial scale.

CENTRAL AMERICA

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Program Headquarters:	Guatemala
Duration:	Three years
Executing Unit:	SIECA
Cost of Regional Component:	US$5,159,200

One of the top priorities established by the governments of the countries of the Central American isthmus for reactivating their economies is to improve the balance of payments situation by increasing their exports. At present, important activities are being carried out in this connection and economic policies are being coordinated to achieve this goal.

This Regional Program for Intra-Regional Trade and Exports to Third Countries is a significant contribution to this strategy and, especially, to the Plan of Economic Action for Central America approved by the presidents of the isthmus in June 1990.

The Regional Program is divided into two components: one regional and one national. The objective of the regional technical cooperation component is to generate joint actions in Central America in support of agricultural exports. The benefits of the Regional Program will cover all agricultural exports since it is related to, and coordinated with, the Chamber of Export Enterprises.

II. REGIONAL PROGRAM DESCRIPTION

Justification

The Regional Program is justified because:

-The development of intra- and extra-regional trade is a top priority in the current economic strategy of the countries of the isthmus.

-Efforts being developed by the countries, in coordination with regional agencies, must be supplemented with regional investment projects that have an immediate impact.

-Diversification of agricultural production for export must be strengthened with additional financial resources.

-The execution of national agricultural projects will increase foreign-exchange earnings and generate employment; it will also raise the standard of living for a broad sector of the population with potential for self-management.

Objectives

-To increase the trade of agricultural products among the countries of Central America

-To contribute to increasing the production and export of nontraditional products, by improving joint negotiating capabilities of the countries of the isthmus vis-a-vis third countries

Beneficiaries

The countries that will benefit from this Regional Program are Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama. Direct beneficiaries of the Regional Program include private export enterprises, small- and medium-scale farmers and small- and medium-scale private agricultural and agroindustrial enterprises.

III. COSTS AND FINANCING

Costs

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**

Financing

Item	Coun-tries	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

IV. ANALYSIS

Regional Program Impact

-The Regional Program will accelerate the process and negotiations to economic integration in Central America, and provide support to the guidelines set forth by the presidents of the countries of the isthmus in the Plan of Economic Action for Central America (PAECA).

-It will increase nontraditional agricultural exports and, in the case of Nicaragua, it will promote the modernization of coffee cultivation and increase coffee exports.

-National investment projects constitute, in and of themselves, an important source of employment in rural areas, the impact of which will be greater for agricultural workers and small- and medium-scale farmers.

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

COSTA RICA

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

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location:	Central Pacific and Chorotega regions
Duration:	Four years
National Executing Institution:	Ministry of Agriculture and Livestock in collaboration with the private sector
Regional Support Agencies:	SIECA/OIRSA/ICA
National Financial Agency:	Central Bank of Costa Rica and the National Financing System

II. PROJECT DESCRIPTION

Justification

The mango subsector is strongly represented by an organization of farmers, industrialists and exporters.

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.

Mango cultivation can generate new sources of employment that will raise family income levels.

The Project aims to establish a quarantine treatment and mechanized packing plant.

The area comprised by the Project is agriculturally suited to growing mangoes profitably, as attested to by the output of the 4,000 hectares currently under cultivation.

Support is forthcoming from producers organizations, exporter organizations, and agreements between MAG and UCR (University of Costa Rica) guaranteeing technology generation and transfer.

Objectives

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

Components

-Planting and renewal of plantations

-Quarantine treatment and marketing

-Generation of technology

Goals

-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 boxes by the Project's 10th year

-To establish a quarantine treatment and mechanized packing plant by the fourth year

-To upgrade the collection infrastructure of farmers' organizations during the first three years of the Project

-To develop the processing technology needed to export processed mangoes

Beneficiaries

Direct:

Farmers	420
Jobs	660

III. COSTS AND FINANCING

Costs

Local currency:	US$5,445,300
Foreign currency:	US$11,749,800
Total:	US$17,195,100

Financing

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**

IV. ANALYSIS

Indicators

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

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 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. As a result, rural migration to the cities will decrease.

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.

COSTA RICA

Project Profile: PROMOTING THE CULTIVATION, PROCESSING AND EXPORT OF CASHEW NUTS

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location:	Chorotega and Central Pacific regions
Duration:	Four years
National Executing Institution:	Ministry of Agriculture and Livestock in collaboration with the private sector
Local Responsibility:	Central Pacific and Chorotega Regional Offices and cashew producers associations
National Financial Agency:	Central Bank of Costa Rica and the National Financial System

II. PROJECT DESCRIPTION

Justification

Agricultural and climatological conditions of Project area are apt for cashew growing. Nevertheless, the slow pace of research and technology transfer holds back production and productivity.

The Project will contribute to increasing production by disseminating a technological package which will remedy shortcomings in the various stages of cultivation. In addition, it will modernize and upgrade the industrial process, as well as marketing.

Objectives

To foster social and economic development in the Central Pacific and Chorotega regions by promoting and modernizing production, modernizing cashew processing practices, and improving domestic and external marketing for the cashew industry

Beneficiaries

Agricultural component	Direct 750
	Indirect 3,750
Industrial component	Direct 60
	Indirect 300
Marketing component	Direct 50
	Indirect 200

The investment per Project beneficiary is US$6,598 (direct beneficiaries only).

III. COSTS AND FINANCING

Costs

Local currency:	US$974,900
External currency:	US$3,973,400
Total:	US$4,948,200

Component	External	Local	Non-reimbursable technical cooperation	Total
Agricultural	2 683.2		114.4	2 797.6
Processing	716.2	333.3		1 049.5
Marketing		112.7	20.0	132.7
Technological research		219.5	202.2	421.6
Training			197.4	197.4
Executing unit		309.4	39.9	349.4
Total	**3 399.4**	**974.9**	**573.9**	**4 948.2**

IV. ANALYSIS

Indicators

A financial analysis was done of the Project's agricultural and processing components. The following indicators were obtained:

NPV 12%	US$197,508
FIRR	24.0%
Benefit/cost ratio	1.07

Sensitivity analysis

Variable	FIRR (%)	B/C	NPV (US$ X 000)
Costs +5%	14.2	1.01	145.4
Income -5%	14.9	1.01	197.0

Additional Parameters and Scenarios

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates were obtained: FIRR, 49.3 percent; B/C, 1.71; and NPV, US$21,151,800.

-Economic indicators were based on the following parameters: i) elimination of taxes, subsidies and all types of transfers; ii) an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 31 percent; the NPV, US$13,187,300; and the economic B/C ratio, 1.45.

The Project's contribution to the trade balance will be US$5.9 million.

Project Impact

The Project will generate 860 jobs directly, and 4,250 indirectly, in socioeconomically-depressed areas. The processing plant will be situated in Barranca, a region with one of the highest unemployment rates in the country.

EL SALVADOR

Project Profile: PROMOTING THE CULTIVATION, PROCESSING AND EXPORT OF CASHEW NUTS

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location:	Crops: Southeastern zone of the Departments of San Miguel and La Union. Processing Plant: Department of San Miguel
Duration:	10 years
National Executing Institution:	Cashew Cooperative
National Support Agencies:	Promotion: FUSADES and COMCORDE. Research and development: DIVAGRO and the Agricultural Technology Center (CENTA-MAG)
Regional Support Agencies:	SIECA/OIRSA/ICA
National Financial Agency:	National Financial System

II. PROJECT DESCRIPTION

Justification

The main justifications for the Project are:

-The availability of 34,000 hectares of national land that can be used for cashew growing. By nature, the cashew adapts easily to prevailing conditions, so that there are no obstacles to its cultivation in the selected area. In this zone (the southeastern part of San Miguel and La Union provinces), it is estimated that there are approximately 6,300 hectares of suitable land for the Project's purposes.

-The availability of an abundant supply of suitable labor (existing crops will not be affected).

-Availability on the national market of sufficient quantities of other inputs necessary for agricultural and industrial production.

-The existence of an industrial 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. Worldwide production for 1989 is estimated at 500,000 metric tons; over the last five years the trend was upward, but always less than the demand.)

Objectives

-To increase cashew production and productivity on existing plantations and to expand planted areas

-To industrialize cashew nuts for export

Subprojects and Components

-Agricultural phase

-Industrial phase

-Marketing

Goals

-To reactivate the existing 900 hectares during the first year and to incorporate the 3,100 remaining hectares during the next five years

-To totally reactivate the agroindustrial plant, operating it at 90-percent capacity within an eight-year period

-To increase export earnings from US$504,000, during the first year, to US$2.8 million during the 10th year. During the Project's life, export income will amount to US$11.3 million.

Beneficiaries

Type Direct Indirect

Small- and medium-scale farmers in the southeastern part of the departments of San Miguel and Usulatan 200

Workers on cashew plantations 1,000

Workers at industrial plant 315

Estimating three direct beneficiaries per production unit selected by the Project, the per-capita investment is US$5,291.70.

III. COSTS AND FINANCING

Costs

Local currency: US$2,200,900

Foreign currency: US$974,400

Total cost; US$3,175,300

Financing

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**

IV. ANALYSIS

Indicators

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 analysis of the Project for other scenarios that facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the results were: FIRR, 24.8 percent; B/C, 1.44; and NPV, US$3,308,800. The following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project.

-Economic indicators were based on the following parameters: i) elimination of taxes, subsidies and all types of transfers; ii) an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 18.6 percent; the NPV, US$1,405,800; and the economic B/C ratio, 1.19.

Once fully implemented, the Project will contribute US$4,397,600 annually to the trade balance.

Project Impact

As of the Project's first year, foreign-exchange earnings will exceed US$500,000, reaching US$2.8 million in its 10th year.

The Project will generate 27,300 work days in the first year; from the eighth year on, the number will reach 88,500.

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

Ten permanent jobs will be generated in the administrative component.

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

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

As for ecological benefits, the reforestation of 4,000 hectares of land will contribute to the conservation of soils, as well as to protecting the area's flora and fauna.

EL SALVADOR

Project Profile: BANANA PRODUCTION AND INSTALLATION OF PACKING PLANTS IN LEMPA-ACAHUAPA

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

National Executing Institution:	Private enterprise
Duration:	10 years
National Support Agencies:	General Directorate of Irrigation FUSADES/DIVAGRO
Regional Support Agencies:	IICA/OIRSA/SIECA
National Financial Agency:	National Financial System

II. PROJECT DESCRIPTION

Justification

The Lempa-Acahuapa No. 3 Irrigation and Drainage Agricultural Development project is in the construction stage. A potential area of 600 hectares for the cultivation of bananas is included on the list of crops for this Project, based on technical studies conducted by the MAG.

The existence of a market in Europe with a minimum demand for 5 million boxes (18 kg each) per year, with a purchase price guaranteeing an attractive net profit for the producer, justifies the preparation of this Project to produce Grand Nain bananas for export, and generate foreign exchange and employment.

Objectives

To cultivate Grand Nain bananas and install selection, classification and packing plants to export the produce to European markets, in the service area of the Lempa-Acahuapa Project. The Project will be located and executed in the departments of Usulutan and San Vicente.

Goals

-To develop 600 hectares of bananas, Grand Nain variety, over a three-year period, for export to European markets. The expected yield is 2,200 boxes per hectare.

-To establish three Grand Nain-variety processing plants, each with the capacity to process 440,000 boxes a year

-To train a minimum of 30 technicians and 100 members of enterprises involved in the Project

-To generate 130 work days a year and to export the equivalent of US$6 million a year, once the Project is established

Beneficiaries

Direct Beneficiaries 450 individual farmers and farmers organized into cooperatives

Indirect Beneficiaries 1,350 farm workers

Investment per production unit (three people) US$7,585

III. COSTS AND FINANCING

Costs

Local currency: US$2.692 million

Foreign currency: US$7.512 million

Total cost: US$10.204 million

Financing

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**

IV. ANALYSIS

Indicators

A 12-percent discount rate was used. 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

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates were obtained. FIRR, 28.1 percent; B/C, 1.40; and NPV, US$8,579,200.

-Economic indicators were based on the following parameters: i) elimination of taxes, subsidies and all types of transfers; ii) an 80-percent correction factor for skilled labor. Under these conditions, the estimated economic internal rate of return (EIRR) is 29.6 percent; the NPV, US$9,112,500; and the economic B/C ratio, 1.43.

Project Impact

-Efficient use of the irrigation systems installed by the government

-An increase of approximately 130,000 work days a year and an increase in the incomes of both farmers and the working population at large

-A net generation of foreign exchange of approximately US$6 million a year, as of the fourth year

EL SALVADOR

Project Profile: MELON PRODUCTION AND INSTALLATION OF PACKING PLANTS IN COMALAPA

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location: Farms: Municipalities of San Luis Talpa and La Libertad. Packing plants: Municipalities of San Luis Talpa and La Libertad	
Duration:	Six years
National Executing Institution:	Private enterprise
National Support Agencies:	FUSADES/DIVAGRO
Regional Support Agencies:	IICA/OIRSA/SIECA
National Financial Agency:	Central Reserve Bank and the National Financing System

II. PROJECT DESCRIPTION

Justification

The following conditions justify Project execution:

-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.

-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 kg to 4.45 kg. In Florida, average costs of the last four harvests increased from US$10.40 to US$14.90.

Objectives

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

Components

Component 1: Agricultural. Farms

Component 2: Agroindustrial. Installation and operation of packing plants

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

Beneficiaries

Direct beneficiaries: 450 private landholders with plots of up to 10 hectares

Indirect beneficiaries: 1,500 farm workers

IV. COSTS AND FINANCING

Costs

Local currency: US$5.105 million

Foreign currency: US$2,656,500

Total: US$7,761,500

Financing

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**

IV. ANALYSIS

Indicators

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

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 a year, and will generate net revenues amounting to US$6 million a year.

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 a year.

EL SALVADOR

Project Profile: CITRUS PRODUCTION, PROCESSING AND EXPORT

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location:	Department of Libertad (Opico)
Duration:	13 years
National Executing Institution:	Fruit Growers' Cooperative
National Support Agencies:	National Agricultural Technology Center (CENTA)/MAG/FUSADES/DIVAGRO
Regional Support Agencies:	SIECA/IICA/OIRSA
National Financial Agencies:	Central Bank and the National Financial System

II. PROJECT DESCRIPTION

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

Objectives

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

Subprojects and Components

Component 1. Agricultural. Establishment of commercial plantations

Component 2. Agroindustrial. Installation of three packing plants

Goals

The goals for the agricultural and agroindustrial components are:

-To plant an additional 3,000 hectares to 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 metric tons by year six

-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

Beneficiaries

Direct beneficiaries: 1,400 farmers

Indirect beneficiaries: 4,200 workers in the agricultural and agroindustrial phases

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

III. COSTS AND FINANCING

Costs

Local currency: US$11.47 million

External currency: US$2.327 million

Total: US$13.797 million

Financing

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**

IV. ANALYSIS

Indicators	
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

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 13.

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 permanent jobs.

The Project will benefit the environment by reforesting land with perennial crops which promote soil conservation.

GUATEMALA

Project Profile: SUPPORT FOR FRUIT AND HONEY EXPORTS

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location:	Central Highlands, Southwestern Coast, Southern Coast, the Northeastern corner of the country and the departments of Izabal, Peten and Alta Verapaz
Duration:	10 years
National Executing Institution:	Ministry of Agriculture, Livestock and Food with collaboration from the private sector
Local Responsibility:	MOSCAMED Program with collaboration from the private sector
Regional Support Agencies:	SIECA/IICA/OIRSA
National Financial Agencies:	National Financial System and the national budget

II. PROJECT DESCRIPTION

Justification

The Project responds to the country's need to diversify its export agriculture. It will give hundreds of farmers living in target areas the opportunity for full-time employment, earning profits to raise their standard of living and to modernize their farms, bringing production up to commercial levels and raising productivity rates.

Objectives

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

Subprojects

1. Blackberry cultivation
2. Anna apple cultivation
3. Cultivation and processing of pineapple and orange
4. Cultivation and processing of cashew
5. Processing oranges in the Northern Transverse Belt
6. Mango cultivation and hot-water treatment plant
7. Production of honey, royal jelly and propolis

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 plant 200 hectares of Anna apple, yielding 500 quintals per hectare, and to export 50 percent to the Central America

-To introduce commercial-scale plantations of pineapple (500 ha) and oranges (600 ha). The plant will produce 1,015 metric tons of orange juice, 1,204 metric tons of pineapple juice and 2 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 Northern Transverse Belt.

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

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

Beneficiaries

Direct: 755 five-member farming families

Indirect: 45,525 agricultural workers

III. COSTS AND FINANCING

Costs

The distribution of Project costs is as follows:

Item	US$ X 080
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**

Financing

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.

IV. ANALYSIS

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

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates were obtained: FIRR, >100.0 percent, B/C, 2.14; and NPV, US$100,103,600.

-Economic indicators were based on the following parameters: i) elimination of taxes and subsidies and all types of transfers; ii) an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was >100%; the NPV, US$100,214,400; and the economic B/C, 2.14.

Project Impact

The Project will generate 44,881 permanent jobs, primarily in the rural areas of the country. At the conclusion of 10 years of execution, the Project will have brought in US$56.9 million for exports. 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

Project Profile: PROCESSING AND COLD STORAGE FACILITIES FOR VEGETABLE PRESERVATION IN PRODUCTION CENTERS

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location:	Chimaltenango and Zacapa
Duration:	10 years
National Executing Institution:	Ministry of Agriculture, Livestock and Food with collaboration from the private sector
Local Responsibility:	Agricultural Diversification and Marketing Program and the private sector
Regional Support Agencies:	SIECA/ICA/OIRSA
National Financial Agency:	National Agricultural Development Bank

II. PROJECT DESCRIPTION

Justification

The Project is justified because the farmers are already well organized, have standing marketing infrastructure and have achieved a good degree of technical development, and because it will raise productivity on vegetable farms, create jobs and orient production to external markets.

Objectives

To create more sources of employment and improve income among small-scale vegetable farmers, by installing production infrastructure to support organized marketing centers

Subprojects

Vegetable freezing plant

Cantaloupe exports to the United States

Prechilling and refrigeration of snowpeas

Goals

-To increase vegetable exports to 4,348 metric tons by the end of the Project

-To offer direct marketing of 63,000 cases of melon by year 10 of the Project

-To boost snowpea export earnings to US$1.6 million by the final year of the Project

Beneficiaries

Direct: 30 farmer associations (some 1,050 members)

Indirect: 3,150 workers on farms

III. COSTS AND FINANCING

Costs

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

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**

Financing

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**

IV. ANALYSIS

Indicators

Overall indicators show that this is a financially-sound proposition. The Project will have an 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 at 12 percent over a ten-year period.

Sensitivity Analysis

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

Project Impact

-Some 1,223 permanent jobs are assured.

-Farmer incomes will rise by US$900 per year as of the third year of the Project.

-The Project will generate US$300,000 annually, beginning the first year that the agroindustrial plants are in operation.

HONDURAS

Project Profile: INSTALLATION OF COLD-STORAGE FACILITIES FOR AGRICULTURAL AND LIVESTOCK PRODUCTS IN PUERTO CORTES AND THE RAMON VILLEDA MORALES INTERNATIONAL AIRPORT OF SAN PEDRO SULA

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

National Executing Institution:	Atlantic Region
Duration:	Three years
National Executing Agencies:	Federation of Agricultural and Agroindustrial Producers and Exporters of Honduras (FEPROEXAAH), Cortes Chamber of Commerce and Industries and the Pro-Development Committee of the Ramon Villeda Morales Airport
Local Responsibility:	Cold-Storage Services Enterprise
National Support Agencies:	Secretariat of Natural Resources
National Financial Agency:	Central Bank of Honduras

II. PROJECT DESCRIPTION

Justification

The Project will promote agricultural exports from Honduras and also facilitate exports from Nicaragua, Guatemala and El Salvador, which lack the port facilities available at Puerto Cortes. These will be enhanced by the installation of a cold-storage system and other export facilities.

The construction and installation of these cold-storage facilities will stimulate off-season production of products already being exported, as well as other items not yet in production or expanded because of a lack of adequate facilities for export.

The Master Plan for Development of the Sula Valley, currently being implemented by the government, consists of rehabilitating 20,000 to 30,000 hectares over the next three years to bring them under agricultural production for export. In addition, efforts currently being undertaken by the enterprises in that area to improve their airport facilities, suggest that the Ramon Villeda Morales Airport will soon acquire greater importance as a port of departure for agricultural exports. These facilities will also enable the country to diversify its export markets, especially its agricultural exports, since they will facilitate storage for a much longer period of perishable products. Thus, exporters will be in the position to export not only to relatively nearby countries, but to more distant markets as well.

Objectives

-To contribute to increasing exports of perishable agricultural produce

-To promote the cultivation of perishable agricultural products, which can have more than one annual harvest and which, due to the current lack of cold storage-facilities, are produced in limited volumes

Subprojects

Subproject 1. Multiple-purpose, cold-storage chambers for refrigeration and freezing, to be installed in Puerto Colon

Subproject 2. Multiple purpose cold-storage chambers for refrigeration and freezing, to be installed in the Ramon Villeda Morales International Airport

Goals

-To conduct a 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 refrigeration equipment and components

-To install refrigeration equipment

-To acquire freight and internal transportation equipment for the Puerto Cortes and Ramon Villeda Morales International Airport facilities

Beneficiaries

The Project will directly benefit producers and exporters of citrus fruit, pineapple, melon, banana, plantain, watermelon, shrimp, lobster, other shellfish, ornamental plants and fresh flowers.

The inhabitants of Puerto Cortes and San Pedro Sula will also be benefited since permanent job possibilities in these installations will be generated.

III. COSTS AND FINANCING

Costs	
Preinvestment funds	US$ 3 000 000
Estimated investment	US$ 3 960 000
Technical assistance	US$ 10 000

Item	Total Investment	External resources	National contri-bution
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**

Financing

The Project will be financed with a US$3.5 million, 10-year loan, a two-year grace period and a 19-percent interest rate.

The local share of the Project financing will be 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 the Puerto Cortes and the Villeda Morales Airport.

IV. ANALYSIS

Indicators

It is not possible to calculate the financial indicators (IRR and NPV), since complete information on expenses and income related to cold storage and freezing services is not available.

Based on the information obtained, the Project is found to be profitable. Through the use of the Puerto Cortes facilities and services contracted, annual earnings in the neighborhood of US$10.3 million will be obtained, if estimated freight volumes and potential activity are maintained. This means that the investment could be recovered in three years.

Project Impact

Increased foreign-exchange earnings from US$74 million to US$215 million. Most of the exports will exit through Puerto Colon, which will have the appropriate facilities.

Increases in direct employment will be limited, since very few new personnel will be required. Altogether, some 20 to 30 people, between freight handlers, administrative personnel and guards, will be employed. Maintenance work should preferably be carried out by private enterprises contracted for this purpose.

The Project's greatest impact will stem from the fact that cold- storage facilities will promote production of perishable produce for export, since they will allow fresh fruit and vegetables to be stored for shipment to the United States and Canadian winter markets. It will also increase the possibility of competing on the European winter market.

HONDURAS

Project Profile: REHABILITATING CASHEW PLANTATIONS IN THE SOUTHERN ZONE AND INSTALLATION OF A SEMI-MECHANIZED CASHEW NUT AND FRUIT PROCESSING PLANT IN EL TRIUNFO, CHOLUTECA DEPARTMENT

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location:	Southern Region, Department of Choluteca
Duration:	Five years
National Executing Institution:	Federation of Agricultural and Agroindustrial Producers and Exporters of Honduras (FPX)
Local Responsibility:	Cashew Agroindustrial Enterprise
National Support Agency:	National Agricultural Institute (INA)
National Funding Agency:	Federation of Savings and Loans Cooperatives of Honduras (FACACH)

II. PROJECT DESCRIPTION

Justification

It will contribute to the diversification and expansion of the supply of nontraditional exports.

-The cashew crop adapts well to the conditions of the Southern region, since it can resist long droughts.

-This is a profitable crop, which provides many benefits, including quick reforestation, use of the false fruit as fresh fruit, and a broad range of byproducts.

-The crop has excellent export benefits; world demand exceeds supply. Cashews nuts have shown a 14-percent increase in prices, followed by almonds, Brazil nuts, chestnuts and peanuts.

Objectives

-To increase the production and productivity of cashew plantations

-To exploit cashew harvests to the maximum through the introduction of an agroindustrial phase that replaces primitive methods used for extracting the products and byproducts

-To generate jobs and improve the incomes of cashew growers, and the rural population in the the crop's area of influence

-To increase exports of cashew nuts in order to obtain foreign exchange

Subprojects

1. Rehabilitation and planting of new plantations

2. Modernization of agroindustrial processing operations

Goals

	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

Project Beneficiaries

The Project will directly benefit 350 present cashew growers and 310 new ones. The total population of the southern region will benefit indirectly from the Project.

IV. COSTS AND FINANCING

Costs

Local currency:	US$329,000
Foreign currency:	US$2.462 million
Total:	US$2.791 million

Financing

The external funds required amount to 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 would 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.

IV. ANALYSIS

Indicators

Subprojects	NPV	FIRR (%)
Subproject 1. Agricultural	5 240.0	60.3
Subproject 2. Agroindustrial	19 173.2	69.6

Sensitivity Analysis

A sensitivity analysis was conducted for the agricultural subproject, increasing annual costs by 10 percent. Under these conditions, the FIRR is 55.4 percent.

Project Impact

Annual income levels would rise to US$350 for present-day farmers who rehabilitate their plantations, and to US$700 for farmers establishing new plantations.

Some 490 direct jobs will be generated directly and approximately 550 indirectly.

Cashew exports will increase. The Project will generate approximately US$30 million in foreign exchange during the useful life of the cashew plantations.

The Project will contribute to reforestation in the southern region.

NICARAGUA

Project Profile: DEVELOPING MELON PRODUCTION AND EXPORTS

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location:	Municipalities of Nagarote and Sebaco
Duration:	10 years
National Executing Institution:	Nicaraguan Investment Fund, with collaboration from the private sector
Local Responsibility:	Fund for Export Promotion and the private sector
Regional Support Agencies:	SIECA/OIRSA/IICA

II. PROJECT DESCRIPTION

Justification

During the last five years, solid agronomical experience was gained in melon growing for export. The main problems involved in marketing and trade were solved with the reopening of trade relations with the United States and the hiring of specialized brokers. The Project will generate an increased influx of foreign exchange and steady employment opportunities. It will also consolidate the first organization of nontraditional producers; the results of this organizational effort will depend upon the success achieved in the market.

Objectives

To increase the output of export melons and to initiate the National Program for Promotion of Nontraditional Agricultural Exports, and to strengthen the private sector's role in the export sector

Components

Agricultural component

Agroindustrial component

Marketing component

Administration and implementation

Goals

-To cultivate 657 hectares of melon

-To obtain a yield of 22.5 metric tons per hectare

-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

Beneficiaries

Direct: Four enterprises (3 private: Betania, Hansell and Hannon: 1 state-owned: Oscar Benavides)

Indirect: 4,500 workers, including the owners of the enterprises

III. COSTS AND FINANCING

Costs

Local currency: US$1,528,700

External currency: US$2,965,400

Total: US$4,494,100

Financing

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**

IV. ANALYSIS

Indicators

The internal rate of return (IRR) is 89.1 percent, the Benefit/cost ratio (B/C) is 1.17, and the net present value (NPV) is US$5.56 million at 12 percent.

Sensitivity Analysis

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 analysis of the Project for other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: i) a useful life of 20 years for the Project, ii) income and costs at market prices, iii) a 12-percent discount rate. The following estimates were obtained: FIRR, >100 percent; B/C, 1.26; and NPV, US$9,902,100.

-Economic indicators were based on the following parameters: i) elimination of taxes, subsidies and all types of transfers; ii) an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was >100 percent; the NPV, US$7,909,100; and the economic B/C ratio, 1.20.

The Project's contribution to the trade balance is US$6,436,100.

Project Impact

Exports will generate a gross annual income of US$8.2 million. After meeting financial obligations, the balance in foreign exchange is US$2.5 million annually, for a cumulative balance of US$12.4 million at the end of the fifth year.

The Project will generate a value added of slightly more than

US$2.5 million yearly. An amount equivalent to US$415,000 per year will cover 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 creates one new agricultural job for every two hectares during eight months of the year. Most of the jobs will be for 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 will be developed in the Project area in the form of more than 70,000 new agricultural work days. Some 17,500 more work days will be generated in agroindustry and in administrative matters.

NICARAGUA

Project Profile: REHABILITATION OF COFFEE CULTIVATION

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location: Departments of Matagalpa, Jinotega, Esteli and Nueva Segovia

Duration: 15 years

National Executing Institution: Nicaraguan Investment Fund in collaboration with the private sector

II. PROJECT DESCRIPTION

Justification

Coffee cultivation is of vital importance to the nation's economy. Therefore, it is necessary to improve the plantations and yields, as well as to increase exports.

Objectives

To recuperate 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

Components

Credit

Research and technology transfer

Training

Follow up and evaluation

Preinvestment studies

Administration and execution

Goals

To rehabilitate 20,641 hectares and increase yields. This area will be worked as follows:

-To renew 2,861 hectares, 65 percent of which will increase the current production from 6.5 to 30 quintals/green coffee per manzana

-To replant 4,487.9 hectares; average yields will increase from 11 to 25 quintals/green coffee per manzana

-To improve 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

-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. Thirty-five 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 previous 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

Beneficiaries

The Project will directly benefit 5,071 small- and medium-scale farmers and 211 cooperatives.

The Project will indirectly benefit 7,465 farmers.

III. COSTS AND FINANCING

Costs

Local currency: US$19,850,200

Foreign currency: US$14,997,400

Total: US$34,847,600

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		2062.2	
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

IV. ANALYSIS

Indicators

A financial analysis reveals that the Project is very attractive for farmers and for the country as a whole.

FIRR	22.6%
NPV:	US$ 17162 200
B/C:	1.33

Sensitivity was made by calculating a 10-percent drop in coffee prices, which is the most critical value of the Project.

FIRR	18.7%
NPV	US$ 10 250. 000
B/C:	1.17

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$17.1 million 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 annual increase of 93 percent.

The Project will generate employment as of year two. The demand for labor exceeds the situation without the Project, reaching maximum demand for 18,000 workers in the eighth year -- 7,000 more than currently employed.

PANAMA

Project Profile: PROMOTING THE PRODUCTION OF NONTRADITIONAL EXPORT CROPS

Regional Program: INTRA-REGIONAL TRADE AND EXPORTS TO THIRD COUNTRIES

I. BASIC INFORMATION

Location:	Provinces of Panama, Chiriqui, Herrera, Cocle, Los Santos, Veraguas, Boca del Toro and Darien
Duration:	Five years
National Executing Institution:	Ministry of Agriculture and Livestock, with collaboration from the private sector
National Financial Agency:	Agricultural Development Bank

II. PROJECT DESCRIPTION

Justification

The Project aims at promoting the export of nontraditional products by motivating and assisting private farmers in the production, agroindustrial and marketing processes. The Project is entirely in keeping with the country's objective to diversify agricultural exports, and increase the sources of foreign- exchange earnings by supporting successful experiences with 10 crops. It will also promote socioeconomic development in the country's major agricultural areas, by creating steady employment and directly improving the income levels of 869 families.

Objectives

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

Subprojects and Components

Subprojects

1. Promoting agricultural production
2. Agroindustry
3. Marketing

Components

1. Credit
2. Research
3. Administration and implementation

Goals

-To finance production activities of the 10 selected crops, to increase their productivity for export purposes

-To establish commercial operations on 869 farms covering an area of 3,808 hectares

-To install and operate a csashew nut processing plant in year one of the Project

-To build and operate four fruit-packing plants in year one of the Project

-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 the Project

Beneficiaries

Direct: 869 farmers

Indirect: 3,000 farm workers

Investment per direct beneficiary is US$16,300.

III. COSTS AND FINANCING

Costs

Local currency: US$5,991,400

External currency: US$12.811 million

Total: US$18,802,400

Financing

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**

IV. ANALYSIS

Indicators

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

Project Impact

Implementation of this Project will substantially improve employment levels in the target areas.

It will raise the income of 869 new farmers and indirectly benefit more than 3,000 farm workers to be involved in the proposed activities.

As of year three, 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.

CENTRAL AMERICA

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Project Headquarters:	Costa Rica
Duration:	Four years
Executing Unit:	IICA
Cost of Regional Component:	US$69,755,200

Agroindustrial development is one of the most viable ways for the countries of Central America to strengthen their production base and diversify exports. In order to achieve this objective, the presidents of the region, in the Plan of Economic Action for Central America (PAECA), instructed the ministers responsible for integration and regional development to promote "a gradual and selective conversion policy to improve the countries' efficiency, penetrate new markets and substitute imports competitively, whenever appropriate."

The Regional Program contains two components: a regional component with technical cooperation and preinvestment activities, and a national component consisting of investment projects presented by the countries. The Regional Program includes the establishment of a regional fund for agroindustrial development which will have its greatest impact in rural areas.

The national projects will benefit from an agroindustrial information, dissemination and coordination system, which will form part of a broader information network for Central American trade and exports. The harmonization of subsectoral policies, the creation of the regional fund and the aforementioned information network are some of the principal activities that will support agroindustrial development in the isthmus.

II. REGIONAL PROGRAM DESCRIPTION

Justification

The Regional Program on Agroindustrial Development is justified because:

-Agroindustrial modernization and conversion are top priorities in the strategy for agricultural reactivation.

-Agroindustrial exports from Central America have lost their competitive edge due to poor quality and high prices.

-Increased value added will help stem the current deterioration in the terms of trade.

-National investment projects will increase agricultural production and, as a result, the supply of raw materials for the principal agroindustries of the region.

-National projects represent an important source of employment, will contribute to import substitutions and generate foreign exchange.

Objectives

-To support the efforts of the Central American countries in reactivating and developing an efficient agroindustrial sector, the ouput of which will boost regional trade and enable the countries to enter international markets with competitive products

-To develop harmonized guidelines among the countries of the isthmus which will facilitate private sector investments in the agroindustrial sector and contribute to the efficient development of agroindustry

Beneficiaries

The beneficiaries of the national investment projects are:

Direct 16,473 farmers

Indirect 73,000 farm and agroindustrial workers

The beneficiaries of the regional technical cooperation and preinvestment component are:

Direct:

-Producers of agricultural goods subject to processing

-Producers of secondary goods such as special containers needed for the agroindustrial products

-Workers in services linked to agroindustry: laborers, agroindustrial technicians and other specialized workers that participate in this production process

The preparation of investment profiles on agroindustrial topics will benefit: 15 edible oil processing plants, 10 sugar mills, 10 coffee processing plants and 10 coffee roasting enterprises, 10 agroindustries for processing cocoa and cocoa byproducts, and five fruit and vegetable processing plants.

Indirect

-Professionals of technical services including marketing, information, small metal industry, administration and others linked to agroindustrial development

-Central American entrepreneurs who will receive technical and financial facilities for agroindustrial development

III. COSTS AND FINANCING

Costs

The following is a breakdown of the regional and national components:

Components	US$ X 000
1. Regional Technical Cooperation and Preinvestment Component (A+B+C+D)	**69 755.2**
A. Technical cooperation	**1 141.9**
Agroindustrial information system	730.0
Agroindustrial inventory and analysis	44.4
Policy harmonization proposal	172.5
Training program	95.0
Quality-control laboratory services	100.0
B. Formulation of investment profiles for portfolio	**4 922.5**
-Vegetable oils and fats	921.0
-Dairy agroindustry	443.5
-Coffee agroindustry	809.5
-Sugar agroindustry	953.0
-Products of nonexportable bananas	692.0
-Cocoa agroindustry	472.5
-Fruit and vegetable agroindustry	631.0
C. Executing unit	**450.8**
D. Rural Agroindustrial Development Fund	**63 240.0**
2. National Investment Projects	**199 671.9**
Costa Rica	
-Oil palm	12 710.7
-Coconut palm	24 353.8
El Salvador	
-Cassava	2 269.3
-Soybeans	25 916.0
Guatemala	
-Oilseeds	21 745.2
Honduras	
-Soybeans	8 531.1
Nicaragua	
-Sesame	6 903.2
-Cotton	94 167.0
Panama: Agroindustnal Research Center	3 075.4
TOTAL REGIONAL PROGRAM (1+2)	269 427.1

Financing

Category	US$ X 000 A) Local contribution	B) External contribution
1. Technical Cooperation	235.3	**906.6**
-Agroindustrial Information System	127.0	603.0
-Agroindustrial analysis and inventory	12.4	32.0
-Policy harmonization	46.0	126.5
-Training program	29.4	65.6
-Quality-control laboratory services	20.5	79.5
2. Preinvestment	1 462.0	**3 460.5**
-Oils and fats	248.2	672.8
-Milk and dairy products	170.6	272.9
-Coffee	338.9	470.6
-Products of nonexportable bananas	210.2	481.8
-Sugar and byproducts	229.3	723.7
-Cocoa production	114.5	358.0
-Fruits and vegetables	150.3	480.7
3. Executing unit	125.4	**325.4**
4. Regional Rural Agroindustrial Development Fund	12 540.0 *	**50 700.0**
Total (1+2+3+4)	14 362.7	55 392.5
Grand total (A+B)		*69 755.2*

*Includes US$80,000 from regional agencies

IV. ANALYSIS

Regional Program Impact

Production efficiency will increase through the modernization of processing procedures, which will boost the competitiveness of exports from the Central American isthmus on international markets. The harmonization of policies will also contribute to Central American integration as pertains to agroindustry.

New investments will be supported through the Regional Agroindustrial Development Fund, which will have the greatest impact in rural areas.

National investment projects will contribute to import substitution of food products and the saving and generation of foreign exchange; they will also provide an important source of employment.

COSTA RICA

Project Profile: AGROINDUSTRIAL DEVELOPMENT OF COCONUT PALM IN THE HUETAR ATLANTIC REGION

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Location:	Huetar Atlantic region
Duration:	Five years
National Executing Institution:	Ministry of Agriculture and Livestock with the collaboration of the private sector
National Financial Agencies:	Central Bank of Costa Rica and the National Financial System

II. PROJECT DESCRIPTION

Justification

-It is necessary to resolve marketing and processing problems that limit coconut production and cause major losses to producers.

-There is a need to generate increased processing capacity to make better use of current and projected output.

-The cultivation and processing of coconut are part of a completely viable alternative for generating employment and improving the standard of living of the families involved in this activity in the Project area.

-The Project area offers optimal agricultural conditions for development of the crop.

-The production potential of the Project area is approximately 122,200 hectares.

-The international market holds great promise for coconut products and byproducts.

-Coconut production and processing for export represents an important source of foreign exchange for the country.

Objectives

To promote the production and agroindustrial development of coconut products in the Huetar Atlantic region, in order to increase nontraditional exports and improve the socioeconomic conditions of Project beneficiaries

Components

1. Crop promotion
2. Industrial development
3. Marketing support

Goals

-To rehabilitate 2,000 hectares of the crop during the first two years of the Project, increasing national output by 13.9 million coconuts

-To make plantings using hybrid seedlings at the rate of 500/hectares per year beginning in the second year of the Project, until a total of 2,000 hectares has been planted. Yields will increase from 15,960 coconuts/ha/yr in the fourth year to 29,640 coconuts/ha/yr by the eleventh year, at which time production will stabilize at 59.3 million coconuts.

-To gradually replace the Giant plantations, since this variety is susceptible to lethal yellowing

-To install and operate a coconut processing plant for export during the second year of the Project, installed with the capacity to process 40 million coconuts per year into 4,800 metric tons of crude oil. This will sell as 1,444 metric tons of refined oil, 2,035 metric tons of coconut char, 2,418 metric tons of oil cake and 189 metric tons of soapstock.

-At the beginning of the third year, to increase plant capacity to process 1,018 metric tons of activated charcoal, utilizing available raw materials.

Beneficiaries

Direct

Agricultural component 600

Industrial component 1,000

The investment per direct Project beneficiary is US$5,073

(with an average of three dependents per direct beneficiary).

III. COSTS AND FINANCING

Costs

Local currency:	US$11,637,500
External currency:	US$12,716,200
Total:	US$24,353,800

Financing

	(US$ X 000)			
	External financing	Local contribution	Technical cooperation	Total
Agriculture	3 975.7	407.5	16.5	4 399.70
Industrialization	8 172.1	10 144.2	49.5	18 365.80
Research and technology transfer	296.7	591.5	16.5	905.80
Executing office	117.7	493.3	71.5	682.60
Total	**12562.2**	**11 637.5**	**154.0**	**24 353.80**

IV. ANALYSIS

Indicators

	NPV (US$)	IRR (%)	B/C
Agricultural Component	4 107	30.4	1.52
Sensitivity			
Decrease in earnings 30%	1 297	14.8	1.06
Increase in costs 30%	1 120	20.2	1.21
Industrial Component	10 956 000	32.5	1.24
Sensitivity			
Decrease in earnings 18%	808 700	13.7	1.02
Increase in costs 20%	2 048 900	15.7	1.04

Sensitivity Analysis

The sensitivity analysis of the Project showed that the agricultural component would remain profitable even in the face of a 30-percent increase in costs and a 30-percent drop in income.

It also showed that the industrial component continued to be profitable with a 20-percent increase in costs and an 18-percent price decline.

Project Impact

In the agricultural phase of the Project, 2,000 hectares will be brought under production, and 2,000 hectares of coconut plantations will be rehabilitated; 600 producers will benefit directly. The industrial phase will benefit 1,000 farmers.

The Project will generate 1,000 new jobs through agricultural production, product collection centers and the industrial plant. Therefore, the Project will have an additional estimated 1,000 indirect beneficiaries.

With the establishment of this industry, the local economy will receive an injection of around US$14 million during the six years of Project life, solely from coconut purchases from producers.

With regard to environmental impact, the Project will bolster actions now under way to guarantee that natural resources are used appropriately and protected. The Project will safeguard the soil from erosion and will provide adequate soil coverage. In the industrial component, design precautions will be taken to guarantee that wastes and residues are eliminated properly.

COSTA RICA

Project Profile: AGROINDUSTRIAL DEVELOPMENT OF OIL PALM IN THE CENTRAL PACIFIC AND BRUNCA REGIONS

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Location:	Pacific Central and Brunca regions
Duration:	Five years
National Executing Institution:	Ministry of Agriculture and Livestock with the collaboration of the private sector
National Financial Agencies:	Central Bank of Costa Rica and the National Financial System.

II. PROJECT DESCRIPTION

Justification

By 1992, national production will reach 399,757 metric tons, which will surpass the operating capacity for oil extraction by 25,700 metric tons. The Project will increase the industrial processing capacity in order to handle the output of existing farms and that produced on new areas under cultivation.

Agroindustrial plants will be installed near the farms, which will help decrease transportation costs and prevent fruit damage. This will benefit the farmers, who will also profit from the advantages offered by vertical integration of the production process.

Products will be placed on international markets under more favorable conditions due to an increase in plant capacity, which will also ensure domestic supply. The Project will increase the area under cultivation. This, together with the modernization and expansion of the industrial process will generate a significant number of jobs in the Project area.

Objectives

To increase the processing capacity and boost palm production in order to achieve self-sufficiency in palm oil, increase nontraditional exports and improve socioeconomic conditions in the Brunca and Central Pacific regions.

Components

1. Agricultural

2. Agroindustrial

3. Marketing

Goals

-To establish two crude oil extraction plants with a six metric ton per hour capacity for fresh fruit, to process 25,000 metric tons of fresh fruit in each plant, extracting 5,498 metric tons of crude oil and 949 metric tons of palm kernels

-To increase the area under cultivation with oil palm by 2,300 hectares in the areas surrounding the new plants over a four- year period; 1,050 hectares will be established between Piedras Blancas and Palmar Sur, and 1,250 hectares in Hatillo.

-To increase the production of fresh fruit to 86,700 metric tons, that of crude oil to 19,074 metric tons, and that of palm kernels to 3,294 metric tons by the sixth year of the Project, in order to supply the new plants

-To increase to 12 metric tons per hour, during the fifth year, the capacity of the Piedras Blancas-Palmar Sur plant and of the Hatillo plant, thereby processing 10,995 metric tons of crude oil and 1,899 metric tons of palm kernels in each of the plants

Beneficiaries

-Direct beneficiaries will be 500 producers, 200 of whom will improve their farms, and 300 of whom will benefit from agroindustrial processing activities.

-Indirect beneficiaries will be 3,500 farm workers.

-The per-capita investment is US$7,824, and considers three persons per production unit in the agricultural phase, and US$10,718 as indirect benefits in the industrial and marketing phases.

III. COSTS AND FINANCING

Costs

Component	(US$ X 000)
Agricultural	4 694.4
Industrial and Commercial	5 359.2
Research and Technology Transfer	806.0
Executing Unit	555.5
Consultants	140.0
Contingencies (10%)	1 155.6
Total	**12 710.7**

Financing

The Project will be financed with external resources in the amount of US$8,202,300; US$154,000 for technical cooperation, and a local contribution of US$4,354,400.

Component	External	Local	Technical coopera-tion	Total (US$ X 000)
Agricultural	4 476.8	687.1	16.5	5 180.4
Industrial	3 312.3	2 582.8	49.5	5 944.6
Research and technology transfer	295.5	591.1	16.5	903.1
Executing unit	117.7	493.4	71.5	682.6
Total	**8 202.3**	**4 354.4**	**154.0**	**12710.7**

IV. ANALYSIS

Indicators

Component	FIRR (%)	B/C	NPV (US$ X 000)
Agricultural	25.4	1.39	1 206.0
Sensitivity			
Costs +20%	18.0	1.16	584.0
Earnings -20%	17.0	1.12	1 906.0
Industrial			
Hatillo plant	24.2	1.11	1 293.0
Piedras Blancas plant	25.8	1.12	1 432.2

Additional Parameters and Scenarios

The economic analysis was based on the following parameters: i) elimination of taxes, subsidies and all types of transfers; ii) 80-percent correction factor for skilled labor.

The economic internal rate of return (EIRR) was 25 percent.

Project Impact

Two hundred farmers will be the direct beneficiaries of the Project, 92 of whom will benefit from the 1,050 hectares that will be planted in Piedras Blancas and 108 of whom will benefit from the 1,250 hectares in Hatillo. In the industrial phase, at least 500 producers will be benefited. There will be indirect benefits for 3,500 individuals.

The Project will directly generate approximately 565 new jobs in the agricultural and industrial phases. Furthermore, it has been estimated that there will be another 500 new jobs in transportation, marketing, inputs, support services and other areas.

By executing the Project, the economy of Piedras Blancas-Palmar Sur will receive an injection of around US$1.28 million. Domestic producers will participate not only in the agricultural phase, but also in processing and marketing phases, which will increase the value added and their incomes.

EL SALVADOR

Project Profile: PROMOTING THE CULTIVATION AND PROCESSING OF SOYBEANS

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Location:	National
Duration:	Six years
National Executing Institution:	National Soybean Cooperative in collaboration with the private sector
Local Responsibility:	National Soybean Cooperative and the private sector
National Support Agency:	Center for Agricultural Technology (CENTA)

II. PROJECT DESCRIPTION

Justification

The Project will contribute to diversifying agricultural production, and represents a profitable option for farmers.

It will also result in substantial foreign-exchange savings through the substitution of soybean meal and vegetable oil imports bought to supply the domestic market.

It will promote agroindustrial integration and would result in greater value added of primary output.

The country has available 150,000 hectares suitable for soybean cultivation.

Farmers in the departments of San Miguel and Usulutan have experience in soybean cultivation. The greatest advantages of the location of the industrial plant is the excellent highway infrastructure. This will facilitate transportation of the raw material and the final products to the domestic market and, in the long term, to the Central American market.

Branches and agencies of financial institutions operate in the area selected; they will facilitate credit to producers and will provide support to the Project.

Finally, the Project will take advantage of the experience of potential cooperative beneficiaries in managing cooperative enterprises.

Objectives

To promote soybean cultivation and industrialization for supplying the domestic market with soybean meal and vegetable oil in the short term.

Subprojects

Subproject 1. Promotion of agricultural production

Subproject 2. Industrial processing

Goals

Annual production goals are:

Year	Surface area (hectares)	Yield (mt/ha)	Soybean output (mt)
1	7 000	1.95	13 650
2	14 000	1.95	27 300
3	21 000	1.95	40 950
4	28 000	1.95	54 600
5	35 000	1.95	68 250

Industrial output goals of 10,920 metric tons of oil and 54,600 metric tons of soybean meal have been set for year five, as follows:

Year	Soybean output (mt)	Oil output (mt)	Soy meal output (mt)
1	13 650	2 184	10 920
2	27 300	4 368	21 840
3	40 950	6 552	32 760
4	54 600	8 736	43 680
5	68 250	10 920	54 600

Beneficiaries

Direct beneficiaries will be 833 producers working farms that measure an average of 42 hectares.

Also benefiting directly from the Project will be some 7,000 heads of household who will participate in the agricultural activities and the permanent workers who will participate in the industrial phase.

III. COSTS AND FINANCING

Costs

Local currency:	US$20.6 million
Foreign currency:	US$5.2 million
Total:	US$25.9 million

Financing

Item	External	Internal	Total (US$ X 000)
Farms			
Land		5 250	5250
Working capital	11 460		11 460
Storage centers	2 766		2 766
Cold storage rooms	2 272		2 272
Other minor equipment and inputs	1 600		1 600
Technical assistance	380		380
Industrial plant			
Machinery and equipment	797		797
Construction and minor equipment	466		466
Working capital	653		653
Studies and others	272		272
Total	**20 666**	**5 250**	**25 916**

IV. ANALYSIS

Indicators

Net present value (NPV)	US$ 11 295 000
Internal rate of return (IRR)	29.4%
Benefit/cost ratio (B/C)	1.18
Sensitivity Analysis	
10% increase in costs	
Net present value (NPV)	US$ 4 843 000
Internal rate of return (IRR)	19.2%
Benefit/cost ratio	1.07
Though substantial variations are noted, the Project remains financially feasible.	
10% decline in income	
Net present value (NPV)	US$ 3 713 000
Internal rate of return (IRR)	18.1%
Benefit/cost ratio	1.06

Additional Parameters and Scenarios

Additional analysis of the Project for other scenarios facilitates the financial and economic assessment of investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 10 years for the Project. The following estimates were obtained: FIRR, >100 percent; B/C, 2.14; and NPV, US$69,494,300.

-Economic indicators were based on the following parameters: i) elimination of taxes, subsidies and all types of transfers; ii) an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 14.5 percent and the B/C ratio, 1.01. The critical values for the Project are the international prices for soybean meal and oil.

The Project's contribution to the trade balance will be US$15,891,800.

Project Impact

Project impact can be measured as follows:

-There will be an increase of 7,000 jobs in the agricultural phase and 50 in the industrial phase.

-The incomes of farmers and the working population in general will rise.

-Over the past few years, edible oils and meals on the order of US$33.2 million have been imported; this volume will gradually drop off.

-Due to the positive effects of the soybean crop as a nitrogen-fixing agent, soil fertility will be recovered in part.

EL SALVADOR

Project Profile: PROMOTING THE CULTIVATION AND PROCESSING OF CASSAVA

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Location:	Central Zone
Duration:	Three years
National Executing Institution:	National Cassava Cooperative in collaboration with the private sector
Local Responsibility:	National Cassava Cooperative and the private sector
National Support Agency:	Center for Agricultural Technology (CENTA)

II. PROJECT DESCRIPTION

Justification

-Substituting starch imports will help save foreign exchange.

-Incentives will be provided for agricultural diversification and primary production will be processed; production will take place on a commercial scale.

-Incomes of cassava producers will increase.

-Technologies for agroindustrial processing will be modernized and better-quality, more-competitive products (starch and meal) and byproducts (animal feed) will be obtained.

Objectives

To expand and improve cassava production and productivity, in order to supply raw materials to the starch agroindustry and to use byproducts to produce animal feed for the local market.

Subprojects

Subproject 1. Promotion of agricultural production

Subproject 2. Modernization of industrial production

Goals

The annual goals for the first five years of the Project are:

Year Area (ha) Yield (mt/ha) Production (mt) Starch (mt) Animal feed (mt)

Year	Area (ha)	Yield (mt/ha)	Output (mt)	Starch (mt)	Animal feed (mt)
1	558	26	14 508	2 540	4 352
2	703	26	18 278	3 200	5 483
3	885	26	23 010	4 027	6 903
4	885	26	23 010	4 027	6 903
5	885	26	23 010	4 027	6 903

Beneficiaries

The Project will directly benefit 1,500 to 2,000 farmers. It will also benefit some 60 people who will work in the industrial plant and in the Project's executing cooperative, for a total of 2,060 workers. Some farmers will have to hire additional labor, which will increase the number of indirect beneficiaries.

III. COSTS AND FINANCING

Costs

Year	Agriculture		Industrial		Total
	Foreign exchange	Local currency	Foreign ex-change	Local currency	
0	300.1	167.4	732.9	711.7	1912.1
1	81.7	43.5	0	0	125.2
2	177.4	54.6	0	0	232.0
Total	**559.2**	**265.5**	**732.9**	**711.7**	**2269.3**

Financing

The financial breakdown by contribution and source is as follows:

Item	External	National	Total
Agricultural plantations	553.0	265.5	818.5
Industrial plant			
Land and construction	388.9		388.9
Studies, inputs	322.8		322.8
Equipment, assembly and insurance	732.9		732.9
Technical cooperation	6.2		6.2
Total	2 003.8	265.5	2 269.3

Indicators

Calculations were based on low indexes for yield and extraction, which can be expected to improve in the medium term. A 26 metric ton yield per hectare is really feasible, and the enterprise will improve the 25-percent ratio of fresh cassava to starch, and the 70-percent degree of efficiency.

A 12-percent discount rate was used, since it approximates the interest rate paid on bank deposits in the international financial market. The following results were obtained:

Net present value (NPV):	US$ 2 181.8 miles
Internal rate of return (IRR):	30.6 %
Benefit/cost ratio (B/C):	1.29
Sensitivity Analysis	
10% increase in costs	
Net present value (NPV):	US$ 1440 miles
Internal rate of return (IRR):	23.6%
Benefit/cost ratio (B/C):	1,18
10% decrease in revenues	
Net present value (NPV):	US$ 1121.9 miles
Internal rate of return (IRR):	22.9%
Benefit/cost ratio (B/C):	1.16

Additional Parameters and Scenarios

Additional analysis of the Project with other scenarios facilitates the financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates were obtained: FIRR, >100 percent; B/C, 2.01; and NPV, US$13,833,300.

-Economic indicators were based on the following parameters: i) elimination of taxes, subsidies and all types of transfers; ii) an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was >100 percent; the NPV, US$12,596,300; and the economic B/C ratio, 1.84.

The Project's contribution to the trade balance is US$1.356 million. It will generate 714 new jobs.

Project Impact

-Increased use of labor force: approximately 2,000 campesinos, mostly smallholders

-Use of land, currently under-utilized or abandoned

-The industrial process will increase the value added of raw materials.

-Foreign exchange will be saved by substituting starch imports.

GUATEMALA

Project Profile: PRODUCING AND PROCESSING OILSEEDS

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Location:	Southern coast (Escuintla and Suchitepequez, Central (Guatemala), Central-Western Highlands (Chimaltenango and Solola).
Duration:	Five years for disbursement and a 10-year useful life of the Project
National Executing Institution:	Bank of Guatemala (BANGUAT) with collaboration from the private sector
Local Responsibility:	Credit Department of BANGUAT and the private sector
National Support Agency:	Ministry of Agriculture, Livestock and Food
Regional Support Agencies:	CABEI
National Financial Agencies:	National Banking System and government budget

II. PROJECT DESCRIPTION

Justification

Due to a decrease in the area devoted to cotton growing, the country has had to import large amounts of raw materials for the edible-oil industry and unrefined oil. The Project will reduce imports and generate the equivalent of US$19 million in foreign exchange annually.

Objectives

To provide support to the national agricultural and agroindustrial production sectors involved in the production of vegetable oils and fats, by significantly increasing the domestic supply of oilseeds at competitive prices. The Project will expand and refurbish industrial complexes for the extraction of oils from various short-cycle oilseeds.

Subproject

The oilseed production subproject includes investments in farms that produce seeds for industry and for planting, in the following: acquisition of machinery and equipment, permanent improvements and construction works.

The agroindustrial processing subproject includes investments for the acquisition of machinery and equipment, and for the construction or establishment of storage silos.

Goals

Oilseed production subproject (hectares)

Farm type	Location	Crop	Years 1	2	3	4	5	Total
I	Escuintla	Soybean	1500	1500	1500	3000	3000	10500
	Suchitepequez	Sesame	400	400	400	800	800	2800
		Sorghum	500	500	500	1000	1000	3500
II	Suchitepequez	Soybean			300	300	300	900
		Sesame			150	150	150	450
III	Suchitepequez	Soybean seed			50	50	50	150
		Sesame			40	40	40	120
IV	Chimaltenango Solola	Soybean seed			80	80	80	240

Beneficiaries

Farm type	Years 1	2	3	4	5	Nº benef. Total
I	10	10	10	20	20	70
II	0	10	10	20	30*	70
III	0	10	10	10	10*	40
IV	0	10	10	10	10*	40
Total	**10**	**40**	**40**	**60**	**70**	**200**

*Test plots were established only this year.

III. COSTS AND FINANCING

Costs

Local currency: US$2.231 million

Foreign currency: US$19.514 million

Total: US$21.745 million

Financing (US$ X 000)

Item	Type	Short term	Long term	Total (US$ X 000)
Engineering and management	1	276.9		276.9
Permanent improvements	2	3 782.0	3 782.0	
Machinery and equipment	2		13 317.7	13 317.7
Technical cooperation	2		52.8	52.8
Cost increases	2		2 361.0	2 361.0
Financial expenses	1	1 954.7		1 954.7

Type 1: Local Type 2: External

IV. ANALYSIS

Indicators

Profitability indicators were: FIRR, 42.5 percent, B/C ratio, 1.10; and NPV, US$18,296 million.

Sensitivity

Variable		NPV (US$ X 000)	FIRR (%)	B/C
Increased costs	+10%	634.2	12.7	1.00
Reduced revenues	- 9%	753.8	12.9	1.00

Additional Parameters and Scenarios

In order to expand the profitability analysis of the Project, additional parameters were considered such as a 20-year useful life of the Project, 12-percent discount rate, and income and costs at market prices.

The financial results were: IRR, >100 percent, B/C, 1.54; and NPV, US$5,321,900. The FIRR was substantially higher compared to the previous rate of 42.5 percent, since the latter included consideration of the financial costs.

Economic indicators were based on the following parameters: i) elimination of taxes, subsidies and all types of transfers; ii) an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 16 percent and the B/C ratio was 1.05. Although the IRR is always favorable in Guatemala, it decreased due to the international price of edible oil, which is a critical value for the Project.

Program Impact

Net foreign-exchange savings with the Project will be approximately US$12 million annually. At the end of the five years of disbursements, the Project will have generated the equivalent of 2.7 million work days a year, which represents approximately US$2.5 million in wages.

The Project will make a significant contribution to conserving the local environment, as well as the flora and fauna of the rivers that flow into the Pacific by decreasing the use of pesticides, increasing crop rotation and the use of organic materials and nitrogen-fixing plants.

HONDURAS

Project Profile: PROMOTING SOYBEAN CULTIVATION

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Location:	Nine regions of the country
Duration:	Five years
National Executing Institution:	Secretariat of Natural Resources with collaboration from the private sector
Local Responsibility:	Basic Grains Unit of the Secretariat of Natural Resources and the private sector
National Support Agency:	General Directorate of Agriculture
National Financial Agency:	National Agricultural Development Bank

II. PROJECT DESCRIPTION

Justification

-Domestic demand for soybeans is currently met with imports and there is no substitute product.

-Little foreign exchange is available to import soy grain and byproducts.

-Foreign exchange will be saved when imports are substituted with national output.

-The country has land suitable for expanding the cultivation of soybeans.

Objectives

-To increase the production and productivity of soybeans as an input for domestic industries

-To use soil resources better and more sensibly, establishing rotation and plant association in areas most suitable for growing this crop

-To encourage the production of top-quality vegetable oils for human consumption and of other foodstuffs derived from soybeans

-To contribute to improving the quality of animal feed concentrates, to improve livestock production

Subprojects

1. Southern region (Choluteca)
2. Western-Central (Comayagua)
3. Northern region (Cortes)
4. Atlantic Coast (Atlantida)
5. Eastern-Central (Olancho)
6. Western region (Copan)
7. Northwestern region (Santa Barbara)
8. Northeastern (Yoro)
9. Central region (Francisco Morazan)

Goals

Goals through year five

Year	Surface Area (ha)	Production (mt)	Yield (mt/ha)
1	4 050	7 248	1.79
2	6 960	13 812	1.98
3	10 860	22 734	2.09
4	14 610	32 912	2.25
5	17 520	42 470	2.42
Totals	**54 000**	**11 9176**	**2.21**

Source: Special Soybean Production Plan, 1989-1994. Secretariat of Natural Resources, 1988

Beneficiaries

Project beneficiaries after five years

Type of beneficiary	Number of beneficiaries		
	Direct	Indirect	Total
Type 1. Soybean producers	1 800	400	2 200
Type 2. Workers	400	3 400	3 800

III. COSTS AND FINANCING

Costs

Category	Amount (US$ X 000)
-Farm operating credit (machinery, inputs, labor, transport and contingencies)	5 676.5
-Fixed investment credit (tractors, seeders, sprinklers, threshers, harvesters and contingencies	2 515.7
-Administration and management (salaries, equipment and supplies, fuels and lubricants)	339.1
Total	**8 531.3**

Financing

Source	Short term	Long term	Total (US$ X 000)
External	5 676.5	2 515.7	8 192.2
Domestic	339.1	0	339.1
Total	6 075.6	2 515.7	8 531.3

IV. ANALYSIS

Indicators	
Internal rate of return (IRR)	69%
Benefit/cost ratio: (B/C)	1.43
Net present value (NPV):	US$ 5 422 864

Sensitivity Analysis	
Annual increases in operating costs	IRR (%)
+ 30%	54.7
+ 35%	37.6

Additional Parameters and Scenarios

Alternative scenarios were used for a more in-depth financial and economic analysis.

The financial analysis indicated: FIRR, >100 percent; and B/C, 2.22. The basic elements of the analysis included: income and costs at market prices, 12-percent discount rate and a 20-year useful life for the Project.

Parameters used for the economic indicators include: 1) elimination of taxes, subsidies and all types of transfer; ii) 80-percent correction factor for skilled labor. Results: EIRR, >100 percent; and economic B/C, 1.50.

The contribution of the Project to the trade balance was estimated at US$30,818,600, by Project conclusion.

Project Impact

The incomes of soybean producers will increase by US$254 per hectare. Gross income of the producers over the five years of the Project is estimated at US$34.7 million.

Employment will be generated in the Project area and in the agroindustrial enterprises.

Imports of soybeans and soybean byproducts will be replaced. By the fifth year of the Project, domestic supply will meet demand for soybean oil. Domestic production of soybean meal will meet 83 percent of local demand. Over five years, US$34 million in foreign exchange will be saved.

NICARAGUA

Project Profile: PROMOTING COTTON CULTIVATION

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Location:	National
Duration:	Four years
National Executing Institution:	National Commission of Cotton and Oilseeds in collaboration with the private sector
Local Responsibility:	National Commission of Cotton and Oilseeds in collaboration with the private sector
National Support Agency:	Cotton Experimental Center
National Financial Agency:	Nicaraguan Investment Fund

II. PROJECT DESCRIPTION

Justification

The Project is justified because:

-Region II is appropriate for the cultivation of high-yield and high-quality cotton.

-The cultivation of cotton has an important impact on the national economy. In 1981, cotton exports amounted to US$123 million. Presently (1990), cotton exports amounted to US$35 million.

-Crop research, carried out by the Cotton Experimental Center (CEA), has various problems and is going through a critical stage, mainly due to financial and management problems; this has led to a high turnover of technical personnel, the deterioration of facilities and equipment, and a lack of means of transportation.

-It is necessary to equip a team of extension agents to provide specialized technical assistance to cotton producers.

-At the industrial level, cotton gins are under-utilized and in a state of disrepair due to a decrease in the area under cultivation. Most of the cotton gins have not received adequate maintenance because of insufficient resources to purchase spare parts, which indirectly affects the yield and quality of raw cotton.

Objectives

To reactivate cotton growing in Region II, by recovering the area under cultivation. This will make it possible to increase profits, boost the volume of cotton exports and generate more jobs for the rural population.

Components

1. Support to agricultural production
2. Support to industrial production
3. Research and technology transfer

Goals

Support to agricultural production

-To stabilize the area under cultivation at 105,000 hectares in four years

-To increase the physical yield of the crop from 14.5 quintals of lint cotton per hectare to 19 quintals per hectare. This will increase potential production for export from 725,000 quintals of lint cotton to 1.995 million quintals in four years.

-To rehabilitate five cotton fields a year at a cost of US$10,000 each

Support to industrial production

-To rehabilitate the ginning capacity from 15 to 35 cotton gins in four years

-To rehabilitate five cotton gins a year, in accordance with production volumes

-To promote feasibility studies for the installation of a processing plant for ginning byproducts (linter and noil), in the cotton region

Research and technology transfer

-To obtain two or more high-yield bacteria- and virus-resistant varieties, with good fiber technology, as of the fifth year of research

-To validate the thresholds of economic losses, in three stages of crop development, after two years of research

-To encourage the producers in the Project area to adopt management and soil conservation practices (after year 5)

-To evaluate the application and use of alternative pest management measures in the second year of the Project (Cotton Experimental Center)

-To decrease the use of agrochemicals from 23 to 18 sprayings, on the average, in the second year of the Project

-To disseminate boll weevil management practices among producers, in the first year of the Project

-To determine the best cotton management practices (weeds, fertility, distances, planting dates, etc.), in year two

-To provide ongoing training for technicians and producers on the different development stages of the crop, through seminars conducted by CEA, field trips, publications, technical standards and recommendations on crop management, the use of insecticides, herbicides, etc.

Beneficiaries

Direct: 770 cotton growers from Region II (543 small-scale farmers, 178 medium-scale farmers and 49 large-scale farmers).

Indirect: 4,000 farm workers

III. COSTS AND FINANCING

Costs

The Project will be executed over a period of four years. The total cost of rehabilitating cotton production in Nicaragua is US$230.6 million. This amount includes the government contribution of US$140.8 million and US$45.5 million from the producers. The Project profile covers only US$94.2 million (it does not include the government contribution).

Category	US$ X 000
Investment in plantations and agroindustry	40.367
Research and technology transfer	4 300
Contingencies (physical)	4 000
Producers' contribution	45 500
Total	**94 167**

Financing

Item	Year 1	Year 2	Year 3	Year 4	Total US$ millions
National government funding					
Recurring costs	62.6	88.3	114.8	136.5	136.5
Agricultural operations	62.6	88.3	114.2	135.3	135.3
Research operations and maintenance			0.6	1.2	1.2
General costs	1.4	0.9	1.0	1.0	4.3
Subtotal	64.0	89.2	115.8	137.5	140.8
Incremental	1.4	26.6	53.2	74.9	78.2
Funding from producers					
Recurring costs	20.9	29.5	38.2	45.1	45.1
Agricultural operations	20.9	29.5	38.0	45.1	45.1
Research operations and maintenance			0.2	0.4	0.4
Subtotal	20.9	29.5	38.2	45.5	45.5
Incremental		8.6	17.3	24.6	24.6
External funding					
Investment	14.1	14.1	12.2		40.4
Contingencies (physical)	1.4	1.4	1.2		4.0
Subtotal	15.4	15.5	13.4		44.4
Total	**100.3**	**134.2**	**167.4**	**183.0**	**230.6**

*The total amount is not equal to the sum for the total number of years, since, for the recurring costs, the highest annual amount for the period is used.

IV. ANALYSIS

The financial results of the Project are:

Net present value at 12% (NPV):	US$112,497,300
Internal rate of return (IRR):	59%
Benefit/cost ratio (B/C):	1.22

The economic results of the Project are:

Net present value at 12% (NPV):	US$119,337,800
Internal rate of return (EIRR):	64%
Benefit/cost ratio (B/C):	1.24

PROJECT IMPACT

At the national level, there will be a notable improvement in the balance of payments situation, since foreign exchange will be generated rapidly and in high amounts. With the exception of the first year, when the gross profit margin in foreign exchange will drop 3.3 percent and the net flow decrease by 34.2 percent, the remaining years will show rapid increases, until a maximum profit margin of more than US$148 million and US$135 million, respectively, are achieved, as of the fourth year. As a result, there will be an increase of more than 200 percent in both cases.

The Project will generate savings in foreign exchange, by increasing national output of edible oils, which will substitute such imports.

The Project will have a favorable impact on employment in agriculture and agroindustry, as a consequence of increased areas under cultivation and of production. The effect on rural employment will be seen in the creation of some 2.359 million work days in the second year; 3.033 million in the third year; and 3.538 million in the fourth year, equivalent to increases of 40 percent, 80 percent and 110 percent, respectively.

NICARAGUA

Project Profile: PROMOTING SESAME CULTIVATION

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Location:	Departments of Leon and Chinandega
Duration:	15 years
National Executing Institution:	The National Cotton and Oilseed Commission (CONAL) with collaboration from the private sector

II. PROJECT DESCRIPTION

Justification

Agricultural conditions in Region II are excellent for high-quality sesame production, and the farmers resident there have been producing this crop for many years. By upgrading sesame production units and mechanizing sesame production, the Project will increase yields and improve export earnings. Sesame can make a valuable contribution to the trade balance, accounting for export earnings in excess of US$4 million procured with a minimal amount of foreign exchange.

Likewise, the Project will afford farmers the opportunity to increase their incomes and acquire new skills, while providing them with a steady source of employment. These factors will contribute to the social development of the zone, which has been neglected in recent years.

Objectives

To promote sesame production in Region II, increase the volume of production and upgrade the quality of this grain export, thereby generating foreign exchange and employment for the country

Components

Research and technology transfer

Support to agricultural production and storage

Support to industrial production

Administration, follow-up and control

Goals

-To stabilize at 17,500 hectares the area planted annually in sesame

-To increase productivity to as much as 10 quintals per manzana (1 mz = 0.7 ha)

-To achieve sustained production of 250,000 quintals (unprocessed), which is equivalent to industrial output of 200,000 quintals (processed)

-To achieve uniform operating capacity at all stages along the industrial production line (20 quintals per hour)

-To purchase vibrators, driers, electronic separators and other equipment

-To increase the current number of varieties from 35 to 40

-To rehabilitate the three permanent sesame storage warehouses

Beneficiaries

Model	Number of Farmers	%	Area of Model Sesame Farms		Total Area in Sesame		%
			M2	(ha)	M2	(ha)	
SM-Sp	1 890	56.0	2	(1.4)	3 780	(2 646)	15.0
SM-Mp	1 075	32.0	8	(5.6)	8 600	(6 020)	34.0
SM-Sppp	70	2.0	10	(7.0)	700	(4 900)	3.0
SM-Mppp	70	2.0	16	(11.2)	1120	(784)	4.0
SM-SC	220	8.0	50	(35)	11 000	(7 700)	44.0
Total	**3 325**	**100.0**			**25 200**	**(17 640)**	**100.0**

S=Small; M=Medium; C=Commercial

SM=Sesame model; p=producer; pp=private property

III. COSTS AND FINANCING

Costs

Component	(US$ X 000)
Administration and follow-up	810.3
Agronomical research	1 038.4
Technology transfer	1 472.5
Agricultural credit	3 310.0
Support to industrial production	272.0
Total	**6 903.2**

Financing

Component	1		2		3		4		5	
	Ext	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Int
Administra-tion		280	145	32	100	18	100	18	100	18
Research	250	42	270	13	140	14	140	14	140	14
Technology transfer	120	14	100	38	350	57	300	47	300	47
Credit	2850	460								
Storage		15		30						
Industrial re-habilitation	200	72								
Total	**3700**	**603**	**615**	**113**	**590**	**89**	**540**	**79**	**540**	**79**

IV. ANALYSIS

Model farms	NPV (US$ X 000)	IRR (%)	B/C
SM-Sp	36.2	17.0	1.03
SM-Mp	1 188.2	73.0	1.39
SM-Sppp	1 868.2	63.2	1.60
SM-Mppp	3 259.0	76.0	1.70
SM-SC	18 146.2	>100.0	2.26

PROJECT IMPACT

Net foreign exchange generated during the life of the Project will be US$47.5 million, while net foreign-exchange earnings per unit of foreign exchange invested will be 22.2. Net productivity in foreign exchange will be 6.3 and the cost in foreign exchange per unit of capital invested will be 1.1 for the investment and 0.09 for operations. The values found indicate that the Project will have a very positive effect on the country's balance of payments situation.

PANAMA

Project Profile: CENTER FOR RESEARCH AND TECHNOLOGY TRANSFER FOR AGROINDUSTRIAL DEVELOPMENT (DESIGN, CONSTRUCTION AND EQUIPPING)

Regional Program: AGROINDUSTRIAL DEVELOPMENT

I. BASIC INFORMATION

Location:	National
Duration:	Three years
National Executing Institution:	Ministry of Agricultural Development (MIDA) with collaboration from the private sector
Local Responsibility:	General Directorate of Agriculture of MIDA and the private sector
	National Financial Agency: Central Bank of Panama

II. PROJECT DESCRIPTION

Justification

-Installation of agroindustrial enterprises at reduced costs

-Lower costs for conversion of existing agroindustrial enterprises

-Development of food industry for products of mass consumption

-Appropriate use of agricultural potential, with increased efficiency in the use of production resources

-Enterprises upgraded with regard to new products, processes and packaging (technology)

-Better selection of industrial equipment to be installed in agroindustrial enterprises

Objectives

To establish a research and technology-transfer center for agroindustrial development in Panama

Subprojects

1. Agroindustrial Research and Technology Transfer Center
2. Technology transfer and technical assistance to producers for installation of rural agroindustries
3. Documentation and Information Center
4. Quality control in food preparation

Goals

Description	Goals	
1. Feasibility study	Study	1
2. Supplementary research studies	Study	2
Agroindustrial processing lines		
Pilot plant equipment		
3. Technology Center		
Pilot plants (main line)	Plant	1
Pilot plants (other processing)	Plants	4
Laboratories	Laboratories	3
4. Rendering of services in:		
Agroindustrial research	Companies	
Technology transfer	Companies	
	Producers	
5. Technical training	Companies	10
	Technicians	250
	Producers	1 000
6. Technical assistance to small agroindustries	Companies	1 000
7. Documentation Unit		
Library specializing in food technology	Library	1

Beneficiaries

The Project will directly benefit agroindustrial enterprises in the country, as well as producers, government officials and institutions and, especially, private-sector organizations.

-Companies	500 companies
-Employees hired	20,000 employees
-Producers trained	1,000 producers
-Officials trained	40 technicians

III. COSTS AND FINANCING

Costs

Local currency:	US$2,347,025
Foreign currency:	US$728,375
Total:	US$3,075,400

Financing

Source	Total
Local	1 285 025
External	1 790 375
Total	**3 075 400**

IV. ANALYSIS

The Technological Center will cover its own expenses by providing technological services. Rates charged for the services should make it possible to improve the quality and timeliness of the Center services.

Profitability indicators will be described in the feasibility study for the Technological Center, as proposed in the Profile.

Project Impact

The Project will have an impact throughout the country, as reflected in the following:

-Existing enterprises will be able to modernize their industrial equipment at lower costs (500 agroindustrial enterprises).

-Agroindustrial development areas will be established in the interior of the country. Zoning will be used and a specialized infrastructure constructed to facilitate the installation of agroindustrial enterprises and cut costs.

-Improved marketing of perishable products will be achieved, due to improved processing techniques.

-Less foreign exchange will be spent to acquire foreign technology.

CENTRAL AMERICA

Regional Program: STRENGTHENING PLANT AND ANIMAL HEALTH SERVICES

I. BASIC INFORMATION

Regional Program Headquarters:	El Salvador
Duration:	Three years
Executing Unit:	OIRSA
Cost of Regional Component:	US$2,668,700

The economic and social problems posed by animal and plant diseases and pests in Central America and Panama, have sparked ongoing concern among the international organizations and in the affected countries. Viable solutions must be found to this critical problem plaguing the agricultural sector.

Insufficient animal health and plant protection actions have given rise to: a) a fall in export earnings; b) food shortages due to losses occasioned by diseases and pests; c) environmental damage due to indiscriminate pesticide use; d) contaminated foodstuffs; and e) a decrease in income for small- and medium-scale producers.

This Regional Program is a joint effort, undertaken by the countries and the specialized regional organizations in the area, to strengthen plant and animal health services.

II. REGIONAL PROGRAM DESCRIPTION

Justification

The strengthening of appropriate programs for the prevention, control and eradication of pests and diseases will reduce the colossal losses sustained in agricultural production and post-harvest activities, and facilitate intraregional and international trade.

The Regional Program will contribute to the development of the region's agricultural and livestock sector and have a noteworthy impact on the following:

-Increased sources of employment

-Generation of foreign exchange through an increase in the volume of agricultural exports

-Decreased losses due to improved product quality

-Increased income for small- and medium-scale producers, due to increased productivity on their farms

-Conservation and improvement of the agricultural genetic stock through the safe exchange of genetic material

-Improved environmental conditions through the appropriate use of pesticides

-Strengthening of regional integration based on coordinated plant and animal health activities

Objectives

To improve plant and animal health services in Central America and Panama, in order to benefit intraregional and international trade, to raise agricultural and livestock productivity, and to prevent the entry and establishment of exotic diseases and pests

Beneficiaries

The main beneficiaries of this Regional Program are agricultural and livestock producers and agroexporters. The former will benefit from fewer losses occasioned by plant and animal diseases and pests on their farms, which will raise their productivity levels. The latter will benefit from having greater access to international agricultural and livestock markets, because their products will have guaranteed superior sanitary conditions. In addition, less stock will be rejected for failing to meet international animal health standards.

The Regional Program will benefit all farmers. More specifically, plant and animal health actions will have their greatest impact on the small farmer, who lacks the resources which afford access to plant and animal health technology.

III. COSTS AND FINANCING

Costs

Regional Program: Costs by component and country (US$ X 000)

Component	Tech. Admin. Coord.	Instit. Strength	Quar. Emerg.	Diag. Dis./Pest	Dis./Pest Mgmt.	Health Info.	Country Totals
I. National		9 913.7	7 421.2	6 401.2	4 098.2	946.6	**28 780.9**
Costa Rica		3 263.2	2 022.1	1 310.9	971.4	55.8	7 623.4
El Salvador		1 069.4	362.0	476.2	330.2	214.3	2 452.7
Guatemala		1 540.9	1 815.2	794.8	679.2	111.9	4 942.0
Honduras		1 000.8	602.6	398.9	378.1	160.2	2 540.6
Nicaragua		889.4	377.2	1 008.7	397.6	197.4	2 870.3
Panama		2 150.0	2 241.5	2 411.7	1 341.7	207.0	8 351.9
2. Regional Organization	518.2	142.0	445.5	617.5	637.5	308.0	**2 668.7**
Regional Program (1 + 2)	518.2	10 055.7	11 866.7	7 018.7	4 735.7	1 254.6	**31 449.6**

Financing

Levels	External	National	OIRSA	Technical Cooperation	Total
National (1)	13 339.5	15 213.9		227.5	28 780.9
Costa Rica	3 963.2	3 622.7		37.5	7 623.4
El Salvador	1 050.2	1 355.0		47.5	2 452.7
Honduras	1 446.8	1 056.3		37.5	2 540.6
Guatemala	1 990.0	2 914.5		37.5	4 942.0
Nicaragua	1 522.8	1 310.0		37.5	2 870.3
Panama	3 366.5	4 955.4		30.0	8 351.9
Regional (2)			307.7	2 361.0	2 668.7
Regional Program (1 + 2)	13 339.5	15 213.9	307.7	2 588.5	31 449.6

IV. ANALYSIS

Regional Program Impact

-Integration of the private sector into the decision-making process concerning the management of plant and animal health problems in Central America and Panama

-Training for all personnel providing international inspection and quarantine services in the subregion

-Training for all personnel responsible for emergency animal health and plant protection systems in the countries of the subregion

-Application of import and export quarantine methodologies and technologies in the countries of the isthmus, to boost regional and intraregional trade

-Establishment of national plant and animal health laboratory networks to diagnose diseases and pests

-Training for all personnel working in disease and pest diagnostic laboratories

-Development of a program for managing major plant and animal diseases and pests, to operate in each country with the joint participation of the public sector, producers' associations and veterinary schools

-Establishment of a central plant and animal health information network headquartered at OIRSA, and national information offices in each of the countries of the region

-Improvement of environmental conditions through improved pesticide use and management

CENTRAL AMERICA

Regional Program: DEVELOPMENT OF BORDER AREAS

I. BASIC INFORMATION

Regional Program Headquarters:	Guatemala
Duration:	Five years
Executing Unit:	IICA-OAS-SIECA
Cost of Regional Component:	US$3.552 million

The governments of the countries of Central America and Panama, in their efforts to shore up the peace process in the isthmus, have identified possibilities for joint investment. Their aim is to conduct projects in border areas that take advantage of existing economic and natural resources, with a view to developing and making maximum use of the potential of the border areas, offering inhabitants in those areas better living conditions and reducing socioeconomic tension in these areas.

This Regional Program on the Development of Border Areas includes the Costa Rica-Panama Project and the Support for Developing the Farming Community in the Trifinio Region Project, which surrounds the Guatemala-El Salvador-Honduras border area. Technical studies have been completed for both these projects, and presented to the First Agricultural Sector Meeting of the Central American Governments with Cooperating Governments and Institutions, as national components of the Regional Program.

II. REGIONAL PROGRAM DESCRIPTION

The Regional Program on the Development of Border Areas consists of two components:

A. A regional component which will conduct two types of activities: 1) technical cooperation, including the preparation of an assessment and a development strategy; 2) preinvestment activities, including the preparation of investment profiles and the expansion and updating of the regional executing unit. The regional component will deal with border areas that have already been selected. Its cost is estimated at US$3.552 million.

B. Execution of two investment and development projects involving two or more countries

Justification

The Regional Program will:

-improve the quality of life of the inhabitants through investments in private production activities and through training activities;

-facilitate and contribute to enabling the State to provide basic services on a timely basis;

-improve the standard of living of inhabitants of border areas, thus contributing to reducing the likelihood of outbreaks of social unrest;

-enable vast regions previously cut off from the mainstream to become engaged in sustained development, allowing the inhabitants to take part in the dynamics of national growth;

-prevent further environmental deterioration;

-contribute to containing deforestation, soil erosion, the extinction of plant and animal species, and the upsetting of the ecological balance;

-provide support to economic integration in Central America in border areas; and

-improve instruments and mechanisms for joint action among the countries.

Objectives

-To finance the establishment of the basic infrastructure needed to foster economic growth in the border areas, with a view to boosting production and productivity, conserving renewable resources and improving the quality of the environment

-To accelerate the integration process in border areas, identify their potential, and plan for the integrated and sustainable exploitation and management of these resources

-To propose investment projects that generate employment, raise incomes and improve the living conditions of inhabitants living in extreme poverty

Beneficiaries

The beneficiaries of the national investment projects are:

Direct: 15,270 farmers and their families

Indirect: 27,000 agricultural laborers

An estimated 1.3 million inhabitants are expected to benefit from the regional technical cooperation and preinvestment component.

III. COSTS AND FINANCING

Costs

Category	US$ X 000
A. Regional component	**3 552**
-Technical cooperation	1 245
-Preinvestment	2 307
B. National investment projects	**47 625**
-Project to Support the Development of the Farming Community in the Trifinio Region	29 000
-Project to Support Agricultural Production in the Coto Brus (Costa Rica) and Chiriqui Viejo (Panama) River Basins	18 625
TOTAL FOR THE REGIONAL PROGRAM (A + B)	**51 177**

Financing

Activity	Local	External	Total (US$ X 000)
A. Technical Cooperation	**295.0**	**950.0**	**1 245.0**
Assessment	177.0	570.0	747.0
Development strategy	118.0	380.0	498.0
B. Preinvestment	**295.0**	**2 012.0**	**2 307.0**
Preparation project profiles	295.0	950.0	1 245.0
Executing unit		1 062.0	1 062.0
Total (A+B)	**590.0**	**2 962.0**	**3 552.0**

IV. ANALYSIS

Regional Program Impact

The Regional Program will allow the Central American governments to expand existing initiatives to undertake joint ventures in border areas. It will also boost the effectiveness of mechanisms used to design and negotiate binational or multinational projects.

In addition, the base studies will provide the means for assessing and making inventories of natural resources in the border areas. Investment possibilities will be identified for production. The Regional Program places heavy emphasis on promoting a style of economic growth that makes massive use of the unemployed or under-employed population. It will work to protect and appropriately manage natural resources and the environment.

COSTA RICA-PANAMA

Project Profile: SUPPORT FOR AGRICULTURAL PRODUCTION IN THE COTO BRUS (COSTA RICA) AND CHIRIQUI VIEJO (PANAMA) RIVER BASINS

Regional Program: DEVELOPMENT OF BORDER AREAS

I. BASIC INFORMATION

Duration:	Five years
National Executing Institutions:	Ministry of Agricultural Development in Panama and Ministry of Agriculture and Livestock in Costa Rica
International Funding Agency:	European Economic Community
National Funding Agencies:	National Bank of Costa Rica and Agricultural Development Bank of Panama

II. PROJECT DESCRIPTION

Justification

The Project envisages the creation of an agricultural credit fund and the upgrading of access roads to production areas, with a view to facilitating development of agricultural activities.

Project execution will make it possible to organize and follow up on actions that have already been initiated in the area, and will also contribute to ensuring that technical assistance and agricultural credit reach the producer in an efficient and timely fashion.

Resurfacing and improving roads to urban centers will facilitate the marketing of agricultural products in the Project area.

The Project will contribute to reducing unemployment levels and improving family incomes of Project beneficiaries.

Objectives

To promote and provide incentives for economic growth in the region by improving technical assistance, credit and other services which support agricultural production, while at the same time strengthening relations between the two countries

Components

Agricultural credit

Resurfacing and improvement of roads

Goals

The agricultural credit component will invest a total of US$4.01 million over a five-year period; a total of 1,270 producers will benefit.

In the livestock credit component, the amount of US$2.1 million has been planned for a five-year period, to serve the credit needs of 300 small-scale producers.

It is expected that 970 producers, cultivating a total of 1,800 hectares, will be assisted with a credit portfolio amounting to US$1.91 million.

The plan envisages the following distribution in hectares of the targeted crops:

Crops	hectares
Macadamia	1 200
Vegetables	50
Highland fruit trees	50
Corn and beans	1 500
Total	**2 800**

Under the resurfacing and improvement of production roads component, 69.3 kilometers of road will be upgraded, as follows:

Resurfacing	
Plaza Caizan-Volcan	20.0 kilometers
Plaza Caizan-Rio Sereno	19.7 kilometers
Improvements	
Piedra Candela-Santa Clara	9.6 kilometers
Pan American Highway-Gomez-San Andres	20.0 kilometers

Beneficiaries

The agricultural credit component will benefit a total of 1,270 producers; 300 livestock producers and 970 farmers. Since each producer benefited represents a five-member family, it is calculated that the number of indirect beneficiaries through this component will be 6,350 persons.

The roads component is estimated to benefit indirectly the entire population of the communities in the area of influence, i.e., approximately 27,000 inhabitants.

Investment per Project beneficiary, including family members, is US$2,900.

III. COSTS AND FINANCING

Costs

Component	Total (US$ X 000)
1. Agricultural credit	**4 010.0**
Livestock credit	2 100.0
Farming credit	1 910.0
2. Road component	**12 875.5**
3. Executing unit (personnel)	**1 740.0**
Total	**18 625.5**

Financing

Component	Local	External	Total (US$ x 000)
1. Agricultural credit		**4 010.0**	**4 010.0**
Livestock credit		2 100.0	2 100.0
Farming credit		1 910.0	1 910.0
2. Road Component		**12 875.5**	**12 875.5**
3. Executing Unit	***1,740.0***		**1 740.0**
Total	**1 740.0**	**16 885.5**	**18 625.5**

IV. ANALYSIS

The financial internal rate of return was calculated for a variety of scenarios; the one based on costs and benefits of production activities was considered to be the most appropriate. Using a 20-percent interest rate to calculate capital costs, and based on credit allocations for each year, the FIRR for 10- and 15-year periods is 30.5 percent and 36 percent, respectively.

Project Impact

-It will contribute to protecting and conserving resources in the area, through technical assistance to farmers and livestock ranchers.

-It will foster greater binational cooperation through joint collaboration between technical teams.

-It will establish a more solid foundation for improving family incomes and well-being.

-The improvement of roads will make it possible to get farm and livestock products to market in the Project area.

GUATEMALA-EL SALVADOR-HONDURAS

Project Profile: SUPPORT FOR DEVELOPING THE FARMING COMMUNITY IN THE TRIFINIO REGION

Regional Program: DEVELOPMENT OF BORDER AREAS

I. BASIC INFORMATION

Location:	Guatemala: the municipalities of Agua Blanca, Santa Catarina Mita, Esquipulas, San Jose La Arada y Chiquimula
	El Salvador: the municipalities of Santiago La Frontera, San Antonio Pajonal, Metapan, Msahuat and Santa Rosa Guachiplin, Citala, San Ignacio and La Palma
	Honduras: Departments of Ocotepeque and Copan
Duration:	Five years
National Executing Institution:	IICA-OAS

II. PROJECT DESCRIPTION

Justification

The Project is justified by the fact that the area is threatened by serious and rapid environmental deterioration, reflected mainly in deforestation, loss of plant cover, erosion by, and irregularity of, water currents, and pollution of lakes and rivers. Furthermore, the soil is not especially suitable for agriculture.

Agriculture and livestock raising are fundamental and will continue to be so for a long time. The region's leading limiting factor is the scarcity of water for agriculture and even for household use. The social indicators (health, education and others) are lower and more disturbing than for the rest of the countries, and there is a lack of basic infrastructure.

For all these reasons, economic and social improvement of the farming communities can come from combining small and varied sources of income, in an overall process of agricultural reactivation.

The Project's importance is centered on the need to achieve better use of land resources through appropriate farming systems that ensure soil conservation and increase production of basic foodstuffs for household consumption.

There is serious deterioration in the standard of living among the population of the Trifinio region, as well as a technological lag in production activities. The demands of a rural population living in extreme poverty must be satisfied.

The execution of the Project is one of the major priorities of the governments of the three countries. This has been manifested by the Trinational Trifinio Plan Commission, which seeks to establish and conserve a biosphere reserve. The aim is also to incorporate the region's communities into an integrated development process, promoting conservation and offering alternatives that can improve the standards of living of the inhabitants while, at the same time, arresting the deterioration of natural resources.

The following are some of the results expected: a) reduction of slash-and-burn agriculture; b) soil conservation; c) reforestation and protection of forests; d) diversification and increased farm output; e) creation of jobs; and f) improved standards of living.

Objectives

To provide direct support to the rural population of the Trifinio area, in order to raise standards of living through combined technical and production actions, support services, and application of financial and organizational mechanisms that ensure participation, and to guarantee the conservation of natural resources. This will be achieved by combining the efforts of the three countries of the border area.

Components

Reforestation

Basic infrastructure

Physical and social infrastructure

Goals

-To generate, through reforestation activities, around 280,000 new work days annually; the farming community development component, 360,000 days; and infrastructure works, 600,000 days

-To reforest an average of 5,000 hectares annually, for a total of 25,000 hectares in the five years of the Project's life

-To establish three Basic Service Centers (BSC) to administer, coordinate and control the execution of the Project's components and, particularly, to manage its financial resources

-To carry out soil conservation works on 2,900 hectares, consisting of the construction of ditches on slopes and other mechanical soil conservation works

-To develop 60 artisan units, for canning food, building family silos and installing water filters and improved stoves

-To increase maize production by 9,700 metric tons, beans by 7,000 metric tons, sorghum by 200 metric tons, rice by 900 metric tons, vegetables by 12,000 metric tons and coffee by 6,500 metric tons

-To organize 90 farmers' groups for developing agroforestry, artisan, fishery and other activities

-To improve 500 kilometers of roads in the main access network to the work areas and communities

-To establish six warehouses for inputs, six collection centers, three fishery stations, and three demonstration farms

-To expand and upgrade the basic educational, health and housing infrastructure. Sixty schools, 36 health centers and 6,000 housing units will benefit

-To construct six small reservoirs and establish mini-irrigation units to serve a 400-hectare area

Beneficiaries

Total direct beneficiaries will be 14,000 producers, in a total area of 44,000 hectares to be served by the Project.

The Esquipulas center will serve 5,460 beneficiaries; Nueva Ocotepeque, 4,480; and Metapan, 4,060.

Per-capita investment for the Project is US$2,071.40.

III. COSTS AND FINANCING

Costs

Local currency: US$6 million

External currency: US$23 million

Total: US$29 million

Financing

Component	Local	Financing	Technical co-operation	Total US$ X 000
Reforestation		10 937	1 000	11 937
Basic Infrastructure		8 743	1 000	9 743
Physical and social infrastructure	3 900			3 900
Executing unit	2 100	1 320	3 420	
Total	**6 000**	**19 680**	**3 320**	**29 000**

IV. ANALYSIS

Indicators

Variable	FIRR	B/C	NPV (US$ X 000)
Project	20.0%	1.14	11 600
Sensitivity Analysis			
Revenue -10% and Costs +10%	12.4%	1.03	2 691

Project Impact

The Project's main impact will be on the conservation of resources and protection of the environment. Some 25,000 hectares will be reforested. In the medium term, indirect environmental benefits of the Project will have a positive qualitative influence on populated areas.

In terms of employment, the Project will generate 1.24 million work days per year, significantly reducing the levels of under-employment in the area. Furthermore, increased production will improve the nutritional situation.

Farmers will be organized through the activities of the Basic Service Centers. The construction of infrastructure will generate multiplier benefits for Project-area farmers.

CENTRAL AMERICA

Regional Program: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

I. BASIC INFORMATION

Program Headquarters:	Costa Rica
Duration:	Five years
Executing Unit:	IICA
Cost of Regional Component:	US$5.093 million

The overriding concern of this Regional Program is to strengthen small-scale farmers by funding activities for production, food security and regional integration. These same objectives have been stressed by the ministers of CORECA in a number of working meetings. This Regional Program also fits into the context of government programs for the agricultural sector and is tailored to mesh with adjustment policies, which in nearly all the countries call for reductions in public spending, downsizing government structures, general privatization and decentralization of government functions.

The Regional Program will include activities at the regional and national levels. For the most part, national activities will consist of investment projects to be carried out in each country. The Regional Program falls under the aegis of the PRACA Secretariat, and one of its prime duties is to train technicians and outreach workers. Thus, it is part of IICA's technical cooperation to PRACA member countries.

The basic objective of the Regional Program is to support the implementation of the national projects and, consequently, the consolidation of settlements in the region. It will provide specific technical cooperation related to the training of technicians, the training of instructors of small-scale producers, and follow-up and evaluation. The national investment projects and regional activities are expected to transform these settlements into small, efficient rural businesses that are competitive and fully-removed from government tutelage.

II. REGIONAL PROGRAM DESCRIPTION

Justification

The proposed activities will take advantage of the enterprises' production potential, which is currently under-used.

The Regional Program will gradually remove the settlements from government tutelage and privatize government activities.

Nongovernmental organizations and the private sector will develop activities previously carried out by the State.

The region's economic development strategy calls for reactivating both the agricultural sector and the small-farm economy. New sources of employment need to be created, higher production and productivity levels are needed for the items in the basic market basket (which play a key role in food security), and production must be diversified, targeting new market niches. These activities, in turn, will generate foreign exchange through exports.

Objectives

-To help make the national projects fully successful, it will consolidate national project implementation and offer region-wide technical assistance to national executing units. The Regional Program's areas of cooperation will include project formulation, training for technicians, and other tasks typical of a regional executing unit.

-To provide training in order to upgrade the skills of technical staff at national executing bodies, to ensure that each of the national project components is carried out successfully

-To consolidate a group of small rural enterprises selected especially for their production potential. This will be done by financing agricultural and off-farm production activities and training small-scale producers in production and management techniques.

Beneficiaries

In the various countries, the Regional Program identified a special group of settlements as having high agricultural production potential. These settlements are home to 32,847 families, whose human and physical resources and degree of organization will facilitate their conversion into small, efficient, competitive rural businesses.

The Regional Program will also strive to incorporate social groups such as women, young people and indigenous people into production processes, through investment projects in small rural businesses that generate jobs and income.

III. COSTS AND FINANCING

Costs

Components	Cost	%
1. Regional level		
Executing unit	5 093	4.3
Training unit	1 435	
Project unit	560	
Unit for follow-up and evaluation	480	
Support unit	245	
PRACA Secretariat[1]	1 643	
Equipment and supplies	100	
Office rental	120	
Other expenses[2]	510	
2. National level	**113 750**	
Executing units	9 900	8.3
Rural Development Fund	71 800	60.4
Working-capital loans	29 200	24.6
Training	2 850	2.4
Regional Program (1+2)	**118 843**	**100.0**

[1] Pertains to rural development specialists presently working in PROADER-IICA, who will play a significant role in the Regional Program.

[2] 18 percent of expenses, not including the IICA contribution

2. Financing

Level	Sources				Uses				Total
	External	National	IICA/ PRACA	Total	Fund	Working-capital loan	Training	Executingunit	
Countries (1)	98.7	15.05		113.75	71.8	29.2	2.85	9.9	113.8
Costa Rica	18.1	.80		18.9	15.0	1.5	.30	2.1	18.9
Guatemala	16.7	1.60		18.3	9.7	7.7	.20	.7	18.3
Honduras	11.2	1.85		13.1	6.0	3.6	.55	2.9	13.1
Nicaragua	25.5	2.80		28.3	24.1	2.5	.20	1.5	28.3
Panama	10.7	.30		11.0	5.8	3.3	.50	1.4	11.0
Dominican Republic	16.5	7.70		24.2	11.2	10.6	1.10	1.3	24.2
Executing unit (2)	3.1	.25	1.75	5.1			.88	4.2	5.1
Regional Program (1+2)	101.8	15.30	1.75	118.9	71.8	29.2	3.73	14.1	118.9

IV. ANALYSIS

Regional Program Impact

The implementation of the Regional Program by the regional executing unit in the PRACA setting will have a significant impact in the region, visible in the following ways:

-The capabilities of national institutions will be strengthened in connection with the formulation, negotiation, management, follow-up and evaluation of small-scale development and investment projects. In addition, they will boost their capacity to design and exchange methods for providing training and technical assistance to small-scale producers; this will contribute to regional integration.

-The Regional Program will consolidate and transform 729 small settlements into economically-independent rural enterprises (settlements), benefiting 32,847 families in the Central American countries.

The Regional Program will generate 2.3 million work days per year by the fifth year. Available employment will rise from 3.4 million work days per year without the Program, to 5.7 million with the Program.

Regional Program action is also expected to produce the following concrete results on beneficiary settlements:

-Agricultural production will increase and diversify as a result of changes in production technology and access to inputs.

-Family incomes will rise as women and young people become more involved in agricultural and off-farm activities.

-The Regional Program will help identify funding mechanisms appropriate for small-scale producers; this means setting flexible regulations and procedures for the loan study, approval, disbursement and follow-up stages.

-The investment projects will enable small-scale rural production units to achieve greater capital formation.

-Better use will be made of natural resources.

Finally, the following are the expected results of the training component.

-Methods will be identified and developed for training technicians, outreach workers and small-scale farmers.

-National units will be established with technicians, outreach workers and campesinos who have received the pertinent training, and which will be used for extending the Regional Program to other types of producers.

-The training component will identify topics that contribute most to strengthening settlements.

COSTA RICA

Project Profile: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

Regional Program: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

I. BASIC INFORMATION

Location:	Regions: Huetar Atlantic Region, Northern Huetar, Chorotega and Brunca
Duration:	Five years
National Executing Institution:	Agricultural Development Institute (IDA), in collaboration with the private sector
Local Responsibility:	Executing unit of the Project and the private sector
National Support Agencies:	Ministry of Agriculture and Livestock (MAG), National Production Council (CNP) and the National Irrigation and Drainage Service (SENARA)
Regional Support Agency:	IICA
National Financial Agency:	IDA's Agrarian Fund and the national banking system

II. PROJECT DESCRIPTION

Justification

The agricultural policies promoted by the government of Costa Rica highlight the importance of the campesino economy to the country, and its commitment to stimulate rural development by providing technical and credit support to campesino settlements.

There are 305 campesino settlements in the country which cover 200,000 hectares and occupy 28 percent of the land acquired by the IDA. These settlements have the necessary production infrastructure.

The resources available to the reformed sector have not been used efficiently and effectively; this is reflected in the poor production and productivity levels of most of the settlements and the low living standards of beneficiaries.

All the support received by the settlements is provided by the State, which does not have sufficient technical and financial resources to meet the demand for services for developing the reformed sector.

The Project will contribute to revitalizing the reformed sector and the overall economy. It will support and finance profitable production activities that will encourage campesino settlements to gradually become independent of the State, by boosting their capabilities for self-management, and transforming them into financially-sound enterprises.

The Project will also promote active participation on the part of beneficiaries through technical and administrative training that will equip them to manage their production and commercial activities efficiently.

Objectives

To contribute to strengthening and consolidating the social and economic conditions of the enterprises of the reformed sector, which will improve the living conditions of beneficiaries

Components

Component 1. Development Fund

Component 2. Farm credit

Component 3. Training

The following farm models were identified, in order to determine the amount of resources required:

Farm Model 1

This farm model is designed for a nine-hectare plot (the size assigned to a single family unit) and will be used on nine settlements. The aim is to extend the area under cultivation with sugar cane (3 hectares), coffee (2 hectares), and pineapple (0.5 hectares).

Farm Model 2

This was designed for a 6.7-hectare farm (plot assigned to a single family unit) and will be used on 12 settlements. The aim is to install irrigation infrastructure to maximize land use, with a view to harvesting two rice crops a year in a four-hectare area. It will also introduce nontraditional crops such as melon (0.5 hectares) and industrial tomato (0.5 hectares).

Farm Model 3

This model will be implemented on 6.4-hectare farms (plot assigned to a single family unit) and will be used on 30 settlements. The aim is to introduce nontraditional crops: passion fruit (1 hectare), pineapple (1 hectare), and roots and tubers (2 hectares). Construction of packing plants is also included.

Goals

To operate in 51 settlements, with 1,731 beneficiary families, involving a total area of 17,000 hectares over a period of three years

Farm model	Area (ha)	Output (Year 5)
Farm Model 1		
Sugar cane	891	53,460 mt
Coffee	594	23,760 fanegas
Pineapple	148.5	540,540 boxes
Farm Model 2		
Rice	1 056	4,829 mt
Industrial tomato	132	6,600 mt
Melon	132	177,804 mt
Farm Model 3		
Pineapple	1 170	4,258,800 boxes
Oranges	1 170	2,340 mt
Cassava	1 170	11,115 mt
Spoonflower	1 170	9,360 mt

Beneficiaries

Settlement farmers: 1,731 direct beneficiaries and 7,000 indirect beneficiaries

III. COSTS AND FINANCING

Costs

Local currency: US$775,000

Foreign currency: US$18,480,700

Total: US$19,225,700

Financing

Component	Local contribution	External contribution	Total (US$ X 000)
Development Fund		15 000.9	15 000.9
Farm credit		1 848.8	1 848.8
Training		327.0	327.0
Executing unit	775.0	1 304.0	2 079.0
Total	**775.0**	**18 480.7**	**19 255.7**

IV. ANALYSIS

Indicators

The overall financial evaluation showed the following results: internal rate of return (IRR), 27.6 percent; net present value (NPV), US$7.066 million; benefit/cost ratio, 1.51. The indicators show that the Project is financially feasible.

Measures of profitability of the models, by region

Region		IRR (%)	NPV (US$)	B/C
Brunca	Model 1	21.2	2 391	1.65
	9 settlements	19.0	621 041	1.61
Chorotega	Model 2	39.0	2 123	1.35
	12 settlements	29.4	384 443	1.41
Huetar Norte	Model 3	32.5	5 657	1.55
Huetar Atlantica	30 settlements	30.1	6 287 780	1.51
Project total	**51 settlements**	**27.6**	**7 066 298**	**1.51**

Sensitivity Analysis

A sensitivity analysis of the farm models was made, using the following parameters and variations: 10-percent increase in investment and operating costs; 10-percent reduction in income.

Sensitivity analysis of IRR by model

Item	Model 1	Model 2	Model 3
Standard value	21.2%	39.0%	32.5%
10% increase investment costs	17.8%	33.9%	32.1%
10% increase operating costs	4.0%		30.0%
10% decrease in income		6.9%	

Project Impact

The incomes of beneficiaries will rise with Project implementation. In the Huetar North and Huetar Atlantic regions, the annual incomes of beneficiaries will increase from US$2,377 to US$5,466 because of Project activity.

Sales prior to the execution of the Project amount to US$3.111 million, and will increase 5.6 times to US$17.529 million in year five of the Project.

The Project's agricultural activities will generate an additional 485,493 work days; from 163,826 work days, prior to the Project, to 649,319 work days per year (year 5) as a result of the Project.

The development of profitable investment projects will contribute to the economic security of beneficiaries and to the conservation of natural resources and the environment.

GUATEMALA

Project Profile: STRENGTHENING AND CONSOLIDATING AGRARIAN SETTLEMENTS

Regional Program: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

I. BASIC INFORMATION

Location:	Chimaltenango, Escuintla, Suchitepequez, Retalhuleu and Quetzaltenango
Duration:	10 years
National Executing Institution:	Ministry of Agriculture, Livestock and Food, with collaboration from the private sector
Local Responsibility:	National Institute of Agrarian Transformation (INTA) and the private sector
Regional Support Agency:	IICA
National Financial Agency:	National Agricultural Development Bank

II. PROJECT DESCRIPTION

Justification

The government is committed to supporting production on rural settlements (established in the Constitution of Guatemala), providing them with integrated services and consolidating them as organizations.

Objectives

To help raise the standard of living of the members of agrarian settlements participating in the Project, by increasing agricultural productivity through the application of modern technology.

Components

-Rotating Fund

-Working-capital loans

-Training

-Social outreach workers

-Off-farm production activities

Goals

-To renew 715 hectares of coffee plantations a year, for a total of 2,860 hectares by the end of the fourth year

-To renew 199 hectares of sugar cane plantations by the end of the first year

-To introduce 150 hectares of plantains by the end of the first year

-To achieve the following yields, by the end of the fifth year:

Coffee (parchment)	47 qq/ha
Sugar cane	100 tm/ha
Plantains	800 qq/ha
Maize	80 qq/ha
Sesame	12 qq/ha

-To replace 135 hectares of corn with plantains, by the end of the first year

-To establish 38 small businesses by the end of the first year

Beneficiaries

Direct beneficiaries: 2,042 recipients of land titles

Indirect beneficiaries: 10,848 settlers involved in production activities

III. COSTS AND FINANCING

Costs

Component	Cost (US$ X 000)	%
1. Investments	9 348.1	51.8
2. Operating expenses	7 697.1	42.6
3. Other expenditures (outreach worker)	195.0	1.1
4. Executing unit	658.0	3.6
5. Campesino training	150.0	0.9
Total for five years	**18 048.2**	**100.0**

Financing

Type	1	2	3	4	5	Total
Local	326.9	326.9	326.9	326.9	326.9	1 634.5
External	3 066.7	2 472.3	2 916.0	3 853.4	3 739.3	16 047.7
NRFA*	119.6	61.6	61.6	61.6	61.6	366.0
Total	**3 513.2**	**2 860.8**	**3 304.5**	**4 241.9**	**4 127.8**	**18 048.2**

* Nonrefundable Financial Assistance

IV. ANALYSIS

Financial Analysis

Model	IRR (%)	NPV (US$ X 000)	B/C
Coffee	22.37	8 449.0	1.5
Coffee-sugar cane	22.74	2 050.1	1.4
Sesame	85.70	1 145.0	3.2

Sensitivity Analysis

The sensitivity analysis was performed by reducing income estimates by 10 percent. The coffee model is the most sensitive, as can be seen in the dramatic NPV figure. The same occurred when adjustments were made to operating-cost estimates. Therefore, the coffee model poses the highest risk.

Model	IRR (%)	NPV (US$ X 000)	B/C
Increase costs 10%			
Coffee	16.6	3 519.9	1.26
Coffee-sugar cane	19.9	1 528.6	1.29
Plantains	74.1	1 010.3	2.98
Reduce income 10%			
Coffee	14.4	2 407.7	1.22
Coffee-sugar cane	16.9	1 093.8	1.25
Plantains	80.1	1 019.5	2.90

Additional Parameters and Scenarios

Additional analysis of the Project indicates other scenarios that facilitate further financial and economic assessment of the investments. The estimates and results are as follows:

-For the financial analysis, the following parameters were considered: income and costs at market prices, a 12-percent discount rate and a useful life of 20 years for the Project. The following estimates of profitability indicators were obtained: FIRR, 16.1 percent; B/C, 1.10; and NPV, US$1.572 million.

-The analysis of economic indicators was based on the following parameters: elimination of taxes, subsidies and all types of transfers; an 80-percent correction factor for skilled labor. Under these conditions, the estimated EIRR was 13.3 percent; ENPV, US$478,000; and economic B/C, 1.02.

The Project's contribution to the trade balance will be US$2.7 million.

Project Impact

The expected results are:

A 102.7-percent increase in work days (from 493,000 without the Project, to 1 million with the Project)

An increase of 305 percent in the generation of foreign exchange (from US$270,000 before the Project, to US$1.1 million with Project activities)

A 263-percent increase in family incomes (from US$460 currently, to US$1,670 with the Project)

HONDURAS

Project Profile: STRENGHTHENING AND CONSOLIDATING RURAL ENTERPRISES

Regional Program: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

I. BASIC INFORMATION

Location:	National
Duration:	Five years
National Executing Institution:	National Agrarian Institute, in collaboration with the private sector
Local Responsibility:	National Agrarian Institute and the private sector
Regional Support Agency:	IICA
National Financial Agency:	National Development Bank

II. PROJECT DESCRIPTION

Justification

INA has endowed agrarian-reform beneficiaries with 327,631.9 hectares, of which 77.5 percent (253,915 hectares) are arable. Of this arable land, only 139,653 hectares (55%) are presently under cultivation, mainly because of the lack of irrigation systems, insufficient credits and limited technical assistance.

This Project aims at correcting a large part of these deficiencies, and will focus on credit, technical and administrative assistance and training. It will also strengthen the managerial capabilities of the production units and improve the standard of living of campesinos.

To bring new areas into production and promote new crops, support services for production will be expanded and reinforced, and the approach of support services currently provided by the State will be redesigned in order to reach farmers effectively.

The training program will upgrade managerial skills at all levels of the Project, particularly among the beneficiaries, in order to ensure their effective participation in decision-making and in achieving self-management in their enterprises.

Continued efforts will be made to improve credit, training and social organization programs that contribute to making better use of the land.

By the same token, methods to develop campesino enterprises will be applied for making maximum use of physical, human and institutional resources, conserving the environment, instilling sound business practices, and, as a result, improving the economic and social conditions of the campesino families of the reformed sector.

Objectives

To contribute to strengthening and consolidating the socioeconomic conditions of enterprises in the reformed sector, with a view to improving the living conditions of Project beneficiaries

Components

-Rural Development Fund

-Farm credit

-Training

Model Farms

Model 1 - Yojoa

Model 2 - Progreso Choloma

Model 3 - Cuyamel

Model 4 - Quimistan

Model 5 - Oloman

Goals

To benefit 280 campesino settlements which cover an area of 55,331 hectares and have a population of 5,600 families

Total production goals by product for the five models appear below:

Product	Without Project	With Project	Production Increase (metric tons)
Maize	11 610	46 970	35 360
Beans	1 156	2 699	1 543
Cassava	2 030	2 900	870
Pineapple*	4 350	14 500	10 150
Annatto	3.5	35	31.50
Soybeans	2 541	25 110	22 569
Plantains	520 200	5049 000	4 528 800
Sugar cane	306 000	856 800	550 800
Rice	2 838	16 813	13 975
Cocoa	20	600	580
Coffee	387	2 322	1 935

*thousands of units

III. COSTS AND FINANCING

1. Costs

Local currency: US$11.23 million

Foreign currency: US$1.831 million

Total: US$13.061 million

Financing

Component	External	Local	Total (US$ X 000)
Development Fund	5 957		5 957
Farm credit	3 633		3 633
Training	551		551
Executing unit	1 089	1 831	2 920
Total	**11 230**	**1 831**	**13 061**

IV. ANALYSIS

Model	IRR (%)	NPV (US$ X 000)
Choloma	25.7	129 769
Quimistan	32.9	122 501
Yojoa	24.0	57 702
Cuyamal	39.3	231 074
Oloman	31.3	305 458

Sensitivity	IRR (%)	NPV (US$ X 000)
10% reduction in prices		
Choloma	14.0	25 718
Quimistan	19.5	42 580
Yojoa	12.2	862
Cuyamal	14.5	15 779
Oloman	23.3	109 201

Sensitivity	IRR (%)	NPV (US$ X 000)
10% increase in costs		
Choloma	17.6	75 288
Quimistan	23.0	64 672
Yojoa	15.6	16 096
Cuyamal	36.1	204 895
Oloman	30.2	144 797

The investment per Project beneficiary is US$2,332.

Project Impact

The Project will fully incorporate 30,000 hectares into agricultural, livestock and agroindustrial production, only 30 percent of which is now used for agricultural purposes, owing to the lack of direct access to credit or because national funds are insufficient to meet the needs of the campesino enterprises.

Increased output for these products will be as follows: corn, 25,360 metric tons; beans, 1,543 metric tons; and soybeans, 22,569 metric tons.

For plantains and rice, production will increase by 4,528,800 and 13,900 metric tons, respectively.

The Project will directly benefit 5,600 families, who will secure permanent jobs in their enterprises and contribute to boosting their efficiency, enabling them to break ties with the State.

The Project will improve the standard of living of the beneficiaries by improving their diets; it will market the surplus of staple grains and generate income through the planting of profitable crops.

NICARAGUA

Project Profile: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

Regional Program: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

I. BASIC INFORMATION

Location:	Regions I, II, III, IV, V and VI
Duration:	Five years
National Executing Institution:	National Institute of Agrarian Reform (INRA), in collaboration with the private sector
Local Responsibility:	Executing unit of the Project, National Steering Committee and the private sector
National Support Agencies:	Ministry of Agriculture and Livestock (MAG), Nicaraguan Coffee Enterprise (ENCAFE), Enterprise for the Distribution of Agricultural Products (ECODEPA), AGROMAG, SUMAGRO and PROAGRO
Regional Support Agency:	IICA
National Financial Agency:	National Development Bank and the CABEI

II. PROJECT DESCRIPTION

Justification

The new agricultural policies promoted by the government of Nicaragua, highlight the importance of the campesino economy to the country, and its commitment to spur rural development by providing technical and preferential credit support to rural settlements.

The country has a total of 3,151 campesino settlements with 76,715 families (430,000 inhabitants), for a total area of 1.1 million hectares, as well as the corresponding production infrastructure.

The resources available to the reformed sector have not been used efficiently and effectively; this is reflected in the low production and productivity levels of most of the settlements and the low living standards of beneficiaries.

All the support received by the settlements is provided by the State, which does not have the technical and financial resources to meet the demand for services for developing the reformed sector.

The Project will contribute to revitalizing the reformed sector and the overall economy. It will support and finance profitable production activities that will gradually allow the settlements to become independent of the State, by boosting their capabilities for self-management and transforming them into financially-sound enterprises.

The Project will also promote active participation on the part of the beneficiaries through technical and administrative training that will equip them to manage their production and marketing activities efficiently.

Objectives

To strengthen and consolidate the social and economic conditions of campesino organizations participating in the Project, in order to improve beneficiaries' living standards

Components

-Rural Development Fund

-Farm credit

-Training

-Executing unit

Models

Agricultural Model

Agricultural and Livestock Model

Livestock Model A

Livestock Model B

Livestock Model C

Goals

To strengthen 240 settlements, benefiting 4,897 families on a total area of 116,874 hectares, over a period of three years

Some 1,200 settlement members will take part in a total of 44 training events, including technical (1,680), organizational (1,200) and management (720) courses, over a period of four years.

A total of 240 outreach workers will take part in 44 training events: 28 of a technical nature, four dealing with campesino organization and 12 with management, for a total of 2,640 participants.

Training will also be given to mid-level INRA technicians, each of whom will be in charge of five settlements. A total of 47 technicians will participate in 44 training events -- the same as the outreach workers -- for a total of 539 participants.

Agricultural goals	Area (ha)	Production (Year 5)
Agricultural Model		
Coffee	352.0	17 248 qq/oro
Plantain	160.0	4 089 unidades
Maize	192.0	710 tm
Beans	224.0	224 tm
Cassava	6.4	75 tm
Agricultural-Livestock Model		
Coffee	1 400.0	68 600 qq/oro
Maize	5 300.0	19 610 tm
Milk		2 154 600 litros
Meat		2 500 animales
Livestock Model A		
Maize	940.0	3 478 tm
Beans	564.0	480 tm
Milk		2 154 600 litros
Meat		4 700 animales
Livestock Model B		
Maize	864.0	197 tm
Sorghum	3 024.0	10 735 tm
Plantains *	72.0	1 440 unidades
Sesame	3 046.0	2 924 tm
Squash	14.4	22 493 docenas
Cassava	14.4	189 tm
Milk		4 368 168 litros
Meat		3 600 animales
Livestock Model C		
Maize	4 368.0	16 162 tm
Beans	273.0	232 tm
Cassava	156.0	1 794 tm
Milk		2 027 025 litros
Meat		18 915 animales

* thousands of units

Beneficiaries

The Project will directly benefit 4,897 settlement farmers and indirectly benefit 14,000.

III. COSTS AND FINANCING

Costs

Local currency: US$2.81 million

Foreign currency: US$25,517,700

Total: US$28,327,700

Financing

Funding Sources (US$ X 000)

Item	External	Local	Total
Rural Development Fund	24 085.9		24 085.9
Farm credit		2 544.6	2 544.6
Training	196.7		196.7
Executing unit	1 235.1	265.4	1 500.5
Total	**25 517.7**	**2 810.0**	**28 327.7**

IV. ANALYSIS

Financial Feasibility

Model	Initial Value			10% increase in investments			10% increase in operating costs			10% reduction in revenues		
	IRR (%)	NPV	B/C	IRR (%)	NPV	B/C	IRR (%)	NPV	B/C	IRR (%)	NPV	B/C
Agricultural	100.	82.2	3.12	86.9	80.3	2.96	70.8	72.4	2.49	49.5	55.1	2.42
Mixed	60.1	236.3	2.23	55.4	229.5	2.15	47.6	196.2	1.85	52.5	194.2	2.01
Livestock A	53.3	128.5	1.67	47.2	119.7	1.59	40.8	95.3	1.42	40.7	89.8	1.47
Livestock B	32.2	61.1	1.68	30.3	57.4	1.62	18.4	14.3	1.10			
Livestock C	83.7	254.3	1.30	60.9	209.2	1.23	81.9	247.9	1.29	43.9	115.5	1.14

Project Impact

Without the Project, the gross value of production is US$8.087 million; with the Project, the figure rises to US$18.503 million in year five, representing an increase of 129 percent. This represents a highly-successful initiative. The same positive outcome applies to the incremental benefits, which amount to a total of US$4.35 million in year five. Furthermore, the Project will boost incomes of beneficiaries and of those providing services and inputs for production.

The Project will generate a 24-percent increase in work days, from 2.1 million to 2.6 million per year. It will also contribute to boosting foreign-exchange revenues, since production plans include the upgrading of coffee plantations and beef cattle production systems.

PANAMA

Project Profile: REORGANIZING RURAL ENTERPRISES

Regional Program: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

I. BASIC INFORMATION

Location:	Provinces of Veraguas, Chiriqui, Cocle, Herrera and Los Santos
Duration:	Five years
National Executing Institution:	Ministry of Agricultural Development Institute (MIDA), in collaboration with the private sector
Local Responsibility:	National Directorate of Agrarian Reform of the MIDA and the private sector
National Support Agencies:	Agricultural Marketing Institute, Agricultural Research Institute and the Institute of Natural Resources
Regional Support Agency:	IICA
National Financial Agency:	National Bank of Panama

II. PROJECT DESCRIPTION

Justification

New agricultural and livestock policies promoted by the State, call attention to the importance of the campesino economy for the country and to the need to foster rural development through technical support and preferential credits for campesino organizations.

The Project will contribute to efforts to reactivate the agrarian-reform sector, and the economy as a whole, by supporting and financing profitable production activities, fostering the gradual separation of the campesino settlements from dependence on the State and transforming them into financially-sound, self-managed enterprises.

Furthermore, the Project will foster the active participation of beneficiaries by offering technical and administrative training to equip them to efficiently manage their production and commercial activities.

Objectives

To contribute to strengthening and consolidating the financial and production conditions of agrarian-reform enterprises, with a view to improving the living conditions of settlement members

Subprojects and Components

Model

Livestock

Agriculture

Agriculture-Livestock

Components

Rural Development Fund

Farm credit

Training

Executing unit

Goals

-To involve 60 rural settlements in the Project over a three-year period. Grouped by farm model, figures break down as follows: livestock model (12), agricultural model (15) and agricultural-livestock model (33)

-To hold 152 training events over a five-year period

-To provide training to 500 persons (who will participate in several events): 400 campesinos, 60 outreach workers and 40 technicians

Total participants: 2,750

Type of Model	Area (ha)	Production (Year 5)
Farm Model 1		
Natural pasture	3 600	
Improved pasture	360	
Sugar cane	132	
Sales		
Culls (cows)		276 animales
Culls (bulls)		36 animales
Steer (beef production)		708 animales
Hogs for market		1 764 animales
Broilers		6 000 animales
Construction of block factories		12
Cement block production		5 040
Farm Model 2		
Nonirrigated rice	1 275	4 909 tm
Maize	675	2 430 tm
Sorghum	600	2 160 tm
Beans	135	122 tm
Watermelon	60	180 000 unidades
Rice mill installation		12
Hulled rice production		3 348 tm
Farm Model 3		
Agriculture		
Nonirrigated rice	2 640	10 164 tm
Irrigated rice (2 harvests)	660	6 600 tm
Maize	660	1 320 tm
Cassava	660	2 244 tm
Livestock		
Natural pasture	5 049	
Improved pasture	495	
Sugar cane	165	
Sales		
Culls (cows)		264 animales
Steer		1 320 animales
Culls (bulls)		33 animales
Installation of cassava drying plants		33
Cassava flour production		4 290 tm

Beneficiaries

Settlement farmers: 1,200 direct beneficiaries; 6,000 indirect beneficiaries

III. COSTS AND FINANCING

Costs

Local currency: US$341,000

Foreign currency: US$10.595 million

Total: US$10.936 million

Financing

Funding source	Year 1	Year 2	Year 3	Year 4	Year 5	Total (US$ X 000)
External funding	1 956	3 257	3 551	1 153	677	10 595
Local funding	68	68	68	68	68	341
Total	**2 024**	**3 325**	**3 619**	**1 221**	**745**	**10 936**

IV. ANALYSIS

Model	IRR (%)	NPV (US$)	B/C
Farm model 1	19.1	40,410	1.16
Farm model 2	38.6	286,580	1.21
Farm model 3	20.2	131,496	1.14
Overall (60 settlements)	**25.1**	**8,163,252**	**1.16**

Sensitivity	IRR (%)	NPV (US$)	B/C
10% investment increase			
Farm model 1	17.7	36 655	1.15
Farm model 2	37.6	283 365	1.02
Farm model 3	19.4	125 180	1.14
10% increase in costs			
Farm model 1	11.3	9 833	1.09
Farm model 2	27.9	195 884	1.15
Farm model 3	11.0	29 297	1.07
10% decline in revenues			
Farm model 1	8.6		
Farm model 2	24.6	163 414	1.14
Farm model 3	8.9		

Project Impact

Current labor utilization on the 60 settlements amounts to 27,177 worker/days per year. By year five of the Project, the number of worker/days will total 210,392 per year, representing a 7.75 increase. Considering an annual average of 220 work days per person, it is found that without the Project there is permanent employment for 120 members (10% of the population), while with the Project, permanent employment will stand at 957 members (80% of the population).

Gross production value will have a notable impact on Project execution, as can be seen in the following table:

Item	Year 1	Year 2	Year 3	Year 4	Year 5 (US$ X 000)
Without Project	544	1 803	2 823	2 944	3 097
With Project	1 6276	133	10 453	11 608	12 154
Increase	1 083	4 330	7 630	8 664	9 057

Average net annual profit, per settlement member, without the Project, derived from net surplus from their production activities, is US$443. With the Project, the net profit rises to US$1,593.

DOMINICAN REPUBLIC

Project Profile: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

Regional Program: STRENGTHENING AND CONSOLIDATING RURAL ENTERPRISES

I. BASIC INFORMATION

Location:	National
Duration:	Five years
National Executing Institution:	Dominican Agrarian Institute (IDA)
Local Responsibility:	Executing Unit, National Steering Committee and the private sector
National Support Agency:	Secretariat of State for Agriculture, INDRI, INESPRI
Regional Support Agency:	IICA
National Financial Agency:	Agrarian Bank of the Dominican Republic

II. PROJECT DESCRIPTION

Justification

The agrarian-reform sector is of great importance to the economy of the Dominican Republic because of its resources and the jobs it provides, as well as the share it contributes to national food production. The country has 328 campesino settlements, which house 75,000 families on 410,000 hectares of land.

The resources available to the reformed sector have not been used efficiently nor effectively. This is demonstrated in low production and productivity levels of crops in a large number of settlements, and in the low quality of life of a large part of the farmers.

The support received by the agrarian reform settlements comes almost entirely from the State, which does not have sufficient technical and financial resources to meet the demand for services and resources required by the reformed sector for its development. This problem will worsen in the current situation in which public spending is restricted because of the economic crisis.

The Project will contribute to reactivating the reformed sector and will help to improve the overall economy. It will support and finance profitable production activities and encourage the independence of campesino settlements from the State, by transforming them into self-managed and financially-consolidated enterprises.

Furthermore, the active participation of beneficiaries will be promoted at the different administrative levels of the Project and, through a technical and administrative training process, will upgrade self-management capabilities for the efficient handling of the settlements' production and commercial activities.

Objectives

To contribute to the socioeconomic strengthening and consolidation of participating campesino settlements, in order to reduce their economic dependence on the State and upgrade the standard of living of settlement families

Goals

-To increase agricultural production on 88 agrarian-reform settlements that cover a total of 56,200 hectares

-To increase the cultivated area by 19 percent, by year five of the Project

-To increase crop production as much as 24 percent (in the case of bananas) and 280 percent (in the case of rice) during the five-year period of the Project

-To conduct 1,114 training events for 44,560 participants

-To upgrade the standard of living of 17,449 farmers

Beneficiaries

The Project will benefit 17,449 settlers directly, and 94,551 dependents of the direct beneficiaries.

III. COSTS AND FINANCING

1. Costs

Local currency: US$7.667 million

Foreign currency: US$16,503,200

Total: US$24,170,200

Financing

Component	External	Local	Total (US$ X 000)
Rural Development Fund	11 189.3	0.0	11 189.3
Farm credit	3 172.7	7 403.0	10 575.7
Training	1 123.8	0.0	1 123.8
Executing unit	1 017.4	264.0	1 281.4
Total	**16 503.2**	**7 667.0**	**24 170.2**

IV. ANALYSIS

Indicators

Model/Project	IRR (%)	NPV (US$ X 000)	B/C
Farm model			
Rice	>100	2 371.1	1.53
Small irrigated crops	59.35	348.4	1.38
Small rain-fed crops	83.23	149.0	1.84
Small livestock projects			
Beekeeping	49.25	9.7	1.45
Broilers	47.30	16.7	1.05
Goats	69.92	24.4	1.73
Hog fattening	54.57	9.3	1.16
Non-agricultural projects			
Small-scale feed plants	>100	21.8	1.24
Pottery workshop	>100	30.1	1.58

Project Impact

The gross value of agricultural production will increase by US$3.704 million, rising from US$3.444 million without the Project, to US$7.148 million with the Project. The irrigated rice model will account for 77 percent of the production increases; the small irrigated-crops model, 18 percent; and the small rain-fed crops model, five percent.

The Project's agricultural activities will directly generate 114,833 jobs. Jobs will increase from 174,833 without the Project, to 289,011 with the Project. Job creation by model will be as follows: irrigated rice, 72 percent; small irrigated crops, 25 percent; and small rain-fed crops, three percent.

VI. ANALYSIS OF THE PORTFOLIO

A. Global Analysis

Total cost of the portfolio: US$818.8 million

99. Of the 59 project profiles prepared, 51 are national projects and eight are Regional Programs.

100. The total cost of the portfolio* is US$818.8 million. Of this sum, US$711.0 million are for national projects and US$107.8 million for Regional Programs.

101. External funding needs come to a total of US$604.8 million -- US$519.4 million for national projects and US$85.4 million for Regional Programs.

102. The following is a list of the Regional Programs, showing the number of national projects making up each one:

i.	Agroalimentary Development	6
ii.	Irrigation, Drainage and Land Leveling	4
iii.	Development of Biotechnology	6
iv.	Intra-regional Trade and Exports to Third Countries	13
v.	Agroindustrial Development	9
vi.	Strengthening Plant and Animal Health Services	6
vii.	Development of Border Areas	2
viii.	Strengthening and Consolidating Rural Enterprises	5

103. There will be 99,000 direct beneficiaries of the portfolio of proposed projects, with an average investment of US$7,184 per beneficiary.

104. The Projects included in the Portfolio will generate 136,000 new jobs, with an average investment of US$5,230 per job unit.

The projects proposed will generate 136,000 new jobs.

105. The net contribution of these Projects to the region's balance of payments is estimated at US$184 million a year by the time they are fully operational.

106. An analysis of the portfolio was carried out in order to measure the economic impact of the national projects. This analysis eliminated the effects of subsidies and certain fiscal

---

* Includes the Project for Strengthening the Capacity to Harmonize Policies and Projects in the Agricultural Sector (CORECA). It also contemplates a project presented by the Dominican Republic as a signatory to the PRACA agreement.

prerogatives, and included a correction factor to allow for the use of skilled manpower. It should be pointed out that for the purposes of this analysis, the breakdown of the portfolio took the following factors into consideration:

- The eight Regional Programs were not included, as they involve technical assistance and preinvestment activities.
- The budget of the Program to Strengthen Plant and Animal Health Services, broken down by each individual country, was not included (6 projects).
- A total of 45 national project profiles make up the Regional Programs. Thirty profiles (70%) were sampled.

107. According to this analysis, the execution of the 30 projects sampled will lead to increased output worth US$1.9 billion.

108. When fully operational, the projects' annual net contribution in terms of foreign-exchange earnings will be over US$150 million. Two thirds of this sum will be generated by the Trade and Agroindustrial Development Programs.

109. The net present value for each dollar invested stands at US$3.5, further underlining the feasibility of the projects analyzed and the portfolio as a whole.

The Regional Programs on Trade and on Agroindustrial Development will bring in the largest return in foreign exchange per investment unit.

110. It was found that both the Trade and Agroindustrial Development Programs will contribute the highest foreign-exchange earnings per investment unit. Each dollar invested in these Programs generates an average US$0.85 in net foreign-exchange income.

111. The economic IRR for the 30 projects, estimating the flow of income and expenditures at shadow prices, is 47 percent, while the economic benefit/cost ratio is 1.48. The Programs' economic indicators are very favorable. In the case of the EIRRs, all exceed a 12 percent opportunity cost of capital.

112. It is important to point out that the generation of each new job will involve an average outlay of US$7,000, while investment per project is around US$6 million.

113. At current prices, the most important programs in terms of increased output are the Agroindustrial Program, which accounts for 37 percent of the total, and the Trade and Rural Enterprise Programs, each of which contribute about 23 percent to the total.

The Programs on Rural Enterprises and on Agroalimentary Development will create the most jobs.

114. The Regional Programs which generate most new jobs are the Rural Enterprise and Agroalimentary Development Programs, with around 30 percent each. They require an investment of over US$5,000 and US$3,600 per new job, respectively.

B. Analysis of Regional Programs

Regional Program on Agroalimentary Development

115. This Regional Program consists of six national projects. The total cost is US$150.6 million -- US$147.0 million for the national component and US$3.6 million for the Regional Program's regional components.

Cost of the Program on Agroalimentary Development: US$150.6 million

116. The external funding required for the national investment projects is estimated to be US$107.2 million, while the Regional Program's technical assistance and preinvestment components will cost US$3.4 million.

117. The Regional Program will directly benefit 33,000 small- and medium-scale producers and generate 5,096 jobs.

Regional Program on Irrigation, Drainage and Land Leveling

118. This Regional Program consists of four national investment projects and five regional technical assistance and preinvestment components. The total cost of the Regional Program is US$31.2 million, made up of US$23.2 million for national investment projects and US$8.0 million for regional components.

Cost of the Program on Irrigation, Drainage and Land Leveling: US$31.2 million

119. The external funding required for the investments in the various countries comes to a total US$16.6 million, plus another US$7.3 million for regional activities.

120. The Regional Program will generate 2,578 new jobs at a per-unit cost of US$9,000. The direct beneficiaries of the national projects are 2,000 producers, plus an additional 6,000 who will benefit indirectly.

Regional Program on the Development of Biotechnology

121. This Regional Program is composed of six national projects costing a total of US$4.7 million, plus 5 regional components for a cost of US$3.1 million.

Cost of the Program on the Development of Biotechnology: US$7.8 million

122. The external resources required for the investment projects are US$4.3 million, plus US$2.3 million for regional activities.

123. There are 4,600 direct, and 20,000 indirect, Regional Program beneficiaries; the investment per direct beneficiary is calculated to be US$1,030.

Regional Program on Intra-regional Trade and Exports to Third Countries

124. This Regional Program consists of 13 national projects, plus eight regional components involving the six countries in the isthmus. The total cost of the national projects is US$146.2 million, while the regional technical assistance and preinvestment components have a cost of US$5.2 million.

Cost of the Program on Intra-regional Trade and Exports: US$151.3 million

125. The external funding required for the execution of the national projects is US$111.1 million; for regional activities the figure is US$4.2 million.

126. The Regional Program will generate 67,393 new jobs, representing roughly 49.5 percent of the total number of jobs generated by the Regional Programs. There will be 14,000 direct beneficiaries, mostly agricultural and agroindustrial producers and exporters engaged in nontraditional export activities. The investment per direct beneficiary is US$10,440.

Regional Program on Agroindustrial Development

Cost of the Program on Agroindustrial Development: US$269.4 million

127. This Regional Program is made up of nine national projects and eight regional technical assistance and preinvestment components. The total cost of the Regional Program is US$269.4 million, of which US$199.7 million is for national investment projects, and US$69.7 million allocated for regional components.

128. The external funding required for the national projects is calculated at US$127.9 million, plus US$55.4 million for regional activities.

129. The Regional Program will generate 29,453 new jobs at an average cost of US$6,785 each. There will be 10,000 direct and 37,000 indirect beneficiaries.

Regional Program to Strengthen Plant and Animal Health Services

Cost of the Program to Strengthen Plant and Animal Health Services. US$31.4 million

130. The global cost of this Regional Program is US$31.4 million. It includes six national investment projects, costing US$28.8 million, and five regional components with a cost of US$2.7 million. Of the latter, some US$2.3 million will involve technical assistance resources.

131. The total external funding needed for the Regional Program's national projects is calculated at US$13.6 million.

132. The Regional Program is intended to prevent the introduction and establishment of exotic pests and diseases, and to upgrade plant and animal health services in the countries of the region.

133. The Regional Program's country-specific activities and regional components will cover the following areas:

—Quarantine and agricultural emergency

—Diagnostic study of diseases and pests

—Management of diseases and pests

—Agricultural health information

—Institutional strengthening

Regional Program on the Development of Border Areas

134. This Regional Program involves two border projects plus two regional technical assistance and two preinvestment components.

Cost of the Program on the Development of Border Areas: US$51.1 million

135. The projects are the following:

- Support for Developing the Farming Community in the TRIFINIO Region (comprising the border areas of Guatemala, El Salvador and Honduras)
- Support for Agricultural Production in the Coto Brus and Chiriqui Viejo River Basins (Costa Rica and Panama)

136. The regional components cover the following activities:

Technical assistance

- Diagnostic study of 12 border areas
- Formulation of a border zone development strategy

Diagnostic studies for 12 border areas will be carried out.

Preinvestment

- Preparation of investment project profiles
- Expansion of the regional executing unit

137. The cost of the national projects is calculated to be US$47.6 million, while the cost of the regional components is US$3.6 million.

138. The external funding required for the border investment projects is US$39.9 million, with the corresponding regional activities calling for a further US$3 million.

139. The Regional Program will generate 15,200 new jobs at an average cost of US$3,133 each. There are expected to be 15,000 direct beneficiaries as a result of the Regional Program, with a further 46,000 indirect beneficiaries. The investment per direct beneficiary is estimated to be US$3,175.

Regional Program to Strengthen and Consolidate Rural Enterprises

140. This Regional Program involves five national investment projects and technical assistance and preinvestment activities.

Cost of the Program to Strengthen and Consolidate Rural Enterprises: US$94.7 million

141. The total cost of the five national projects is US$89.6 million, with the six regional components costing US$5.1 million.

142. The external resources required for the national projects come to a total of US$82.2 million, plus a further US$3.1 million for regional components.

143. The Regional Program will generate around 16,200 new jobs at a cost of US$5,000 each, and will directly benefit 32,850 rural families.

C. Analysis of National Projects

The total cost of the 51 national projects is US$686 8 million.

144. The total cost of the 51 projects submitted by the countries of the isthmus is calculated to be US$686.8 million. The external funding required for these projects is US$502.9 million. A breakdown of the total cost of the national investment projects, counterpart contributions and external funding by country is given below.

(US$ X 000)

Country	Number of projects	Total cost	Local contribution	External funding
Costa Rica	8	105 993.5	32 761.0	73 232.5
El Salvador	9	101 954.9	14 691.1	87 263.8
Guatemala	8	93 519.4	12 789.2	80 730.2
Honduras	10	105 272.1	32 608.2	72 663.9
Nicaragua	9	227 496.0	77 242.0	150 254.0
Panamá	7	52 612.2	13 825.1	38 787.1
Total	**51**	**686 848.1**	**183 916.6**	**502 931.5**

1. Economic and financial analysis

145. The national investment project profiles present favorable economic indicators. The economic internal rate of return (EIRR) in every case exceeds the 12 percent opportunity cost of capital. The economic benefit/cost ratio is similar, varying between 1.14 and 1.96.

Both the financial and economic indicators of the proposed projects are favorable.

146. The financial indicators are also favorable. The financial internal rate of return of the projects assessed, ranges from 16 percent to 82 percent, and in some cases surpasses 100 percent. The financial benefit/cost ratio varies between 1.3 and 3.7.

2. Stage of preparation

147. The 51 national investment projects can be divided into the following categories, according to the point that has been reached in their preparation:

- There are financial and economic indicators for seven project profiles, as well as prefeasibility studies.
- There are financial and economic indicators for 28 project profiles.

- There are financial indicators only in the case of 13 project profiles.
- Further studies are required to complete the financial and economic indicators of three project profiles.

Only three projects require additional studies.

148. The following are the three projects which require additional studies:

- Chilling Plants for Agricultural Exports (Honduras)
- Center for Research and Technology Transfer for Agricultural Development (Panama)
- Support for Agricultural Production in the Coto Brus and Chiriqui River Basins (Costa Rica-Panama)

VII. MODUS OPERANDI OF THE CAM-90-002 PROJECT

A. Organizational Phase (April-May 1990)

149. With the start-up of project activities, and in view of the complexity of the work to be undertaken in achieving the objective, a Letter of Understanding was drawn up and signed by GISA's Technical Secretariat, CORECA's Coordinating Secretariat and the Principal Technical Assistant (PTA) of the CAM-90-002 Project. This agreement defined the participation of the countries and regional organizations in the preparation of the documentation and explained how CAM-90-002 would undertake and coordinate the effort.

150. CORECA, GISA, and the Project, combined efforts to draw up the document entitled "Organization and Procedures for the Preparation of Investment Project Profiles." Apart from organizational issues, this document clearly defined the responsibilities and functions of each player, established a model memorandum of understanding to be used by the different organizations, as well as a quality-control mechanism for the documentation and a work schedule.

151. A single Guide for the Presentation of Investment Profiles from the Central American Agricultural Sector was drawn up to ensure the quality of the profiles. A standard technical record was also designed to provide a summary of basic information on each project.

152. Also defined were the terms of reference for hiring the national consultants, regional experts and specialists who would underpin the work.

CORECA's Technical Committee modified and approved the composition of the Ad Hoc National Committees.

153. CORECA's Technical Committee was asked to set up an Ad Hoc Committee in each country with responsibility for handling the preparation and presentation of projects at the national level. The Technical Committee modified and approved the composition and functions of the Ad Hoc Committees, plus their relationship with national-level consultants.

154. National consultants were selected and hired in each country to assist the ministries of agriculture in formulating the projects.

155. The PTA of the CAM-90-002 Project, together with officials from CORECA's Coordination Secretariat and GISA's Technical Secretariat, held meetings with representatives of governments and organizations to explain the work in detail and define the way in which their efforts were to be implemented and coordinated.

156. During the organizational phase there were ongoing meetings with GISA's Technical Working Group, coordinated by CORECA and made up of representatives from the Inter-American Institute for Cooperation on Agriculture (IICA), the Technical Assistance Unit for Agricultural Development in Central America (RUTA II), the Center for International Cooperation on Agricultural Preinvestment (CIPREDA), the Tropical Agricultural Research and Training Center (CATIE), and the United Nations Development Programme (UNDP).

B. Preparation of the Documentation (June-October 1990)

Around 50 experts and consultants were hired

157. Around 50 experts and consultants were hired to prepare the documentation for the individual countries and regional institutions involved.

158. During this phase, the Ad Hoc Committee of each country selected the priority projects at the national level and monitored the work of the consultants. At the same time, sectoral institutions were instructed to select and appoint local counterparts to support the national projects. The members of the regional team of specialists also made visits to the countries throughout this period, in support of the work of the national consultants.

159. Of special importance during this stage was the mandate issued by the ministers of agriculture at a meeting held in Tegucigalpa, Honduras, in July 1990, requesting that the documentation and projects be harmonized with the documentation and projects of the Plan for Economic Action in Central America (PAECA). The main change involved was placing greater emphasis on the areas of Trade and Agroalimentary Development.

160. This phase of the work produced 51 project profiles, organized into eight Regional Programs reflecting the priority areas defined by the ministers of agriculture.

161. A computerized program was designed and implemented, which made it possible to: a) centralize the information from all the project profiles for subsequent review, modification and editing; b) set up a system for managing the project which took into account its complex characteristics; and, c) provide a database with electronic records on each project, thus making it possible to analyze the information and, subsequently, the Project portfolio, by grouping them together according to different criteria.

A computer program was used to establish a management system and provide a data base for use in analyzing the portfolio of projects.

162. Three meetings were held during this phase. The ministers of agriculture were presented with progress reports on the status of the documentation and there was a meeting of the Joint Sectoral Forum (ministers and vice-ministers of agriculture). Reports were also presented to GISA. In addition to the reports presented at these meetings, five monthly and several fortnightly reports were prepared on the progress being achieved by each country and each organization.

C. The Review, Modification, Translation and Printing of the Documentation (November 1990-February-March 1991)

163. During this period, each of the projects was reviewed and modified, either through visits by the regional specialists to the countries or via the visit of national experts to the CAM-90-002 Project's headquarters in San Jose, Costa Rica. The same procedure was followed in the case of the projects drafted with support from regional GISA member organizations.

The portfolio's programs and projects were subjected to an intensive process of review and modification

164. Apart from the eight Regional Programs and the national projects, an executive summary of the documentation was prepared based on the projects' technical specifications, along with a general document describing the importance of the sector, an analysis of international assistance and a summary of the projects.

165. The documentation was subjected to a quality-control process which involved contributions from the CAM-90-002 Project's regional team, specialists from the RUTA II Program, and several international experts hired for that purpose. The general document was reviewed and amended by IICA, ECLAC and RUTA II officials. Once this process had been concluded, the documents were edited and formatted. A quality-control mechanism was also applied for the process of editing and formatting.

166. The information was presented to, and approved by, the Joint Forum of Ministers of Agriculture and ministers responsible for the PEC at a meeting held in Guatemala City on November 30, 1990.

167. An agreement was signed with the Inter-American Institute for Cooperation on Agriculture (IICA), for translating the documents into English and printing them. This effort was covered with CAM-90-002 Project funds.

D. The Promotion of Investment Projects and Organization of the Sectoral Meeting with Cooperating Governments and Institutions (February-April 1991)

Finally, a process was begun to promote the projects among cooperating governments and institutions, prior to the Agricultural Sector Meeting

168. A program of work was drawn up to promote the projects through dialogue with potential cooperating governments and institutions, prior to the Agricultural Sectoral Meeting.

169. Cover letters for the documentation and invitations to cooperating governments and institutions to attend the Sectoral Meeting were prepared.

170. Audiovisual aids and formats were developed for the presentations to be offered to the cooperating governments and institutions. The same method of organization, details and time allotted were employed in each case.

VII. OFFICIALS, EXPERTS AND INSTITUTIONS WHICH PARTICIPATED IN THE PREPARATION OF THE DOCUMENTATION

A. MINISTERS AND VICE-MINISTERS OF AGRICULTURE, AND PLANNING DIRECTORS

COSTA RICA

Juan Rafael Lizano	Minister
Jose Joaquin Acuna	Vice-minister
Lucia Chinchilla	Director

EL SALVADOR

Antonio Cabrales	Minister
Jaime Mauricio Salazar	Vice-minister
Mercedes Llort	Director

GUATEMALA

Carlos De Leon Prera	Minister
Mario Gaitan	Vice-minister
Rolando Tobar	Director

HONDURAS

Mario Nufio Gamero	Minister
Francisco Matamoros	Vice-minister
Luis H. Zelaya	Director

NICARAGUA

Roberto Rondón Sacasa	Minister
Jorge Granera Sacasa	Vice-minister
Róger Montiel	Director

PANAMA

Ezequiel Rodríguez	Minister
Pablo Quintero	Vice-minister
Gumercinda Taboada	Director

REPUBLICA DOMINICANA

Nicolas C. Garcia	Minister
Pedro Rijo C.	Vice-minister
Benito Rodriguez	Director

B. CAM-90-002 PROJECT STAFF

PROJECT DIRECTOR

Efraim Kelsari P. T. A.

REGIONAL TEAM OF CONSULTANTS

Jorge L. Christiansen Z.
Carlos A. Cabrera del Valle
Carlos Alcántara
José Wilberth Alfaro Z.
Róger Guillén B.

PROJECT ANALYSIS CONSULTANTS

Adel Cipagauta
Enrique Lehman
Alejandro Plon
Rodolfo Teruel

PROJECT ADMINISTRATIVE STAFF

Lucía García Carbone
Olga L. Rojas Alvarado

NATIONAL TEAMS OF SPECIALISTS

COSTA RICA

Ezequiel García
Javier Gallardo
Patricia Solís
Fernando Lizano

EL SALVADOR

Angel Iturbide
Ana Delmy Linares
Rafael Huezo
Mauricio Aguilera
Marco Tulio Araniva

GUATEMALA

Hugo Soto
Edgar Fernando Navas
María Elena Ortiz
Otto Raúl De León
David Eliézer Castañón

HONDURAS

Inés Narváez
Mario Ponce
Luis Alberto Fuentes
Amanda Merino
Ricardo Arias
Edda de Daccarett

NICARAGUA

Ariel Cajina
Julio R. Hernández
Sebastián Vega
Linda Báez
Otoniel Saravia

PANAMA

Francisco Ortiz A.

CONSULTANTS WHO COLLABORATED WITH THE REGIONAL ORGANIZATIONS INVOLVED IN THE PREPARATION OF THE PROGRAMS

José Antonio Valle	Support for BCIE
Manuel Martínez y Martínez	Support for BCIE
Victor Villalobos	Support for CATIE
Jorge Torres Hernández	Support for IICA
Javier Gatica	Support for IICA
Yolanda de Arévalo	Support for IICA
José Antonio Basagoitia	Support for OIRSA
Eduardo Alonso	Support for SIECA
Alvaro López	Support for SIECA
Orlando Solórzano	Support for CORECA
Luis Alberto Fuentes	Support for CEPAL
Arturo Montenegro	Support for CEPAL

EDITORS

Tomás Saraví	Editor/ Production Coordinator, Spanish
Barbara Kelly	Editor/ Production Coordinator, English

COMPUTER FORMATTING AND LAYOUT

Eduardo Valverde Volio	Layout and formatting Specialist
Sylvie Durán Salvatierra	Formatting Assistant

TRANSLATION INTO ENGLISH

Susana Raine, IICA	Chief Editor and Revisor
Barbara B. Rojas	Translator/revisor
Elizabeth Lewis	Translator/revisor

Translators

Paul Murphy, IICA	Barbara Cohen, IICA
Deborah Cheifitz Pira	Orlando Garcia
David Robichaux	Henrietta Jordan
Peter Leaver	Anthony Papworth
Maurice Harrah	Nicholas Papworth
Marc Bogan	Adrian Sotela
Fernando Pfannl	

DESIGN AND PRINTING

Edwin Bolaños	Printshop Manager, IICA
Jimena Ugarte	Overall design
Marcelle Banuett	Cover design, IICA

C. INSTITUTIONS AND OFFICIALS WHO PARTICIPATED IN THE PREPARATION OF THE DOCUMENTATION

UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP/PAHO)

HEADQUARTERS (NEW YORK)

Elena Martínez	Head, Division II DRALC (UNDP)
Oscar Yujnovsky	Advisor
Laura Canuto	Head, Division III (PAHO)
Pablo José Mandeville	Projects Officer

CORECA COORDINATING SECRETARIAT

Reynaldo Pérez Guardia	Coordinating Secretary
Gloria Abraham	Official

INTER-INSTITUTIONAL GROUP OF THE AGRICULTURAL SECTOR (GISA)

Roberto Matheu	Technical Secretary
Victor Ganoza	IICA/SIECA

UNDP REPRESENTATIVES IN THE COUNTRIES

COSTA RICA
Bruno Guandalini.
Resident Representative
Salomón Cohen
Regional Officer, Liaison PEC/UNDP
Roxana Volio
National PEC Officer

EL SALVADOR
Walter Franco
Resident Representative
René Hernández
National PEC Officer

GUATEMALA
Ricardo Tichauer
Resident Representative
Hugo Figueroa
National PEC Officer

HONDURAS
James Rawley
Resident Representative
Nelson Avila
National PEC Officer

NICARAGUA
Francesco Vincent
Resident Representative
Hugh A. Stevenson
National PEC Officer

REGIONAL UNIT OF TECHNICAL ASSISTANCE FOR AGRICULTURAL DEVELOPMENT (RUTA)

Arturo Cornejo	RUTA Director
Lars Pira	Economist
Oscar Urbina	Projects Expert
German Rioseco	Projects Expert

INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE (IICA)

Rodolfo Martínez F.	Advisor to the Director General
Carlos Pomareda B.	Director, Agricultural Policy Analysis and Planning
Jerry Fowler	Director, Agricultural Health
Héctor Campos	Plant Protection Specialist
Rodolfo Quirós G	Director, Marketing and Agroindustry
Víctor Tunarosa M.	Trifinio Project Coordinator

CENTRAL AMERICAN BANK FOR ECONOMIC INTEGRATION (CABEI)

Luis Alberto Chocano	Manager, Promotion
Eugenio Morales	Representante ante el GISA

ACTION COMMITTEE FOR ECONOMIC AND SOCIAL DEVELOPMENT IN CENTRAL AMERICA AND PANAMA (CADESCA)

Lesly Pujol	P.S.A. Coordinator
Guy Christopher	Advisor

ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN (ECLAC)

Antonio Tapia	Section Director ECLAC/FAO

NUTRITION INSTITUTE OF CENTRAL AMERICA AND PANAMA (INCAP)

Luiz Elías	Head, Agricultural Division
Leonardo De León	Technology Specialist

INTERNATIONAL REGIONAL ORGANIZATION FOR AGRICULTURAL HEALTH (OIRSA)

Rafael Ernesto Mata	Director
Miguel Angel Granillo	Head of Planning

UNITED NATIONS FOOD AND AGRICULTURE ORGANIZATION (FAO)

Eduardo Alves Da Silva	Project FAO/NIC/86/003
Carlos Ladrix	FAO/CR Consultant