

AGRICULTURAL SERVICES MODERNIZATION PROGRAM

(EC-0040)

EXECUTIVE SUMMARY

BORROWER AND GUARANTOR:	Republic of Ecuador	
EXECUTING AGENCY:	Ministry of Agriculture [Ministerio de Agricultura y Ganadería (MAG)]	
AMOUNT AND SOURCE:	IDB:	US\$30.0 million (OC)
	Local contribution:	US\$11.5 million
	Total:	US\$41.5 million
FINANCIAL TERMS AND CONDITIONS:	Amortization period:	20 years
	Disbursement period:	5 years
	Interest rate:	variable
	Grace period:	5 years
	Inspection and supervision:	1%
	Credit fee:	0.75%
OBJECTIVES:	<p>The objective of the agricultural services modernization program (PROMSA) is to boost productivity and improve the level and quality of agricultural output by modernizing and strengthening national technology generation and transfer systems and agricultural health services.</p> <p>The program promotes competition and encourages participation and collaboration by the private sector and nongovernmental organizations (NGOs), and seeks to bring about greater diversification and decentralization in the execution and financing of the proposed technological innovations and agricultural health activities.</p> <p>The target for the program is to achieve a 25% increase in yield per hectare for the country's priority crops and livestock products. This target is to be attained by (i) raising annual public investment in the generation and transfer of agricultural technology to 1% of the gross agricultural product; and (ii) reducing post-production losses from pests and diseases affecting priority products by 25%.</p>	
DESCRIPTION:	<p>The program consists of three components: (i) technology generation (TG), which has three</p>	

subcomponents: a competitive research fund, training and strategic alliances with international scientific institutions, and strengthening of the National Agricultural Research Institute [Instituto Nacional Autónomo de Investigaciones Agropecuarias (INIAP)]; (ii) technology transfer (TT), which has two subcomponents: technology transfer groups (TTGs) and a program of technical assistance for commercial development (TAED); and (iii) agricultural health, which includes the establishment and development of the Ecuadorian Agricultural Health Service [Servicio Ecuatoriano de Sanidad Agropecuaria (SESA)].

The World Bank will provide partial funding for the TG component. The IDB will provide all funding for the TT and agricultural health components and will partially finance the TG component through funding for a portion of the cost of the competitive research fund.

Technology generation component: The competitive research fund will promote competition among public institutions, agricultural universities, and private organizations for the execution of research projects in areas that are priorities for the country. The support provided to INIAP, universities, polytechnic schools, and private nonprofit organizations through training activities and strategic alliances will strengthen national capacity for agricultural research. The aim in strengthening INIAP is to improve the quality of research on medium- and long-term activities to the public benefit.

Activities under this component will be executed by INIAP, universities, polytechnic institutions, and private nonprofit organizations through a TG subcontractor retained for this purpose.

Technology transfer component: All TT activities financed under the program will be carried out by private firms and NGOs, which will compete for contracts to supply these services. The services will be supplied under a scheme determined by the demand for technical assistance, which will be provided to groups of producers. The technology transfer groups aimed at medium-scale producers will be organized by areas of production, while the technical assistance for the commercial development program targeting small-scale producers will be based on production systems.

Both activities will be financed with proceeds from this loan, which will decrease proportionately over the life of the program, and contributions from the Government of Ecuador (GOE) and from the beneficiaries, which will increase proportionately over time, eventually covering 100% of the costs in the case of the TTGs and 50% in the case of the TAED program. After six years of participation in the TAED program, producers will assume responsibility for covering their technical assistance needs through participation in TTGs or by contracting directly with private consultants. The TTG program provides for a transition to totally private financing by the end of the program.

Agricultural health component: Under this component, the existing plant and animal health programs within the Ministry of Agriculture will be consolidated in the Ecuadorian Agricultural Health Service. SESA will have administrative and financial autonomy and will recover its costs by charging for its services. It will also accredit private professionals to supply many plant and animal health services.

Coordination of execution of the three components will be ensured by the Technology Generation and Transfer and Agricultural Health Council and the program implementation unit (PIU), to be created within the MAG, for the five-year execution period. The necessary personnel will be hired for the unit.

**SPECIAL
CONDITIONS:**

Before any disbursements for the program are made, the following conditions must be met: (i) the program implementation unit must be established within the Office of the Undersecretary for Technical Affairs of the MAG (paragraph 3.4); (ii) the Council on Technology Generation and Transfer and Agricultural Health must be established (paragraph 3.3); and (iii) the Office of Environmental Management [Oficina de Gestión Ambiental (OGA)] of the MAG must formulate a plan for mitigating and preventing damage to the environment (paragraph 3.23).

Before the first disbursement for the TG component, the following condition must be met: evidence must be submitted to the Bank that the conditions established in the loan contract signed with the World Bank for the competitive research fund (paragraph 3.6) have been fulfilled.

Before the first disbursement for the TT component, the following conditions must be met: (i) the first annual plan of operations (APO) must be submitted

(paragraph 3.14); and (ii) the firm that will execute the component must be hired (paragraph 3.7).

Before the first disbursement for the agricultural health component, the following conditions must be met: (i) the first APO for the component must be submitted (paragraph 3.14); (ii) SESA must be formally established and the regulations governing its organizational structure, functions, and staffing, and the awarding of SESA fellowships, must be enacted (paragraph 3.11); (iii) agricultural health certification regulations must be established (paragraph 3.11); (iv) evidence that SESA staff has been selected must be submitted (paragraph 3.11); and (v) evidence of the transfer to SESA of the MAG assets, equipment, and physical facilities necessary for SESA's activities must be submitted (paragraph 3.11).

During the execution of the program, the following conditions must be met: (i) prior to October 31 of each year, the APO for the following year for each component must be submitted to the Bank (paragraph 3.14); (ii) each phase of program execution (20 months) must be evaluated jointly with the Bank (evaluation mission), especially the fulfillment of goals for the contribution by producers benefiting from the technology transfer component, in order to make any needed adjustments in the execution of the following phase (paragraph 3.14); and (iii) prior to the end of the first phase of program execution (20 months), a proposal must be prepared for ensuring continued financing of the TG, TT, and health components upon completion of execution of the Bank project (paragraph 3.15).

In the specific case of the agricultural health component, prior to the end of the first phase, evidence of the entry into force of the following should be presented: (i) new plant health regulations (paragraph 3.12); (ii) regulations for the Animal Health Act (paragraph 3.12); (iii) technical-operational and administrative-financial procedures manuals for SESA (paragraph 3.12); (iv) agreements and/or contracts with the appropriate agencies and institutions for the execution of SESA functions; and (v) a new fee structure for SESA services. By the same date, the borrower shall have placed a bill before the Congress conferring administrative and financial autonomy on SESA (paragraph 3.12).

**ENVIRONMENTAL
CLASSIFICATION:**

The Environment Committee, at its meeting of April 6, 1993, classified PROMSA as a Category III operation. The environmental summary was approved on February 21, 1995.

BENEFITS:

Modernization of the TG and TT systems and of the country's agricultural health services will boost agricultural productivity and increase the volume and quality of agricultural output in Ecuador. To that end, the program provides various mechanisms for the involvement (in financing and/or execution) of the public sector, universities, polytechnic schools, and the private sector and seeks to increase the participation of producers in domestic and foreign markets. At the same time, the program will help to increase income and improve the distribution thereof, keep prices for staple foods low, and enhance the management of natural resources in the agricultural sector.

RISKS:

The successful outcome of the operation will hinge on the ongoing application of policies for the modernization of the State and on the continuity in the medium term of public financing for the services essential to sector development included in the program. Several factors may hinder the achievement of the program objectives, namely: the fact that the institutions involved in the program are undergoing a transition period, the scarcity of qualified human resources and, in some cases, legal restrictions that make it difficult to adequately remunerate personnel. In order to address these problems, mechanisms are proposed for the strengthening of agricultural technology and health systems, coordination with the private sector, high-level advisory services, and monitoring and evaluation.

**TARGETING TO POOR
BENEFICIARIES:**

Since 45% of Ecuador's rural population lives below the poverty line (estimated at 80,997 sucres per capita per month) and given the features of the beneficiaries of the three PROMSA components, an estimated 62% of those beneficiaries are considered to be poor. Accordingly, the program qualifies as an investment targeted to the poor based on the criterion that over 50% of its beneficiaries are living in poverty (see paragraphs 5.19 to 5.22).

**PROCUREMENT
THRESHOLDS:**

The thresholds for international competitive bidding for this project are: US\$350,000 for goods and US\$1 million for construction.

**BANK COUNTRY
AND SECTOR**

This operation will be carried out in the framework of a stabilization and structural reform program that

STRATEGY:

has been under way in the country since 1992. The Bank has supported the consolidation of this process through investment and technical-cooperation operations and through development of the necessary institutional capacity.

The programming mission in June 1994 underscored the need to continue to pursue structural reforms in the principal areas of economic activity and give priority in future Bank financing to the social sectors, with emphasis on projects in the areas of sanitation, drinking water supply, primary health care, education, and environmental protection.

The modernization of productive sectors such as the agricultural sector is a priority in the Bank's strategy. In addition to the institutional and policy reforms to be introduced under the recently approved agricultural sector program (loans 831/OC-EC and 832/OC-EC) and the investments proposed under this operation, the possibility of new irrigation and rural development operations is being explored.

I. FRAME OF REFERENCE

A. Macroeconomic situation

- 1.1 By August 1992, when the new government took office, the economic situation had deteriorated considerably. Inflation was running at 50%, the public sector deficit had risen to 7% of GDP, the per capita product was hovering at 1978 levels, international reserves had been depleted, and the country had accumulated substantial arrears in its external debt payments. The new government implemented a strategy consisting of: stabilization measures designed to reduce the fiscal imbalance, regularization of relations with international lending agencies, lifting of controls on financial and exchange markets, and introduction of structural reforms with a view to modernizing the government apparatus.
- 1.2 This strategy has been complemented by a series of provisions aimed at modifying the structure of the economy and reducing the role of the State. The enactment of the law on modernization has engendered processes of government restructuring (including the public agricultural sector) through new regulations for management contracts and concessions, facilitating the negotiation of contracts with the private sector for the supply of services that had traditionally been provided by the public sector.
- 1.3 The economic program has yielded satisfactory results, especially in terms of controlling the fiscal deficit and inflation and boosting international reserves. In 1994 the nonfinancial public sector deficit fell to 0.4% of GDP and annual inflation dropped to 25%, while an upturn in economic activity led to 3.9% growth in GDP. However, the prospects for continued fiscal improvement and economic growth in 1995 are less bright. As a result of the expenses associated with the border conflict and loosening of fiscal control during the first quarter, a deficit amounting to some 4% of GDP is expected unless drastic measures are taken to cut public spending. With the fiscal austerity that must be practiced during the remainder of the year and the rise in domestic interest rates, GDP might grow between 2% and 3%, in the best of cases.

B. The agricultural sector

- 1.4 Agriculture is one of the most important sectors of the economy in terms of food production, generation of foreign exchange through exports (48%), share of the gross domestic product (17%), and jobs (35%). Ecuador has a land area of 27.1 million hectares, 8 million of which are devoted to agricultural production. Crop yields are low and there is little use of improved inputs. In the past, growth in output has generally been the result of increased use of land for agriculture, rather than increased productivity.

1. Structure of production

- 1.5 The area under cultivation covers approximately 2.8 million hectares, 20% of which is in the highlands and the rest mainly in coastal regions. Most of the agroindustrial and export crops (coffee, cacao, bananas, sugar cane, cotton, soybeans, rice) are produced along the coast, while staple food crops (potatoes, wheat, sweet corn, legumes, and milk) are produced in the highlands, mainly by small- and medium-scale farmers. Livestock farming has been increasing in importance, and by the end of the last decade it accounted for one third of agricultural output. Dairy products constitute the largest component (29% of animal production), followed by beef (26%), poultry (20%), and eggs (14%). In 1993 an estimated 4 million hectares were being used as pastureland.
- 1.6 The principal export crops are bananas (US\$800 million per year), coffee, and cacao. The importance of nontraditional export crops (melons, mangos, other produce, and flowers) is growing rapidly thanks to good prospects for these products in regional and international markets. Shrimp exports total some US\$600 million annually.

2. Obstacles to sector development

- 1.7 In the past, development of the agricultural sector has been negatively affected by the country's macroeconomic policies, especially numerous restrictions on exports and imports (prohibitions, prior licensing requirements, and export taxes), which skewed the allocation of resources. Sector policy has been characterized by government intervention in pricing and marketing, credit subsidies, and distortions in land and water markets.
- 1.8 The Agrarian Reform Law of 1964 facilitated the adjudication of land to communes and cooperatives but prohibited its transfer. This prohibition and the subsequent division of land have given rise to an underground land market in which many transactions are never legalized. This situation, in combination with other provisions of the agrarian reform that have encouraged the utilization of lands in fragile environments, largely explains the deterioration of natural resources in many parts of the country. Existing legislation on water has led to inefficient use of this resource, to the construction of subsidized irrigation projects, and to the deterioration of water quality.
- 1.9 Relative price distortions, weakening of ownership rights over the principal resources, diversion of public funds into unproductive activities, and the bureaucratization and debilitation of sector institutions have undermined the possibilities for agricultural growth and led to inefficient use of natural resources.
- 1.10 In 1994 the country enacted a law on agricultural development, which lifted many of the restrictions on land market transactions

and permitted the transfer of water rights. The law overturned the Agrarian Reform Law, the articles of the Consumer Protection Law that established price controls, the articles of the Law on Agricultural Promotion and Development that sanctioned State intervention in the market, and the export restrictions contained in the Export Facilitation Law.

- 1.11 In 1990 the public agricultural sector was organized so as to accommodate extensive government intervention in production and marketing activities. In order to make the organization of the sector more efficient, in the context of the recently approved Agricultural Sector Program (ASP), the Ministry of Agriculture has become the principal regulatory and policy-making body in the sector. Most product programs and activities to supply inputs have been eliminated, agricultural health programs have been consolidated, and extension activities have temporarily been transferred to the provincial secretariats. As a result, Ministry of Agriculture staff has been reduced by more than 50%. The Ministry's organization is geared mainly toward fulfillment of the basic functions of policy regulation, coordination of sectoral and regional investment, and implementation of environmental policies for the conservation of renewable natural resources. As a result, the Ministry has been organized around the Policy and Investment Undersecretariat and the Technical and Administrative Undersecretariat.
- 1.12 The ASP has supported the implementation of many measures in connection with the deregulation of markets (pricing and marketing policies, land market, water laws, and elimination of public agricultural enterprises) and restructuring of the public sector (reorganization of the MAG, public spending reform, revision of policies on irrigation and renewable natural resources). In this context, the privatization of the National Fertilizer Company was completed, progress was made on privatizing ENSEMILLAS, and the National Machinery Program was eliminated. Privatization of the marketing companies is expected to be completed prior to the second tranche.
- 1.13 Inappropriate allocation of public funds has been one of the principal hindrances to sector development. In recent years, public spending in the agricultural sector has been channeled mainly into irrigation and subsidies (for credit, marketing, and inputs), while allocations for research, technical assistance, and agricultural health have been very small. Investment in agricultural technology has dropped to extremely low levels (0.2% of the agricultural GDP) in comparison with an average of around 1% of the agricultural GDP for Latin America as a whole and 2% in more developed countries. The current low level of investment is insufficient to meet the technological needs of the sector.

- 1.14 As a result of the situation described above, agricultural productivity has stagnated. Although the amount of land suitable for agriculture is limited, the growth in agricultural output during the last decade has been due to expansion of the area under cultivation. The extension of the Ecuadorian agricultural frontier into the Amazon region has had limited impact because this region is located far from the principal markets, and because of the potentially serious environmental problems associated with this activity. Consequently, growth in agricultural output must come from areas currently under cultivation (in the highland and coastal regions) through increases in productivity. There have been no significant improvements in productivity over the last 15 years, owing mainly to macroeconomic and sectoral policies that were unfavorable to agriculture, to the severe shortage of resources for the generation and transfer of agricultural technology, and to deficiencies in agricultural health programs.

3. The need to strengthen priority activities

- 1.15 The difficulties currently holding back the efficient development of basic agricultural services are: lack of a strong institutional base, lack of operating resources, and lack of solid linkages to the private sector and to end users. The recent advances in macroeconomic and sectoral reform described above constitute necessary but not sufficient conditions for the development of the sector. As a complement to the ASP it is essential to invest in strengthening services that will ensure sector development, especially in the areas of agricultural technology and health.

a. The technology generation and transfer system

- 1.16 Most agricultural research in Ecuador has been conducted with government funding because it generally has been viewed as a public benefit. Historically there has been substantial underinvestment in the development of agricultural technology in the country, and the return on past investments has been limited.
- 1.17 The bulk of agricultural research has been conducted by the National Agricultural Research Institute (INIAP), with universities and polytechnic schools participating to a lesser extent. The private sector has supported some research aimed at improving inputs (seeds, agrochemicals) and the quality of products (cacao). Strategic and applied research on staple crops (potatoes, cassava, rice, and wheat) is conducted by international research centers (CIP, CIAT, CIMMYT) in collaboration with INIAP.
- 1.18 INIAP's activities during the 1980s and early 1990s were limited, owing, inter alia, to a lack of institutional autonomy, scarcity of resources, and failure to concentrate its efforts in a small number of high-priority areas. These problems have been partially resolved since the Institute became an autonomous entity in 1992 and more funding has been allocated to it. In addition, INIAP has

endeavored to prioritize its activities, train its personnel, and redefine its role vis-à-vis other organizations in the sector and with respect to new demands from agricultural producers.

- 1.19 The private sector (NGOs, producers' associations and companies, commercial firms) currently has limited capacity to provide technical assistance services. NGOs focus their efforts on assisting small, low-income producers in the highlands, who generally practice subsistence farming and have been neglected by public institutions. Commercial marketers of seeds and agrochemicals provide services directly related to the inputs they supply. Some producers' associations arrange for technical assistance services at the local level for their members.
- 1.20 For the most part, the State has had direct responsibility for the delivery of technical assistance to producers through externally financed projects such as the program for development of agricultural technology (PROTECA); the technology transfer groups (TTGs) funded by the Swiss government and executed by INIAP; the livestock development project (PROFOGAN), supported by German funding and executed by the MAG; and the national rural development program (PRONADER), financed by the World Bank and executed by the MAG by delegation of the Ministry of Social Welfare. Although PROTECA financed various activities relating to the generation and transfer of technology, it had no appreciable impact on the productivity of the agricultural sector.

b. Plant and animal health services

- 1.21 Public agricultural health activities are the responsibility of the national programs for plant and animal health of the MAG, each of which has decentralized units, including laboratories, provincial and local units, and control and inspection units at borders, ports, and airports. Each program functions independently and without adequate coordination with the private sector. Successive reorganizations of the MAG, coupled with a chronic shortage of funds, have undermined the organization of these programs and hindered the development of the necessary regulatory and operational capacity.
- 1.22 The area of animal health has experienced greater relative development than plant health, owing in part to the national foot-and-mouth disease control program (loan 380-SF/EC), which was in effect between 1975 and 1981. The national coffee program and the national banana program have also undertaken activities to control rust and sigatoka (leaf-spot disease), respectively.
- 1.23 The country lacks a well-structured system of epidemiological surveillance of both plant and animal diseases. The quarantine system for agricultural imports and control of inputs shows marked deficiencies with regard to inspection procedures and record-keeping mechanisms. The procedures for inspection and certifi-

cation of plant and animal export products are also deficient. In the case of animal health, diagnostic reference laboratories, production of biologicals for veterinary use, and quality control of inputs for use in animals do not come under the jurisdiction of the MAG, but rather under that of the Ministry of Health.

- 1.24 The MAG is able to meet the demand for foot-and-mouth disease vaccine, but it does not have the capability to diagnose animal diseases or analyze biologicals for use in livestock production. Consequently, it is essential to redesign the control of health problems, with active participation by the private sector, especially in regard to campaigns and projects for the control and eradication of animal diseases. This is particularly important in the case of diseases that it is technically feasible to control and eradicate, in order to reduce or eliminate the health barriers that prevent domestic products from being sold on international markets, among other objectives.

C. Bank strategy in the country

- 1.25 The Bank is supporting, through several recently approved sector operations, the country's efforts to address the external debt problem and its actions with regard to privatization and modernization of the State. ^{1/} The Bank's strategy emphasizes the regulatory role of the public sector, support for development of the private sector, and growth in productivity, as well as the delivery of efficient, targeted services (health, education, and sanitation) to alleviate the poverty that affects one third of the population. The IDB is also supporting the development of a strategy and an appropriate regulatory framework for environmental protection.

D. Bank experience in the sector

- 1.26 To date, the Bank has approved financing for more than 21 projects in the agricultural sector, totalling approximately US\$900 million, the bulk of which has gone to irrigation and credit projects. Only US\$60 million has been allocated to technology development activities. The Bank has funded two agricultural research projects (loans 245/SF and 483/SF-EC, approved in 1969 and 1976, respectively), which were executed by INIAP. Under the first project, a total of US\$2.2 million was disbursed and the objectives of strengthening the infrastructure and operating capacity of INIAP were successfully achieved. Under the second loan, which was for US\$11 million, only about 60% of the objectives were achieved, owing mainly to institutional weaknesses in INIAP. The

^{1/} Agricultural sector program (831/OC-EC and 832/OC-EC), finance sector program (833/OC-EC and 834/OC-EC), transport sector program (842/OC-EC and 843/OC-EC), and the debt reduction facility (850/OC-EC).

agricultural sector program (loans 831/OC-EC and 832/OC-EC), approved in December 1994, has contributed to profound institutional and legal reform, and through its technical-cooperation component it will help to strengthen the institutions involved in the project.

- 1.27 PROTECA (loan 207/IC-EC), approved in 1986 and finalized in 1994, was executed directly by the MAG. Under the program, funding was provided for activities in the following areas: generation of technology by INIAP; production and distribution of seeds with the National Seed Corporation [Empresa Nacional de Semillas (EMSEMILLAS)], INIAP, and the MAG; and mainly strengthening of the State apparatus for technology transfer by the MAG through its provincial offices and national product programs. The program disbursed over US\$30 million, and a balance of US\$14 million was cancelled. PROTECA provided financing for several activities crucial to technological development, namely: training abroad for more than 80 technical experts and training nationally for 426; direct technical assistance for 85,000 farmers; and experimental research carried out by INIAP. Although some progress was made (increases in production and productivity) in some of the areas targeted by PROTECA, the program had no appreciable impact on the output and productivity of the Ecuadorian agricultural sector.
- 1.28 As PROTECA was initially designed, responsibility for the execution of agricultural services relating to technology generation and transfer and seed production was entrusted to the public sector. However, in view of the policy changes introduced by the new government and the new institutional strategy proposed under this program, the last phase of PROTECA was adjusted to provide for privatization of technical assistance. The final phase of the project was thus brought into line with the objectives of the program proposed here. 2/
- 1.29 In summary, the Bank's experience has shown that public entities do not have sufficient capacity to deliver agricultural services and that it is necessary to devise mechanisms that will allow for greater participation by the private sector.

2/ In October 1993 PROTECA entered into agreements with eight producers' associations (AGSO, ANCUPA, FENARROZ, FUNALGODON, PROEXANT, PRONACA, the Carmen Livestock Producers' Association, and the Gatazo-Zambrano farmers' association), under which 30 technicians and vehicles were transferred to them. Under the agreements, for the first two years the MAG will provide subsidies equivalent to 80% of wage costs and the producers' associations will cover up to 20% of operating costs. In the third year, technical personnel and all related costs will be paid entirely by the private sector.

E. Design of the proposed program

- 1.30 In the framework of current economic policy, which is oriented toward international trade and modernization of the sector and encourages greater participation by the private sector, the basis for the agricultural services modernization program (PROMSA) is the need to bring about a sustained increase in the sector's output and productivity through modernization of technology and agricultural health services. The program seeks to strengthen national technology and agricultural health systems over the next 15 to 20 years through participation by the State in regulatory matters and financing of activities in the public interest, coupled with delivery by the private sector of research, technology transfers, and agricultural health services. PROMSA will support and consolidate the transition from a system of service delivery by the State to a system that is partially financed by the public sector but is managed by the private sector and responds to user demand.
- 1.31 The program is based on four principles: (i) public investment in key agricultural services within an appropriate institutional and policy framework; (ii) supply of competitive services in response to real demand; (iii) involvement of the private sector in the delivery and financing of services, complementing the actions of the public sector; and (iv) shared efforts with other development agencies (national, regional, and international), employing a common medium- and long-term strategy for the development of the sector.

1. Investment in an appropriate framework

- 1.32 In keeping with the modernization policy currently in effect, responsibility for the delivery of agricultural services will be transferred to the private sector, while the public sector will retain responsibility for regulatory matters and facilitate financing through appropriate mechanisms. The MAG, through autonomous public entities, will maintain responsibility for financing services that are in the public interest (agricultural technology and health) and fund activities intended to benefit small producers. Under PROMSA, a variety of financing and service delivery options will be created through various public institutions, universities and polytechnic schools, NGOs, and the private sector. The ASP provides an appropriate institutional and policy framework for the investment proposed under PROMSA by reworking economic incentives to achieve more efficient use of productive resources and reorienting the MAG toward regulatory functions.

2. Demand-driven services and competition among suppliers

- 1.33 PROMSA responds to producers' demands for research, technology, and health services as expressed through the importance they attach to research, their willingness to pay for the technical assistance received, and their desire for effective agricultural health

services. The program will encourage competition among suppliers of these services through the competitive research fund and competitive bidding for contracts to supply technical assistance and agricultural health services.

3. Private sector participation in the financing and delivery of services

- 1.34 The results of most research for the development of biological and applied technology are in the public domain in that the discoveries are not generally patentable. This implies that such research activities should be financed, though not necessarily executed, by the public sector. PROMSA, through various mechanisms, seeks to increase private sector participation in financing and execution of research activities.
- 1.35 All the proposed technology transfer activities will be carried out by private sector organizations. They will be financed in part by the beneficiaries, and the private sector will play the lead role in executing the transfers of technology. This means that the State will give up its role as a provider of technical-assistance services and will assume a regulatory role, in addition to providing financing for the services required by producers.
- 1.36 In the area of agricultural health, the program will encourage greater private sector participation in the execution of health protection campaigns and activities. These activities will be regulated and cofinanced by the public sector and the program.

4. Common medium-term strategy

- 1.37 This program is part of a joint effort led by the MAG and supported by various multi- and bilateral technical-assistance agencies (GT2, COTESU, and others) which are contributing to the modernization of the agricultural sector in Ecuador. The program has been designed and prepared in conjunction with national authorities and the World Bank, following joint missions, preparation of aides-mémoires, and advisory studies. Parallel financing by component has been agreed on with the government and the World Bank.

II. THE PROJECT

A. Objective and target

- 2.1 The objective of the program is to boost productivity and increase the level and quality of agricultural output by modernizing and strengthening national technology generation and transfer systems and agricultural health services. The program seeks to increase private participation in the execution and/or financing of these activities.
- 2.2 The target of the program is to achieve a 25% increase in yield per hectare for the country's priority crops and livestock products. This goal is to be attained by: (i) raising annual public investment in the generation and transfer of agricultural technology to 1% of the gross agricultural product; and (ii) reducing post-production losses from pests and diseases affecting the main products by 25%.

B. Description

1. Technology generation component 3/

- 2.3 This component seeks to develop a national research system that is responsive to demand and involves a variety of public and private entities, which compete for research funds. It consists of three subcomponents: a competitive research fund, training and strategic alliances with international scientific institutions, and strengthening of INIAP. This component will be financed by the World Bank, except for the competitive research fund, which will be partially financed by the IDB.

a. Competitive research fund subcomponent

- 2.4 The fund will provide financing for individual research projects on the basis of open competition. The maximum amount to be provided will be 70% of the total cost of a research project, with a ceiling of US\$100,000 per project and a maximum duration of three years. The projects will be appraised on the basis of technical, economic, and institutional criteria, which will be established in the fund's operating regulations. Projects submitted by investigators from universities, polytechnic schools, NGOs, INIAP, and the private sector will be eligible, with preference given to projects submitted by the private sector in association with any of the other organizations mentioned.

3/ A full description of the component is included in the appropriate technical annex.

- 2.5 For the purposes of this program, the priority products for research (determined by means of a prior economic appraisal) will include: beef and dairy cattle, rice, coffee, potatoes, cacao, sweet corn, flint corn, bananas and plantains, soybeans, and beans. The specialized support areas are: integrated pest control, soil and water management, irrigated crops, agroforestry, biotechnology, nutrition, and quality control. During the execution of the program other products or specialized areas may be added in response to new needs or opportunities.
- 2.6 In addition, research may be conducted in the following general areas: agricultural economics, rural sociology, natural resource management, and participation by women in the productive process. These activities will guide studies of a biological nature, facilitate the adoption of technology, increase the program's impact on the well-being of rural families, and upgrade the environment.

b. Training and strategic alliances subcomponent

- 2.7 Funds will be provided for short-term specialized postgraduate training in the priority research areas mentioned above. The funds will be awarded on a competitive basis to investigators from universities, polytechnic schools, and NGOs with the capacity to conduct agricultural research. Funding will be extended only for those training activities that will demonstrably increase the capacity of the national system in the priority research areas.
- 2.8 This subcomponent will finance research partnerships, short-term technical assistance, and exchanges of scientific personnel from INIAP, universities, polytechnic schools, and NGOs with international scientific institutions in order to facilitate the incorporation of technology that is appropriate for Ecuador but has been developed outside the country. Funding will be provided, on a competitive basis, for up to 50% of the costs of projects. International institutions will finance no less than 50% of these costs.

c. INIAP subcomponent

- 2.9 INIAP will be strengthened through: postgraduate training, hiring of national and international scientists to serve as long-term consultants, purchase of equipment and vehicles, and upgrading of laboratories and libraries. Fellowship recipients will complete their research theses, preferably in Ecuador, under the direction of their academic advisors. After PROMSA ends, these scientists will join the staff of INIAP.

2. Technology transfer component (TT) 4/

- 2.10 This component seeks to replace the traditional public agricultural extension services, which are centralized within the MAG and delivered by public servants, with a TT market, financed by the State and the beneficiaries, in which private agents will compete to deliver services. These agents will include producers' organizations, NGOs, foundations, and local private technical-assistance firms. They will be responsible for the transfer of modern production technologies and their services will include assistance in business management.
- 2.11 The TT activities will help to support the business and farm economies, especially in the case of technologies that reduce unit production costs, conserve the productive base of natural resources, and protect the quality of the rural environment. The use of different TT methodologies and strategies will be promoted, depending on the type of production system, the agroecological area, the geographical region, and the socioeconomic level of the users toward whom they are directed.
- 2.12 Priority will be given to assisting crop and livestock farmers in the microregions with the greatest productive potential, market access, and availability of irrigation. This population comprises 250,000 producers: 10,000 large-scale, 150,000 medium-scale, and 90,000 small-scale. 5/ Of that total, close to 90,000 producers will receive technical assistance, directly or indirectly, with attention focused on small- and medium-scale producers.
- 2.13 The program of technical assistance for entrepreneurial development (TAED) has been designed for small-scale producers who have the potential for commercial development and wish to receive assistance for that purpose. Medium- and large-scale producers who wish to receive technical assistance will be grouped in technology transfer groups (TTGs). The experience of Ecuador and other countries indicates that the optimum size is 20 producers per group. The

4/ A full description of the component is included in the appropriate technical annex.

5/ In developing the program, the following definitions were used to scale the TT component: (i) large-scale producers are crops and livestock farmers with more than 20 hectares in highland areas or more than 100 hectares in coastal areas who employ workers, borrow from private banks, pay taxes, and produce to sell; (ii) medium-scale producers have less than 20 or 100 hectares in highland or coastal areas, respectively, but more than 5 hectares; employ workers but also participate personally in the work of the farm; borrow from the BNF or private banks; and produce to sell; and (iii) small-scale producers have less than 5 hectares, use family labor, do not pay taxes, and produce for their own consumption, only selling surpluses.

criteria used to identify the potential areas and beneficiaries for TT activities are: demand by producers for these services, the experience accumulated through the pilot program of TT groups under the COTESU project for fruit growers, existence of irrigation systems and organized groups of users, cultivation of priority products, number of potential beneficiaries and their agroecological potential, market prospects, and availability of production infrastructure.

a. Technical assistance for entrepreneurial development (TAED)
subcomponent

- 2.14 The TAED program will be organized around productive systems and will serve groups of economically viable small-scale producers by means of professional firms or individuals. The ideal would be for the total cost of technical-assistance services to be covered by the users. However, the State (PROTECA) has been subsidizing the entire cost of technology transfer for small producers. Under the TAED program, producers will gradually increase the amounts they contribute to cover the cost of technical assistance. The goal — once the program is solidly established and its beneficiaries are fully aware of the way in which it operates and of the benefits it offers — is to have producers paying 50% of the total costs by their sixth year of participation in the program.
- 2.15 The beneficiaries will partially finance the cost of the services according to the scale shown in Table 1, paying 5% of the costs in their first year in the program and gradually increasing their contribution to 50% in their sixth year of participation. The maximum contribution per small producer is estimated at US\$52 a year (\$1 a week). The scale for producers who enter the program in subsequent years will be the same, but will apply only for the remainder of the duration of the TAED program.
- 2.16 After participating in the TAED program for six years, the producers will shift to the TTG modality to cover their technical assistance needs or will contract directly for services. It is estimated that by the fifth year the TAED program will be directly serving 24,000 small-scale producers organized in 1,200 groups composed of 20 producers each. Each extension agent will serve five groups.

Table 1. Financing and scale of the TAED subcomponent					
Financing (% of the total)				Number of TAED groups	
Year	IDB	GOE	Producer	New	Total
0	0	100	0	0	0
1	88	7	5	300	300
2	76	14	10	400	700
3	65	20	15	300	1000
4	50	30	20	150	1150
5	34	33	33	50	1200
6	0	50	50	0	1200

2.17 The TAED groups will be organized according to predetermined agroecological zones, where the executing agency, with the participation of the beneficiaries, will select, retain, and supervise the firms that supply the services. The latter will compete for annual contracts. 6/ Basically, priority will be given to producers who own the land they farm, whose principal residence is located on that land, whose age is under 35, whose income is derived totally from farming, and who have irrigation. Special weight will be given to the opinion of the extension agent and the neighboring producers who will potentially participate in the group.

b. Technology transfer group (TTG) subcomponent

2.18 This subcomponent consists of the implementation of a national network of TTGs composed of groups of medium- and large-scale producers. In order to receive technical assistance, the producers must organize themselves and pay the cost of the service on a graduated scale, according to which they will cover increasing amounts through the fifth year and thereafter will be responsible for the total cost (see Table 2). The groups will be formed in the various provinces around existing associations of producers of the most important crops. The timetable for the establishment of TTGs by products and provinces appears in the TT technical annex.

6/ The planned timetable for the establishment of groups at the national level, their provincial distribution, as well as the criteria and rating system for the selection of producers, are specified in the corresponding technical annex.

Table 2. Financing and scale of the TTG subcomponent					
Year	Financing (% of total)			Number of TTG groups	
	IDB	GOE	Producers	New	Total
0	0	100	0	0	0
1	40	40	20	75	75
2	30	30	40	95	170
3	20	20	60	35	205
4	10	10	80	10	215
5	0	0	100	5	220
6	0	0	100	0	220

2.19 The TTGs will serve a total of 4,400 crop and livestock farmers organized in 220 groups composed of 20 producers each. They will be served by 44 technical experts, each of whom will be responsible for five groups. The maximum that producers will be expected to contribute per year will be US\$213.

2.20 Some 28,400 producers will be served directly by the TAED and TTG programs. However, given that two additional producers are expected to benefit indirectly from the technical assistance provided directly to each producer through these two programs, the total population served by the technology transfer component, both directly and indirectly, will be 85,200 producers.

3. Agricultural health component 7/

2.21 The aim of this component is to protect health and improve productivity and competitiveness in the agricultural sector by increasing the safety and quality of Ecuadorian animal and plant products. The component will seek to respond to producers' needs and foster full participation by the private sector. To achieve these objectives, the national plant and animal health programs will be consolidated in a new institution, the Ecuadorian Agricultural Health Service (SESA), which will have technical, operational, and financial autonomy.

7/ A full description of the component is included in the appropriate technical annex.

- 2.22 SESA will carry out activities relating to control, plant and animal product inspection and quarantine, and agricultural health campaigns. Coordination with the private sector will be achieved through: (i) laboratory diagnosis and field activities, with SESA maintaining regulatory and supervisory control over the activities it delegates; (ii) the creation of mechanisms for accrediting the private companies or individuals who carry out the delegated activities and the establishment of systems for supervising them; (iii) recovery of the cost of services provided by SESA; and (iv) the inclusion of private sector representatives on SESA's board of directors.
- 2.23 The main activities to be financed under this component are: inspection and quarantine control, plant health monitoring and forecasting, epidemiological surveillance, national system of laboratories for diagnosis and analysis and control of agricultural inputs, registration and control of agricultural inputs, plant health projects, animal health projects, and institutional strengthening of SESA (health education and information, information system, technical documentation center, and administrative management).
- 2.24 In order to modernize agricultural health services, the following activities will be carried out: professional training; expert technical assistance; provision of laboratory, office, library, audiovisual, and data processing equipment; improvement of the infrastructure of laboratories and control and inspection points at ports, airports, and border crossings; and procurement of vehicles.

C. Program implementation and coordination

- 2.25 In order for the MAG to assume its responsibilities as coordinator and regulator of the activities relating to modernization of agricultural services, it will be necessary to contract specialized advisory services to improve the monitoring and evaluation skills of the personnel of the Office of the Undersecretary for Technical Affairs and its regional offices, as well as the personnel to be recruited for the PROMSA implementation unit (chapter III). In addition, the MAG unit responsible for monitoring the environmental impact of the program will be strengthened.

D. Cost and financing

- 2.26 The total cost of the program in December 1994 prices is estimated as the equivalent of US\$41.5 million. Table 3 shows the investment categories for each of the components and indicates the sources of financing.

Table 3. Cost and financing (thousands of US dollars)			
	IDB	Local contribution ^{1/}	Total
I. Engineering and supervision	3,981	255	4,236
1.1 <u>Engineering</u>	<u>81</u>		<u>81</u>
1.2 <u>Supervision</u>	<u>3,900</u>	<u>255</u>	<u>4,155</u>
1.2.1 Implementation unit	1,020	255	1,275
1.2.2 Transfer component	2,870	--	2,870
1.2.3 Health component	10	--	10
II. Direct costs	15,413	5,621	21,034
2.1 <u>Generation component</u>	<u>1,000</u>	--	<u>1,000</u>
2.1.1 Research fund	1,000	--	1,000
2.2 <u>Transfer component</u>	<u>11,516</u>	<u>5,621</u>	<u>17,137</u>
2.3 <u>Health component</u>	<u>2,897</u>		<u>2,897</u>
2.3.1 Construction	1,089		1,089
2.3.2 Machinery, equipment, vehicles	1,808		1,808
III. Concurrent costs	5,642	4,834	10,476
3.1 SESA incremental salaries	--	4,367	4,367
3.2 SESA maintenance and inputs	2,249	467	2,716
3.3 SESA institutional strengthening	2,993	--	2,993
3.4 MAG institutional strengthening	400	--	400
IV. Unallocated	4,664	790	5,454
4.1 Contingencies	2,404	400	2,804
4.2 Escalation	2,260	390	2,650
V. Financial costs ^{2/}	300		300
5.1 F.I.V.	300		300
TOTAL	30,000	11,500	41,500
% OF TOTAL	72,3	27,7	100
^{1/} In addition, there will be a contribution of US\$5,379,000 from the beneficiaries of the technology transfer subprogram. ^{2/} The finance charges indicated exclude interest during execution (US\$5.3 million) and the credit fee (US\$500,000), which will be financed by the borrower.			

2.27 The principal investment categories are described below:

1. Engineering and supervision (US\$4,236,000)

2.28 This category (10.2% of the total cost) includes:

- (i) the engineering budget (US\$81,000), which covers the design costs for the construction projects included under the agricultural health component (laboratories, inspection stations, etc.);
- (ii) the cost of the program implementation unit (PIU) (US\$1,275,000);
- (iii) administrative costs of the central and

regional offices for the TAED and TTG programs (US\$2,870,000); and (iv) SESA supervisory costs (US\$10,000).

2. Direct costs (US\$21,034,000)

2.29 This category accounts for 50.7% of the total cost and includes:

- a. Technology generation. Includes the Bank's contribution to the financing of the competitive research fund (US\$1,000,000) for which universities, polytechnic schools, NGOs, INIAP, and private sector organizations will compete.
- b. Technology transfers. Includes the cost of contracting with private firms to provide services (TAED and TTG subcomponents) to the beneficiary producers (US\$17,137,000).
- c. Agricultural health. Includes: (i) construction of offices, laboratories, inspection stations at ports, airports, border crossings (US\$1,089,000); and (ii) procurement of machinery and equipment, including appropriate equipment for laboratories, offices, libraries, the documentation center, control and inspection stations, and the purchase of 50 vehicles (US\$1,808,000).

3. Concurrent costs (US\$10,476,000)

2.30 This category (25.3% of the total cost) includes: (i) incremental costs to finance increases in public sector salaries for the professionals employed by SESA in order to make them more competitive with private sector salaries (US\$4,367,000); (ii) travel, maintenance, and inputs, which in the case of SESA will include travel costs (US\$1,976,000); maintenance and repair of vehicles, equipment, and buildings (US\$377,000); office and data-processing equipment (US\$90,000); and technical documentation (US\$60,000) and materials for laboratories and health campaigns (US\$213,000); (iii) institutional strengthening of SESA (US\$2,993,000), which includes graduate training abroad and in Ecuador (US\$2,229,000) and national and international consulting services (US\$764,000); and (iv) strengthening of the MAG environmental unit, which includes the implementation of environmental impact mitigation measures (US\$400,000).

4. Unallocated (US\$5,454,000)

2.31 This category (13.1% of the total cost) includes: (i) contingencies (US\$2,804,000) and (ii) escalation costs (US\$2,650,000).

E. Bank financing

2.32 The Bank will contribute 72.3% of the total cost of the program (US\$30 million), out of the ordinary capital resources. It is proposed that the Bank extend the loan under the following terms:

Fund	IDB-OC
Interest rate	variable
Credit fee	0.75%
Inspection and supervision fee	1.0%
Disbursement period	5 years
Grace period	5 years
Amortization period	20 years
(includes grace period)	

F. Local contribution

- 2.33 Locally-contributed funds amounting to the equivalent of US\$11.5 million will cover 27.7% of the total cost of the program. These resources will be contributed by the Ecuadorian government out of the national budget. The feasibility of this contribution is analyzed in chapter V.

III. PROJECT EXECUTION

A. Execution scheme

- 3.1 The Office of the Undersecretary for Technical Affairs of the MAG will coordinate execution of the program through the program implementation unit (PIU). All activities will be guided by a council on TG, TT, and agricultural health. The TG and TT components will be executed by specialized firms, which will be awarded contracts for this purpose through international competitive bidding. The health component will be executed by SESA.

1. The TG, TT, and Agricultural Health Council

- 3.2 The council will establish the policy lines that will guide the execution of PROMSA, establishing the linkages between the components and ensuring that producers' needs are reflected throughout the program. The council will have six members: the Technical Undersecretary of the MAG, who will serve as chairman; the Sector Investment and Policy Undersecretary of the MAG, two representatives of the Federation of Boards of Agriculture, one for the highlands and eastern region and the other for the coastal region; one representative of the agricultural scientific community, appointed by the National Science and Technology Secretariat (SENACYT); and one representative of polytechnical schools and universities, appointed through the National Board of Polytechnical Schools and Universities (CONUEP).
- 3.3 The chief of the PIU will serve as secretary of the council. Establishment of the council will be a condition precedent to the first disbursement under the program. The council will serve as a regulatory body, ensuring coordination with the policies included in the national development and science and technology agenda. It will also oversee the implementation of the program and approve the annual plans of operation (APOs) for each of the components, ensuring their consonance with national priorities.

2. Program implementation unit (PIU)

- 3.4 The PIU will administer and promote the program, serving as the principal contact with the IDB and the World Bank for the program's implementation. The unit will be responsible for preparing the budget, coordinating the preparation of the APOs for each component, making payments, requesting disbursements, and preparing financial and progress reports to be submitted to the appropriate entities. Establishment of the PIU will be a condition precedent to the first disbursement under the program.

- 3.5 The PIU will have a staff consisting of a maximum of seven persons, including support personnel and the director, who will report to the council and the Undersecretary for Technical Affairs of the MAG. The unit will be supported by administrative-financial personnel, who will be responsible for expenditures, the annual budget, and consolidated statements of account for the project and will establish a special account to cover auditing of the project's financial statements. A procurement and contracts specialist will ensure that all contracts for technical assistance, goods, equipment, vehicles, and public works conform to procedures acceptable to the government and each source of financing. The unit will also have a monitoring and evaluation manager, aided by one assistant, who will monitor and evaluate implementation of the project.

3. Implementation of the technology generation component

- 3.6 This component will be executed by a firm engaged through international competitive bidding. The firm will be responsible for managing and promoting the competitive research fund. In addition, it will oversee activities relating to training, strategic alliances, and strengthening of INIAP. It will organize review panels to select the research projects and strategic alliances to be funded by the program. Before the Bank makes the first disbursement to finance the competitive fund, the government must demonstrate that it has complied with the conditions for the operation of the fund in accordance with World Bank requirements.

4. Implementation of the technology transfer component

- 3.7 For the execution of the TAED and TTG subcomponents, a firm will be selected on the basis of international competitive bidding. Hiring of the firm will be a condition precedent to the first disbursement under the component. The firm, with participation by the groups of producers, will take technical responsibility for selecting, subcontracting, and supervising local private technical-assistance firms and organizations to implement the TAED and TTG subcomponents. There will be a central office and three regional offices for this purpose. The firms engaged will be awarded renewable annual contracts on the basis of policies established by the MAG and in accord with the provisions of the program.
- 3.8 The firm responsible for executing the component, in addition to overseeing technology transfer activities per se, will coordinate the training to be provided to the TAED and TTG groups with a view to achieving private management of the system once the program is completed and will promote the establishment of local companies that can carry out these activities in a decentralized fashion. Under the timetable of operations planned for the TT component, once private TT firms begin executing this component, MAG officials will cease to provide public extension services.

5. Implementation of the agricultural health component

- 3.9 The agricultural health component will be executed by SESA as an agency of the MAG, with technical operating and financial autonomy. In the framework of the agricultural sector program, the government has streamlined the structure of the national programs and obtained the approval of the National Administration Secretariat (SENDA) to establish SESA within the MAG as a transitional step. Pursuant to Ministerial Decision 0434 of November 18, 1994, the national programs on animal and plant health were recently consolidated in SESA under the MAG structure. Ministerial Decision 0488, issued in January 1995, established SESA's organizational structure and functions. These documents will serve as the basis for the preparation of a bill to be placed before Congress establishing the definitive autonomy of SESA.
- 3.10 SESA will be responsible for regulatory functions and for the management, coordination, supervision, and control of agricultural health activities at the national level. Activities in the field will be overseen by 21 provincial units, 36 local agencies, and 12 inspection stations at ports, airports, and border crossings. The planning and finance units will be responsible for monitoring and disbursements, in coordination with the PIU in the MAG.
- 3.11 In order to ensure that SESA has been legally established and has the necessary human and physical resources to execute the component, the following conditions must be met precedent to the first disbursement: (i) the regulations governing the organizational structure, functions, and staffing of SESA and the regulations for the awarding of SESA fellowships must be in effect; (ii) legal analysis, approval, and implementation of the regulations for accreditation in agricultural health; (iii) submission of evidence of the credentials of the personnel selected for SESA; and (iv) submission of evidence of the transfer to SESA of the MAG properties, equipment, and physical facilities necessary for SESA's activities.
- 3.12 The efficient operation of plant and animal health services requires the drafting of regulations and manuals to govern the relations between the institution and its users. Accordingly, before the end of the first phase of program execution (20 months), SESA must carry out the following activities: (i) formulate new plant health regulations; (ii) formulate regulations for the Animal Health Act; (iii) prepare procedural manuals for the technical and operational units and a manual of administrative and financial procedures for SESA; (iv) draft, approve, and implement agreements and/or contracts with the appropriate agencies and institutions for the execution of SESA functions; (v) propose a new fee structure for the services to be provided by SESA; and (vi) place a bill before Congress conferring administrative and financial autonomy on SESA.

B. Monitoring and sustainability of the program

- 3.13 The execution period will be 5 years (60 months), which will be subdivided into three phases of 20 months each. During the execution period two evaluations will be conducted, one at 20 months and the other at 40 months after the program is launched. Based on the findings of these evaluations, adjustments can be made in the next phase of program execution - for example, changes in the types of research projects to be funded, the number of producer groups to be served by the firms, or the agricultural health campaigns to be implemented. The evaluations will be conducted taking into account the targets established in the annual plans of operation (APOs) for each program component. Annex V outlines an execution monitoring plan.
- 3.14 The total cost of each component will be disbursed according to the specific APOs for each component, which will be agreed with the Bank during the fourth quarter of each year of the life of the program. The first APO must be submitted as a condition precedent to the first disbursement. Subsequently, the APOs for the following year for each component will be submitted prior to October 31 each year.
- 3.15 In order to ensure continued support for the technology generation and transfer and agricultural health systems after the program ends, during the first phase of program execution (20 months) mechanisms will be developed and agreed upon for the provision of ongoing public support for the systems. The continuation of the research activities after the program has ended will require a minimum annual commitment of US\$10 million. The essential elements for maintaining the TT system in the future will be: (i) the TTG groups, which will function autonomously; (ii) the TAED program groups, which thanks to the work of the private organization engaged, will have acquired sufficient capacity to collect their own contributions and administer transfers from the government; and (iii) the PIU, whose functions, after PROMSA ends, will be assumed by the MAG's Agricultural Technology Division, which will coordinate and administer the TT system. The continuation of the TAED model will require an annual commitment of approximately US\$8 million.

C. Disbursement schedule

- 3.16 Table 4 shows the disbursement schedule for the program, based on the execution of each component, the budget performance capacity of the MAG, and the timely availability of counterpart resources.

Table 4. Disbursement schedule (in thousands of US dollars)				
YEAR	IDB/OC	Government	TOTAL	%
1	5,924	898	6,822	16.4
2	6,723	1,781	8,504	20.5
3	6,819	2,360	9,179	22.1
4	5,674	2,959	8,633	20.9
5	4,860	3,502	8,362	20.1
Total	30,000	11,500	41,500	100.0

D. Bidding

- 3.17 Procurement of goods and contracting for construction works will be carried out in accordance with the procedures stipulated in Annex B of the loan contract. International competitive bidding will be required for the procurement of any good or service whose value exceeds US\$350,000 or any construction work whose value exceeds US\$1 million. These thresholds have been set since foreign firms have generally bid on similar projects in the country starting at these levels. Bidding on goods and services with a lesser value will be conducted according to domestic law. Annex II shows the proposed bidding calendar for the program, as well as the specific limits set in domestic legislation.

E. Advance funds

- 3.18 In order to ensure timely execution of the program, it is recommended that an advance equivalent to 10% of the total budget be extended.

F. Maintenance of equipment and facilities

- 3.19 The borrower, through each of the executing agencies, undertakes to include as part of the financing agreements a commitment to operate and maintain all equipment and facilities financed with program funds in accordance with generally-accepted technical standards and to ensure the availability of the personnel and materials necessary for their efficient operation. Every year during program execution and for five years after its completion, the borrower will submit to the Bank a report on the maintenance carried out the previous year.

G. External auditing

- 3.20 The financial accounts of the program and those of the MAG will be examined by a firm of independent auditors acceptable to the Bank.

The accounts must be presented annually within 120 days of the end of the government fiscal year during the program execution period.

H. Ex post evaluation

- 3.21 An immediate evaluation (project completion report) will discuss the sustainability of the program from the standpoint of public financing and the execution of program activities. Three years after completion of the program, it is recommended that an ex post evaluation be conducted to verify that the program targets have been attained. The attainment of the targets (chapter II) will be confirmed by comparing levels of investment, returns, and reduction of losses for the TG, TT, and agricultural health components in the priority areas of agricultural production (chapter II) in the early 2000s (e.g., average for the years 2001-2003) with the levels registered during the early 1990s (e.g., average for the years 1991-1993).

I. Environmental aspects 8/

- 3.22 The program includes activities that will have a neutral or potentially favorable impact on the environment. The increases in agricultural productivity resulting from technological development, research on sustainable agricultural production systems, and improvements in agricultural health conditions should reduce the need to continue expanding the agricultural frontier, alleviate the pressure on lands with fragile environments (including those in the eastern region of the country), slow the pace of deforestation, and lead to more efficient use of soil and water resources. However, the program may also have negative environmental effects owing to increased use of agricultural technology, which may lead to greater use of agrochemicals that could contaminate water and soil.
- 3.23 Consequently, the principal recommendations with regard to environmental protection are: (i) include under the TG, TT, and agricultural health components activities that will ensure good management of natural resources, the development of soil conservation practices and efficient management of irrigation water, integrated pest control and reduction of contamination from agrochemicals, as well as sustainable management of forest resources; (ii) supervision and evaluation by SESA of the enforcement of restrictions and prohibitions on the use of agrochemicals, and application of measures for the correct management of chemical and biological waste generated by SESA laboratories; and (iii) evaluation by the Environmental Management Office (OGA) of the MAG of the effectiveness of the mitigating and preventive measures recommended. As a condition for the first disbursement, the OGA will draft a report containing the plan of environmental

8/ A full description of the environmental aspects of the program is included in the appropriate technical annex.

protection measures to be implemented (environmental monitoring plan). The program will include funds (US\$400,000) to train extension agents in the proper use of agrochemicals and to implement the environmental monitoring plan during program execution.

IV. BORROWER AND EXECUTING AGENCY

A. Borrower

- 4.1 The borrower under this program will be the Republic of Ecuador and the executing agency will be the MAG, which will coordinate and oversee the activities of each component through the program implementation unit (PIU). The latter will be established within the Office of the Undersecretary for Technical Affairs of the MAG and will be supported by the other MAG policy and technical-administrative units. The PIU will coordinate the entire program, including the TG component to be financed by the World Bank.

B. Ministry of Agriculture (MAG)

1. Functions and organizational structure of the MAG

- 4.2 The MAG is the lead public agency in the agricultural sector. It sets agricultural policy, coordinates investment planning, and regulates sector services. The current structure and functions of the MAG were established by Ministerial Decision 0264, promulgated in July 1994 pursuant to the recommendations of the Agricultural Sector Program (ASP).
- 4.3 When the ASP was launched, the MAG was organized to carry out regulatory and control functions through the offices of five undersecretaries (three of them in different regions) and national programs relating to specific products or activities. In addition, there were a number of largely autonomous entities under the MAG, public corporations devoted to the marketing of products and inputs, and five regional development corporations.
- 4.4 The public agricultural sector, and specifically the MAG, has undergone a transformation under the framework of the reforms initiated by the government in 1992. This process has accelerated in the new framework provided by the Law on State Modernization. In the early stages of the process, in the context of the ASP, new regulations governing the structure and functions of the MAG were issued, and its principal functions were divided between the offices of two undersecretaries: the Undersecretary for Sector Policy and Investment and the Undersecretary for Technical and Administrative Affairs. These offices engage basically in regulatory and coordination functions. The MAG's regional activities are coordinated by three regional undersecretaries (for the highland, northern coastal, and southern coastal regions) and a small number of provincial and local agencies. The state-run commercial corporations are to be privatized or eliminated in the framework of the ASP.

- 4.5 The new regulations temporarily preserve the national programs on specific products and activities, but those programs will also eventually be privatized, restructured, or eliminated, a process which should be completed by the second phase of the ASP. The product programs have been carrying out extension and agricultural health activities, which will be taken over by the institutions created under this program. The activities conducted by PROTECA will be shifted to the TAED and TTG groups and the plant and animal health programs will be absorbed by SESA.
- 4.6 During the second phase of the MAG restructuring process, sector and environmental management offices will be created and strengthened. The sector management office, with personnel financed by the ASP, will be responsible for advising sector executives on the formulation and application of policies. The environmental management office will oversee the processes of environmental planning, coordination, and evaluation. Territorial zoning and information activities will also be strengthened during the second phase. In the technical area, responsibility for regulatory activities and the coordination of agricultural services (research, extension, and health) will be entrusted to the Agricultural Technology Division within the Office of the Undersecretary for Technical and Administrative Affairs, which will be responsible for coordinating the execution of this program.

2. Public employees in the agricultural sector

- 4.7 In 1994 the public agricultural sector (which comprises the MAG and the agencies reporting to it, the regional bodies, and the public corporations) employed 10,903 individuals, of whom 2,316 worked for the MAG, 716 for INIAP, and 431 for the plant and animal health programs. The salary levels and qualifications of these employees were not sufficient to allow them to effectively carry out their functions. Under the Law on State Modernization, surplus staff is to be reduced, which will mean the elimination of 3,500 posts during 1994-1995 and the eventual elimination of 5,900 over the life of the ASP. As a result of this downsizing, it has been possible to formulate a new salary structure for cases such as SESA, using the structures already implemented for INIAP and INEFAN as a guide. Eliminating surplus personnel in the entire public agricultural sector is expected to cost an estimated US\$25 million, but should result in annual savings of US\$12.5 million. The costs of this reduction will be financed by means of a bond issue administered by the Ministry of Finance to pay for staff reduction throughout the public sector.

3. Budget, accounting, and financial administration

- 4.8 The Law on Public Sector Budgets, enacted in November 1992, establishes the rules that govern the budget programming, approval, and control process. The technical procedures for this process are established by the Ministry of Finance. The regulations to the Law

provide for a process of sector budgeting and specify the entities that will coordinate this process. The Ministry of Finance and the General Planning Department of the National Development Council (CONADE) are the entities responsible for the sector budgeting process and the MAG coordinates the process in the agricultural sector. Within the MAG, the Directorate of Planning, Budget, and Sector Investment is the entity that coordinates with the other entities in drawing up the sector budget. The Finance Division of the MAG, through its accounting and budget execution units, monitors budget execution at the sector level.

- 4.9 Under the technical-cooperation component of the ASP, the MAG is to receive assistance in implementing an administrative and financial management system for the public agricultural sector. Implementing this system will entail the automation of all stages of the budgeting process; the development of programming, execution, and evaluation methodologies; and an extensive training program for MAG staff working in this area.

C. Ecuadorian Agricultural Health Service (SESA)

1. Organizational structure of SESA

- 4.10 The organizational and functional regulations governing SESA, as an agency of the MAG, were approved by Ministerial Decision 0488 of January 12, 1995. However, before the first phase of the project is completed (20 months), the government will prepare and place before Congress a bill to make SESA a public corporation, with legal capacity, its own budget and assets, and administrative and financial autonomy.
- 4.11 The proposed organizational structure for SESA will follow the general lines of the organizational structure approved by SENDA for its current transitional phase as a MAG agency, although with some variations. SESA's structure will comprise two levels: (i) a central level with regulatory, managerial, organizational, coordination, and control functions, with a technical coordination directorate and an operational coordination directorate reporting to the national authorities; and (ii) a provincial operational level, with 21 agencies, which will have essentially operational functions. At this level, field teams operating within the local agencies will provide services relating to both crop and livestock farming, and inspection and control stations.

2. SESA staff

- 4.12 SESA, in accordance with the concept underlying its establishment, will have a maximum staff of 312, including 150 professionals, 106 technical and auxiliary field staff, 39 administrative staff, and 17 support staff. SESA will be required to work in close coordination with the private sector, for which purpose it will establish a system for accrediting private technical personnel.

Staff will be selected on a competitive basis by a specialized private firm engaged for that purpose. Employees of the national plant and animal health programs prior to their consolidation in SESA-MAG will also be allowed to participate in this competitive selection process.

- 4.13 In early 1994 the MAG's national plant health program had a total staff of 130, consisting of 54 professionals and 76 technical, administrative, and support staff; the national animal health program had 301 employees, including 70 professionals and 231 technical, administrative, and support staff. Following the initiation of the modernization process in the public agricultural sector, and in particular the plant and animal health programs, the total staff for the two programs was reduced to 248.
- 4.14 SESA's incremental staffing cost during the five years of project execution will be US\$4,367,000. This amount will be covered under the local counterpart for the project.

D. Financial aspects

- 4.15 Table 5 shows MAG investment outlays by source of financing for 1993 and 1994. During those two years the MAG invested an annual average of US\$22.2 million, with 64% coming from the government's budget and 36% from external funds. External funding totaled US\$16.2 million, of which the Bank provided 83% through operation 207/IC, PROTECA.

Table 5. Recent MAG investment outlays (in thousands of US dollars)				
Expenditure	1993	1994	Total	Annual Average
External resources	7,828.0	8,340.4	16,168.4	8,084.2
Ecuadorian government	9,135.1	19,101.1	28,236.2	14,118.1
Total capital expenditure	16,963.1	27,441.5	44,404.6	22,202.3

- 4.16 In addition to the allocations for investment, the government provided an annual average of US\$3.6 million for operating expenses. Controlling the level of these expenditures is one of the government's goals and, accordingly, under the 1995 budget a lesser amount (US\$2.3 million) has been allocated.

V. VIABILITY AND RISKS

A. Technical and institutional viability

- 5.1 The TG, TT, and agricultural health activities will be carried out in close coordination with the private sector. The efficiency and continuity of the services will be ensured through recovery of the cost of the services provided. This is particularly important with regard to the cofinancing to be provided by producers for TT services and in relation to health inspection and laboratories.
- 5.2 The institutional viability of the TT component will derive from the new system of private delivery of agricultural technical-assistance services, as well as from the strengthening of the State's role in regulatory matters and in providing the necessary financing for the modernization of technology generation, technology transfer, and agricultural health services.
- 5.3 The institutional model for execution of the program is viable in the framework of the modernization process currently under way. In the case of agricultural health services, the new institution (SESA) will have technical, administrative, and financial autonomy and a salary scale that will enable it to hire highly specialized personnel. SESA will also be developing a system for accrediting private entities, which will result in more effective delivery of the plant and animal health services required for national and international trade.
- 5.4 Strengthening of public agricultural health activities through the creation of SESA, coupled with greater participation by the private sector, will endow the country with an agricultural health system capable of responding to the demands of producers, export markets, and domestic consumers. The technical viability of the agricultural health component will derive from the establishment of SESA, the participation of private-sector professionals in the accreditation system, and the adoption of a realistic fee scale.
- 5.5 In the case of the MAG, this program will complement the activities planned under the ASP by strengthening the technical, regulatory, and coordination units involved in the delivery of agricultural services, ensuring the MAG's institutional viability as the executing agency.

B. Financial viability

- 5.6 Annex III presents the projections for the IDB program and also shows the projections for the component to be financed by the World Bank. Other than the activities mentioned, there are no further investments planned for the MAG agencies involved.

- 5.7 Analysis of the financial projections, taking into account the recent operational and financial experience of the MAG, whose resources come mainly from budget allocations, indicates that: (i) execution of the investment plan is feasible in terms of operating capacity; and (ii) the government counterpart is feasible. The projections total US\$66.5 million in investments, or an annual average of US\$13.3 million, which is in line with the Ministry's recent execution capacity, considering that MAG investment has averaged US\$22.2 million a year for the past two years. In addition, given that most of the activities will be contracted out, the MAG's ability to execute the investment plan will be linked to its capacity for contract administration. As was explained in the previous chapter, in order to strengthen this capacity the program provides for the establishment of specialized units, through contracts awarded by means of international bidding, and for the organization within the MAG of the program implementation unit to be staffed by an appropriate number of qualified individuals.
- 5.8 The counterpart resources required from the government will increase from US\$1.9 million in the first year to US\$4.5 million in the fifth year, totalling US\$16.5 million for the five year period. This sum amounts to just 58.5% of government allocations to the agricultural sector during 1993 and 1994; hence, the local counterpart is feasible. It should also be noted that the government counterpart requirements could decrease, since SESA will be charging for its services and those revenues will replace budget counterpart resources. A ministerial decision authorizing charges for SESA services has already been issued, and the fee scale to be implemented is under study.
- 5.9 Notwithstanding the foregoing, it should be borne in mind that the recent armed conflict produced a fiscal deficit, which will undoubtedly affect the targets agreed on with the International Monetary Fund and which has already made it necessary for the government to revise capital spending for 1995. Although some financial risk does exist for the first year of the program, it is relatively minor for the following reasons: (i) the government counterpart for the first year is relatively small - US\$1.9 million - and it will probably not begin to be paid out until 1996; and (ii) the program (including the World Bank project) constitutes the investment plan for the entire agricultural sector. Its failure to materialize would paralyze the sector, which would be extremely costly, since the operating expenses of the current institutional apparatus would continue.

C. Economic viability ^{9/}

- 5.10 The program's potential impact through the TG and TT components was assessed using the economic surplus analysis model, which takes explicit account of autonomous changes in supply and demand and quantifies the portion of supply shift attributable to the program. The benefits of technological change translate into reductions in real prices for consumers and lower production costs for farmers, measured in terms of surpluses for consumers and producers owing to the shift in supply. In the case of plant and animal health, the benefits are calculated on the basis of the decrease in production losses due to an improved health system.

1. Benefits accruing from TG and TT

- 5.11 Nineteen products (representing 97% of the value of agricultural production) were selected on the basis of their relative importance in the agricultural GDP. The calculation of benefits excluded cotton, tomatoes, and sugar cane, crops on which no research will be conducted. The analysis assumed open-economy conditions for rice, bananas, cacao, coffee, beef, barley, milk, flint corn, African palm, soybeans, and wheat, and closed-economy conditions for beans, dried sweet corn, fresh sweet corn, potatoes, and plantains.
- 5.12 The benefits of technology generation and transfer were assessed using partial market equilibrium models for each crop selected, for each of the 15 years for which benefits were calculated. The surpluses for consumers and producers were estimated on the basis of those benefits, desegregating the benefits attributable to technological factors. Thirty percent of the surpluses (adjusted for the estimated probability of success for each technology in the research and transfer process) has been considered as the return on the project over a 20-year period.
- 5.13 The economic parameters take account of: independent rates of growth in production and demand for each crop, price elasticity of supply and demand and income elasticity of demand, international prices for tradable crops, consumption patterns by income level, and land use patterns by farm size and crop. The parameters estimate the technical coefficients and research costs associated with technologies that affect supply, considering the following: returns on current and new technology, timeframe for release and dissemination of new technologies, potential area for new technologies, probabilities for success in research, and research cost flows by activity and technology.

^{9/} A full description of the economic evaluation is included in the appropriate technical annex.

2. Benefits accruing from agricultural health activities

- 5.14 The benefits of this component will derive from reductions in agricultural production losses and fewer rejections of the country's exports as a result of the new agricultural health program. ^{10/} Annual losses due to pests and diseases of agricultural products range from 5% to 15% of gross agricultural output. These losses are estimated at 5% of the value of output for one group of products (rice, flint corn, African palm, soybeans, beans, barley, wheat) and 15% for another group (potatoes, plantains, dried sweet corn, tomatoes, fresh sweet corn). The program is expected to have reduced losses by 5% in the third year and by 40% in the twentieth year.
- 5.15 In regard to the benefits attributable to the plant health subcomponent, it is estimated that rejections of the country's non-traditional export crops - currently around 30% - will decrease to 20% in the case of flowers, pineapples, and other fruits. The benefits attributable to the animal health subcomponent will derive from the control of foot-and-mouth disease, the disease which causes the greatest losses in livestock production due to reductions in meat and milk production. In general, it is estimated that 10% of the cattle population is afflicted with the disease. The program is expected to reduce this percentage to 9% in the third year, 7.5% in the fourth year, and 5% in the fifth year. Just 10% of the benefits of the program can be attributed to this component, since the vast majority will derive from the technology transfer activities and the contribution of private agricultural health services.

3. Impact on foreign trade

- 5.16 The results of the economic evaluation for the products in open-economy conditions indicate that adoption of the proposed technologies will very likely lead to growth in exports (except in the cases of barley, soybeans, and wheat). The current trade surplus is expected to grow significantly, increasing by 50% by the year 2000 and possibly tripling by the year 2005.

^{10/} The benefits are estimated conservatively for the areas of production that are of greatest economic significance and in which the greatest losses occur. It is assumed that the benefits attributable to the agricultural health component will begin to be realized in the third year of the program, since health campaigns do not produce immediate results. The benefits have been calculated for a period of 20 years on the basis of 1992 economic and technical parameters.

4. Economic feasibility of the investments

- 5.17 The internal rate of return (IRR) for the program is estimated at 34%, and the present net value (PNV), calculated at a rate of 12%, is estimated at US\$245 million, which are satisfactory from the standpoint of the feasibility of the proposed investments. The sensitivity analysis conducted, which assumed a reduction of 20% in the expected benefits and a cost increase of 20%, showed small variations in the IRR and PNV. It should be noted that program evaluation results are more affected by a reduction in benefits than by an increase in costs.
- 5.18 The estimates of the benefits to be derived from the research and technology transfer components can be used to perform a distribution analysis of benefits for consumers and producers. 11/ The best products, from the standpoint of the surplus for small farmers, are rice, bananas, and beef, while the products showing the poorest performance are wheat, barley, sweet corn, and dried beans. Low-income farmers are expected to receive up-dated benefits in the order of US\$712 million, approximately one third of the total producer surplus.

5. Targeting of poor beneficiaries under the program

- 5.19 The total number of program beneficiaries has been estimated at 113,316 farmers, including all those served by the TAED program (72,000 will benefit directly and indirectly) and the TTG program (13,200 will benefit directly and indirectly) and an additional 33% of producers who will benefit directly under the technology generation and agricultural health components.
- 5.20 Thirty-two percent of the country's total population lives below the poverty line (estimated at 80,997 sucres/month). In rural areas, however, as much as 45% of the population is poor, according to Bank estimates for 1994. In order to calculate the percentage of poor beneficiaries to be served by this project, each component was evaluated separately. The total percentage for the project was then calculated as a weighted index by the volume of financing allocated to each subcomponent.
- 5.21 Of the total number of beneficiaries of the technology transfer component, it is estimated that all of the beneficiaries of the TAED program are poor, which means that poor beneficiaries (72,000 out of 85,200) account for 84.5%. Because the SESA component is expected to serve all agricultural producers, the percentage of

11/ In order to calculate this distribution, the percentage of small-scale farmers engaged in the production of the selected products was estimated to average 44%. The percentage of small-scale farmers engaged in the production of each product was estimated using crop surveys.

poor rural population (45%) was considered to be the percentage of poor beneficiaries to be served by this component. For the TG component, there was insufficient information to calculate the percentage of poor beneficiaries to be served.

- 5.22 The weighted total for the program as a whole is 62%. This percentage means that the program qualifies as an investment program targeting the poor, since more than 50% of the expected beneficiaries live below the poverty line.

D. Women in the productive process

- 5.23 The analysis of the groups that are potential beneficiaries of the program showed that women are more involved in production activities and decision-making on small and medium-sized farms than on large ones. Moreover, an inverse relationship has been found between the size of the farm and female participation in decision-making. Women's activities are mostly related to livestock production (raising poultry and pigs). Generally speaking, female participation is greater in the highlands, where women hold 42% of rural jobs.
- 5.24 The program's orientation, especially in the technology transfer component, ensures that an adequate proportion of the benefits will accrue to women, since a significant portion of the funding (US\$15 million) will be channeled into TAED groups made up of small- and medium-scale producers, and livestock production is one of the priority areas for research and technology transfer activities. In addition, a substantial portion of the program's activities will be carried out in the highlands.
- 5.25 One of the most important criteria for the selection of the small producers who will participate in the program is female participation in family farming activities. With a view to guiding biological research, facilitating the adoption of technology, and increasing the impact on family well-being, the ways in which women participate in the productive process will be included as one of the program's areas of investigation.

E. Program risks

- 5.26 The results of the project will depend, above all, on the continuity of the policy on State modernization being implemented by the current government. The program is founded on processes implicit in the Law on Modernization, including the conversion of ENDES to SESA and the subcontracting of services under the TG and TT components. Any delay in implementing these processes, within the MAG, the National Council on Modernization (CONAM), or SENDA, could jeopardize the execution of the operation.
- 5.27 A second important aspect of the program design is private sector participation in the delivery of technology transfer and agri-

cultural health services. Without this participation, the proposed objectives of modernization, restructuring, and institutional strengthening cannot be achieved - hence the importance of implementing the mechanisms for accrediting private services under each component.

- 5.28 The limited tradition of private supply of agricultural services in Ecuador may make it difficult to achieve the levels of private participation projected in the early months of the operation. In order to minimize this problem, US\$1.5 million have been made available under the ASP to promote the development of private services.
- 5.29 It should also be taken into account that the public institutions in the agricultural sector are in a transitional phase, and that there is a lack of qualified personnel and budgetary restrictions make recruitment difficult. These considerations are especially important in cases such as the offices of the MAG and in recently-created institutions such as SESA. In regard to the latter, establishing the proposed staff will require US\$5.5 million during the program execution period. 12/
- 5.30 Finally, the sustainability of the activities supported by the program, once the program ends, is dependent on the availability of public and private funds in the medium and long terms. The implementation of an effective cost-recovery system is therefore essential. During the first phase of program execution, mechanisms will be designed that will make it possible to ensure an ongoing flow of government transfers to guarantee the sustainability of the TAED program; the training of the TAED groups to enable them to function independently will be one of the obligations of the private firm retained.

12/ It should be noted, however, that with the restructuring of the MAG and other sector institutions, such as INIAP and INEFAN, currently under way, wage increases of more than 100% have been achieved, and this trend may continue with the downsizing of the bureaucratic apparatus in the public agricultural sector and the application of financing mechanisms for its liquidation provided for under the Law on Modernization.

**SUMMARY OF COSTS BY CATEGORY AND SOURCE,
INCLUDING WORLD-BANK-FINANCED COMPONENTS**

(thousands of US dollars)

	IDB	Local cont. IDB <u>1/</u>	World Bank	Local cont. World Bank	Total
I. Engineering and supervision	3,981	255	2,334	575	7,145
1.1 <u>Engineering</u>	81		--	--	81
1.2 <u>Supervision</u>	3,900	255	2,334	575	7,064
1.2.1 Implementation unit	1,020	255	583	145	2,003
1.2.2 Generation component	--	--	1,751	430	2,181
1.2.3 Transfer component	2,870	--	--	--	2,870
1.2.4 Health component	10	--	--	--	10
II. Direct costs	15,413	5,621	15,206	4,425	40,665
2.1 <u>Generation component</u>	1,000	--	15,206	4,425	20,631
2.1.1 Research fund	1,100	--	3,750	1,875	6,625
2.1.2 Training fund	--	--	2,370	--	2,370
2.1.3 Support for INIAP	--	--	6,536	--	6,536
2.1.4 Strategic alliances	--	--	2,550	2,550	5,100
2.2 <u>Transfer component</u>	11,516	5,621	--	--	17,137
2.3 <u>Health component</u>	2,897	--	--	--	2,897
2.3.1 Construction	1,089	--	--	--	1,089
2.3.2 Machinery, equipment, vehicles	1,808	--	--	--	1,808
III. Concurrent costs	5,642	4,834	--	--	10,476
3.1 SESA incremental remuneration	--	4,367	--	--	4,367
3.2 SESA maintenance and inputs	2,249	467	--	--	2,716
3.3 SESA institutional strengthening	2,993	--	--	--	2,993
3.4 MAG institutional strengthening	400	--	--	--	400
IV. Unallocated	4,664	790	2,460	--	7,914
4.1 Contingencies	2,404	400	1,583	--	4,387
4.2 Escalation	2,260	390	877	--	3,527
V. Financial costs	300	--	--	--	300
5.1 Inspection and supervision fee	300	--	--	--	300
TOTAL	30,000	11,500	20,000	5,000	66,500
% OF TOTAL	46	30	26	7	100
<u>1/</u> Excludes producer contributions estimated at US\$5.4 million. Finance charges do not include interest during execution (US\$5.3 million), or the credit fee (US\$500,000), which will be defrayed by the borrower.					

BIDDING TIMETABLE

PRINCIPAL ACQUISITIONS FOR THE PROJECT	Financing (%)		Method	Prequali- fication	Publication AEA semester/yr.
	IDB	Local			
A. Procurement of goods ^{1/}					
1. Laboratory equipment several lots US\$609,000	100		ICB	No	II/96
2. Computer equipment 1 lot US\$160,000	100		CQ	No	I/96
3. Vehicles 1 lot US\$370,000	100		ICB	No	I/96
4. Vehicles 1 lot US\$325,000	100		ICB	No	II/96
B. Civil works Construction and rehabilitation of laboratories and inspection stations					
1. Tumbaco Central Laboratory 1 lot US\$639,000	100		LCB	No	II/96
2. Inspection stations 1 several lots US\$48,000	100		PC	No	I/96
3. Inspection stations 2 several lots US\$118,000	100		PC	No	I/97
4. Inspection stations 3 several lots US\$208,000	100		PC	No	II/97
5. Repair of central office 1 lot US\$75,000	100		PC	No	I/96
C. Consultancies ^{2/}					
1. Technology transfer several lots US\$15,000,000	100		ICB	Yes	II/96
ICB: international competitive bidding LCB: local competitive bidding PC: price comparison (concurso de precios) CQ: competitive quotes (concurso público de ofertas)					

^{1/} To equip the various laboratories of the Ecuadorian Agricultural Health Service (SESA) to carry out procedures relating to plant health (nematology, phytopathology, entomology, and pesticides) and also to equip the central animal health reference laboratory.

^{2/} Refers to private or specialized consulting firms or organizations that will administer technology transfer services in various parts of Ecuador. Organizations that are awarded contracts for this purpose will have technical responsibility for selecting, subcontracting, and supervising local firms to provide services to organized groups of producers.

Ecuador's law on awarding of government contracts does not distinguish between procurement of goods and services and construction works. Types of procurement are determined on the basis of the following amounts:

PROCUREMENT PROCEDURES	
Amount (value in US\$ equivalent)	Type
>31,000	Limited price comparison (concurso privado de precios)
>62,000	Unrestricted price comparison (concurso público de precios)
>125,000	Competitive bidding (concurso público de ofertas)
>312,000	Competitive bidding (licitación)

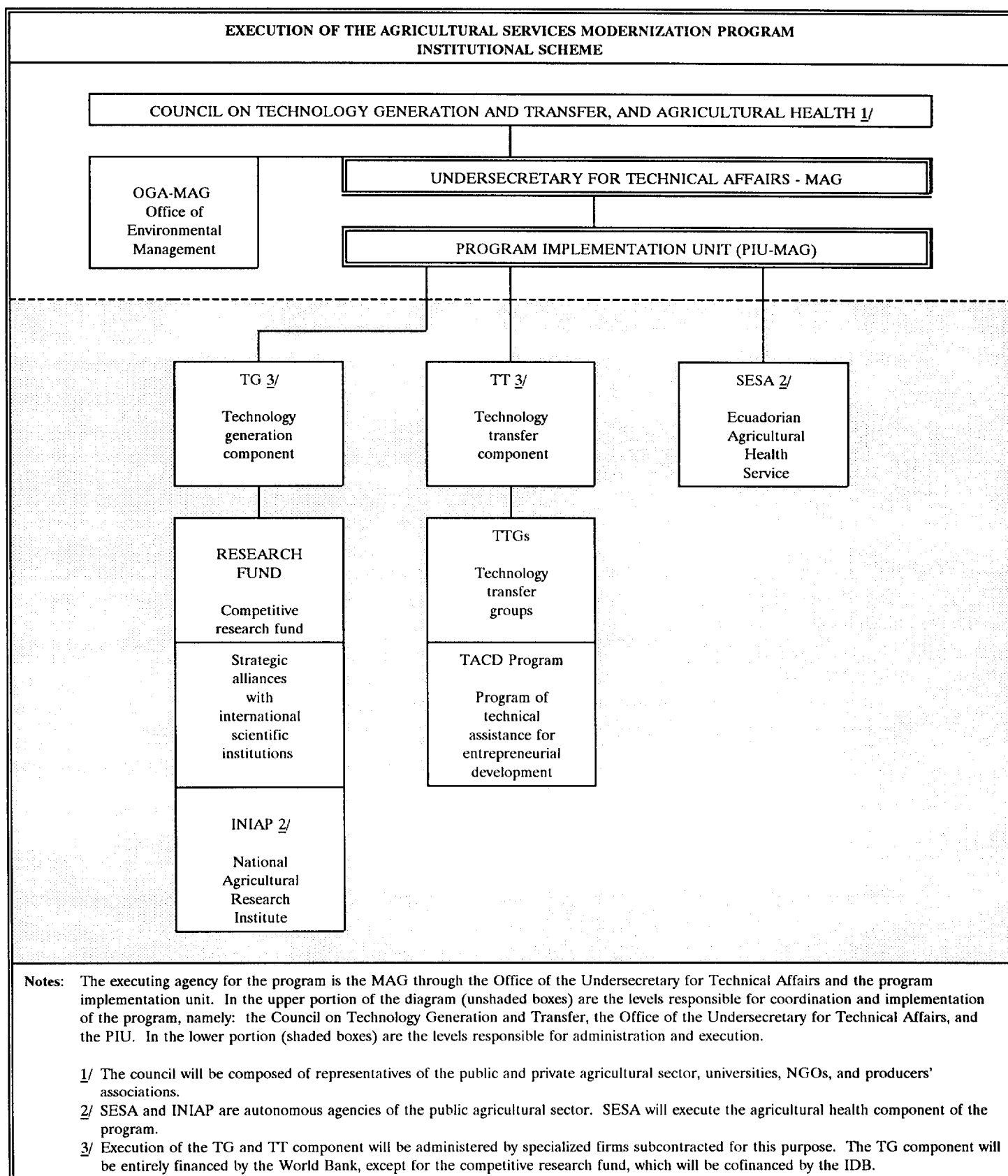
In the case of consultancies, there are only two categories:

>34,000 limited bidding (concurso privado)

>135,000 unrestricted bidding (concurso público)

ANNUAL COST AND FINANCING OF THE PROGRAM
(including the World Bank project)
Expressed in thousands of US dollars
as of December 31, 1994

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
EXPENDITURES Program (IDB and World Bank)	11,121	14,360	15,728	13,342	11,949	66,500
FINANCING Government of Ecuador	1,898	2,781	3,360	3,959	4,502	16,500
IDB	5,924	6,723	6,819	5,674	4,860	30,000
IBRD	3,299	4,856	5,549	3,709	2,587	20,000
Total external financing	9,223	11,579	12,368	9,383	7,447	50,000
TOTAL FINANCING	11,121	14,360	17,728	13,342	11,949	66,500



PLAN FOR MONITORING PROMSA EXECUTION (1996-2000) ^{1/}							
COMPONENTS	EXECUTION STAGES						EX POST EVALUATION
	I (1996-1997) 1-20 months	FIRST EVALUATION	II (1997-1998) 21-40 months	SECOND EVALUATION	III (1999-2000) 41-60 months	FINAL EVALUATION (Project Completion Report)	(2001-03) vs. (1991-93)
TECHNOLOGY GENERATION	Training program under way Adjust Fund's Operating Regulations First allocation of Fund resources		Analyze links with technology transfer component.		Evaluate performance of technology generation and technology transfer system.		25% increase in returns in priority areas.
TECHNOLOGY TRANSFER	700 TAED groups set up		1,150 TAED groups set up		1,200 TAED groups set up		25% increase in returns in priority areas.
	170 TTGs set up		215 TTGs set up		220 TTGs set up		
	Review costs and operations of TAED and TT groups		Review costs and operations of TAED and TT groups		Review costs and operations of TAED and TT groups		
AGRICULTURAL HEALTH	SESA operating as autonomous agency. Staff selected according to agreed criteria. Reference laboratory built. Agreements signed with appropriate institutions. Plant health regulations approved. New operating and technical manuals. New tariff structure.		SESA operations, POA goals. Evaluate accreditation system for private professionals.		Overall operation of SESA based on goals of each annual operating plan.		25% reduction in post-production losses in priority areas.
PROMSA	PIU/MAG coordinates execution. OGA/MAG operating, adjust environmental monitoring plan. Plan drawn up for continued strengthening of technology generation and transfer and agricultural health systems.						

^{1/} Program execution will be monitored by evaluating the goals set in each annual operating plan for each of the program components.

PROPOSED RESOLUTION

ECUADOR. LOAN /OC-EC TO THE REPUBLIC OF ECUADOR.
PROGRAM FOR THE MODERNIZATION OF AGRICULTURAL SERVICES

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf the Bank, to enter into such contract or contracts as may be necessary with the Republic of Ecuador, as borrower, for the purpose of granting it a loan to cooperate in the execution of a project to modernize agricultural services. Such financing will be for the amount of up to US\$30,000,000, or its equivalent in other currencies except that of Ecuador, which are part of the ordinary capital resources of the Bank, and will be subject to the "Special Contractual Conditions" and the "Terms and Financial Conditions" set forth in the Executive Summary of the Loan Proposal.