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ROCAP
REGIONAL AGRICULTURAL SECTOR STRATEGY
VOLUME 1
AGRICULTURAL PROGRAM STRATEGY

COOPERS & LYBRAND
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ROCAP
REGIONAL AGRICULTURAL SECTOR STRATEGY

Volume I
AGRICULTURAL PROGRAM STRATEGY

TABLE OF CONTENTS

	<u>PAGE</u>
I. INTRODUCTION.....	1
A. THE IMPORTANCE OF AGRICULTURE IN CENTRAL AMERICA....	1
B. ECONOMIC AND POLITICAL CHARACTERISTICS OF THE REGION.....	1
C. ROCAP'S EVOLVING ROLE.....	3
D. THE REGIONAL AGRICULTURAL SECTOR STRATEGY.....	4
II. REGIONAL AGRICULTURAL CONSTRAINTS ANALYSIS.....	6
A. INTRODUCTION.....	6
1. The Central role and Unrealized Potential of Central America Agriculture.....	6
2. Classification of Constraints.....	6
B. STRUCTURAL CONSTRAINTS.....	8
1. Physical Insecurity and Uncertainty.....	8
2. Population Pressure.....	9
3. Low per Capita and Skewed Distribution of Income.....	9
4. Malnutrition.....	10
5. Dualistic Nature of Central American Agriculture	11
C. POLICY CONSTRAINTS.....	12
1. Investment Allocation Policies.....	12
a) Over Emphasis on Non-Agricultural Production.....	12
b) Lack of Investment in Human Resources and Production Technology.....	13
2. Exchange Rate Policies.....	14
3. Agricultural Pricing Policies.....	15
4. Import Substitution vs. Export Promotion.....	16
5. Promotion of Non Traditional vs. Traditional Exports.....	16
6. Agricultural Taxation.....	17
7. Trade Documentation Policies and Procedures.....	17
8. Public Sector Agencies.....	17
9. Agricultural Credit.....	18
D. OPERATING CONSTRAINTS.....	18
1. Low Productivity.....	18
2. Weakness of Professional and Subprofessional Staff.....	21
3. Ineffective Land Markets.....	23
4. Deteriorating Natural Resources.....	24

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TABLE OF CONTENTS
(Continued)

	<u>PAGE</u>
5. Disorganized, Fragmented, and Deteriorating Markets.....	26
a) Traditional Export Markets.....	26
b) Domestic Markets.....	27
c) Export Market for Non-Traditional Crops.....	28
d) Market Infrastructure.....	28
6. Agricultural Sector Credit.....	29
a) Production and Marketing Credit.....	29
b) Investment Capital.....	31
III. REGIONAL AGRICULTURAL STRATEGY.....	34
A. CRITERIA FOR ROCAP INTERVENTION.....	34
B. CONSTRAINT PRIORITIES WITHIN PROPOSED CRITERIA.....	36
1. Structural Constraints.....	36
2. Policy Constraints.....	37
3. Operational Constraints.....	38
C. PROGRAM STRATEGY.....	38
1. Increase Agricultural Productivity.....	38
2. Upgrade Professional/Subprofessional Agricultural Staff.....	40
3. Encourage Development of Effective National Land Markets.....	41
4. Encourage Wise Use of Natural Resources.....	42
5. Improve Private Sector Participation in Non-Traditional Export Markets.....	44
6. Increase Capital Availability to Producers in the Sector.....	45
D. SUMMARY OF THE PROGRAM STRATEGY.....	46
IV. PROGRAM RECOMMENDATIONS.....	48
A. RECOMMENDATIONS FOR ROCAP ACTIVITIES.....	48
B. PROGRAM ACTIVITY SUMMARY.....	60
C. SOME ADDITIONAL ISSUES.....	64
1. Long Term Role of Regional Institutions.....	64
2. Relationship to USAID Program Strategies.....	65

I. INTRODUCTION

I. INTRODUCTION

A. THE IMPORTANCE OF AGRICULTURE IN CENTRAL AMERICA

Agriculture contributes one-fifth to one-fourth of the GNP of all countries but Panama, constitutes from one fourth (Belize) to five-eighths (Honduras) of the labor force, and supports three-fifths of the population. Agricultural products constitute two-thirds of the exports of all countries but Panama (29%) and Guatemala (45%). Taxes on these exports contribute much of each government's revenues. Coffee is by far the largest foreign exchange generator in the isthmus. The decline in its price beginning in 1977 has reinforced the devastating impact of the increased price of petroleum imports, and ~~exaggerated~~ the long-term problems of rural poverty.
exacerbated

Should reflect recent ↑ Prof/Co

The National Bilateral Commission on Central America (NECCA - Kissinger Commission) confirmed the importance of the sector and recommended accelerated agricultural development both to improve economic growth generally and to improve the welfare of large numbers of people. They recognized the need for a variety of coordinated programs, placing great stress on land issues (tenure security, redistribution through sale and reform, use of idle lands, natural resource protection), agricultural credit and cooperatives, improved productivity, more rational pricing policies, and expanded infrastructure. They encouraged a program focus on medium and small farmers, recognizing the "staggering administrative requirements."

B. ECONOMIC AND POLITICAL CHARACTERISTICS OF THE REGION

The region to which this strategy is directed comprises the six nations of Guatemala, Belize, Honduras, El Salvador, Costa Rica and Panama, i.e., the Central American isthmus, less Nicaragua. The total land area is 533,325 km², about the size of France, with a population of 25 million, equivalent to that of California. Individual countries vary from 21,000 km² (El Salvador) to 140,000 km² (Nicaragua) in area, and from 159,000 (Belize) to 8 million (Guatemala) in population.

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Although the entire region falls within the tropics, land forms include both mountains and coastal plains, leading to tropical and temperate life zones with varied soils and rainfall conditions. An exceptionally large variety of agricultural products has been grown successfully in all these countries, but low average yields are characteristic because of the unproductive technologies employed.

Traditional exports are concentrated on two to four commodities in each country, with coffee, sugar, and bananas dominating, and cotton, meat, shrimp, and cardamom important in some countries. Costa Rica, Guatemala, and more recently Honduras, have generated the largest variety of non-traditional exports, includ-

ing cacao, mangos, pineapples, spices and flavorings, cut flowers and ornamental plants, melons, garlic, snow peas, winter vegetables, etc., but such products comprise less than ten percent of their agricultural exports.

The region's economies grew rapidly in the 1960s and early 1970s, sparked by favorable prices for principal exports, the development of the common market, and relative political stability. Increased oil import prices combined with declining prices of primary exports to create huge debt service burdens and exacerbate internal inequities. Political unrest, expressed as terrorism and civil war and countered by social reforms, generated uncertainties which restrained investment and led to capital flight. From 1979 to 1983 the region suffered through one of the worst economic recessions in its history, with rising unemployment and real per capita GDP declining by 16%. Massive foreign assistance, combined in some instances with policy reforms and electoral changes, appear to have arrested the deterioration in both the economic and political situations, but uncertainty and instability persist.

Debt service burdens grow due to other factors

C. ROCAP'S EVOLVING ROLE

AID's Regional Office for Central America and Panama (ROCAP) was established in 1962 to provide official U.S. support for development of the Central American Common Market (CACM). This role emphasized direct technical and financial support for the Secretariat for Central American Economic Integration (SIECA) and the Central American Bank for Economic Integration (CABEI) to permit these organizations to provide the staff support to implement the economic integration movement, and to finance integration industries and trade and related infrastructure. ROCAP's support was also directed to other regional institutions supported by Central American countries, notably INCAP, ICAITI, CABEI, CSUCA, and INCAE. ROCAP also provided centralized technical assistance to bilateral programs when doing so promised economies of scale.

The political tensions in Central America and declining international economy came close to destroying the CACM, although its potential usefulness remains, as do most of the regional institutions, whose functions do not depend on trade. ROCAP's role - and its staff - was severely limited in the early 1980s. However, the NBCCA's recommendations, incorporated in the Jackson Plan focused renewed attention and resources on Central America, and ROCAP is playing a much expanded role.

The review of the ROCAP FY 1986 SPS recommended that ROCAP, in light of the Jackson Plan, fill an expanded role in the region, to include:

- Support for regional economic cooperation.
- Responsibility for policy dialogue associated with regional economic institutions and coordination of that dialogue with similar efforts at the bilateral level
- Work with and through regional institutions in carrying out projects designed to address economic growth, stabilization and equity objectives of the Jackson Plan.
- Responsibility for regional socioeconomic analyses and increased collaboration with bilateral missions in conducting macroeconomic studies.

Implementation of this strategy in the agricultural sector has been through projects which concentrated in one or more of the following areas:

- Strengthening of regional economic institutions,

either indirectly, by using the institution as the mechanism for carrying out ROCAP-sponsored activities, or directly, by using a ROCAP project (e.g., Higher Education) to finance needed improvements in the institution.

- Planning and financing activities (e.g., coffee rust research) which are important to most countries but which, by their nature, either require a regional approach or for which a regional approach provides significant economies. In most cases, these activities are implemented by regional institutions.
- Providing technical support for bilateral mission activities when multiple missions require such support on an intermittent basis (e.g., environment, forestry, integrated pest management advisors).
- Providing a forum for the region's Ministers of Agriculture to discuss common policy issues (e.g., the Agricultural Secretariat).

D. THE REGIONAL AGRICULTURAL SECTOR STRATEGY

On January 5, 1985, ROCAP contracted with Coopers & Lybrand to prepare a regional agricultural sector strategy to help orient their program planning over the next ten years. We reviewed a wide variety of literature, including Country Mission CDSSs, Action Plans, and Congressional Presentations, World Bank Country Studies, State Department profiles, IICA/CORECA reports, environmental profiles, and trade reports from USDA, UN/FAO and USDOC, and the AID/W data bases. This information was synthesized and condensed into six country profiles which summarized national economic conditions and development constraints and AID and other donor programs.

The country profiles were reviewed with and corrected by Mission Agricultural Development Officers (ADOs), and suggestions for future ROCAP program options were solicited from them and Mission management. Mission profiles and the other data sources were used to develop a regional profile. Constraints to agricultural development were identified, analyzed and prioritized. A strategy and a proposed program to correct the principal constraints were prepared and discussed with ADOs from four Missions

and ROCAP staff. Their comments have been considered and incorporated in this draft.

The following pages include an analysis of principal constraints to agricultural development; a strategy for correcting those constraints; and a proposed regional program for implementing that strategy. An annex volume includes country and regional profiles.

II. REGIONAL AGRICULTURAL SECTOR CONSTRAINTS ANALYSIS

II. REGIONAL AGRICULTURAL SECTOR CONSTRAINTS ANALYSIS

A. INTRODUCTION

The objective of this section is to identify and discuss constraints to agricultural development in the Central American region, and to indicate the potential for ROCAP intervention in each constraint area.

1. The Central Role and Unrealized Potential of Central America Agriculture

Agriculture is the primary economic base of every Central American nation except Panama. In the other six nations, the agricultural sector is the single largest generator of income and employment, the source of most food for consumption, and the supplier of raw materials to much of the existing manufacturing sector. The primarily agricultural countries range in level of development from very poor to advanced developing, based on per capita income.

Throughout the isthmus, a relatively small percentage of regional territory is suited to intensive agriculture. Most is subject to seasonal and sometimes erratic rainfall patterns. Substantial areas of marginal land are used for cultivation. Yet, other societies with similar resource endowments, most notably those of South and East Asia, have much more productive and faster growing agricultural sectors. By comparison, Central America agriculture is clearly not performing up to its potential. The question which naturally arises, then is what are the constraints to growth of central America's agricultural sector, and what are their causes?.

2. Classification of Constraints

Constraints to improved agricultural performance in Central America were identified on the basis of problem areas highlighted

in the country and regional sector profiles. We then segregated them into three categories: structural, policy or operational. This classification, albeit somewhat arbitrary, facilitates description of the constraints. It also suggests a varied potential for effective intervention in their solution by ROCAP.

Structural constraints are the parameters which define the semi-permanent environment in which agricultural production and marketing must take place. They are based on longstanding physical, cultural or political conditions which are very difficult to modify.

The basic poverty of most of Central America's population is in large part attributable to a social structure which has persisted for much of the past four centuries. This social structure gave rise to a dualistic rural society, with skewed distribution of income and wealth. Rapid population growth intensifies these problems.

Constraints in areas of trade and foreign exchange availability often reflect fundamental comparative advantage, the terms of which are extremely difficult to modify in the short run.

Some environmental degradation, e.g., already eroded or deforested land, can be considered structural in the sense that restoration, if at all possible, is a long term process. Conservation of existing natural resources and infrastructure construction, on the other hand, are readily amenable to program interventions and have therefore been discussed under operational constraints.

Policy constraints are those which result from either counterproductive impact of poorly designed policy instruments or negative side effects of policies directed towards other objectives.

Policy related constraints have their origins in conscious decisions taken by national governments. Consequently, they have a high element of political content, and, as vested interests

become firmly entrenched, these constraints attain the rigidity of structural constraints. Only national governments can act directly upon these constraints, yet their power to act is severely circumscribed by the realities of affected constituencies.

Operational constraints are those which result from neglect of sectoral priorities or from poor execution of otherwise reasonable policies and programs. In general, operational constraints are the most easily resolvable through appropriate combinations of management and resource allocation, hence more affectable by projectized activities. Most donor assistance, perforce, is directed at operational constraints. Donor agencies consciously design or condition projects directed at operational constraints so as to have an effect on structural or policy constraints.

B. STRUCTURAL CONSTRAINTS

1. Physical Insecurity and Uncertainty

This constraint is classified as structural due to its pervasiveness, but its immediate causes are usually of recent origin with roots in social, political and policy areas.

The most common causes of insecurity and uncertainty in Central America are:

- War, guerrilla action, and terrorism.
- Insecurity of land tenure due both to a lack of titling and real or perceived fears related to expropriation and land reform.
- Intrusive and shifting government policies.

Constraints of this nature are normally manifested by reluctance to invest or even make investment decisions, and unwillingness or inability to use high input production technology because of its cost.

2. Population Pressure

The demographic problem in Central America is less one of absolute numbers than of a poor match between the rural economic structure and the numbers of people it must support.

In terms of absolute numbers, Central American population density, even in crowded highland areas, is not high relative to some advanced developing nations. The problem lies in the combination of low productivity agriculture coupled with high rural population growth rates. These in turn give rise to the high rates of rural-urban migration characteristic of the region. The inability of these poorly prepared migrants to cope with the complexity of urban life combined with the high rate of urban population growth make difficult the provision of even minimally acceptable levels of education, health, and elementary social welfare in either urban or rural areas.

No mention of environmental effects

Urban employment opportunities are more plentiful than those in rural areas, but they are predominantly of a low level, low income character. Industrial and service sectors have not grown fast enough to provide full employment, nor are the migrants prepared for more exacting positions. The end result is a transfer of rural poverty to urban poverty. This situation must be attacked at both ends.

3. Low per Capita and Skewed Distribution of Income

With some exceptions, most often in coffee producing areas, the rural social organization of the isthmus since the time of the Spanish conquest has consisted of a small elite of large landholders and a generally impoverished majority of smallholders, tenants or farm laborers. This latter group, the majority of the isthmus' rural population, lacks access to the means of production beyond those needed for a bare subsistence level. They have thus been condemned to extremely low levels of income, a factor which creates its own vicious circle of low educational levels, lack of purchasing power, lack of aggregate demand in the national economy, lack of employment opportunities, etc.

The extremely low level and rate of capital formation of the rural poor, their limited access to commercial credit channels, and their reduced capacity to absorb modernizing methods because of poor education frustrate most efforts to break the circle of poverty. This process is even more intractable among indigenous populations, separated by language, culture, and tradition from the dominant national societies.

Implementation of a development program is virtually impossible without the support and good will of governments and rural elites. However, generalized, large-scale elimination of rural poverty has frustrated development efforts by national governments, even where a consensus to do so may exist (e.g., Mexico).

4. Malnutrition

The widespread malnutrition evident in four (Guatemala, Honduras, El Salvador, Nicaragua) of the isthmus' seven countries is not due to agronomic inability to produce more food or income generating cash crops. Rather, it is the effect of a lack of purchasing power by a large share of the population, and therefore, their inability to create a market demand for food crops which accurately reflects their true need. This lack of purchasing power is due to the basic rural and urban poverty noted previously, aggravated by stagnant growth rates and increased unemployment in the early 1980's.

Under these circumstances, food production in the isthms has barely kept pace with population growth, the primary determinant of demand. The less favored part of the population bears a disproportionate share of the poverty, and malnutrition. However, expansion of the food supply in the face of limited demand will lead to lower prices and then lower production (and employment) as farmers find planting unprofitable.

A more appropriate strategy for reducing rural malnutrition would be to increase and stabilize rural income among commercially-oriented small farmers. Compared with larger farmers, or subsistence farmers, these farmers employ more labor per farm

unit and spend a larger share of their income for both producer and consumer goods, thus creating other employment opportunities.

5. Dualistic Nature of Central American Agriculture

Central American agriculture consists of a relatively small number of large and medium sized units with favorable economic characteristics (larger farm size equates with greater wealth, greater potential production, better access to education, credit, productive technology and inputs, and greater influence in the marketplace of goods and ideas) and a large number of farms of precarious economic characteristics.

The latter have limited resources and owners/operators with limited education, limited access to opportunity, and limited capacity to bear risk. Redressing their privation through traditional approaches is exceptionally difficult. Public welfare programs (security, basic education, basic health services) are generally of indifferent quality, slow to reach them, and slow to achieve an impact. However, these programs have gradually assumed the status of a political "right".

Programs which might bring these small farmers into the economic mainstream are not welfare programs, nor should they be welfare recipients, but are to be helped to become productive assets. Nevertheless, their dispersion, cultural limitations, inhibitions towards risk, small purchasing power and limited market participation make them poor subjects for credit and poor clients for agribusiness as well as for the public extension services, all of whom can deal more productively and efficiently with better endowed clients.

Indeed, the only way in which these small farmers can become viable clients for any commercial or public sector delivery system is through association. Association into common interest groups or cooperatives enables such groups to achieve the economies of scale and market influence which they can't as individuals. The group also provides opportunities for natural leadership development, for learning the forms of democratic

institutions, and for acquiring the interactive bargaining traits which are needed to effectively express the group's interests.

C. POLICY CONSTRAINTS

The purpose of agricultural policy is to modify market forces so that farmers and other actors in the sector, acting rationally, alter their production and marketing decisions in ways which promote the common good. Good policies achieve their purpose without punitive impact, only limited side effects, and minimum distortion of broader economic allocation decisions. No policy instrument, however, is completely free of negative side effects. In Central America, for example the common incidence of intra-regional contraband in agricultural products and inputs is evidence that rational producer response to poorly designed policies will ultimately frustrate the policy objectives.

The following are among the policy areas where poorly designed policy, inappropriate policy instruments or basic neglect of sectoral priorities adversely affect national agricultural sector performance.

1. Investment Allocation Policies

a) Over Emphasis on Non-Agricultural Production

From the early post World War II period until the late 1970's, the economies, not only of Central America, but of most developing nations, exhibited fairly steady growth rates. In Central America incipient industrial and commercial sectors often led this growth, while agriculture tended to lag behind. One of the principal reasons was the tendency on the part of governments, via policy, and the banking sectors to either explicitly or implicitly favor the industrial and commercial sectors in the allocation of capital.

Indicative of this bias was the fact that the CACM was concerned exclusively with trade of manufactured goods. In recent years, a growing awareness of the need to give higher priority to

capital availability for agriculture has developed. Nevertheless there is still no effective regional mechanism for exchanging price and crop forecasting information, and no organized mechanism to facilitate intra-regional trade of food grains.

b) Lack of Investment in Human Resources and Production Technology

The rural sector has been consistently short-changed on investment in education. This applies not only to the professional and subprofessional manpower needed to modernize and manage the sector. The lack of investment in rural human capital has persistently retarded rural progress, and limited the absorption of rural-urban migrants.

Studies have shown that one of the most cost effective tools of development is primary education. Ability to absorb and practice improved cultivation practices is directly related to functional literacy. The four nations with severe malnutrition problems are also those with high illiteracy rates. The association is not at all coincidental. Concerted attack upon rural illiteracy will require a fundamental rearrangement of budget priorities in nations with historically low levels of expenditure for primary rural education, the essential human capital investment for producers.

Low agricultural productivity throughout Central America is well documented in comparative yield statistics. Its causes are multiple and well known, ranging from insufficient human and financial capital, to poor seed stock to erosion, etc. At the macro level, low agricultural productivity is the root cause of much of the poverty of the region, and has proven to be a very persistent constraint. Low agricultural ministry budgets, and constantly shifting budget priorities within the sector, poor quality and inadequate numbers of specialized professionals, and failure to consider the technology system as a whole are among the causes. Nevertheless, within the overall context of structural poverty, many individual productivity improvement programs have been successful.

2. Exchange Rate Policies

The relative impact of exchange rate policies upon agricultural producers in Central America is a function of the structure of production costs and the market for disposition of products. Given the open, agrarian nature of the economies and lack of petroleum resources, virtually all technical inputs (fertilizer, pesticides, chemicals, etc.) must be imported at world prices. If exchange rates are overvalued, and/or prices are regulated, costs will be held down, but demand will be greater than supply, causing shortages, black markets and sales to adjacent nations which have less protected currencies. Unified exchange rates will raise the cost of importation, and result in an allocation to those most willing to pay, generally export producers.

In the absence of distorting levels of export taxation or multiple exchange rates, export producers would be favored, price wise, by unified rates, whereas producers of basic grain crops would not.

In general, export producers will tend to favor unified rate policies, while producers for domestic markets perceive the only impact as an elevation of their cost structure. Consequently, it is difficult to achieve a consensus within the agricultural sector on exchange rate policy.

At present time, exchange rate policies are as follows:

- Costa Rica has a unified exchange rate.
- El Salvador has recently officially devalued the Colon to a fixed rate of 5 per dollar for all except some official transactions.
- Guatemala untied the Quetzal from the dollar in late 1984 and now operates a multiple rate system, maintaining fixed rates for some essential imports to ameliorate the inflationary impact of devaluation.
- Honduras and Belize have exchange rates tied to the dollar, whereas Panama uses the dollar as its medium of exchange. The overvalued rate in Honduras has led

to shortages and a black market in dollars, and has made Honduran products less competitive. Belizean competitiveness is also hurt, but in Panama, the lack of export price competitiveness is harmed more by subsidies and trade policies than by the dollar's exchange rate. USAID national missions have been fairly effective in convincing governments via policy dialogue to work towards more flexible and unified exchange rate policies.

3. Agricultural Pricing Policies

Throughout Central America, agricultural pricing policies have evolved primarily with the intent of stabilizing both supply and producer and consumer prices, and as a curb against monopolistic practices of intermediaries in areas of difficult access and poor transportation facilities. While there is nothing counterproductive, a priori, about well thought out pricing policies, distortions often arise due to inappropriate or excessively rigid implementation of stabilization schemes.

- Producer subsidies have been instituted from time to time in different countries to stimulate import substitution. The costs of such subsidies may find tradeoffs in foreign exchange savings and food security. At inappropriate levels, however, they have encouraged high production cost structures, distortion of sectoral investment priorities, and sometimes overproduction, while constituting an excessive drain on government resources.
- Consumer subsidies have generally been in the form of controlled market prices for basic grains. When applied in a way which reduces producer prices, they may constrain supplies. Marketing boards can incur large losses in the attempt to maintain producer prices in the face of controlled consumer prices.

Agricultural pricing policies exist in virtually all nations. Generally, they have been needed for both equity and stabilization. Although USAID policy is to promote freely functioning markets wherever possible, care should be taken that policy dialogues towards this end do not damage the stabilization/equity considerations of the inherently fragile agricultural markets of the isthmus.

4. Import Substitution vs. Export Promotion

These objectives are most often considered in relation to industrial development, but can also be applied to the agricultural sector within the Central American context.

Import substitution policies in the form of protective tariffs and producer subsidies have been employed most notably in Panama in order to increase local supply of formerly imported poultry, vegetables and grains. Although the program has been successful in terms of supply, the cost to the economy in terms of producer subsidies and high consumer prices may have been greater than that of the foreign exchange conserved.

The current emphasis on promotion of non-traditional agricultural exports rests upon the utilization of basic comparative advantage in production costs and free market exchange rates to fulfill expanding export market demands.

The two objectives are not necessarily at odds if applied rationally, since the crops which are logically promoted for export are not the same as those whose import should be restrained. They use different kinds of land and will probably be produced by different farmers. However, as with any policy, if carried to extremes, import substitution can be ineffective as well as costly, severely distorting investment choices.

5. Promotion of Non Traditional vs. Traditional Exports

USAID missions are encouraging governments to concentrate on the production for export of non-traditional crops. The undeniable desirability of diversification ignores the implications of the almost universal low productivity of traditional export crops in the region. Increasing the productivity of traditional crops through known technology can significantly improve the national competitive edge, despite expected continued low prices (with the temporary exception of coffee).

6. Agricultural Taxation

Taxation policy for the agricultural sector in Latin America is a long standing an issue which has still not been satisfactorily resolved.

Land and income taxes, considered to be the most equitable form of taxation, have never been widely used, due to difficulty of collection. Instead, most agricultural sector fiscal revenues are collected as export taxes on traditional commodities which are considered, perhaps incorrectly, to have a rigid price elasticity of supply. Exporters of traditional commodities have borne a disproportionate tax burden, which in some cases has restrained productivity and lead to decapitalization of estates.

A particularly onerous combination of taxation policies has occurred in some nations which have resorted to systems of multiple exchange rates. Exports have suffered either explicit or implicit taxes in the form of remitting export dollar receipts in local currency equivalents at a government controlled exchange rate, while inputs and other foreign exchange costs must be financed at higher free or parallel market exchange rates.

7. Trade Documentation Policies and Procedures

The prevalent requirement of import and export permits and associated procedures is a deterrent to export expansion throughout the region, particularly for some of the time sensitive non-traditional products. Simplification of procedures is made more difficult by the long-standing vested interest of those whose income and employment is threatened by simplification.

8. Public Sector Agencies

These continue to play major roles in the price regulation and trade of agricultural products and inputs. Government intervention arose from a perceived need to broaden access to inputs or to counter monopsony practices of intermediaries. This type of intervention has a general tendency to restrict the entry (or

re-entry) of competing private firms and to create market distortions through price rigidities or subsidies. Each agency must be evaluated separately, however, for some have fulfilled real need and performed economically useful functions.

9. Agricultural Credit

Agricultural credit availability and credit policies vary considerably among countries and among commodities and classes of borrowers. The mass of small farmers who produce basic food crops are generally not considered creditworthy by the commercial banking system. As a result, they pay heavily for credit through the informal system or are serviced by public development banks whose policies of credit eligibility and subsidization lead to their frequent decapitalization, frustrating their ability to provide credit.

Increasing interest rates for agricultural credit to competitive levels may expand the pool of available credit. Given the more lucrative (and probably more secure) market for commercial and consumer credit, however, there is no guarantee that agricultural sector requirements would be met by unregulated interest rate in the commercial private banking system.

In some nations, such as Costa Rica, the public sector has a powerful role in the sectoral allocation of credit, and control of interest rates.

D. OPERATING CONSTRAINTS

1. Low Productivity

Increasing productivity by increasing yields and net income per land unit is the essence of agricultural modernization. Low average yields automatically constrain agricultural development.

Over the last forty years, AID or predecessors have supported public research and extension activities to generate and transfer the knowledge required to increase productivity. The persistent

limitations of budget, personnel and continuity in national programs prevented most of these institutions from meeting their objectives of a consistent flow of productive technology, adopted by farmers. Eventually, these restrictions led the donor agencies to create the International Agricultural Research Centers to provide improved basic germplasm to national centers for adaptation, proof and transfer to producers. However, the national linkage remains the weakest part of the international technology network.

Central American average yields are extremely low (20 to 40 percent of developed country averages), for basic food crops, livestock and traditional export crops. This low productivity reflects a coterie of limiting factors:

- Inadequate investment in research, and particularly in the postgraduate training and support of research professionals. Although much production technology can be transferred among countries, it must be adapted and proven locally before its use can be recommended without unacceptable risk. The larger, more entrepreneurial farmers can accept this risk, and this is the reason why their yields are commonly three to seven times the national average.
- Public research agencies remain weak, and we continue to support them, for there is no rational alternative where private investors can't capture a benefit. CATIE's role in Central American research is to support, encourage and provide some continuity to these national institutions, and to prepare some of their personnel.
- Weak technology transfer systems. Technology transfer begins with the research institution, which must prepare its research output in forms which are readily assimilable and usable by intermediary transfer agents. This technology output is then transmitted by the intermediary transfer agent (extension agents, input salesmen, news media, credit agent, commodity buyer), who may further adapt the material for a particular clientele, adding economic data or farm experience information to make it more useful in encouraging adoption. Finally, it involves a process of legitimation, acceptance and application by individual farmers, which includes its incorporation in their particular farming systems and household economics.

- Many of the low yield commodities are produced by poorly educated or illiterate smallholders whose traditional low yield, low risk practices can be converted only with difficulty. They are not considered to be creditworthy clients of the banking system nor of input suppliers, so the technology transfer burden customarily falls on the outnumbered, poorly trained and weakly supported public extension worker.
- At this point in time, technology transfer and adaptation is an even greater constraint to increasing the productivity of the small farmer than more fundamental research, since much suitable technology is already available. The primary problems lie in poor quality of personnel and the dispersed clientele. Intensified organization of farmers, with properly trained and supported public or private extensionists tied to these groups, might overcome these problems.
- Inadequate investment in irrigation. Irrigation not only insures against drought, but permits the production of higher value commodities, and combines with other productive inputs to maximize yields. Probably less than one-third of the potentially irrigable land in Central America has been irrigated. Large irrigation systems are usually constructed and operated as public sector projects, normally financed by international lending agencies. They are very expensive to plan, construct and maintain, and they require a high level of management and productive technology to support these costs. Economic uncertainties in the region have limited recent investments in such systems.

AID does not finance large or medium irrigation schemes, preferring to concentrate on on-farm irrigation management and construction of small community or individual systems. Consequently, much of the area's recent irrigation has been in the small to microsystems which AID has supported in Guatemala, Honduras and El Salvador.

The importance of irrigation warrants much more attention than it has been given it in Central America. We believe that IDB or WB should continue to finance major works, but there is a vital and unmet need to improve on-farm water management and reorganize production systems to incorporate the highly productive technology and high value crops which can make these works economically viable. There is also further opportunity to promote small systems which can help smallholders convert from

basic grains to higher value produce, even under hillside conditions.

- Poor quality, overworked and eroded land. Small farmers tend to occupy marginal land which becomes even less productive with increasing population density.
- Low input levels. Small farmers lack both the resources to acquire and the appreciation of the leverage potential of high yielding inputs. Larger farmers frequently opt for extensive, low input practices, reflecting the scarcity of capital and their appreciation of risk.
- Plant and animal health. The tropical environment permits the unhealthy development and spread of destructive pests and diseases. Attempts to control these by chemical applications has damaged the environment, bred insects resistant to these chemicals, and made production uneconomic. In most cases, correction of the problem will require use of disease or insect resistant varieties, close monitoring of pest and disease levels and careful response with integrated pest management practices.

2. Weakness of Professional and Subprofessional Staff

Agriculture is a complex, technology based, incentive responsive private business. Personnel with specialized training at professional and subprofessional levels are required for the development and delivery of the technology, much of which is incorporated in specialized productive inputs such as seed of improved varieties, fertilizers and agricultural chemicals. Other specialization is needed for the planning, management and regulation of sector organizations, which range from public sector agencies to producers associations, and include agribusinesses, banks, and factor and product markets. The number, distribution and quality of such personnel in Central America leaves much to be desired.

All countries support training facilities to educate subprofessional agriculturists, and all but Belize now maintain university level Faculties of Agronomy. Numerical distribution of professionals among countries is very uneven, reflecting the

recent establishment of professional education in some countries. Costa Rica reports a surplus while Belize must rely on subprofessionals and foreign-trained professionals. Whether this distributional problem can be solved in the short term depends on the cultural and economic acceptability of employing foreign nationals (e.g., cultural affinities, migration and labor laws, salary scales). Alternatively, the passage of time will produce the required number of professionals, albeit with a considerable time lag.

The quality of the professional and subprofessional output of this system is deficient principally in practical field operation and farm management experience and in the capacity to perform specialized functions (e.g., research). These deficiencies can be traced to several features of the education system:

- Student characteristics. Few students have a farming background. The agricultural profession has a low social status, so entering students are frequently those rejected from higher status faculties, such as law, medicine, economics or engineering.
- Curriculum content. The curriculum is weak in providing both the hands-on field work experience essential to an appreciation of the business of agriculture, and the management skills needed to conduct that business. This deficiency is serious, given the fact that students enter without field experience, and will have few subsequent opportunities for supervised on-farm training. The opportunity for specialization is restricted.
- Postgraduate Instruction. The supervised research practice and additional coursework received in postgraduate training are essential preparation for both research professionals and university faculty. No national institution provides such training, so that graduate degrees must be obtained outside the region or at CATIE.
- Faculty Preparation. Most of the faculty of national institutions are the product of the same educational system. They, like their current students, lacked on-farm experience, had small opportunity to specialize, and frequently lack the advanced degree training which could prepare them better to train students in either field practice, management or scientific methods.

Attacking these deficiencies is a very delicate long term proposition. Universities are highly traditional institutions which are resistant to external interference, so progress is evolutionary. External assistance must be indirect, limited in relation to the seriousness of the problem, and accepting of small increments over long time periods.

As a partial remedy for these weaknesses, CATIE trains to the M.S. level, but Ph.D. level training must be secured outside the region. The Escuela Agricola Panamericana (EAP) provides hands-on training at the subprofessional level (soon to become a baccalaureate institution) and the Escuela Agricola Regional para el Tropico Humedo (EARTH) is intended to provide similar work in the humid tropics. The Honduran forestry school (ESNACIFOR) provides regional specialization in forestry, and INCAE provides management training.

3. Ineffective Land Markets

The inequitable distribution of land and insecurity of tenure and tenancy are longstanding structural problems to which the typical Central American response has been land invasion, repression, and eventual acceptance, with some form of ameliorative (but usually token) public sector acquisition and distribution program. When pressures become sufficiently severe this may lead to some type of agrarian reform.

Agrarian reform is certainly needed to correct the gross inequities in land ownership distribution, and was prominently included in the NBCCA recommendations. An agrarian reform is extremely difficult to manage. Agrarian reform is a revolutionary political act which alters fundamental economic and political power relationships and is staunchly resisted by those who will lose power. It is usually accompanied by political instability, insecurity, decapitalization, and loss of production.

A donor can't initiate and implement a reform, but it can help to consolidate the reform and alleviate some of its disrupt-

tive production aspects. However, much of the problems created by the inequitable distribution of land might be corrected without a revolution by improving the capacity of farmers to buy, hold, sell, and exchange land through an effective land market.

Land tenure problems have their roots in the inability of the urban-based service and industrial sectors to absorb the surplus rural population, which has no option but to persist in its search for land. This scarcity of land is exaggerated by the almost complete lack of a reliable commercial land market which will provide security of tenure to smallholders through registered titles. Such a market will enable farmers to increase their holdings through purchase or to capitalize, through sales, the effort which they have made to clear and develop their land, sometimes referred to as "sweat equity." Such a market requires an agile and equitable titling system to legalize ownership, a modernized registry and title insurance system to replace the turgid and costly traditional system, and a long-term mortgage banking system to permit broad participation. It should also be guided by land policies which encourage equity and productivity.

4. Deteriorating Natural Resources

Isthmian terrain is mostly hilly, while many soils on the flatter areas are acid, infertile and poorly drained. Much of both classes should be preserved in forests, permanent pasture or shaded tree crops. Deforestation has accelerated over the last two decades, presenting in some countries the spectre of virtual disappearance (and the need to import forest products) within the next two to three decades. Serious land erosion or degradation now affects from one-fifth to one-half of the national land area and leads to low and uncertain water yield, reservoir siltation and flooding, as well as loss of productivity. Failure to manage watersheds for sustained use severely limits the potential for development of viable irrigation systems, which provide the best hope for sustained increases in productivity essential to maintain a growing population.

This degradation arises from two sources: (a) The intense and growing population pressure on land in the absence of urban alternatives, which leads farm families to subdivide and use land too intensively, or to invade large private farms or more marginal hillside or tropical lands with inadequate protection. (b) High economic returns from extensive cattle grazing which leads entrepreneurs to highgrade the best forest species and clear the remainder for pasture. While forestry might be the most profitable long term use for some of this land, the absence of geographically dispersed sawmills, high transportation costs, and stumpage pricing policies make it currently less profitable than grazing.

Most USAID projects attempt to deal with the population inspired problem through a variety of watershed management, soil conservation, tree planting, and small irrigation schemes. The response to radical deforestation has been to create parklands and preserves, stimulate tree planting and try (futilely to date) through policy dialogue to convince national governments that their long term interests take precedence over their immediate economic and social concerns.

A third area of environmental concern is the degradation of soil and water resources through misuse of pesticides. This has already become a major AID concern, reflected in all project design. However, it will begin to gain increased health-related economic importance with expanded export of non-traditional products, if these cannot pass import limitations for pesticide content. Most importing countries rely on national laboratories for certification, but spot check pesticide content. It is, therefore, extremely important that national certification be adequate to prevent wholesale rejection of perishable commodities.

5. Disorganized, Fragmented, and Deteriorating Markets

a) Traditional Export Markets

A major cause of the Central American economic crisis has been the deteriorating prices of their principal export products. This situation is not going to improve in the short run. The principal traditional products (coffee, sugar, bananas, cotton) face continued low prices and some face market quotas. Only beef and shrimp have elastic market demand.

Governments attempted to deal with this problem by import substitution (largely through unsustainable policy constraints) and by borrowing. They have also attempted to expand exports of non-traditional products (see below). Little attention has been given to maintaining or increasing market share through improving quality and productivity, despite low average yields. Neither have we seen evidence of planning to reduce further disruption of employment patterns which further deterioration of these markets might cause.

We strongly believe that the importance of these crops and their well established market channels warrant greater attention. Markets for traditional export crops are usually well organized, quality conscious and adequately financed. They are structured to consolidate, process and grade the output of many producers to achieve economies of scale and maintain product value through differentiation. Trade channels and intermediaries are well established and accepted.

Only in Honduras and Costa Rica have major efforts been directed at increasing the productivity of a major export - coffee - despite the fact that coffee yields throughout the region are very low and the Honduran experience demonstrates that highly productive technology is available and cost effective, even at much lower prices. This yield increasing technology also permits production to shift to rust resistant, higher quality varieties, so that national income can be maintained and expanded even in the face of marketing quotas. Similar productivity

increases could be achieved in cotton, beef, and possibly in sugar, as well as in some minor traditional products such as cacao.

The Honduras program drew on the availability of highly productive, high quality, rust resistant varieties developed and maintained by CATIE. ROCAP currently supports a project in CATIE to investigate control methods and varietal resistance to coffee rust and the leaf miner, both of which could have devastatingly destructive effects on this most important of Central American exports.

b) Domestic Markets

Domestic markets for domestically consumed commodities are poorly organized and highly fragmented, with myriad intermediaries between producer and consumer, and offer little premium for quality. Product differentiation occurs almost exclusively at retail levels, as individual grocers and housewives select for quality.

This system is probably economically efficient in cost distribution, i.e., few detailed studies have demonstrated excess margins. It also absorbs considerable excess labor from an underemployed population. The lack of organization and standards makes it inefficient in product differentiation for pricing and distribution among alternative end uses. However, improvement in this process will probably not be economically attractive, as long as surplus labor finds subsistence employment in mini-marketing activities. Instead, processors will probably contract directly with growers to fill their needs.

The lack of structure and quality control and multiplicity of participants in the domestic market makes it a very poor instrumental to use for consolidating non-traditional products for export. The importing market for produce is extremely quality conscious, with heavy penalization (sometimes 100 percent) for off-quality products. It is also highly complex, with different intermediaries competing to satisfy the consumer.

c) Export Market for Non-Traditional Crops

The export market for non-traditional products is incipient. Few Central Americans have participated in that market, and their experience has usually been bad. Fewer still understand and accept the demands for quality discrimination, packing, presentation, etc., that the receiving market imposes, and even fewer have learned how to meet these demands. The domestic market is not structured to permit the consolidation of product from multiple producers. Exporters must either produce individually the minimum volumes required or associate in a disciplined group to achieve uniformly high standards.

Finally, transportation linkages, methods, freight rates and potential inhibitions are known only anecdotally, and not in a comparative way which provides the data which farmers need to plan production and marketing. Neither do exporters have information on comparative rates or less tangible costs (e.g., closed sky policies) which would enable them to seek relief.

Domestic and international air transport and telecommunications are to international standards, but air freight is sometimes constrained by closed "sky policies" protective of national airlines.

Domestic freight rates for agricultural products are difficult to ascertain since the cost of transportation is frequently included in the margin of the transportista. International rates (land, sea and air) are believed to be higher than those of competing countries in the Basin. There are also believed to be a number of arbitrary disruptions and unnecessary documents which prevent expeditious movement of perishable commodities.

d) Market Infrastructure

Virtually all of the countries have grain storage facilities managed by the public sector as a means for stabilizing prices and providing a measure of food security. These were generally

not well located with regard to either production zones or markets and are less useful than they might have been. These has been a gradual, but incomplete, segregation of public wholesale and retail markets in urban centers. We do not believe further public sector investment in marketing is of a high priority. However, we would encourage increased private sector participation in storage and processing to help clear the markets and reduce price-fluctuations.

6. Agricultural Sector Credit

a) Production and Marketing Credit

Agriculture is a seasonal business which incurs sizeable short term production costs and obtains equally rapid returns which must finance maintenance operations for the rest of the year. Prices are usually lowest at harvest, so the ability to hold product post harvest can materially increase returns. These two elements are either financed from savings (surplus from prior years), or by credit.

Agricultural production and marketing credit is always needed and nearly always deficient in supply. The issue is not one of supply/price/demand but assuring that the credit finances a productive activity. At the farm level, credit is a lever which increases profits, if the use is productive, but expands losses if it was not. Credit should not be used as a stimulant unless certain that the risk is minimal compared with probable rewards, in relation to the recipient's ability to repay.

- Commercially oriented small farmers are generally good credit risks who tend to use credit to hire more labor for leverage in the production process. They also save by using surplus income from annual production to buy livestock or plant tree crops.
- Traditional, subsistence-oriented small farmers live a more precarious existence which commonly prevents accumulation of adequate savings to survive from year to year and still finance a crop. They borrow for subsistence as well as production and the crop is a

chattel to be delivered at harvest to the moneylender at low harvest prices. Institutional credit has been suggested as one way to get out of this bind, but few small farmers have access to institutions.

The supply of credit in gross terms can be expanded by the monetary authority. Once again, it must be directed to a productive enterprise if its impact is not to be inflationary. Within limits, it can be directed towards a particular sector by terms governing its use, access to rediscount windows, etc. However, the infinite fungibility of credit requires that it be rationed by terms which bear some relation to the costs and risks involved. This would argue for (for example) higher interest rates to the agricultural sector, and particularly on loans to the less economically viable. However, it is doubtful that any ordinary interest rate would encourage commercial banks to accept the high transaction costs of small farmer lending, while the high return, low cost, low risk lending for consumers or commerce can quickly absorb any uncommitted funds. Different credit agencies operate with different clientele and different products.

- Commercial Banks. Broadly speaking, commercial banks will provide production and marketing credit necessary to satisfy the needs of the traditional export crops. The central bank will see to it that this sector is not stinted, and the guarantees are sound. The exporting federations will fund the needs of smallholder producers because they can subtract payment from deliveries which must go through the federation. The commercial bank will also finance non-traditional exports if the exporter is experienced and creditworthy, and will finance livestock and commercial grain production on large farms. They will not finance small farmers directly because of the high transaction costs and dubious guarantees.
- Cooperative Banks. Commercial banks do not normally lend to groups. Therefore, credit unions and cooperatives have formed their own banking systems to supply credit to their members, who are usually (not always) small farmers producing traditional commodities. Such institutions must obey the same economic imperatives as commercial banks, or go broke. Their primary advantages are low transaction costs (group loans and voluntary labor) and knowledge of the creditworthi-

ness and needs of their members. Cooperatives frequently have difficulty in collecting and are easily bankrupt.

- National Development Banks. The national development banks finance (up to their portfolio limits) those farmers, large and small, who lack access to commercial banks. Part of their operation is essentially commercial, i.e., they must make enough from large loans to balance the higher transaction costs of small loans. However, they are also subject to "political" loans, which include both loans to influential individuals and to selected groups, e.g., reform beneficiaries, to whom the administration has a commitment. High costs, low repayments, and poor investments leave these banks dependent on periodic replenishments for their survival.
- Informal credit sources. Most small farmers lack access to any of the above sources, and must rely on their own savings or on the informal credit system of private money lenders and storekeepers. Such credit has the virtue of being available in small amounts when needed, but at high cost. Such credit is nearly always repaid, however. We suspect that this type of highly targeted credit could be expanded through supplier credits for inputs.

b) Investment Capital

The decapitalization of the private industrial sector in Central America has also affected agriculture. Except in El Salvador, where severely decapitalization of productive farms was caused by war and the uncertainty caused by terrorism and agrarian reform, the impact on agriculture was probably less severe. Most agricultural capital is in the form of land, livestock, and improvements made and maintained by the farmer, and is not readily converted to cash for transfer to a safer haven. Consequently, this constraint reflects the long-term underinvestment in, and maintenance of, land improvements - protective works, irrigation, improved pastures, tree plantings (orchards and woods), and good land management practices (rotations and tillage). These improvements give land its productive value. When neglected, the farm becomes a less productive and deteriorating enterprise.

Part of this underinvestment was probably due to uncertainty and insecurity, but it may also have resulted from the more recent decline in income from traditional agricultural exports. However, many of these investments are traditionally performed by the owner, his family, and hired hands in the process of farming or in the off season, financed from savings or production credit. When they are not done, it may reflect ignorance or poor management, rather than lack of investment capital, things which might best be remedied by technology transfer activities.

Some types of highly productive investment (e.g., irrigation, permanent crops, livestock, fencing, stock water and other works) require sizeable investments in a short period, and have a multi-year repayment term. Such investments usually require appropriately long credit terms, which have been noticeably lacking in Central America. These requirements are not unlike those of other agribusinesses, and should be treated accordingly. In fact, commercial agriculture should be treated in exactly the same fashion as any other business in the reactivation of the private sector. Commercial agriculture should have access to the same credit lines as agribusiness.

Large commercial agriculture frequently makes somewhat arbitrary investment decisions, reflecting a preference for equipment over labor, and ownership over lease or contracted services. Government policies (e.g., high price supports, labor laws) contribute to these preferences, but in many cases, the choice reflects lack of comparative analysis.

Small farm capital improvements are nearly always financed out of savings and family labor. The more market-oriented smallholders act very much like larger commercial farmers, but commonly lack access to credit for capital improvement because of the high transaction costs of individual loans. Consequently, some small farmers with access to short term production credit use it to incrementally finance investment. Medium to long term credit for capital improvements or land purchase is available only through special programs. Small farmers who are more sub-

sistence oriented have difficulty in accumulating a surplus to invest, limiting capitalization to those improvements which they can accomplish through their own family's labor. These improvements have value (sweat equity) which can only be realized through sale or mortgage of the property.

The fungibility of credit and the fact that it can be generated at will by central banks have reduced AID lending for production credit, except in specific instances where it is a critical input to a USAID program strategy, e.g., production credit for agrarian reform cooperatives in El Salvador. Despite this doubt, two areas which warrant preferential consideration are: (1) group credit through a cooperative bank; and (2) expansion of informal credit through supplier credits by wholesalers to the country stores which provide most of it. Both are private sector activities which are directed at the smallholder who is in AID's preferred target group.

III. REGIONAL AGRICULTURAL STRATEGY

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A. CRITERIA FOR ROCAP INTERVENTION

The extent to which ROCAP can productively intervene in ameliorating any constraint is a function of the nature of the constraint. It is also a function of the institutional environment which conditions ROCAP's ability to modify that constraint.

ROCAP, with its regional focus, is an agency of a bilateral donor (AID) and must coexist with other AID Missions to national governments (USAIDs) in its region. It has specific regional responsibilities (see I.B), but beyond these, it is essentially a complementary support organization. It has no means with which to exert leverage in a policy dialogue with national governments, nor does it have any decision authority vis-a-vis USAID missions.

Given this institutional environment, ROCAP program activities either support USAID programs with a national public or private institution, or support public or private regional institutions which support national public or private institutions. Its most appropriate interventions are directed towards activities which are complementary to those of USAID national missions; regional in scope, and therefore not appropriately addressed by individual national missions; and are of a primarily technical, analytical, or institutional nature. It is both unwise and unproductive for ROCAP to intervene directly in areas where basic political, policy, institutional or budget priorities of national governments must be modified as a precondition for success, or where social reforms are essential. ROCAP can contribute to an understanding of these issues through studies and analysis when they are of regional importance.

Preliminary criteria proposed for selecting ROCAP interventions were based upon the institutional environment outlined above, and after ROCAP's past, current, and potential roles were discussed with ROCAP and USAID mission management and senior agriculturist or their representatives. Table III-1 summarizes these criteria.

Table III-1 - CRITERIA FOR ROCAP INTERVENTION

1. A problem/constraint is recognized as such by a minimum of four country missions.
 2. A problem/constraint requires or is particularly amenable to a regional approach (e.g., disease control).
 3. A minimum of three country missions agree that a ROCAP project will be useful enough that they will participate in project design.
 4. A regional approach is significantly more cost effective (e.g., partial technical support^{1/}, studies of interest to multiple countries).
 5. A regional approach is institutionally effective (e.g., LAAD, CATIE).
 6. A regional approach is politically desirable (e.g., Agricultural Secretariat).
 7. At least three USAIDs believe that support by a regional institution or partial technical support to a type of national institution in their countries is desirable, whether or not the USAID maintains a programmatic relationship with that institution.
- N.B. Country or Mission financial support is not an issue at this level, nor should it become one until particular projects require such commitments for feasibility.

^{1/} "Partial technical support" is that provided by a ROCAP contractor to USAID Missions on an as-required basis.

B. CONSTRAINT PRIORITIES WITHIN PROPOSED CRITERIA

This section seeks to deal selectively with the constraints identified in Part II, sifting and prioritizing activities in accordance with the nature and importance of the constraint, the susceptibility of a constraint to resolution by regional approaches, and the perceived acceptability of the ROCAP intervention by other AID entities. In essence, it attempts to apply the criteria for effective ROCAP intervention discussed above to the problems identified under the constraint section.

In this interpretation it is important to recall that there is some arbitrariness and overlap among categories of constraints and that a number of subsidiary problems contribute variably to each constraint. Further, that a number of possible program interventions might contribute usefully to solving the constraint. In few cases will an intervention prove sufficient in itself to resolve a problem, so considerable judgment must be used to assess the probability that other necessary conditions may also be present. What follows is not mathematical certainty based on statistical proof, but guidance, based on experience and insight.

1. Structural Constraints

These constraints are based on long standing cultural characteristics which are not amenable to change by ROCAP in the short run. Only insecurity and uncertainty might be successfully corrected within a generation, and this will require a concerted diplomatic and economic effort, primarily involving national governments, and beyond the scope of a regional agricultural program.

These constraints should be considered, first, as a given environment in which programs and policies must operate, and second, as defining the long term goals towards which development programs must be directed. In this context, they provide objectives which should influence the design of programs whose immediate purpose is to correct an operational constraint which limits attainment of the long term goal.

In this regard, we agree with the NBCCA that agricultural programs should concentrate on achieving economic growth and on affecting the low per capita incomes and skewed income distribution of the rural population (pp. 51-52). In the process, they should seek to provide greater security and stability to that population, reduce migratory pressure, and assure an adequate supply of food to rural and urban areas. These programs should also seek to organize the less favored farm populations so that they can be reached by public and private sector delivery systems, primarily to provide access to opportunity, influence, and participation in democratic processes.

2. Policy Constraints

Policy constraints are essentially the province of national governments, and are most readily influenced by policy dialogue with those governments by the country USAID Missions. ROCAP has a direct concern with several of these constraints (notably in the trade, import substitution, and exchange rate areas) because they affect trade among the countries. Presumably, ROCAP will use its regional policy coordination role to help country Missions to advise governments.

In other policy constraint areas, ROCAP's role should be limited to that of conducting studies which might be more comprehensive than those which individual Missions would commission, and which would enable several Missions to better advise their host governments. We also recommend a continuation of the policy analysis activities of the Agricultural Secretariat, which provides a forum in which the Region's Ministers of Agriculture can inform themselves on regional agricultural issues and discuss common policy problems.

The NBCCA focused specifically on the importance of national leadership when they reported (p. 57):

"Integrated programs...targeted at the food producing sector have enormous potential for improving the welfare of large numbers of people, while increasing and diver-

sifying agricultural production and lessening dependence on food imports. Such programs require a variety of coordinated measures which would have to be undertaken by the Central Americans themselves..."

3. Operational Constraints

This class of constraint is most amenable to project assistance devoted to dealing with technological and institutional development problems.

These constraints are not all of equal priority, nor are the limiting factors which make them constraints, but they are of equivalent priority for current regional action. In interpreting this strategy, the reader should keep in mind that each constraint is part of a complex system which promotes or retards rural progress. It is in the nature of systems that when one limiting factor is corrected, another becomes limiting. Progress is made by the progressive removal of limits, which means that one must be conscious of the different time lags associated with methods which can be used to remove these limits. For example, it takes a long time to develop an institution and staff it with competent professionals. It takes less time to develop a program to make the institution more effective, but it takes even less to disrupt the work of that institution and destroy the continuity of its experience.

C. PROGRAM STRATEGY

1. Increase Agricultural Productivity

We believe that improvement of productivity is the single most important constraint to achieving progress in economic growth leading to correcting low per capita incomes and skewed income distribution of the rural population. The NBCCA recommended (p. 58):

"Sharply increase rural research and extension services specifically targeted to crops produced for the domestic markets."

In discussion of this constraint, we identified five limiting factors:

1. Inadequate investment in research
2. Weak technology transfer systems
3. Poor quality, overworked land
4. Low input levels
5. Plant and animal health problems

The first two are associated in an integrated subsystem, and must be dealt with jointly. If successful, this effort will contribute to correction of the fourth and fifth. The third constraint is almost structural in character, and should be treated by activities associated with the land market and natural resource management constraints (see below). The fifth has regulatory aspects which require interventions beyond the technological arena. A proposed program strategy for the region would emphasize the following elements:

- Strengthen mixed farming systems research capability, including livestock and tree components, at regional and national levels, emphasizing on-farm adaptive research methods combined with demonstration extension on a massive basis.
- Support the development of materials and methods, training of personnel, and design of programs at the national and local level, for massive adaptation and extension of existing technologies for production of locally consumed food, focusing on methods and mechanisms of technology transfer to groups of smallholders.
- Investigate the productivity and market problems of traditional exports to determine how best to retain export earnings and employment, or ease the transition to alternatives.
- Support the development, testing and dissemination of high yield, disease resistant varieties of traditional export crops (coffee, cacao, banana), and the corresponding cultural techniques.

- Assist regional and national institutions with the establishment of programs and training of personnel for pest monitoring efforts and research on control of principal pests in order to insure against disastrous losses of export crops, and to monitor chemical residues in locally consumed and export foods.
- Provide technical support to regional and national institutions involved in irrigation, primarily to improve on-farm water management, convert farming systems on irrigated land to the high value, high productivity crops needed to amortize the cost of irrigation, and expand the small and micro irrigation systems that enable smallholders to improve their returns.

2. Upgrade Professional/Subprofessional Agricultural Staff

This constraint is high in importance, since it determines the capacity of sector organizations to deal with any of the other constraints. However, although it is amenable to change over time, it is not responsive to strong interventions, and the benefits are not immediate. Persistence of purpose and continuity of effort are more important than forcefulness or massive investment. The subprofessional schools might be easier to deal with than the universities, but the impact on development would be less.

The NBCCA strongly emphasized improved education throughout their report, ranging from primary literacy programs through university levels (p. 69), with specific recommendations for "an expanded program of secondary level technical vocational education" (p. 71). They recommended (p. 73) that scholarship programs be targeted mid-career and junior university faculty and administrators and "develop a long-term plan to strengthen the major universities..." Their emphasis on professional and subprofessional training reflects their concern that the integrated measures proposed for agricultural development involve "strategy administrative requirements" with most of the administrative skills provided by Central Americans (p. 58).

We identified the following factors as most limiting:

1. Student characteristics
2. Curriculum content
3. Postgraduate instruction
4. Faculty preparation

All of these apply to both levels, but the third more strongly affects the university system. A proposed program strategy for the region would emphasize similar elements:

- Increase the proportion of rural youth entering agricultural schools and universities, through the provision of scholarships for traditionally disadvantaged farm youth and through the design and establishment of remedial entrance level programs to compensate for past educational deficiencies.
- Provide in-service training for vocational agriculture instructors through fellowships to CATIE, other educational institutions in LAC, and the U.S., and through exchange visitation programs to introduce other teaching methods and coursework to indigenous institutions with a view towards improving curricula and quality of instruction.
- Support M.S. level training in the region, through curriculum development, provision of long term core support, the establishment of an active formal program of professor/student exchange, and through promotion of joint degree programs with U.S. universities.
- Develop joint Ph.D. degree programs with U.S. universities to combine the broader course offerings and specialization opportunities of the U.S., with the tropical research possible in Central America.

3. Encourage Development of Effective National Land Markets

The longstanding inequitable distribution of land and insecurity of tenure and tenancy are at the roots of some of the most intractable economic, social, political and environmental problems of the isthmus. In our opinion, the weak functioning of land markets contributes significantly to the persistence of the problem.

The NBCCA targeted the land problem in no less than five of its agricultural development recommendations (pp. 57-58):

- "Provide long-term credit at positive but moderate real interest rates to make possible the purchase of land by small farmers."
- "Study the holding of idle but potentially productive land, and programs to capture capital gains from public works for the public."
- "Improve title registration and the defense of property rights of farmers."
- "Where appropriate, initiate programs of agrarian reform -- of 'land for the landless' -- in order to distribute more equitably the agricultural wealth of the country."
- "Clarify the legal status and use of public lands, to check deforestation and the degradation of the environment."

A proposed program strategy for the region would provide national governments with comprehensive analysis of the major issues involved in developing effective land transfer programs, including:

- An agile and equitable titling system to legalize ownership.
- A modernized title registry and insurance system to facilitate transfer.
- A long-term mortgage banking system to permit broad participation.
- National land policies which encourage equity and productivity.

4. Encourage Wise Use of Natural Resources

The rapidity with which Central American forest resources are being eliminated, the loss of soil through improper farming practices, and the contamination of the environment through mismanagement of pesticides makes this one of the highest priorities.

It is also one of the most difficult to deal with, given the laissez faire attitude of governments, the economics of exploitative use, and the lack of regulation.

It is not surprising that a report dealing with major political and economic crises should focus on security issues economic stabilizatn and growth and democratic issues rather than what must seems to be a long-term problem of environmental degradation and deforestation. Nevertheless, the NBCCA made specific reference to checking "deforestation and degradation of the environment" (p. 58) under its program for accelerated agricultural development. the commission also identified the polluting effect of "uncontrolled waste and indiscriminate use of insecticides and fertilizers "and its impact on health (p. 80). The NBCCA also identified repeatedly some of the underlying causes of this degradation in the dualism of society, general poverty, lack of environmental controls, rapid population growth, and the inadequate policies governing land and development.

We identified three types of problems, all of which are intensified by lack of understanding or concern at causal and political levels, and weak institutional and regulatory capacity:

- Intense population pressure on the land
- High economic returns for destructive use
- Excessive reliance on pesticides

A proposed program strategy for the region would emphasize the following points:

- Continued efforts to improve security and equity of land tenure to encourage investment in conservation practices.
- Continued efforts to strengthen governmental institutional and regulatory capacity and to promote better conservation practices through technology transfer intermediaries. This will require additional special-

ized professionals and additional training for people already working in these institutions.

- Further policy dialogue concerning timber pricing and other policies which discourage sustained use of forest resources.
- Massive publicity to orient the population to their stake in conservation and what they might do about it.
- Assistance in development, use and enforcement of pesticide use, management, monitoring and control capacity.
- Preservation of critical tropical biomes as a means of retaining the genetic potential in the biological diversity of these environments.

5. Improve Private Sector Participation in Non-Traditional Export Markets

The market for traditional exports is well organized, adequately financed, and understood. The domestic markets are unstructured, fragmented, and ineffective for consolidating non-traditional products for export, but very difficult to change. The export market for non-traditional products is demanding and poorly understood, but potentially lucrative.

The NBCCA recommended "greatest possibly involvement of the private sector in the stabilization effort" (p. 47); "development of strong and free economies with diversified product on for both external and domestic markets" (p. 51), and expanded trade opportunities (pp. 55-56). This strategy element responds to all of these recommendations.

A proposed program strategy in the region for expanding participation in the market for non-traditional products would be the following:

- Encourage the organization in each country of a private sector association of producers and exporters of non-traditional crops for mutual support and to lead a proactive export marketing effort.

- Provide assistance in understanding the structure and requirement of this market.
- Provide assistance in accessing current market news and production and postharvest handling technology.
- Provide assistance in developing market linkages and creating a "channel captain" concept which will help incorporate additional producers and structure the domestic market end of that channel.

6. Increase Capital Availability to Producers in the Sector

For reasons discussed extensively in the Constraints Analysis, we recognize credit for production and marketing as well as for capital improvements as a constraint in small farmer modernization, but are doubtful of AID's ability to do much about it, short of a complete overhaul of the region's national agricultural banking systems such as occurred in the U.S. between 1918 and 1940. We doubt that lasting improvements can be expected of either the commercial or development banks in terms of volume, quality, equity, or recovery of loans in the smallholder subsector.

This leaves existing and proposed cooperative banks, and informal credit sources. Both of these are private sector operations which reach the lower economic strata of smallholders, each through a different approach. In both cases, our experience is limited, and programs must be considered experimental. Therefore, as a proposed strategy for smallholder development credit in the region we would wish to see:

- Individual national efforts to create and improve cooperative banks.
- Individual national proposals for using informal credit sources as a method to channel production credit to individuals.

Larger commercial farmers are comparable to any other agribusiness venture. Except in El Salvador, the decapitalization of

their enterprises was probably not as severely impacted by uncertainty and insecurity as other parts of the private sector, and has been manifested primarily by inadequate maintenance. However, these enterprises had already been impaired by the long-term shortage of investment credit.

A regional program strategy to remedy this shortage on large farms would focus on the provision of:

- Access to lines of credit through intermediate credit institutions, conditioned primarily on soundly developed proformas and evidence of good technical support and managerial competence.

The NBCCA recognized the important role of credit, and made three specific recommendations (pp. 58-59):

- "We recommend that the financial underpinnings of the efforts to broaden land ownership be strengthened and reformed."
- "We recommend the provision of financial resources to supplement credit and investment programs."
- "We recommend increased economic support for cooperatives."

D. SUMMARY OF THE PROGRAM STRATEGY

*Nothing to address
The policy constraints*

- Increase Agricultural Productivity of both food and export crops through farming systems research, technology transfer, irrigation, and pest control.
- Upgrade Professional/Subprofessional Agricultural Staff by facilitating the entry of deserving farm youth, exchange visitation to introduce new methods and courses, and postgraduate training.
- Encourage Development of Effective National Land Markets by improving land titling, registry, mortgage banking, and land policy.
- Encourage Wise Use of Natural Resources through soil conservation techniques, sustained use forestry and

pasture management, watershed management, pesticide management and preservation of biological diversity.

- Improve Private Sector Participation in Non-Traditional Export Markets by training and technical assistance on the nature of the market, producing and shipping for that market, and linkages with brokers, shippers and buyers.
- Increase Capital Availability to the Sector through cooperative banks and non-institutional sources for small farmers and commercial banks for larger producers.

We consider that the constraints which gave rise to the six major elements of program strategy are of equivalent importance in development of the sector and correcting its structural constraints. They were selected from among a much larger group of problem areas, ranging from those associated with transportation, energy and input supply to poor health and limited leadership opportunities, because of their importance.

The individual alleviation of each constraint, while difficult, will contribute to the solution of the others. That is, improving staff quality will improve institutional performance; increased productivity will reduce pressure on resources; greater security of tenure and convertibility of land will encourage its rational use; the availability of credit for productive use will increase both employment and product output; increased exports lead to greater revenues. This synergism makes it difficult to treat these programs separately. In the following section, where we deal with individual activities, we list these in order of priority within each of these major elements.

IV. PROGRAM RECOMMENDATIONS

IV. PROGRAM RECOMMENDATIONS

A. RECOMMENDATIONS FOR ROCAP ACTIVITIES

The ROCAP program which follows from the strategy has a planning horizon of about ten years. We assume that the current projects will continue to their estimated completion date. Where these fit within the strategy, they are included. Beyond those projects, recommendations are limited to individual activities without attempting to organize those activities into projects or programs.

Many of the proposed activities are studies which will define the parameters of future programs in that strategic area. We fully expect these studies to lead to follow-on activities, some of which will be programmable within the ten year planning horizon. However, we can't anticipate a particular outcome, and therefore, must leave these to the readers imagination.

Strategic Area 1. Increase Agricultural Productivity

Increasing agricultural productivity is of concern to all CAP USAID Missions, but not all have formal projects. Belize is working on farming systems for milpa farmers and cocoa productivity. Costa Rica has a local currency funded project to increase yields of coffee, and another to rehabilitate African oil palm plantations. Honduras supports a national agricultural research foundation, with a link to the S&T agricultural communications project. They also have an extraordinarily successful coffee yield improvement activity, and support a credit-in-kind livestock program whose underlying objective is improved management of livestock by small farmers. Panama supports the training of extension agents, and is resuscitating the Panamanian extension and research organizations after a long decline. Guatemala, Honduras and El Salvador have significant programs in small and micro irrigation and on-farm water management.

- a. Farming Systems Research. Strengthen mixed farming systems research capability, including livestock and tree components, at regional and national levels, emphasizing on-farm adaptive research methods combined with demonstration extension on a massive basis.

Under ROCAP's farming systems project, CATIE has developed effective relationships with most national agricultural research organizations, and has assisted them to initiate or improve this type of research. We believe that both the farming systems orientation and the CATIE relationship with national programs should be sustained by ROCAP. Particular emphasis should be placed on tying farming systems research to formal production and marketing cooperatives or similar groups to facilitate the technology transfer process.

- b. Technology Transfer. Support the development of materials and methods, training of personnel, and design of programs at the national and local level, for massive adaptation and extension of existing technologies for production of locally consumed food, focusing on methods and mechanisms of technology transfer to groups of smallholders.

We recommend that ROCAP assist national agricultural research organizations to develop technology transfer units (TTUs) which can transform research results into information materials which are readily useable by public and private sector technology transfer intermediaries, including extension agents, input supply houses, processors, and the media. This work might include (1) research on factors impeding adaptation of technologically superior practices and materials; (2) assisting TTUs to prepare materials which address these factors, including development of prototype documents; (3) training courses for technology transfer agents to help them organize for effective use of the materials.

ROCAP's participation in such a venture might employ (1) the S&T Agricultural Communications project; (2) the agricultural extension association being developed under the leadership of

Burt Swanson, (3) IICA's agricultural communications centers, and (4) CATIE's established liaison with national agricultural research centers.

- c. Productivity and Marketing of Traditional Crops. Investigate the productivity and market problems of traditional exports to determine how best to retain export earnings and employment, or ease the transition to alternatives.

The extraordinary success of both the Honduras and Costa Rica coffee improvement programs indicate that improved productivity may help producers maintain income, even with lower prices. Belize, Honduras and Costa Rica believe that cacao will also respond economically to improved yields and better post harvest handling. We recommend that ROCAP sponsor region-wide studies on each of the traditional export crops to determine how the region may respond best to the uncertain outlook for these commodities. Initial consideration should be given to potential productivity increases. These studies should also look at alternative uses for the product, as well as for the land and labor used to produce it.

- d. Disease Resistance of Traditional Crops. Support the development, testing and dissemination of high yield, disease resistant varieties of traditional export crops (coffee, cacao, banana), and the corresponding cultural techniques.
- e. Managing Animal and Plant Health. Assist regional and national institutions with the establishment of programs and training of personnel for pest monitoring efforts and research on control of principal pests in order to insure against disastrous losses of export crops, and to monitor chemical residues in locally consumed and export foods.

The potential damage of plant and animal diseases and pests to both the export economy and domestic food crops is enormous. Control of these pests requires anticipation and effective monitoring and protective measures. We recommend that ROCAP play

a major role in protection of animal and plant health, and suggest three parallel lines of attack:

- Encouragement of benign control methods. Where eradication is impossible, control is essential, and it should be carried out by effective methods which cause the least environmental damage. Breeding of resistant varieties, biological control or combining cultural and chemical methods offer acceptable results. ROCAP's current and proposed projects in the following areas are essential:
 - integrated pest management advisor
 - coffee pest control research
 - research on banana-plantain disease resistance
- Assistance in development of animal and plant health regulatory capability. Government interventions essential to the management of control methods, in monitoring disease and insect outbreaks, and to certify product acceptability. ROCAP should assist national governments to develop monitoring and control capability in the following areas:
 - pesticide management
 - disease and insect monitoring and quarantine
 - agricultural laboratories
- Analysis of the feasibility of disease eradication. USDA-APHIS strongly believes that eradication of diseases and pests, where possible, as the cheapest long-run solution, and has proposed eradication of the medfly and screwworm from Central America. The desirability of such programs depends on issues of technical and economic feasibility, and on the allocation of costs and benefits. ROCAP can perform a very useful service by conducting thorough, impartial analyses of such program proposals.
 - Mediterranean fruit fly
 - Screwworm
- f. Irrigation. Provide technical support to regional and national institutions involved in irrigation, primarily to improve on-farm water management, convert farming systems on irrigated land to the high value, high productivity crops needed to amortize the cost of irrigation, and expand the small and micro irrigation systems that enable smallholders to improve their returns.

We recommend that ROCAP arrange for a team from the S&T On-farm Water Management project to study the potential for expanding small irrigation projects in Central America, and for improving water management and cropping patterns on larger systems. We expect that such a study would provide impetus for two further activities:

- A regional irrigation advisor to support mission programs.
- a need for additional farming systems research on irrigated land.

Strategic Area 2. Upgrade Professional/Subprofessional Agricultural Staff

Except for the joint ROCAP-Costa Rica Higher Education project and the Central American Scholarship Program, Central American Missions are out of the education business. They are all concerned about the quality and availability of specialized agricultural staff, but are uncertain about what to do. We believe that they would welcome ROCAP initiative, and recommended the following strategy elements:

- a. Scholarships for Disadvantaged Youth. Increase the proportion of rural youth entering agricultural schools and universities, through the provision of scholarships for traditionally disadvantaged farm youth and through the design and establishment of remedial entrance level programs to compensate for past educational deficiencies.

ROCAP should become the financial leader and coordinator in this effort. It should initiate a disadvantaged youth program for regional institutions, and encourage bilateral institutions to supplement the ROCAP program or establish similar programs with national institutions. The two interrelated activities of the regional program included:

- A scholarship fund to increase attendance at regional institutions.
 - Assistance to each regional institution to establish remedial pre-entry programs for disadvantaged youth.
- b. Vocational Agriculture. Provide in-service training for vocational agriculture instructors through fellowships to CATIE, other educational institutions in LAC, and the U.S., and through exchange visitation programs to introduce other teaching methods and coursework to indigenous institutions with a view towards improving curricula and quality of instruction.

ROCAP should collaborate with the bilateral Missions to conduct a baseline study of the region's vocational agricultural schools to determine the adequacy of students, faculties, curriculum, equipment, and physical plant. Based on that program, ROCAP should develop and coordinate a program of faculty fellowships and exchanges. To set this up and manage it, ROCAP should add a regional vocational education advisor.

- c. M.S. Level Postgraduate Training. Support M.S. level training in the region, through curriculum development, provision of long term core support, the establishment of an active formal program of professor/student exchange, and through promotion of joint degree programs with U.S. universities.

ROCAP is currently strengthening CATIE's postgraduate education program. This support should be continued for the foreseeable future, and be further reinforced by financing additional faculty and student exchanges. CATIE should be encouraged to promote formal joint research and teaching programs with multiple U.S. institutions.

- d. Joint Ph.D. Degrees. Develop joint Ph.D. degree programs with U.S. universities to combine the broader course offerings and specialization opportunities of the U.S., with the tropical research possible in Central America.

CATIE provides excellent facilities for tropical research, but lacks the massive student body and faculty which would enable it to offer the range of coursework needed for the Ph.D. We recommend that ROCAP assist CATIE in investigating the possibility of formal arrangements with U.S. universities which would permit the award of joint Ph.D. degrees.

Strategic Area 3. Encourage Development of Effective National Land Markets

The dualistic distribution of land in Central America was condemned by the NBCCA, which strongly recommended corrective action. If our constraint analysis is correct, an improvement in the marketability of land may permit it to perform a more useful social and economic function, leading to more equitable distribution as well as greater productivity.

We note that most bilateral missions are actively involved in the land issue. El Salvador is consolidating its reform, and recent changes in the land registry and titling system will help. Private sales, rather than forced redistribution by the public sector, was encouraged for Phase II of the reform. Honduras, where considerable land was redistributed in asentamientos, now has a very active program for transferring title of public lands to those who have used it for years. Panama, with a similar background of land redistribution, is also moving to develop a titling program. Guatemala is in the second phase of a pilot private sector land market program.

None of these programs will transform the archaic methods now used to transfer land into an efficient, commercial land market, which we believe should have all the following attributes:

- An agile and equitable titling system to legalize ownership.
- A modernized title registry and insurance system to facilitate transfer.
- A long-term mortgage banking system to permit broad participation.
- National land policies which encourage equity and productivity.

We recommend that ROCAP undertake a comprehensive study of the issues and opportunities for developing such a program in Central America, examining each of these components separately and in combination. A review of the approaches followed in expanding the U.S. housing industry might provide some insights.

Strategic Area 4. Encourage Wise Use of Natural Resources

Central American ADOs consider the current destructive use of natural resources to be a problem comparable in severity to the political and economic stability which afflicts the region. Honduras, Guatemala and Panama have significant programs directed at soil conservation and watershed management. Both El Salvador and Costa Rica would support similar programs under different Mission program emphases.

- a. Land Tenure Security. Continued efforts to improve security and equity of land tenure to encourage investment in conservation practices. (See above.)
- b. Watershed Management Institutional Capacity. Continued efforts to strengthen governmental institutional and regulatory capacity and to promote better conservation practices through technology transfer intermediaries. This will require additional specialized professionals and additional training for people already working in these institutions.

The initial activities implemented in Honduras, Guatemala and Panama to test methods and establish some minimum institutional capability have been successful, but limited in scope. We believe

that ROCAP should sponsor a regional seminar to review the efforts to date, share successful methodology, and project future capabilities against requirements. This effort could lead into the publicity effort recommended below. The regional forestry advisor will continue to be needed for this effort.

- c. Sustained Use of Forest Resources. Further policy dialogue concerning timber pricing and other policies which discourage sustained use of forest resources.

The rapid elimination of forests in favor of pastures are economically rational, given the combination of man-made impediments and general neglect of this resource. The rate of destruction will shortly eliminate the issue -- and the forests --, with severe future economic and environmental costs. We urge ROCAP to finance a study of this phenomenon - extent, causes, remedies, issues - focusing on specific causes and actionable recommendations.

- d. Public Information. Massive publicity to orient the population to their stake in conservation and what they might do about it.

The region has a small but growing constituency for conservation and management of natural resources, which is all but overwhelmed by the extent of the damage. Expanding that constituency is urgent. We recommend that ROCAP develop a set of materials which might be used by environmental groups in each country to create a heightened awareness of the problem and its solutions. The recently completed national and regional environmental profiles provide a wealth of information which could be used in this effort.

- e. Pesticide Management. Assistance in development, use and enforcement of pesticide use, management, monitoring and control capacity.

This problem was referred to above from its regulatory and productivity aspects. Here it is treated as an environmental problem. ROCAP should consider three activities:

- Cosponsorship with Food and Drug Administration of a regional seminar on the health impacts of pesticide use and appropriate regulatory activities.
 - Provide assistance in drafting appropriate regulations governing pesticide use.
 - Provide technical assistance to improve the capacity of national agricultural laboratories for monitoring pesticide contamination of food, water and soil.
- f. Preservation of Natural Genetic Potential. Preservation of critical tropical biomes as a means of retaining the genetic potential in the biological diversity of these environments.

Destruction of the natural tropical environment is proceeding so rapidly that the world is being deprived of a biologically diverse genetic resource even before it is catalogued. There is no way to measure the economic impact of such a loss, because, by definition, its benefits are unknown. However, once gone, the loss is total. Some of these fragile environments have been recognized in Central America. We recommend that ROCAP undertake the studies which will lead to some concrete action for their preservation.

Strategic Area 5. Improve Private Sector Participation in Non-Traditional Export Markets

- Encourage the organization in each country of a private sector association of producers and exporters of non-traditional crops for mutual support and to lead a proactive export marketing effort.
- Provide assistance in understanding the structure and requirement of this market.

- Provide assistance in accessing current market news and production and postharvest handling technology.
- Provide assistance in developing market linkages and creating a "channel captain" concept which will help incorporate additional producers and structure the domestic market end of that channel.

We note that four of six countries have established the private sector export federations, and that Belize has created a corporation with similar ends. ROCAP is providing assistance along the lines indicated above through a five year contract. We suspect that follow-on assistance will be required, but since this is a new and unique effort, believe that the experience gained in that endeavor should guide the nature of follow-on action.

ROCAP should carry out a study of transportation affecting the area, including rates and schedules of land, sea and air transport. The study should examine both the private carriers' internal arrangements and government interventions (protective measures, documentation requirements, inspections, etc.). It should also compare these findings with arrangements under which Central America's competitors operate.

Strategic Area 6. Increase Capital Availability to Producers in the Sector

- a. Cooperative Banks. Promote national efforts to create and improve cooperative banks, to serve small farmer cooperatives.

Currently, Costa Rica has a cooperative bank, and both Guatemala and Honduras are studying the possibility as one part of a program to rehabilitate cooperative federations which have suffered severe economic setbacks. We see two activities for ROCAP in this effort

- **Partial Technical Support.** David Fledderjohn, ACDI cooperatives advisor, has had extensive involvement in this work. We strongly urge ROCAP to acquire his services to continue to advise in this work.
 - **Regional Cooperative Bank.** CUNA International created COLAC as a regional confederation of credit unions to help form and finance national federations. We believe that COLAC was created ahead of its time, becoming a regional financial agency before the national cooperative financing institutions were established and functioning. If this perception is correct, we believe that the work being done in Costa Rica, Honduras and Guatemala may well provide the national foundations required to form a confederated regional cooperative bank within the decade covered by this strategy.
- b. Expanded Informal Credit. Promote national proposals for using informal credit sources as a method to channel production credit to individuals small farmers.

Informal credit sources are recognized as the most important and reliable source of credit for small farmers. Both academicians and development professionals have recommended expanding their resources, possibly through supplier credits, in order to increase credit available to small farmers. However, no viable projects have been developed, and strong prejudices have been expressed against moneylenders generally. We believe that such prejudices are unrealistic, given the acknowledged success of moneylenders in providing (and recovering) credit and the equally strong recommendations of the NBCCA with regards to credit. We recommend that ROCAP take the lead in examining the possibilities and issues, possibly through a contract with the Ohio State University agricultural credit unit.

- c. Improved Access to Credit Lines. Access by large and medium commercial farmers to lines of credit through intermediate credit institutions, conditioned primarily on soundly developed proformas and evidence of good technical support and managerial competence.

We believe that ROCAP has a direct role in assuring that its lines of credit made available to CABEI and LAAD become available to commercial farmers and groups of farmers as well as to industrialists. At the same time, we urge ROCAP to study the terms, conditions, and repayment experience of such farmers, not only for these two credit lines, but also those made by bilateral missions.

B. PROGRAM ACTIVITY SUMMARY

The following table lists the various activities recommended for ROCAP action, by strategic area. Keeping in mind that each of these strategic areas is of highest priority, we have designated each activity as high (H) priority or less high (L). These designations represent very preliminary snap judgments. We recommend that attempts to more precisely prioritize these activities await discussions with the bilateral Mission ADOs.

Strategic Area 1. Increase Agricultural Productivity

- a. Farming Systems Research (H)
 - Technology Transfer Units (H)
 - Concentration on organized groups (H)

- b. Technology Transfer (H)
 - Research on technology adoption factors (L)
 - Technology transfer document preparation (H)
 - Training of technology transfer agents in organization and transfer methods (H)

- c. Productivity and Marketing of Traditional Crops (H)
 - Studies of productivity potential (H)
 - Studies of alternative responses to market problems (L)

- d. Disease Resistance of Tropical Crops (H) and

e. Managing Plant and Animal Health (H)

- Benign Control Methods (H)
 - Regional integrated pest management advisor
 - Integrated pest management (L)
 - Coffee pest control research (H)
 - Research on banana-plantation disease resistance (H)
- Animal and Plant Health Regulatory Capacity
 - Pesticide management (H)
 - Disease and insect monitoring and control (L)
 - Agricultural laboratories (H)
- Feasibility of Disease evaluation (L)
 - Mediterranean fruit fly (L)
 - Screwworm (L)

f. Irrigation (H)

- Regional irrigation advisor (H)
- Farming systems research on irrigated land (H).

Strategic Area 2. Upgrade Professional/Subprofessional Agricultural Staff

a. Scholarships for Disadvantaged Youth (L)

- Scholarship fund (H)
- Remedial programs (L)

b. Vocational Agriculture (L)

- Baseline study (L)
- Vocational agriculture advisor (H)
- Faculty exchanges and fellowships (L)

c. M.S. Level Postgraduate Training (H)

- CATIE strengthening (H)
- Joint M.A. degree programs (L)

d. Joint Ph.D. Degrees (L)

Strategic Area 3. Encourage Development of Effective National Land Markets

- a. Comprehensive feasibility study (H)
- b. Follow-on advisory assistance
 - Titling (L)
 - Title registry (H)
 - Mortgage banking (H)
 - Land policy (L)

Strategic Area 4. Encourage Wise Use of Natural Resources

- a. Land Tenure Security (H)
- b. Watershed Management Institutional Capacity (H)
 - Regional seminar (H)
 - Watershed management (H)
 - Forestry advisor (H)
 - Tree planting and forest management (L)
- c. Sustained Use of Forest Resources (H)
 - Study of actions needed to reverse destruction (H)
- d. Massive publicity on natural resource conservation (H)
- e. Pesticide Management (H)
 - Environmental advisor (L)
 - Regional seminar on health aspects (L)
 - Assistance in drafting pesticide use regulations (L)
 - Assistance to national agricultural laboratories (H)
- f. Preservation of Natural Genetic Potential (L)
 - Studies leading to preservation (L)

Strategic Area 5. Improve Private Sector Participation in Non-Traditional Export Markets

- a. Advisory program (H)
 - National support organization
 - Understanding international market
 - Access and use of current market use
 - Developing market linkages
- b. Follow-on assistance (?)

Strategic Area 6. Increase Capital Availability to Producers in the Sector

- a. Cooperative Banks (H)
 - Cooperatives Advisor (H)
 - Regional Cooperative Bank (L)
- b. Expanded Informal Credit (L)
- c. Improved Access to Credit Lines (H)

Recommended Additional Activities

- 1) Policy
 - a. IICA Agricultural Secretariat
- 2) Management
 - a. Expand CATIE core funding
 - b. Encourage CATIE to assume a professional leadership role in Central American research and education
 - c. Encourage CATIE to fill in behind USAID programs
 - d. Identify agricultural projects of bilateral missions financed by local currency.

C. SOME ADDITIONAL ISSUES

1. Long Term Role of Regional Institutions

Regional public sector institutions, such as CATIE, are anomalies. Although they operate under international agreements which include a commitment to financial support (usually minimal), they have long since outlived both the terms of office of those who made the original commitment and perhaps the specific conditions which led to their establishment.

This by no means implies that they are not useful; their objectives and programs have continued to evolve as conditions and requirements change, and repeated evaluations have attested to their utility. However, national financial support has not developed adequately, and the regional institutions remain dependent upon multilateral and bilateral support for their existence.

Financially pressed nations would rather finance the development of their own professional institutions than contribute to those over which they exercise only shared control. This is understandable, but provides a poor basis for projecting long-term ROCAP operations. Since its program strategy is so closely tied to these regional institutions, ROCAP should take the necessary steps to assure their continuity.

We doubt that national support will ever be raised to a level which will maintain the regional institutions at an adequate sustaining level. We also doubt that national level institutions will develop to the point which will obviate the need for current regional institutions. There will always be a useful role for such institutions to play, even after national institutions have matured. The stability of these institutions and their ability to recruit on the international market can help to provide the professional leadership in the region. CATIE should be encouraged to build on its success with national institutions as regional leader for farming systems research. It should also be encouraged to fill in behind USAID Mission research and education programs, so that it can provide continuity when USAID programs are interrupted or phased down.

In order for this permanent role to be realized, CATIE will need a larger core budget so that it is not so heavily dependent (about 75%) on projectized donor support. ROCAP should take the lead, through a series of meetings with other donors and national and regional CATIE contributors, to devise a formula to increase financial support and program stability. Such collaboration was achieved by a similar process to support international research under the CGIAR/IARC system.

2. Relationship to USAID Program Strategies

ROCAP's agricultural strategy must be and is closely correlated with bilateral USAID strategies. USAID approval is sought for all program initiatives, and USAID ARDOs have been closely involved in planning ROCAP agricultural activities. However, not all ROCAP agricultural activities are directly related to USAID programs. Many ROCAP activities are those which USAID ARDOs feel to be useful to national programs, hence generally supportive of USAID requirements.

Central American Mission agricultural strategies reflect both the changing nature of AID assistance and the variations among countries:

- **AID Levels and Type.** Massive infusions of ESF and PL480 assistance to provide balance of payment support and economic stabilization has generated equivalent volumes of local currency. This local currency has provided counterpart funding, national budget support, and some very innovative operational support and endowment of private institutions, as well as funding some national activities receiving technological support by regional institutions. In many cases, such local currency substitutes directly for DA funding. Although ROCAP activities frequently benefit from such local currency, its programming is not known to ROCAP. We recommend that ROCAP obtain such information as a guide to its own programming.
- **Private Sector Orientation.** All bilateral programs are becoming highly oriented to private sector approaches, and the ROCAP support program also reflects this trend. This shift is not based alone on ideological or efficiency criteria, but recognizes

the urgent need, for the region's recovery and development, to reactivate the private sector, with its potential for expanded investment, technology introduction and adaptation, market access, and management.

Some countries, with USAID support, are adopting private mechanisms to carry out activities which were formerly in the public sector. However, in most cases, the exigencies of program concentration have reduced AID support to traditional public sector agricultural institutions, commensurate with increased emphasis on the private sector, leaving them more dependent for technical assistance on the ROCAP-supported regional institutions. ROCAP should keep this opportunity in mind in its efforts to strengthen these institutions.

Program Concentration. CAP Missions have begun to concentrate their agricultural programs on very few activities. The need to respond to the multiple recommendations of the NBCCA does not imply that each Mission sector office need be responsive. Instead, new agricultural programs are increasingly concentrated on economic growth goals, particularly where there is an opportunity for rapidly expanding exports or for products which serve as a feedstock for agribusiness. Only a few of the new projects focus on strengthening traditional public sector institutions. Even fewer are consciously directed at the equity and democratic institutions issues.

Country Program Models. Exhibits IV-A to F diagram current and proposed agricultural sector activities for each of the CAP Missions. These reflect three different program models. Within the framework of increased ESF and PL480 funding and private sector orientation, Honduras, Belize and Guatemala programs tend towards traditional LDC AID models. That is, they have a relatively large number of projectized, DA-financed activities, directed primarily at strengthening public agricultural sector institutions or associative (cooperative) enterprises.

Costa Rica and Panama are both in the process of shifting strategies towards what may become ADC (Advanced Developing Country) models, with primary emphasis on economic stabilization, policy dialogue and the private sector, and limited DA support to public sector institutions.

USAID/El Salvador's agricultural program is highly concentrated on completing the agrarian reform, with little DA support for other parts of the sector, but

will probably move more towards the traditional LDC
ARD model as the reform becomes consolidates.

It appears to us that bilateral programs are becoming increasingly focused on the private sector, with a concomitant lessening of attention to public sector institutions. National agriculture will not develop nor equity improve without continuing development of the public agricultural sector. Increasing reliance is being placed on regional institutions to "fill the agricultural gap," opening a continuously expanding role for ROCAP. Thus ROCAP programs may tend to proliferate as bilateral mission roles become more concentrated, and as more countries shift to advanced developing country models.