

AGRICULTURAL STRATEGY AND DEVELOPMENT STATEMENT
FOR BELIZE
U.S.A.I.D./BELIZE

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ACRONYMS AND ABBREVIATIONS

USAID	U.S. Agency for International Development
GOB	Government of Belize
BOP	Balance of Payments
GDP	Gross Domestic Product
BLDP	Belize Livestock Development Project
MDC	Macal Dairy Cooperative Project
BEST	Belize Enterprise for Sustained Technology Project
CAC	Commercialization of Alternative Crops Project
TAMP	Toledo Agricultural Marketing Project
E&I	The Export and Investment Promotion Project
PSI	The Private Sector Investment Project
IESC	International Executive Service Corps
BEIPU	Belize Export and Investment Promotion Unit
MED	Ministry of Economic Development
MOWH	Ministry of Works and Housing
TEP	Training for Employment and Productivity Project
BIM	Belize Institute of Management
MOCT	Ministry of Commerce and Tourism
DFC	Development Finance Corporation

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EXECUTIVE SUMMARY

The objective of this study is to analyze the agriculture sector in Belize and make recommendations to U.S.A.I.D./Belize regarding agricultural strategy and future development activities.

The goals of U.S.A.I.D./Belize and the Government of Belize (GOB) are economic stability and long term economic growth. As AID initiated its program in Belize in 1983 the major constraints to achievement of these goals were identified. Strategies were developed for overcoming these constraints which have guided AID's programs, projects and amendments in their continuing contribution.

U.S.A.I.D.'s projects have resulted in substantial advances in the Belizean economy. In 1987 agricultural production increased 8 percent and exports 12 percent. Significant gains have also been realized in the strengthening of the public and private sectors. For example in the Ministry of Agriculture computers are being utilized, an extensive training program is underway and a policy analysis unit is in place with two trained professionals. In the private sector production and value added processing has increased in bananas, citrus and cocoa. Enterprises have been established or expanded to produce and export vegetable crops to the U.S.

Increased livestock and dairy production has made more of these domestic products available to consumers and lowered imports. From 1984 to 1987, the period of U.S.A.I.D.'s Livestock Development Project, production of beef and pork products increased about a third. Further progress is planned and expected by 1992.

Major thresholds of development potential will still exist in Belize after 1992. Some of these opportunities will be capitalized upon by the public and private sectors that have been strengthened by the management training completed, better organization and planning and by the improved policy and business climate. Others will require further donor support to realize the payoff that is achievable based on the sizeable development investment already made. These are:

- o Commercial scale production and export marketing of non-traditional crops;
- o Increased but sustainable fisheries output;
- o Expansion of import substitution crops;
- o Improved forestry production and management; and
- o Upgraded biodiversity management.

In the future, as in the past, there will be constraints to capitalizing on the development threshold opportunities in 1992 and thereafter. These constraints include; (1) inadequate rural infrastructure, (2) uneconomic financing terms, (3) underdeveloped agribusiness, (4) insufficient quantity and quality of management information, and (5) underdeveloped public sector micro policies.

Limited resources dictate the necessity for a highly selected, sharply focused and targeted strategy. While numerous threshold opportunities will be available in 1992, U.S.A.I.D.'s resources are likely to be too limited to assist in pursuing all of them. Thus, U.S.A.I.D. needs to direct its additional efforts to realizing key opportunities especially where important prior progress has been achieved by both the public and private sector. The principal opportunity area for U.S.A.I.D. to pursue is expansion of non-traditional export crops, especially tropical fruit products and cocoa. Other export expansion possibilities include selected winter vegetables and forestry products. Another key opportunity for U.S.A.I.D. to pursue is helping Belize sustain its fisheries resource at optimum productivity.

Four basic strategy elements will be required to realize key 1992 threshold development opportunities with the resources likely to be available:

- o Select key high potential agriculture and natural resource export expansion commodities.
- o Broaden efficient commercialization and/or effective management of highest priority export expansion opportunities by the private sector.
- o Strengthen public sector policy and program support and resource management capability to improve private sector commercialization and management of high priority export opportunities.
- o Promote biodiversity in the agriculture sector.

These strategy elements for Belize, when viewed in their totality, compose a complete strategy. Each strategy element, however, needs to be applied selectively to selected export expansion threshold opportunities in 1992 which will make the greatest contribution to achieving the GOB and U.S.A.I.D.'s goals of economic stability and long term economic growth. All four aspects of the strategy will be needed for expansion of non-traditional export crops. Past programs and projects have already developed some strategy elements in this area, but others still need attention. The efforts of U.S.A.I.D./Belize and the GOB can concentrate on broadening efficient commercialization and other strategy elements not yet fully developed for each specific export commodity selected.

A program to further enhance this highly selective export expansion, utilizing minimum inputs and aimed at maximum payoff, will need technical/management support to: (1) validate or forecast export demand; (2) assess profitability; (3) meet specific market requirements (e.g., quality, packaging, timeliness, volume); (4) identify further constraints that arise as exports increase; and (5) develop and execute programs to overcome the constraints. The support needed for export market development, promotion and facilitation as exports are increased will require assistance in areas such as training, institutional development, information expansion and early warning of any rising problem, both in the public and private sectors. Export growth requires that all elements of an effective system grow simultaneously and operate smoothly together as a total system. Monitoring this growth of all the integrated elements in the system, achieving early warning of bottlenecks and gaps, and arranging specific actions to reduce them is essential to economic stability and long term economic growth in Belize.

As for Belize's forestry and fisheries industries, U.S.A.I.D. can provide technical assistance to determine what can and should be done to sustain and, where possible expand their productivity. Both are national resources likely to rise in value over time. Enhanced management of them will result in major long-term benefits of increased production, greater productivity, expanded exports, and sustained levels of biodiversity and production. Optimizing the use of these resources while sustaining their significance in Belize's natural environment is a high priority objective of the GOB. Small amounts of U.S.A.I.D. technical assistance and related resources from 1992 onward can help provide impetus for the wise management of these important resources by the GOB and the private sector.

U.S.A.I.D.'s overall program priorities in 1992 could be expanded beyond those recommended above by selecting additional commodities or input areas at the threshold of major payoff. For each of these other threshold areas, specific strategy elements can be applied as required so long as U.S.A.I.D. resources are available. All 1992 program possibilities are shown in Table 1. The Table prioritizes anticipated threshold opportunities and indicates the expected application of each of the four strategy elements above to them. Each of the strategy elements outlined is aimed at overcoming the specific constraints likely to inhibit achievement of the specified threshold opportunities in 1992.

Priority in threshold areas other than those given highest priority above would be given to soybeans as an import substitution crop for expanded commercial production and processing. High priority also would be given to fishing and aquaculture for expansion and to rural infrastructure, credit and domestic production of animal feed as inputs for strategic attention.

Priority is given to all these areas because it is believed that they will be threshold opportunities that will benefit most from further support at that time and that they will make a substantial contribution to the sustained achievement of Belize's development goals. All of these priorities are based on current information, analyses and judgment; they can be further refined as 1992 approaches.

Table 1: Belize Strategy
1992 CONSTRAINTS, STRATEGY AND PRIORITIES

Anticipated 1992 Constraints					Agricultural Strategy Elements to Address Constraints	Threshold Opportunities to Which Strategy Elements Need to be Applied		
Rural Infrastructure	Financing	Agribusiness Development	Management -information -quantity -quality	Public Sector Policy		Crops	Livestock	Production Inputs
		X	X	X	1. Select/plan for highest potential commodity			
					1.1 export expansion	1.1.1 fruit-mango 1.1.2 vegetables 1.1.3 cocoa 1.1.4 bananas	1.1.1 aquaculture 1.1.2 beef 1.1.3 honey	
					1.2 Import substitutions	1.2.1 soybeans 1.2.2 corn 1.2.3 rice 1.2.4 beans	1.2.1 swine	1.2.1 animal feeds
	X	X	X		2. Expand commercialization			
					2.1 facilitate: -credit -management -information -technology	2.1.1 soybeans 2.1.2 fruit-mango 2.1.3 vegetables 2.1.4 forestry	2.1.1 aquaculture 2.1.2 African bee	2.1.1 credit 2.1.2 animal feed
X		X			2.2 improve rural infrastructure	2.2.1 for small farmer in remote areas 2.2.2 for aquaculture, forestry		
X	X	X	X	X	3. Strengthen public sector support for private agribusiness	3.1 soybeans 3.2 fruit-mango 3.3 vegetables	3.1 aquaculture 3.2 swine 3.3 African Bee	3.1 credit 3.2 animal feed 3.3 fertilizer
		X	X	X	4. Promote biodiversity	4.1 forestry	4.1 aquaculture	4.1 pesticides 4.2 plant protection
					-policy -program -regulatory			

AGRICULTURAL STRATEGY AND DEVELOPMENT STATEMENT
FOR BELIZE-U.S.A.I.D.

A. INTRODUCTION

1. Summary of goals, constraints and program strategy

a. Goals

The goals of U.S.A.I.D. in Belize and of the GOB were and are economic stabilization and long term economic growth. The situation in the Belize economy as U.S.A.I.D. started its program in 1983 was high dependence on exterior markets for a few traditional crops, particularly sugar, and as sources of supply for needed inputs. This high dependence on few markets, few crops and outside price variability for both imported and exported products lead to economic instability and no assurance of long term growth. The welfare of the nation and the people under these circumstances was controlled by outside forces and both the public and private sectors only reacted to outside fluctuating conditions rather than planning and controlling a stable growing economy.

Strengthening the Belize economy involved lessening this dependence and narrow production base and developing a broader private sector. How was this done? What problems existed? Initially constraints to achieving these common goals of the GOB and U.S.A.I.D. were identified as the basis on which to build effective strategy, programs and projects to overcome the constraints. In this study report the agriculture sector of Belize will be analyzed and recommendations made regarding agriculture strategy and development activities impacting the current and future project/program activities (see Annex 1 Statement of Work).

b. Constraints to achieving goals

The constraints to achieving the goals established for Belize are rooted historically in the resource, human and size base of Belize. The small size of the Belizean market has lead to the large agricultural production units for traditional exports being oriented to foreign markets. This was necessary if economies of scale in production costs were to be realized. Also the small size of the Belizean market and of Belizean enterprises makes it difficult for them to access inputs efficiently particularly adequate credit. Inadequate working capital results in undercapitalization. The need for increased capital, management technology and markets is great, but many individual Belizean firms are not well equipped to identify, plan and negotiate new larger business development projects and loans. The small Belizean market size also leads to distribution problems, high costs of procuring farm inputs, high market risks to produce only for the domestic market and high costs of production.

Another constraint, identified early was the lack of infrastructure to facilitate the importation and supply of inputs to farmers and the marketing and exportation of farm products--roads, bridges, port facilities, electricity, water, waste disposal. At the initiation of the AID program, constraints existed regarding government policies, procedures and pricing decisions--price ceilings, price supports, import licenses and import and export duties. Many of these constraints have been, or are in the process of being ameliorated or eliminated.

An immediately obvious development constraint in Belize was the thin human resource capability in both the public and the private sectors. Most ministries and other public agencies have shallow management and technical capability due to lack of training, experience and an adequate size of staff. In the private sector, there exists a limited availability of trained personnel in many skills even for entry level positions. Some aspects of the personnel and management constraints relate to the outmigration of large numbers of trained, capable people during their most productive years in response to their higher earning potential in other countries, particularly North America.

Both production and marketing constraints that impede economic growth were identified. In marketing the constraints involve market intelligence, communication facilities, knowledge of post harvest technology and inadequate distribution systems for inputs and farm products. In production, the constraints involve lack of effective adaptive research, appropriate technology and effective communications with farmers. Other constraints to be dealt with involved the availability of credit on workable terms and the land titling and availability situation as it relates to land quality, location and cost.

c. Strategy for removing constraints

Following the establishment of goals for the U.S.A.I.D. program in Belize and the identification of the constraints, strategies were developed for overcoming the constraints. These strategies have guided AID's projects and have stood the test of time. These strategies focus on sustainable economic diversification and growth that supports economic stability.

The strategy to expand exports, value added and export earnings involves both traditional and non traditional exports. Traditional exports of sugar need to be maintained, in so far as is feasible, because these exports are so large and important to the total foreign earnings of Belize. Other traditional exports such as bananas, citrus, fishery products and sawn wood need to be expanded. This strategy also involves the concept of initiating or expanding the exports of non traditional products such as tropical fruits and winter vegetables.

The strategy to substitute local production for imports is advantageous in providing domestic employment, reducing the import bill and promoting economic growth and stability. The potential exists for

expansion of production of Belizean food crops currently imported, i.e. rice, beans, corn, vegetables, etc. However, quality, processing and entrenched consumer tastes are obstacles. Non traditional crops pose an even greater potential, such as oilseed crops to substitute for imported livestock feed concentrates and for imported cooking oils. The implications here are great also for the further development of the domestic livestock industry--for poultry, export of beef and import substitution of pork products.

The strategy to diversify farm production away from excessive dependence on sugar is important to achieving economic stability and reducing Belize's vulnerability to price swings in the world market. To achieve this diversification will require both an expansion of export, and of import substitution, crops.

The strategy to improve roads and bridges is imperative to the effectiveness of the other strategies requiring increased transport to and from rural areas. In 1983 rural farm-to-market roads had deteriorated to a condition of being almost impassable particularly in bad weather.

The strategy to enhance human resource development is needed across both the public and the private sector. Emphasis is on training a greater number of people to take positions of leadership and particularly to upgrade their management skills. Skills expansion and upgrade will overcome constraints in many business and public policy areas such as planning, accounting, financial analysis and operations. These skills are basic to preparing business plans, securing credit, and doing policy analysis and recommendations.

B. PROGRESS IN BELIZE'S ECONOMY AND AGRICULTURAL SECTOR 1983-1992

1. Belize's economy

U.S.A.I.D. projects have resulted in substantial advances in the Belize economy and in the strengthening of institutions. They have established a firm foundation for economic stability and continuing long term growth in the decade ahead. In contrast to some other Central American countries, Belize has stabilized with increased public sector revenues, savings and foreign exchange reserves. It has moved to restructure and privatize public enterprises that were operating inefficiently and were a heavy drain on the public budget. Continued progress along these lines is forthcoming and supported by the continuing projects and amendments promoting Belize's growth over the next four years.

U.S.A.I.D. programs plus prudent monetary and fiscal policies of the Government of Belize have lead to economic stability and surpluses in Belize's 1987 external accounts; (1) BOP surplus of \$9.0 million BZ (4.0 percent of GDP) following two previous years of surplus; (2) net foreign exchange reserves of \$24.0 million BZ, built up from a negative position in 1984; (3) public sector savings higher than expected at 6.6 percent of GDP; and (4) an estimated overall current public sector

deficit at only 3.4 percent caused by capital investments made by the GOB in the telecommunication sector.

The vulnerability of Belize BOP to world sugar prices will continue to be reduced as agricultural diversification is realized out to 1992 and beyond. Based on expected continued prudent monetary and fiscal policies by the GOB, the overall fiscal deficit is projected to remain around 3 percent of GDP and public savings around 5 percent. This level of savings should facilitate the GOB financing an increasing part of its public capital formation from its own resources.

From this background of a stable growing Belizean total economy, the discussion that follows of the situation in agriculture will show the achievements, future constraints and strategy needed in agriculture, the largest single segment of the Belizean economy.

2. Belize's agriculture

Belize is small in total size, but its land area is large relative to the population (200,000) and is the country's most important natural resource. About 40 percent or nearly one million hectares are considered to have agricultural potential. In 1984, the 8,562 farms in Belize occupied 851,367 hectares, but only about 150,000 hectares were used for crops or grazing. Large areas are rough, wet, inaccessible or adaptable only to forestry uses. Notwithstanding this under-utilization, agriculture including fisheries and forestry, in recent years has contributed 15-16 percent of GDP and about 40 percent of national employment. The majority of export earnings (about 75 percent) come from agricultural products, sugar, citrus and bananas being important. Domestic food needs, on the other hand, account for about 25 percent of Belize imports, a situation that is now beginning to be rectified by emphasis on shifting production to import substitution crops. For example, increases in the production of livestock and dairy products and of corn, rice and beans (48, 14 and 28 percent respectively in 1987) have substituted for what otherwise would have been imports of basic food needs. These statistics indicate the importance to the Belize economy of growth and prosperity in the agricultural sector (Annex B Statistical Annex).

Significant gains have occurred in the agricultural sector over the past few years. The collaborative efforts of U.S.A.I.D. and the Government of Belize in livestock and crop projects, as well as public and private sector institutional strengthening, contributed substantially to this progress. The several AID projects designed to assist Belizean agricultural production have helped bring about an 8 percent increase in the real growth of value added in agriculture in 1987, after a two year decline and in spite of a decline in sugar output. This gain resulted from a broad base of increases in corn, beans, bananas, citrus, vegetables, and livestock products. Continued increases are projected at 4 to 6 percent per year.

a. Livestock

Increased livestock and dairy production has made more of these domestic products available to consumers. This has resulted in lower imports and improved exports in 1987 of 625,000 lbs of beef products valued at \$1,553,000 BZ. From 1984 to 1987, the period of the Livestock Development Project, production of beef and pork products increased about a third. In 1987 livestock production increased 16 percent and dairy production increased 47 percent.

b. Export crops

Significant increases in the production of export crops in Belize since 1983 has had a favorable impact on income and employment. These increases and emphasis on a policy of agricultural diversification has encouraged the private sector to become more involved in business activities, serving the needs of the increased volume of a greater variety of export crops.

In 1987, Belize's total exports increased 12 percent. This resulted largely from the balancing between a large (nearly 50 percent) reduction in the U.S. sugar quota and similar sized increases in the exports of bananas and citrus, not significantly related to AID Projects. Vegetable exports did increase seven-fold in 1987 to \$4.7 BZ million. All of this increase was undoubtedly not the result of AID projects. It was, however, impacted by several new major investments in the production and export of vegetables and tropical fruits which were encouraged by the AID Projects.

3. U.S.A.I.D. agricultural projects 1983-1992

The U.S.A.I.D. agricultural projects have been and are continuing to overcome the constraints and support the achievement of the U.S.A.I.D./GOB objectives. The projects will each be discussed - basis of need, objectives, contribution made and expected - under the sector heading where they make their major contribution. Several of the projects, however, contribute to more than one objective and constraint.

a. Livestock

(1) Belize Livestock Development Project (BLDP) - This project was designed to improve pastures, swine production, efficiency and local meat processing techniques; to establish, train and implement an agricultural policy unit in MOA; and to make a fresh milk demand study.

The need for this project is indicated by the fact that agriculture is the largest single sector of the Belize economy, generating 80 percent of the foreign exchange and providing one third of their employment. As mentioned earlier, real domestic agriculture value added increased in 1987 after a two year slump as a result of being supported by this project and others.

With the support of BLDP, a Policy Analysis Unit has been established and is operational with a trained staff of two, who are assisting the GOB in policy planning and decision making. The unit issued its first GOB/MOA Policy Paper in 1987. The unit is providing crucial market information analysis and intelligence to GOB and farmers.

BLDP was amended in 1987 to continue and strengthen activities in pasture development, livestock management, policy analysis and credit.

(2) Macal Dairy Cooperative Project (MDC) - This project was designed to increase the production of fluid milk and assist the Macal Cooperative to be profitable. The need for this project relates to the \$334,000 BZ of milk it imported in 1986 and the opportunity and capability to produce domestically and improve the balance of trade deficit. Fresh milk output in Belize has increased 80 percent since 1984, the first full year of the BLDP. The profit margin of the Cooperative is planned to increase 25 percent by the first quarter of 1990.

(3) Belize Enterprise for Sustained Technology Project (BEST) - This project was designed to assist agricultural cooperative/associations to improve their management and business practices. Many farmer groups and cooperatives lack strong leadership and management in business operations and practices. BEST is effective in providing practical assistance economically to these groups and institutions, which are important in the development of the rural institutional infrastructure. BEST is now working with ten established cooperatives, an increase of four over 1987. BEST attempts to charge modest fees, but these do not cover total costs. Demand for BEST's activities continues to grow with the expectation of working with sixteen cooperatives in 1989 to increase their productive output. BEST works with cooperatives of all types in addition to livestock cooperatives.

b. Export Crops

(1) Commercialization of Alternative Crops Project (CAC) - This project was designed to assist in the development of production and marketing of non traditional export crops such as tropical fruit and winter vegetables in the two northern districts and for import substitution crops such as oilseeds. The justification for CAC is based on the excessive high risk dependence of Belize for export earning on the few traditional export crops, particularly sugar. In 1986 for example, sugar exports were 42 percent of the value of total exports. Also world sugar prices are highly variable, causing instability in Belize's export earnings. In the import substitution area domestic food imports account for about 25 percent of total Belize imports such as \$334,000 of fresh milk, \$7.8 million of fruits and vegetables, and \$4.0 million of feeding stuff for animals in 1986 (Annex B Statistical Annex).

Under CAC, based on farm trials, eighteen vegetable export crops and three tropical fruits have been identified for further production

and marketing trials. Significant field work has also been completed on import substitution crops such as soybeans and sesame. Significant increases have been experienced in the production of export crops in Belize since 1983. These increases and emphasis on a policy of diversification has encouraged the private sector to increase the export related business activities needed to service the increased export volumes of a greater variety of crops.

Field trials, farmer education and market development work are continuing at an accelerated pace. Also the CAC Project has been amended to strengthen its capability to overcome the constraints and achieve its objectives. The amendment provides for: (1) assistance to GOB to implement policy changes essential to accelerating agricultural diversification; (2) enhancing the productivity of the fisheries and forestry sub-sectors; and (3) improving land titling methods and operations.

Some GOB policies such as investment incentives and concessions create disincentives for small farmers to diversity into non traditional crops. Concerning fisheries needs, it is notable that Belize's exports of marine products decreased from \$15 million BZ in 1985 to only \$11 million in 1987. In the case of forestry, Belize exports less than \$2.0 million BZ of wood and products annually since 1985, despite its vast forest reserves. This project amendment will assist the GOB to implement needed changes and improvements in CAC related policy areas, fisheries and forestry, and to update the current cumbersome land titling procedures.

(2) Toledo Agricultural Marketing Project (TAMP)- This project was designed to assist in the development of cocoa and other export crops among small farmers in the south and in the policy dialogue of the GOB oriented to accomplishing the outputs of the project. The increased production of cocoa and other export expansion crops is designed to respond to the needs of Belize, to diversify farm production and expand production. Also this project will contribute to the needs of agriculture in the south for increased employment and improved incomes.

The Toledo Agricultural Marketing Project is getting started in 1988. One policy dialogue was successful in developing and negotiating an implementation plan with IFAD and the GOB for parallel AID and IFAD projects in the Toledo District. TAMP in 1988 is moving ahead with securing the technical advisor, developing a policy statement regarding the National Grain Market, and reviewing the elements for reorganization of MOA. A schedule and plan are laid out for 1989 and 1990, ending with 200 acres of new cocoa planted in the Toledo District and other targets achieved.

(3) The Export and Investment Promotion Project - (E&I)

(4) The Private Sector Investment Project - (PSI)

The E&I project is taking a countrywide approach to facilitating both foreign and domestic investment in agriculture and

light industry for export and to a lesser extent, in tourism. The PSI project in cooperation with the International Executive Service Corps (IESC) is complementing E&I by using the IESC retired volunteer network to promote investments in Belize and enhance exports.

The need and advantages to Belize of a broader diversified base of exports to reduce fluctuations in export earning and to enhance domestic employment and family income, have been discussed earlier. Essential elements to expanded exports are the investment, management and marketing capability provided by foreign investment.

BEIPU, under the E&I project, has 783 investment contacts on its data base, of which 221 have made an initial trip to Belize and 15 have made two or more trips. Twelve investments have been facilitated and 16 completed. The PSI/IESC project got off to a quick start and has 18 investment projects and one joint venture in various stages of development and nearing completion.

The E&I project has been amended to develop further the capacity of both the private and public sectors (MED) to promote, to provide technical assistance, and to facilitate export and tourism projects.

One new project has also been added related to export investment. This Export Investment Credit Project was designed to provide technical assistance in loan analysis and portfolio management, combined with funds for on-lending through the Central Bank of Belize (with a 20 percent set aside for small businesses).

The AID program in Belize has taken a multi-project coordinated approach to achieving export promotion. The projects discussed above relate directly to increasing exports. Other projects such as those related to infrastructure, discussed below, also contribute to making increased exports possible and economic.

c. Import substitution

Several of the projects already discussed under the headings of projects that impact livestock production and export crops are projects that significantly contribute to import substitution. As discussed earlier, increased domestic production that reduces food imports is important to the balance of trade. Belize has the resource capability to produce more of the food it consumes, but there are constraints related to costs of production and processing and to established consumer tastes that the projects are addressing.

Import substitution accomplishments and potentials exist in the oilseed/livestock feed complex. These are being worked on under the CAC project and in livestock under the BLDB, MDC and BEST projects. Attention, however, must be focused on domestic cost of production and cost of processing and cost of the importation of inputs, all of which tend to push up the cost of the final product compared to imported products. The total system of inputs, production, processing and distribution must be considered. Also, policy analysis is needed of

the feasibility of supportive micro-policy implementation such as import tariffs, to encourage startup and growth of infant industries.

d. Infrastructure

(1) Rural Access Roads and Bridges Project

This project was designed to mitigate the inadequate rural roads and bridges constraint by focusing on the institutional development of the Ministry of Works and Housing (MOWH) to rehabilitate, maintain and protect Belize's rural road network. This is the only project addressing this major constraint involving limitations on rural transport. Economical distribution to remote rural areas has become at least uneconomic and at times impossible as a result of lack of maintenance. This disadvantages people in those areas where they cannot buy inputs at reasonable prices and cannot get their products to market at a reasonable cost. It also puts limitations on what products they can produce and may encourage the production of undesirable products.

Under the AID projects, an office of Planning and Budget has been established in MOWH which is influential in planning the areas and types of road projects on which the budget will be spent. Training for MOWH personnel has been provided in rural road rehabilitation and maintenance, and in the maintenance and repair of equipment.

The project was amended in 1987 to further strengthen the capability of MOWH, to focus their attention on rural bridges and ensure that adequate MOWH resources are assigned to maintaining rural roads.

e. Human resource development

(1) Training for Employment and Productivity-TEP

This project was designed to strengthen the institutions which train the workforce in management and technical skills needed in an expansive private sector. The Belize Institute of Management is being supported to facilitate the training needed by GOB administrators key to the export and tourism strategy. Other parts of the project also relate indirectly to agricultural strategy, involve no-tech training and drug awareness.

The need for this training is great. The management and technical human resource pool of well trained, experienced personnel in Belize is small. The skilled management resource in the ministries is thin and fragile with only a few managers trained with advanced degrees in the fields for which they are responsible. Extended out-of-country training greatly weakens the capability of the ministry to function while they are away and the position remains open and unfilled. The private sector faces the same management resource dilemma and sometimes solves its problem by attracting management away from government.

In terms of public sector utilization of BIM training, the ministries have conducted needs assessments resulting in about 40 percent of the participants at BIM courses being from the ministries. BIM has moved ahead in staff and course expansion, setting policy direction and in providing technical assistance to 3 private sector organizations.

f. Policy and institutional reforms

In each project where policy and institutional reform is important, these elements are included in the projects. At the time of initiation of the U.S.A.I.D.'s programs, policy and institutional assessments and reforms were needed in several areas and ministries. A number of changes have been made, but also continued analysis and changes need implementation.

All of the policy dialogues pursued under the various projects are oriented towards accomplishment of the outputs defined in each project and are complementary to the other projects. Under the TAM project, a success is the growing commitment of the MOA to restructure. The investment incentive process has been assessed and streamlining is in motion. The budget of the tourism promotion section of the MOCT has been tripled. A policy dialogue supportive to all projects contributing to export promotion has been achieved in the GOB reorientation/ reorganization of ministries to support export and tourism development strategies.

C. THRESHOLD OPPORTUNITY AREAS 1992-

Much desired progress towards the achievement of economic stability and long term sustainable growth has been made since the initiation of the U.S.A.I.D. program in 1983. Much further progress is planned and expected by 1992. At that time, however, major agricultural potential will remain to be realized. Some of the major projects now underway will be leading to identifying and opening up thresholds of opportunity by 1992. Some of these opportunities can be capitalized upon and sustained by the then further strengthened GOB and private sector. Others will require further donor support in order to achieve the maximum payoff from the sizeable development investment already invested. This analysis and evaluation of the 1992 threshold opportunities will help suggest and define the agricultural strategies most pertinent for Belize at that point in its economic development.

(1) Improved productivity

To achieve the goal of long term sustainable economic growth, the major crops produced by Belizean farmers must be cost competitive, both in Belizean and in world markets. By 1992 several agricultural products will be at the stage of development where the productivity (costs per unit of production) will be critical to Belize's competitive position, economic stability and sound long term growth. This will be important for the traditional export crops - sugar, citrus, bananas - because they will have to compete on world markets against production from other countries that have indigenous

production of inputs and better economies of scale than Belize in both production and processing. In some cases these larger scale competitors will have an advantage as regards total returns from a crop, by having efficient processing or secondary uses (such as livestock feed) for some of the non exportable quality, the excess production in high volume years and/or the byproducts.

(2) Greater commercial production and marketing of non-traditional export crops

Based on the plans and results expected from the current U.S.A.I.D. projects working to develop crops for export expansion, greater commercial production of non traditional crops, such as tropical fruits, winter vegetables and cocoa, will be at the threshold of commercialization by 1992. At that time the adaptable crops will have been selected, the inputs and input-output ratios determined, the input supply system described, the production process defined so that it is ready for large scale application and the product demand and marketing system analyzed and forecasted.

The threshold step required to take advantage of all the development investment made in non traditional export crops up to 1992 will be to cross the threshold of implementing and monitoring the total system. Any one major bottleneck that develops and is not identified and adjusted on a timely basis can throw the whole train off the track, especially as regards perishables such as fruit and vegetables.

The achievement of a significant portion of Belize's goal to increase exports, foreign exchange earnings, economic stability can be lost unless this threshold of crossing over to commercial scale production and marketing is achieved.

3. Expanded commercial production/processing of import substitution crops

Belize imports agricultural inputs and consumer food items that it has the resource base to produce - high protein livestock feed concentrates, meat and milk products, fats and oils, etc. The U.S.A.I.D. projects underway are defining the technology needed to produce these crops and are dealing with the credit, management and investment constraints. By 1992 these projects will have laid a firm foundation consisting of crop selection and technology for producing these crops and will have also provided for strategy to overcome the ancillary constraints.

The major import substitution crops will be in a threshold position by 1992. The payoff will come if sizeable commercial production develops. The import substitution crops face complex situations, and will require further development support after 1992 if they are to make a major contribution to economic growth and stability.

Most of the import substitution crops require processing. This is desirable in that it results in greater value added and increase

employment and incomes. On the negative side, however, this means that additional investment and technology are required. The total system of production processing and marketing is more difficult to achieve payoff because it is complex, involved and interrelated between sectors. In the case of oilseed, it involves crops and livestock and consumer demand. These are the threshold factors that lead to the logic of the strategy developed by this report and the need for sharply focused continued U.S.A.I.D. support in certain carefully defined areas that represent the best payoff in terms of Belizean development.

4. Sustained long term fisheries output

Belize's fishery products warrant more development consideration than they have received. World demand for fisheries products is on an upward trend with prices generally strong. Belize's exports of fisheries products has dropped as a result of several variables - need for capital and better boats and equipment to fish areas beyond the reef (capital), need for diversification of the catch and need for additional fisheries department resources and enforcement.

An amendment to the CAC project provides for improving the GOB fishery policies and for establishment of a fisheries Conservation Compliance Unit before 1992. A target is to have a 5 percent annual growth in the exports of fish products.

Fisheries products, of course, are an important export crop for Belize. As a result of the U.S.A.I.D. programs impacting the marine sector of the Belizean economy by 1992, fishery products will be at a threshold and be one of the alternatives that could be selected and targeted for further support to significantly expand commercial production and marketing. The extent of the further support and expansion and the expected payoff will need to consider the conservation/sustained production matrix based on the natural ocean resource, the potential from mariculture and the biodiversity implications.

5. Increased forestry production and management

Despite its large forest areas, Belize has exported less than \$2 million BZ of wood and wood products in recent years. This is due to the lack of an overall program to enhance and encourage the production and exports. It is not due to a lack of export quality hardwood or any onerous restraints by the GOB.

The 1989 amendment to the CAC project encourages the GOB to adopt a policy of rational use of forest resources. It provides for the formulation of a National Forestry Development Plan by 1990 and a 10 percent annual growth in exports of wood products by 1991.

These efforts are expected to lay the groundwork for a threshold situation in forestry by 1992. Although forestry will never be the major contributor to export earnings, it is a renewable resource, where an input can yield a payoff to total economic growth. It needs to be developed and managed for sustained production.

6. Improved management of biodiversity

Biodiversity in Belize is large based on the broad and varied land, forestry and marine resources and the ecological systems they represent. The foundation of the biodiversity is contained in the 2.3 million hectares of the Belizean land mass, the coastline longer than 300 kilometers, the large wetlands where the land and rivers meet the ocean, the extensive offshore chain of caves, islands and reefs, and the diversity of elevations and microclimates.

For centuries the forests have been cut, the oceans fished and the land farmed for economic gain, without regard or attention to the impacts on the organisms living there or on the ecological life cycles and systems supporting them. Now is the threshold time of importance, to include in the plans and strategy, to give attention to this situation or the opportunity can be lost. The future value that is based on the biodiversity must be identified, captured and preserved for its economic, medicinal or other benefits to mankind. The threshold time to recognize this need and give it proper attention is dictated by the existing plans and expectations resulting from the U.S.A.I.D. program for the significant expansion of production and use of, and possibly pressure on, Belize's land and water resources and the impacts that this U.S.A.I.D. supported economic development will have on biodiversity.

D. ISSUES INVOLVED WITH AND CONSTRAINTS TO REALIZING THRESHOLD OPPORTUNITIES

1. Issue areas

a. Biodiversity

Belize's natural resource base includes substantial lowland tropical forests, unique coastal and inland marine ecological systems and resources, and a large unused reserve of arable land. These forests, marine resources and lands have been and continue to be the principal natural resource base for economic development in Belize.

Forestry, for example, was the major economic resource in Belize from 1700 until the 1950's. Today, substantial potential for the harvesting of hardwoods and pine again offers economic opportunity and the forests also offer economic potential as an attraction to Belize's growing tourism sector. The harvesting potential appears feasible to develop, although it must be undertaken in the context of protecting portions of the existing forests to conserve soil and watersheds as well as biological diversity and to support natural tourism. Areas that represent all types of forests in Belize need to be protected to meet these complementary objectives.

Much of the forestry land in Belize is owned and managed by the public sector. Regulations exist for public sector control of harvesting and other activities on private forest land. However, the Forest Department in the Ministry of Agriculture is thinly staffed and

lacks some of the technical and management skills needed to manage the nation's forests effectively. For example, an overall national forestry policy and development plan is needed as are management plans for forestry reserves.

The interaction between agricultural development and forestry and marine ecology is a major area for policy and program development and implementation. Private, as well as public, forestlands are continually being converted to agricultural purposes, both for larger agricultural efforts and by milpa farmers. These conversions require GOB permission, but they are not based on close examination of the ability of the land to support agriculture or on the implications of the change over for tourism or biodiversity in Belize. Improved management of public and private sector forests will sharpen these considerations regarding expansion of agriculture onto forest land. Increased agricultural diversification, agro-forestry techniques, sustainable forest harvesting practices and other management practices need to be developed that will ensure sustainable forest and agriculture resource use while still contributing to biodiversity, tourism and resource conservation objectives.

Biodiversity in Belize is substantial, but not well understood, protected or classified. It is important to preserve the biological diversity that exists before the pressure of agricultural expansion, tourism, hunting and fishing and other development reduces it in ways detrimental to Belize and the world at large. This will require additional classification of natural habitat types (marine, forest and agricultural) expressing Belize's range of biodiversity and the protection of those types not now within protection areas. It also will require further planning, management and protection capability by the GOB. Given the existence and use of this additional capability, Belize's biodiversity, tourism and other objectives can fit together in planned symbiotic ways that provide both for sustainable economic use and preservation of its unique natural resources.

Another important aspect of biodiversity in Belize is fisheries and wildlife production and conservation. Fishing is an important economic subsector in Belize's economy and produces important export products, especially lobster and conch. Based on world demand for such products, Belize's fishery will become an increasingly important economic resource, bringing it under substantial exploitative pressure as time passes. This resource is already beginning to exhibit clear signs of over exploitation. Additional regulation, management and development of alternative fin fish resources will be necessary to sustain the harvest of this important resource and the biodiversity of Belize's unique aquatic habitats.

The marine environment in Belize provides not only fish, but is the major attraction for Belize's developing nature tourism. It has the longest barrier reef in the Northern Hemisphere, numerous caves with resources for diving, fishing, sunbathing, sailing and other active water activities, and extensive environmental habitats available for observation and study by visitors. Sustaining these important and fragile resources must be one of Belize's high priority objectives.

Achieving this objective will require further policy and program development and additional institutional strengthening, both in the public and private sectors.

Wildlife preservation in Belize is important to retain species on the protected/endangered list, to provide a continued basis for natural tourism, and to sustain the biological diversity already present. Improvement of hunting policies, licensing, and regulation and wildlife management is needed to attain these objectives.

Belize's unique environment and natural resource base is essential to its sustained economic and social development. Much of the potential, both economic and aesthetic, of Belize's natural environment remains to be realized. To develop that potential appropriately will require careful management in using and protecting these natural resources. U.S.A.I.D.'s development strategy for the agricultural sector includes activities that will help make such management increasingly possible for the public and private sectors in Belize.

b. Policy Determination 15

U.S.A.I.D.'s program to and beyond 1992 will not be constrained by Policy Determination 15 (PD-15) considerations. PD-15 states that it is AID policy to avoid supporting the production of agricultural commodities for export by developing countries when the commodities would directly compete with exports of similar US agricultural commodities to third countries and have a significant impact on US exporters. A threshold determination as to whether a commodity proposed to be supported is likely to cause substantial injury to US exports is necessary before that commodity can be included in an AID project.

U.S.A.I.D.'s program in Belize supports development of non-traditional export expansion. PD-15 threshold determinations were made as part of the CAC Project for the export expansion crops; all were negative. None of Belize's planned export crops are likely to have a significant impact on US exports. The determinations were made using current crops and production estimates through the year 2000. Thus, the negative determinations already made should be valid through 1992 and beyond.

U.S.A.I.D./Belize's import substitution activities support the food security objectives of AID's policy on food and agriculture development. Expanded pork production, the potential for producing oilseeds locally for vegetable oil and animal feed, expanded production of milk and milk products and other import substitution possibilities are being pursued via U.S.A.I.D. sponsored activities. By 1992, additional pork and milk products, soybean production and processing (should the latter prove to be feasible), and other import substitutes will enable Belize to provide a nutritionally adequate food supply to its population on a continuing basis.

c. Compatibility of the agricultural sector assessments and the MOA policy statement and their implications for the U.S.A.I.D. strategy

During the course of work on the sixteen assessments for strengthening the Belize Ministry of Agriculture, many positive comments arose in spite of the recognition of constrained ministry budgets, limited personnel, and lack of adequate facilities, equipment and transport. The recommendations of the assessments also yielded many themes common to the MOA policy statement.

The MOA policy statement emphasized the importance of Belize agriculture as an income, foreign exchange and basic food supply generator and gives high priority to agricultural modernization and growth. The strategy is to assure: (1) the domestic food supply; (2) efficient base of small farms; (3) free markets and trade; (4) effective resource based production; (5) increased value added; (6) human resource development; and (7) diversified agriculture.

The central focus of the MOA assessments is a series of recommendations the implementation of which will strengthen the capacity of MOA to support economic stabilization and growth consistent with the goals of the assessments. The highest priority recommendation is human resource development. Greater accountability was reflected in the desire for plans of work, position descriptions, a project budgeting monitoring reporting system, illustrated annual reports and computerization of an MOA management information system for budgeting and accounting. The recommendation to strengthen linkages with the private sector included working with farmers cooperatives.

The MOA assessments by their nature are at a lower level of planning and strategy development than the MOA policy statement. The two documents, however, are complementary and supportive. The assessments, which were made at a considerably later date than the MOA policy statement, confirm the goals and strategy set earlier in the MOA policy statement. The assessment recommendations support the direction set for the MOAs by the MOA policy statement.

The management assessments and their impact on MOA operations have significant implications for the U.S.A.I.D. program. As a result of the assessment work, the review and approval of the assessments by the MOA staff and the follow-up deliberations and setting of priorities at two retreats, changes have occurred in the activities and operation of MOA. Notably among these is the strengthening of the policy unit that has been established and staffed under this U.S.A.I.D. project. Strengthening that unit and other changes will require additional resources and training. These additions and improvements will enhance the capability of MOA to work with and achieve the goals of the U.S.A.I.D. programs and also support the achievement of the strategy in the MOA policy statement. The policy unit is a key instrument in analyzing and implementing inter-ministerial and import/export policies consistent with the U.S.A.I.D. programs.

2. Constraints analysis

Section "C" earlier in this report identified the threshold opportunities for Belizean development expected to exist in 1992. These will be at least partially be the result of the achievements of the U.S.A.I.D. programs aimed at economic stability and growth. The threshold opportunities will need attention if the desired payoff from the investment in programmatic economic development is to be realized. There will, however, be constraints to achieving the desired level of payoff after 1992 in terms of economic stability and growth. These constraints are based on: (1) analysis of the current and projected situation in Belize; (2) evaluation of U.S.A.I.D. and other project results and recommendations; and (3) interviews with public and private sector management. These constraints indicate the high priority strategy needed after 1992 to achieve the complimentary goals of GOB/MOA and U.S.A.I.D..

a. Inadequate rural infrastructure - roads, bridges

One of the continuing constraints, particularly inhibiting to the small remote farmer, is the physical infrastructure in the rural areas - lack of transport/communication/utility systems. The condition of some of the roads and rivers (lack of bridges) result in impassable conditions at some times of the year.

This constraint is one that cannot be altered by individual or groups of farmers. Basic transportation and communication facilities are the responsibility of the government in order to create a workable business environment. The most valuable assets of Belize is the land. If this resource is to be developed to its potential and contribute substantially and efficiently to the economic growth of the country the government must provide for physical access to the land. The underlying infrastructure must exist to facilitate efficient movement to the land of the inputs required to support profitable farm, forestry and mariculture businesses, and an acceptable way of life for the people involved. Similarly, the farm products must be able to move to market at competitive costs and the farm people to have access to an acceptable standard of culture, necessities and pleasures of life.

b. Lack of financing

One of the constraints will be lack of finance--equity and credit. Sources of financing on workable terms for investment in, and credit to, agricultural, forestry and mariculture production, processing and marketing are now, and are expected to continue to be, severely limited. Particularly short term production credit is not expected to be adequately available to small producers and related businesses. Credit institutions are not accustomed and are unwilling to take the risk involved in many loans to agriculture. Existing farmers have their resources tied up in ongoing farming operations, yielding low margins of return. Banks and DFC are hesitant to take the risk involved in agriculture. The commercialization of production, processing and marketing to increase exports and import substitution crops will require large additional amounts of capital investment and

working capital. The dichotomy of expanded demand for financing and tight supply will combine to be a major constraint to the economic growth that is desired.

c. Underdeveloped agribusiness

Another constraint will be an underdeveloped input supply/agro-processing marketing system. Most farm inputs must be imported to Belize. Small quantities are required by the non estate farmers and costs are high. Inputs often are not readily available in the remote rural areas on a timely basis. Prices are high due to costs of distribution and lack of competition.

Marketing systems in Belize are not well organized. Processing, packaging and storage facilities for local consumption, nontraditional export and import substitution products are inadequate or completely lacking. Facilities for transportation, processing and packaging, and local storage need to be improved and expanded. Some aspects of this constraint will be ameliorated by 1992. It will need to continue to be monitored and remaining gaps rectified.

d. Insufficient information

Another constraint will be insufficient production and marketing information. Lack of adequate and reliable production and market demand requirements and input-output ratios and experience, will continue to be a plague to farmers and investors willing to take the production risk.

A major factor in any information constraint concerns the adequacy of the coverage and the conveyance of the real meaning via the various means of communication available. In Belize, lines of communication are limited between suppliers, producers, marketers, financiers, investors, researchers and policy makers. Information on production and marketing costs and volumes, harvest schedules and demand statistics is generally lacking. This adversely affects production, marketing and government policy making decisions. Significant amounts of new needed information will be generated by 1992. Prioritization to highlight the most useful information and its communication to those who can benefit from its application will be essential to achieving the payoff from the years of investment in economic development.

e. Underdeveloped management

Another constraint will be underdeveloped farm, farmer group and other enterprise management, efficiency and quality control.

The people of Belize, with an adult literacy rate above 90 percent and a primary education enrollment of 95 percent, are generally educated as compared to many developing countries. The level of capability and training in management, efficiency and quality control. However, is a different story. Existing and new workers in

management in both the public and the private sectors lack capability, training opportunities and experience in modern management methods.

Part of this situation is due to the so-called "brain drain" which occurs as a result of the outmigration of many trained motivated young people to North America, where earnings are higher. This constraint is addressed by current AID programs and amendments that will be in effect until 1992. However, with the sophisticated management demands that will result from the increases in volume, quality requirements and complexity of production, processing and marketing systems, this constraint will require attention after 1992 if the desired development goals are to be attained.

f. Thin public sector management

Another constraint will be inadequately thin public sector institutional management and regulatory control. The number of experienced, well trained managers in the various GOB ministries such as in forestry, fisheries, and the central statistic unit is very limited. When these managers leave to get further training, it leaves a big temporary void. When they leave as a result of working in the private sector in Belize or North America, it leaves an even more serious long term void.

g. Underdeveloped public sector micro policies

The demands on these managers will increase by 1992 and thereafter as more complex policy issues arise from the increased commercialization of new export and import substitution crops and the related agribusiness. Also a greater number of these managers will be needed in both the public and the private sectors to handle the increased volume of work on concessions and the questions concerning import/export duties. This leads to another constraint, the underdeveloped public sector micro policies, regulations and programs aimed at helping the sector realize threshold opportunities.

These constraints indicate the need for continued, but focused strategic attention to Belize development after 1992. They have been basic to the generation of the agricultural strategy which follows in section "D" of this report. Those strategies are designed to overcome these constraints and achieve a good payoff from the development inputs of AID's Belize program.

3. Impact of constraints to agricultural development in Belize vis-a-vis world/regional markets and competitive position of surrounding countries

Overall, the impact of the constraints identified for the agricultural sector in Belize in 1992 and beyond is to force Belize to concentrate its efforts in a few areas of high potential opportunity. Belize's private and public sectors are not skilled at organizing and managing commercial competitive agriculture against major international competition. Both sectors are thinly resourced. There is much each must do to learn to support the other in developing efficient

commercial agricultural systems that are competitive with low cost producers elsewhere.

If these constraints are not removed, Belize will remain in the category of a small, high cost producer of both export and import substitution products. It will not be able to compete as effectively, if at all, in regional and world markets. Nearby countries, such as Mexico, the Dominican Republic, Guatemala, Costa Rica, and others, will be able to compete more effectively than Belize even in commodities where Belize has a head start or other particular advantages.

Belize is not a major force in regional and world markets in any product and is unlikely to be so in the foreseeable future. It does have enviable natural resource potential based in agricultural production, fisheries and forestry, as well as natural tourism, and it can compete internationally in some areas if it uses these resources wisely on a sustainable basis. To enter productively and competitively into regional and world markets, Belize's thin public and private sectors need to concentrate their efforts on key promising opportunities. In these areas, very close cooperation within the private sector and between the private and public sectors will be necessary to develop the efficient, well managed, sustainable commodity systems required to enter and stay in competitive export markets. To achieve such commodity systems will require the constraints identified earlier to be reduced or removed.

For each high potential export and import substitution opportunity, the private sector will have to continuously broaden its commercialization and improve its management of farms, processing plants, marketing segments, banks, insurance programs, information flows, and linkages to international markets involved in the commodity system. As each "system" is better integrated and managed, the above constraints will be reduced--e.g., underdeveloped input supply, agro-processing and marketing system, insufficient production and marketing information, underdeveloped individual, group and enterprise management, efficiency and quality control.

The public sector will have to cooperate to remove the constraints. It will need to constantly test and shape its policies, program and operations to support the private sector's efforts to commercialize and better manage the integrated systems needed to compete effectively in external and internal markets against commodities produced elsewhere. Where appropriate, as in fisheries and biodiversity, the public sector will have to further regulate the use of natural resources to ensure sustainable production and continued competition at home and abroad. The public and private sectors will need to forge a new regime and jointly work to deepen commercialization and improve management of the key commodity opportunities available to Belize. This new cooperation will encompass activities to increase and make production more efficient, to regulate certain activities more carefully, and to conserve natural resource potential.

4. Recommended state of the art technology and innovations that can focus current and proposed project activities

The post 1992 agricultural sector strategy will emphasize: broader commercialization and more effective management by private sector individuals, groups and firms who are participating in the development of high priority export and import substitution commodity systems; public sector commercialization activity; and promotion of biodiversity in the agricultural sector. Certain state of the art technologies and innovations can help focus this strategy and current and future projects that implement it.

a. Computers

Belize's effort to broaden and make more efficient its commercialization of key export expansion and import substitution crops will require management improvements by the individuals, groups and firms involved. Management improvement should be facilitated by the expanded application of computers. They can be used for database development and manipulation, budgeting, assessing the impact of new technological innovations, information retrieval, accounting and other record keeping, inventory control, billing, and written and electronic communication.

b. Communication

Communication/information technology is central to Belize's commercialization and management of key commodity systems. Such systems require nearly constant effort to achieve the optimum balance that enhances their efficiency and profitability. Each participant in a high priority commodity system must be closely attuned to the needs and changes of other participants. For this reason, rapid communication about changes in the system and of needed responses is essential.

When Belize acquires a "packet switch", which is expected sometime in 1988, international communication via private sector dedicated computer networks can be achieved at very low cost and should be used extensively to assist in meeting U.S.A.I.D. and GOB development objectives. This will allow lower cost direct information sharing from international agricultural research centers, financial markets, trade partners, commercial market information centers, and other sources. Local area networks (LANs) for computers enable additional efficient communication between business partners, potential business cooperators, and others. A LAN, for example, can be used to enable GOB agencies to communicate effectively throughout Belize and to help private sector participants develop a commodity system to communicate rapidly.

Facsimile machines are now inexpensive state-of-the-art communication devices that speed communication between, for example, international markets and shipper/packets. They should be introduced into U.S.A.I.D.'s current and planned project activities rapidly. Copy machines, telephones, television and printed media also are important means for communicating between private sector and/or public sector entities and among both to better carry out the planned strategy.

U.S.A.I.D. should ensure that these simpler devices are readily available in all its projects, but especially in those which, as part of the improved commercialization and management strategy, have special needs for constant integration of activities and for good communications to enable such integration to occur.

As U.S.A.I.D.'s program focuses more on biodiversity issues, additional use of satellite information should be made in carrying out resource conservation and management efforts. Satellite derived data is not too expensive or sophisticated for Belize and can be useful in dealing with issues in tropical forestry, agriculture, marine ecology and a variety of other areas. Land photos also can be applied effectively to provide information and enable improved natural resource management and use.

c. Micro-propagation

In developing specific fruit and vegetable crops for export, use of micro-propagation to establish true or disease free initial stock is important. While tissue culture techniques are becoming widely used, the profitable production of planting material using these techniques is more difficult to achieve. It is not likely that Belize will require large enough volumes of material to justify its own commercial micro-propagation facility. However, purchase of plant material from other laboratories usually pay dividends.

E. AGRICULTURAL STRATEGY FOR BELIZE 1992-

The U.S.A.I.D. program for Belize is on a track that has and is continuing to yield significant payoffs. Belize has and is making achievements in economic stability and growth. The programs to 1992 are well defined, underway and meaningful progress is expected to continue. Numerous threshold opportunities for further progress will exist in 1992. The critical next step is to anticipate and develop those strategy elements that will maximum key opportunities selected for development in 1992.

Limited available resources, both in the country and from the outside, dictate the necessity for a highly selective, sharply focused strategy for 1992.

In this section, four strategy elements are described.

1. Select key high potential agriculture and natural resource export expansion and import substitution commodities that can be supported sufficiently with the U.S.A.I.D. resources available.
 - o Develop a joint U.S.A.I.D., inter-ministerial, and private sector working group to assist in identifying these highest potential opportunities
 - o Prepare a working group study summarizing private sector, U.S.A.I.D., MOA and other donor experience with

- export expansion and import substitution and recommending highest potential opportunities to be pursued by GOB, U.S.A.I.D., and private sector jointly
- o Develop a joint public/private sector/U.S.A.I.D. strengthening plan for each highest priority opportunity - production, processing and marketing "system"
2. Broaden efficient commercialization and effective management of highest priority export expansion (and import substitution) opportunities by the private sector
- o Strengthen highest priority commodity systems by facilitating availability of credit, management assistance, and access to information and technology to private sector individuals, groups and firms responding to strategic priority opportunities
 - o Improve rural infrastructure
3. Strengthen public sector policy and program support to improve private sector commercialization and management of high priority production and agribusiness opportunities
- o Provide assistance within MOA and among ministries in policy and program analysis and options formulation to support selected threshold opportunities. As resources permit, assist in implementation of the options selected to support private sector development of the highest priority opportunities.
 - o Provide assistance in developing public-private sector communication, liaison and joint action in developing high priority commodity systems.
 - o Provide technical assistance and other resources to help assess what can and should be done to manage and develop forestry and fisheries resources more effectively.
4. Promote biodiversity in the agricultural sector
- o Provide natural resource oriented management assistance to MOA (policy, program and regulatory analysis and development) in agriculture, fisheries and forestry.
 - o Improve natural resource conservation and management through studies and direct support of GOB policy and program and regulatory development to preserve existing marine and tropical forest environments.

These strategy elements address the 1992 constraints identified earlier in the report. The relationships between all likely key

threshold opportunities constraints and strategy elements are outlined in Table 1 in the Executive Summary. While it is likely that U.S.A.I.D. post-1992 program in Belize will be limited by resource availability, these strategy elements are applicable to all the country's key constraints and threshold opportunities. As 1992 approaches, this strategy will continue to apply whether the U.S.A.I.D. program expands or contracts. For example, selecting, planning for and supporting export expansion and import substitution commodities is a strategy element that addresses the constraints concerning agribusiness, management and public sector policy by supporting developments and improvements in those areas. The strategy element to expand commercialization by facilitating credit, management information, and technology addresses the financing of agribusiness development and management constraints. The strategy element of improving rural infrastructure has a direct linkage to supporting remote farmers, aquaculture and forestry and also should help to ameliorate the constraints in public sector policy and agribusiness development by highlighting those constraints for appropriate attention and action.

Strengthening the public sector support for the private sector will create a better business environment and thus address all the anticipated 1992 constraints. The linkage between the strategy element to promote biodiversity and the constraints is less direct. This strategy element, however, will address the public policy and the management information constraints rather specifically and will relate to agribusiness development particularly in aquaculture and forestry. This brief description concerning how the strategies address and overcome the constraints touches only on the major linkages. Many other crosscutting ties are relevant.

This proposed strategy for U.S.A.I.D. will benefit women in several ways. While few women work directly in production agriculture in Belize (some raise small animals and some are small crop farmers), many more do work in agricultural processing and marketing activities. A few own fishing boats; many more work in fish processing plants. Thus, this strategy of developing commercial export expansion of non-traditional crops and working toward better management of fisheries and forestry resources will directly benefit women even more than improvements in agricultural production per se. Also, much of the training, institution building and information development involved in U.S.A.I.D.'s support of expanded exports after 1992 will benefit women involved in public and private agricultural related institutions (private businesses and government organizations such as MOA and DFC).

F. PRIORITIZATION OF THE STRATEGY

Overall U.S.A.I.D. program priorities will be set by selecting those threshold opportunities considered to be highest priority in 1992. Then the strategy elements needed by the opportunities selected can be applied. There will be a number of high priority threshold opportunities available in Belize in 1992. With its own resources, the GOB may desire to pursue many of these. However, U.S.A.I.D.'s resources are likely to be more limited in 1992 than in prior

programming periods. This resource scarcity will require U.S.A.I.D. and the GOB to select a few threshold opportunities for U.S.A.I.D. to concentrate upon. This selection will concentrate on collecting future payoffs from invested development inputs to date in areas where such returns are expected to be highest.

Several major thresholds of post 1992 development potential have been identified, described and analyzed in this strategy document. These include (1) larger production and export of non-traditional crops, (2) improved fisheries management and productivity, (3) expansion of import substitution crops, and (4) enhanced forestry management and export output.

These opportunities need to be considered in conjunction with their specific constraints and strategies to overcome them. When this matrix is weighed (see Table 1 in the Executive Summary) by U.S.A.I.D., GOB and private sector participants in the development process, the highest priority threshold area for exploitation in 1992 and beyond is export expansion.

The strongest export expansion candidates are tropical fruit, such as mango and papaya, other tree crops such as cocoa (and citrus), selected winter vegetables, and forestry products. These priority commodities are based on the extensive analysis of earlier projects, discussions with, and export experience of, the Belizian private sector and on planning sessions of MOAC managers in developing their policy driven work plans.

With respect to these or other selected products the payoff will result from an emphasis on export market development promotion, facilitation and from further constraint identification and elimination. A program to implement and support this highly selective export expansion, with restricted inputs and aiming at maximum payoff, will require technical assistance for the high potential areas to (1) help forecast or validate export demand; (2) assess profitability; (3) assist in meeting specific market requirements (e.g., quality, packaging, volume, timeliness); (4) further identify constraints that arise as exports are increased; and (5) help develop and execute programs to overcome the constraints. Much of this assistance is likely to take the form of public and private sector training and institution building in the expanded export system. Technical and management specialists with experience in these areas will be needed.

Fisheries is another high priority threshold opportunity in 1992. Better management and regulation of the fisheries resource is the key ingredient needed to realize this opportunity. Additional exports may be possible, but achieving sustained productivity from this important resource is the first important step. This will largely come from improved management. Helping the GOB achieve long-term payoff from the fisheries resource fits directly into the MOA's own priorities. It supports export activity, links directly to natural resource conservation and sustained biodiversity, and supports the fisheries sector's unique contribution to the country's economic development objectives. Technical assistance is needed to help assess Belize's

fisheries industry and determine how to manage it better for sustained exports and biodiversity.

The four strategy elements above, when taken in total, compose a complete strategy. Various combinations of these strategy elements need to be applied to the various high priority threshold opportunities in 1992. Some of these strategy elements will have been completed for some high priority areas by 1992. For other opportunities, part programs and projects will have already developed some strategy elements. Thus at that time it will not be necessary to carry out all strategy elements with respect to all high priority areas and commodities. The efforts of U.S.A.I.D./Belize and the Government of Belize can concentrate on the strategy elements not yet fully developed for such opportunities. It is possible to apply the four strategy elements above to all threshold opportunities in 1992. This is likely to be the desire of the GOB, for example, if it agrees with the proposed strategy. Also, if U.S.A.I.D. has resources beyond those needed for the highest priority threshold areas suggested above, the strategy could be applied to other opportunities using its resources. Table 2 sets up a matrix and matches threshold opportunity areas with the strategy elements likely to be needed by commodities at the threshold point in 1992.

The priorities in Table 2 are based on current thinking and considering the priorities established by MOA in recent planning sessions (Annex C).

Annex C lists the crops, livestock and farm production inputs that were included in the policy driven work plans recently developed by MOA under the U.S.A.I.D./Belize Ministry of Agriculture strengthening project. It also gives the priorities established. It will not be possible or yield the best results for MOA and U.S.A.I.D./Belize to give equal emphasis and high priority to all the commodities needing strategic attention. This evaluation and prioritization process, even though based largely on judgment, is a critical step in the development of the U.S.A.I.D./Belize strategy for Belize and in the economic growth of Belize.

Table 2 presents an informed judgment concerning prioritization of the strategy elements and the anticipated threshold opportunities. It illustrates setting priorities for U.S.A.I.D./MOA strategy post 1992 with the best payoff from the economic development investment that has been made. In the crops category it gives a high priority to tropical fruits, cocoa and winter vegetables for strategic attention for export expansion. It gives high priority to soybeans as an import substitution crop for expanded commercial production and processing. It gives high priority to fishing and aquaculture for expansion and to rural infrastructure, credit and domestic production of animal feed as inputs for strategic attention. High priority is given to these areas because it is believed that they will be in a threshold position to benefit most from further support at that time and that they will make a substantial contribution to Belize's development goals.

This prioritization with respect to export expansion and import substitution illustrates an imperative question concerning the need to evaluate the probability of success and the potential payoff of these and other strategic elements. Export expansion of tropical fruits, cocoa and winter vegetables involves many variable that are outside of the control or influence of the Belizean producers, marketers and government. These include overseas market prices, vagaries of quality shipping and timing, and forecasting of demand. Also this strategy element involves dealing with the sensitive technology of highly perishable products.

In the case of the strategic alternative of import substitution (such as soybeans) the variables related to the success of the strategy are within Belize and the crop is less perishable. The success of this strategy element, however, does require a complete, balance, properly integrated system of production, processing and marketing using appropriate technology for the size of the industry and requiring considerable investment. Export expansion also requires a complete system of production, packaging and marketing, with more of the variables out of Belize. These are the types of collective judgmental comparisons, evaluations and decisions that must be made by the GOB in setting strategic priorities. As 1992 approaches such decisions concerning strategy alternatives will need further consideration by people involved in research, policy making, and business in the public and private sectors. Their deliberations together, will ensure that Belize's strategy for further agricultural development is effective and capable of achieving the country's most important agricultural objectives.

Table 2: Prioritization of the Agricultural Strategy 1992-

Agricultural Strategy for Belize	MOA Policy Driven Work Plan Commodities		
	Crops	Livestock	Production Inputs
1. Select/plan for highest potential commodity -export expansion	1. fruit-mango 2. vegetables 3. cocoa 4. bananas	1. aquaculture 2. beef 3. honey	
feeds -import substitution	1. soybeans 2. corn 3. rice 4. beans	1. swine	1. animal
2. Expand commerciali- zation	1. soybeans	1. aquaculture	1. credit
a) facilitate -credit -management -information -technology	2. fruit-mango 3. vegetables	2. African bee	2. animal feed
b) improve rural infrastructure		1. for small farmer in remote areas 2. for mariculture, forestry	
3. Strengthen public sector support to private agribusiness -MOA -inter-ministerial -legislation -regulation/quality -private/public liaison	1. soybeans 2. fruit-mango 3. vegetables	1. aquaculture 2. swine 3. African bee	1. credit 2. animal feed 3. fertilizer
4. Promote biodiversity -policy -program -regulatory	1. forestry	1. aquaculture	1. pesticides 2. plant protection

Annex A
Statement of Work

Annex A: Agricultural Strategy and Development Statement
for Belize - Statement of Work

BACKGROUND

In the country Development Strategy Statement (CDSS) dated August 1983 and the CDSS dated April 1984, the agricultural sector is identified as a major area for growth and development in Belize. Several subsectors, livestock production, oilseed, and specialty export crops are viewed as having considerable potential from the production perspective. The development of infrastructure, particularly rural roads and bridges and marketing capabilities overlay these areas of opportunity as constraints that must be resolved for development to move forward.

The focus of increasing rural incomes is a fundamental objective of USAID's program. The need has become apparent to analyze the implications of USAID/Belize's agriculture and rural development portfolio in order to assure that projects as designed are: (1) providing the opportunities for sustainable improvements in increasing rural income for those participants in the sector; (2) appropriate vis a vis the contention of reduction of resource levels; (3) compatible with government of Belize policies for long-term development; and (4) addressing state-of-the-art concerns and innovation in the agricultural development of Belize.

ARTICLE I - TITLE

Agricultural Strategy and Development Statement - USAID/Belize,
Number 505-0000-3-80009.

ARTICLE II-OBJECTIVE

The objective is to provide a team which shall analyze macro/micro factors regarding the agriculture sector in Belize and make recommendations to USAID/Belize regarding agriculture strategy and development activities impacting the current and future project/program activities.

ARTICLE III - STATEMENT OF WORK

BACKGROUND

Since the preparation of the initial CDSS, USAID/Belize has designed and implemented a series of agricultural projects which address the constraints of production, Government of Belize policy activities, transportation and marketing activities. As these projects begin to mature from the perspective of implementation and USAID/Belize considers the five year period leading up to 1992, it is necessary that

a review of the agriculture strategy for the Mission should be undertaken.

TASKS

The contractor shall analyze relevant economic and social factors in developing an Agriculture Strategy and Development Statement which addresses the following areas.

(1) USAID Policy Determination 15:

Policy Determination (PD) 15 was issued by the administrator on September 13, 1986, basically as a response to the Bumpers Amendment to the Appropriation Act of 1988. The Bumpers Amendment directs USAID not to assist with the development and production of agricultural crops that directly compete with similar commodity produced by U.S. producers that are exported to third world countries. PD 15 requires that USAID review current and planned projects and determine that (a) potential of the crop (s) be considered for production; (b) volume of production which will result from project activities; (c) identify export markets; and (d) volume of commodity (identified for assistance) that U.S. producers export and U.S. share of market that will be affected by increased exports of the crop(s) or product(s). Part of the review of the agriculture strategy would focus on addressing the issues of PD 15 as related to the agriculture portfolio.

(2) Since the preparation of the first CDSS in 1983, the Mission has prepared an agriculture assessment and the Ministry of Agriculture has prepared the first policy statement. These documents and any implications vis a vis USAID and the GOB's strategy should be reviewed for consistence and compatibility.

(3) The MOA is currently reviewing and assessing its overall operations and management under the Commercialization of Alternative Crops (CAC) Project. The assessments are to be reviewed and their findings and recommendations analyzed as to the impact on the existing USAID project portfolio and the ramification of future project activities.

(4) Analyze constraints prevalent in the agriculture sector and determine their impact on agricultural development in Belize vis a vis regional/world markets, and surrounding countries.

(5) Based on an analysis of the constraints in the agriculture sector, provide recommendations vis a vis state-of-the-art concerns regarding technology and innovations which can provide focus for current and proposed project activities.

(6) Analyze the Host Country institutions (e.g., MOA, DFC) and USAID's capabilities and resources in carrying out the agricultural strategy and development activities which emerge from the analysis completed of the agricultural sector.

ARTICLE IV - REPORTS

A. The contractor will complete a concise report which contains the findings of the analysis and recommendations which take into consideration the micro/macro factors of the agriculture sector of Belize. The report should utilize graphs and charts as appropriate and provide the Mission with an analytical framework regarding the major influences in the USAID program in Belize as described in Article III.

The contractor shall provide five copies of the draft report no later than thirty days after departure from post. Within 15 days of USAID's approval of the draft, the contractor will finalize the report and provide twenty-five copies to USAID/Belize.

ARTICLE V - RELATIONSHIP AND RESPONSIBILITIES

The contractor will work under the technical direction of the Agricultural Development Officer or his designee, USAID/Belize.

ARTICLE VI - TERM OF PERFORMANCE

A. The effective date of this delivery order is July 18, 1988 and the estimated completion date is September 30, 1988.

B. Subject to the ceiling price established in this delivery order, and with prior written approval of the Project Manager (see Block No. 5 on the cover Page), Contractor is authorized to extend the estimated completion date, provided that such extension does not cause the elapsed time for completion of the work, including the furnishing of all deliverables, to extend beyond 30 calendar days from the original estimated completion date. The Contractor shall attach a copy of the Project Manager's approval for any extension of the term of this Delivery Order to the final voucher submitted for payment.

C. It is the contractor's responsibility to ensure that Project Manager - approved adjustments to the original estimated completion date do not result in costs incurred which exceed the ceiling price of this delivery order. Under no circumstances shall such adjustments authorize the Contractor to be paid any sum in excess of the ceiling price.

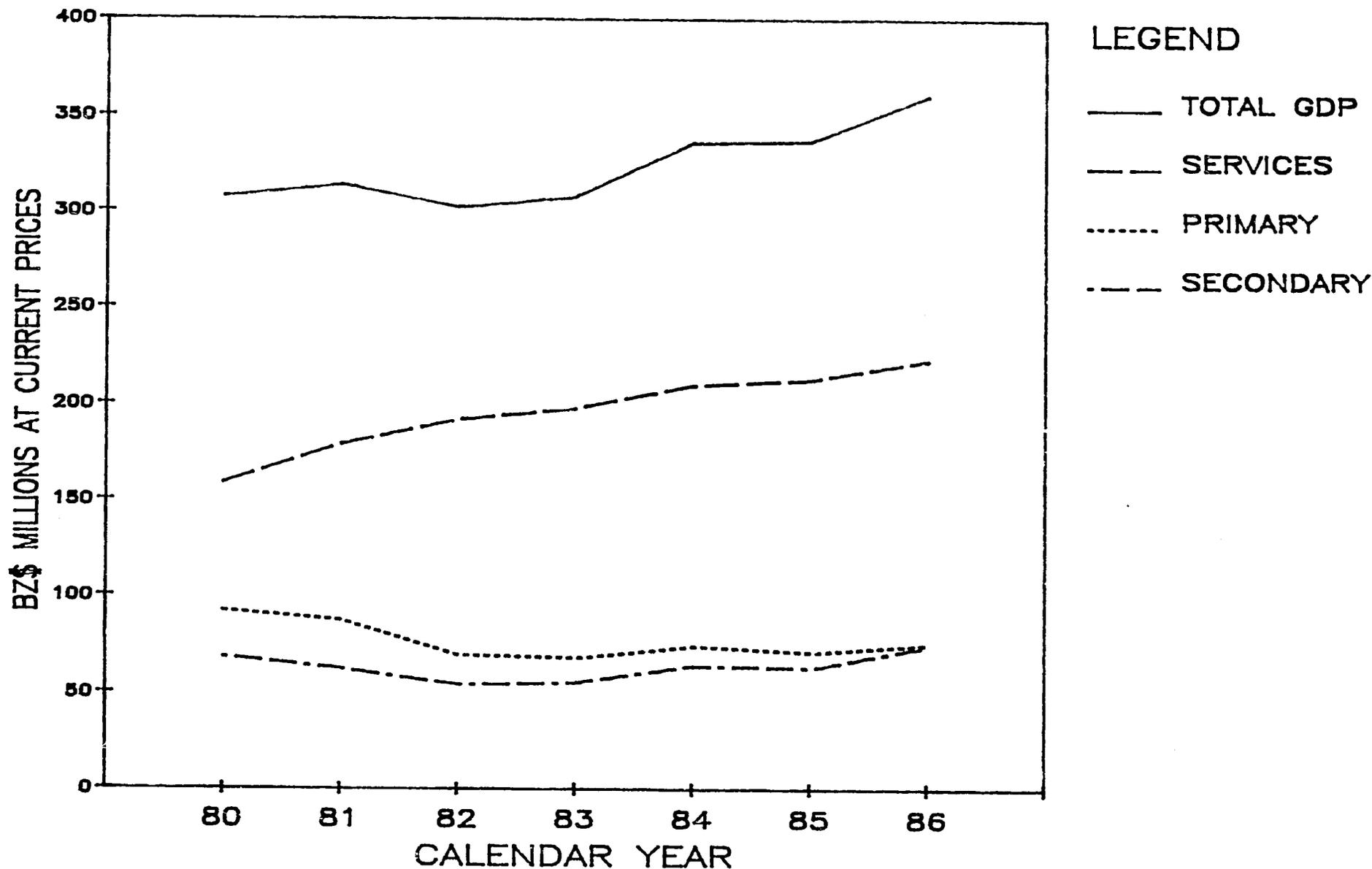
D. Adjustments which will cause the elapsed time for completion of the work to exceed the original estimated completion date by more than 30 calendar days must be approved in advance by the Contracting Officer.

ANNEX B

Statistical Annex

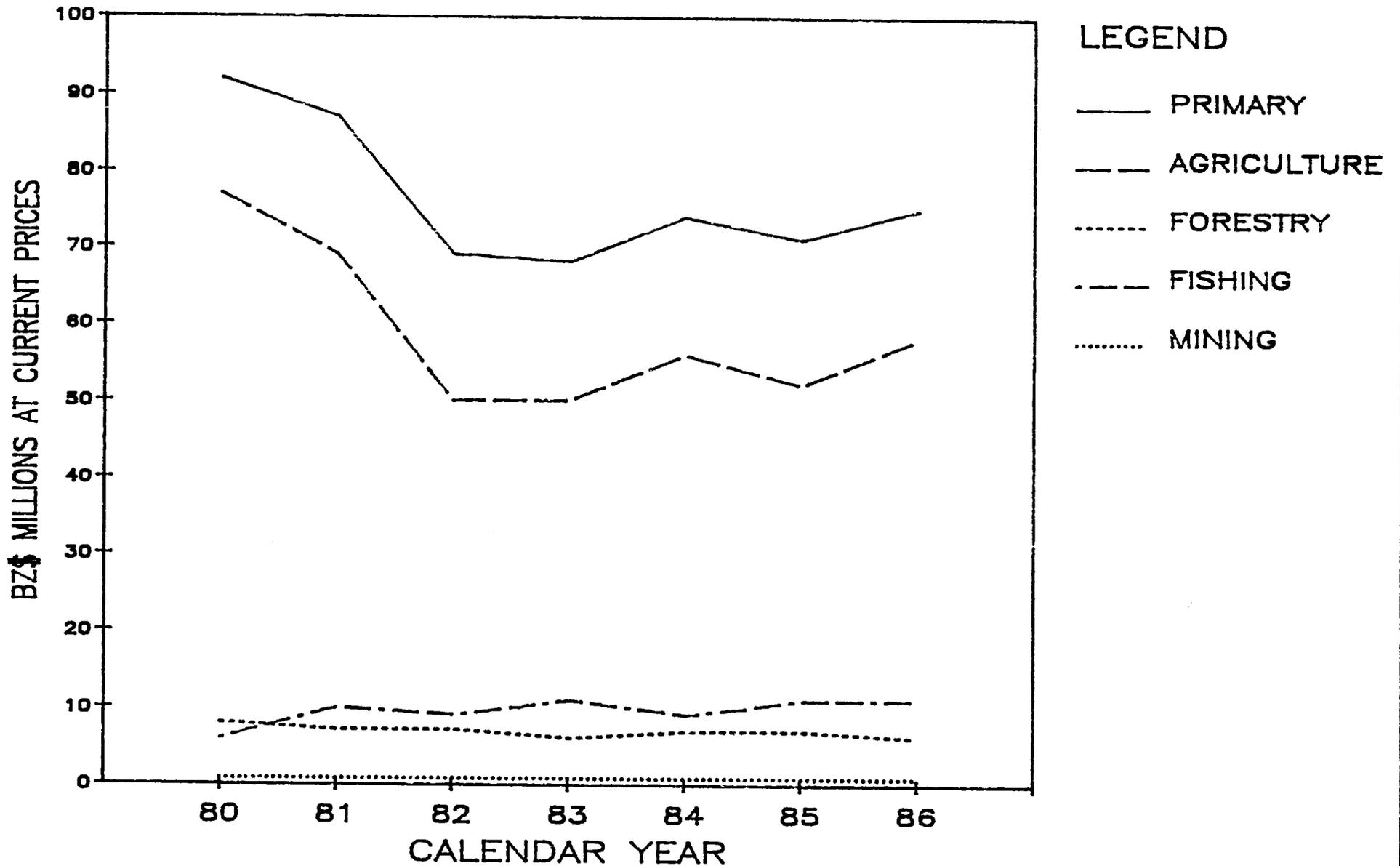
Annex B - Figure 1

GROSS DOMESTIC PRODUCT 1980-1986



B-1

Annex B - Figure 2 GROSS DOMESTIC PRODUCT
1980-1986



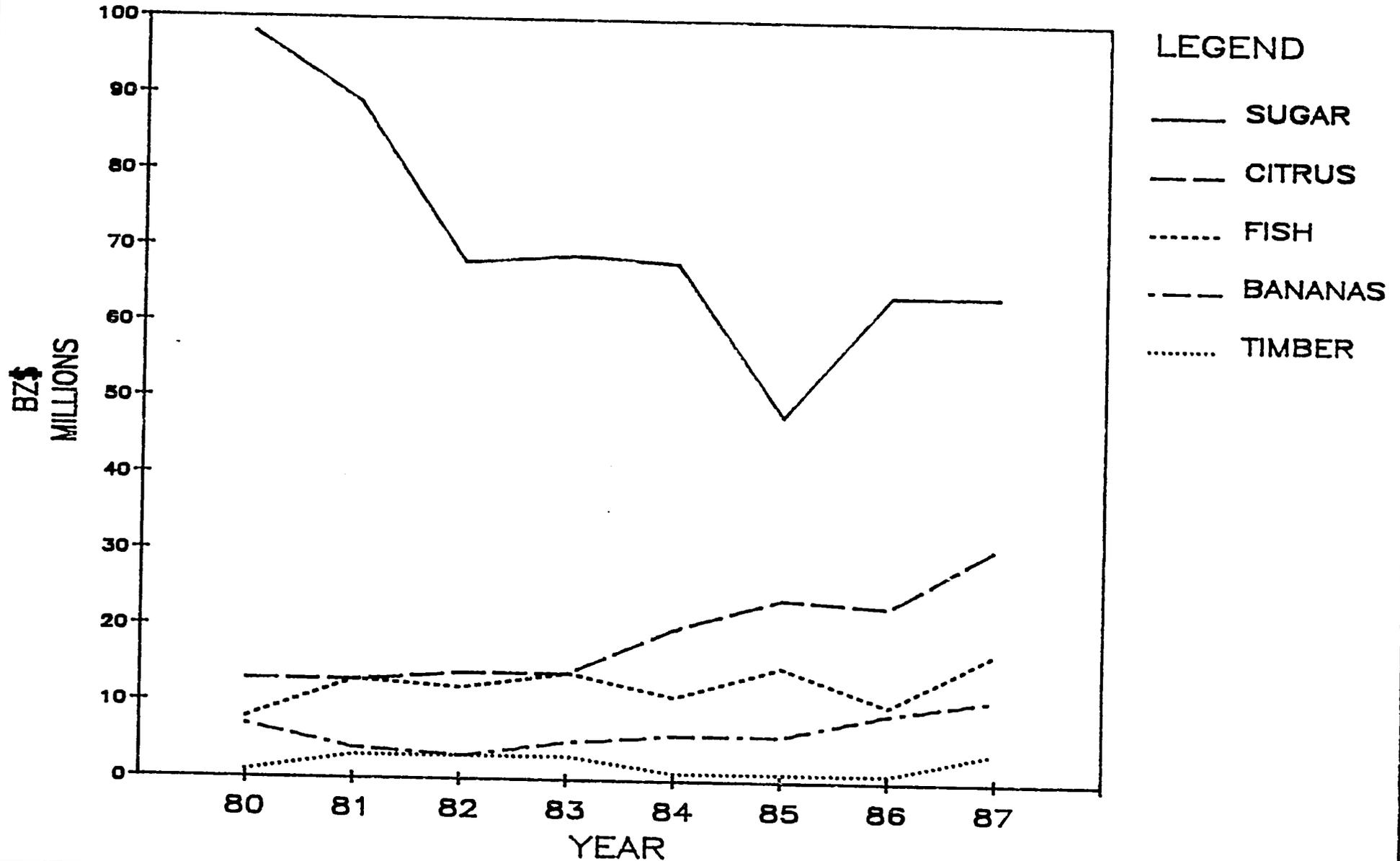
ANNEX B

Table 1: GROSS DOMESTIC PRODUCT BY SECTOR, 1980-86
(million BZ\$) in current prices

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
TOTAL GDP	308	314	302	308	336	337	361
<u>SECTOR</u>							
				<u>PERCENTAGES</u>			
PRIMARY	30	28	23	22	22	21	21
Agriculture	25	22	17	16	17	15	16
Forestry, Fishing and Mining	5	6	6	6	5	6	5
SECONDARY	22	20	18	18	19	19	21
Manufacturing	15	13	10	12	11	10	11
Construction	6	7	6	5	6	6	6
Electricity and Water	1	1	2	1	2	3	4
SERVICE	52	57	64	64	63	63	62
Trade, Rest./Hotel	18	18	18	15	16	15	15
Public Administration	8	9	12	13	12	12	13
Other Services	26	27	34	36	35	36	34
Per Capita GDP	2,119	2,009	1,972	1,956	2,071	2,028	2,120

Source: Central Statistical Office, 1987, plus calculations.

AGRICULTURAL EXPORTS 1980-1987

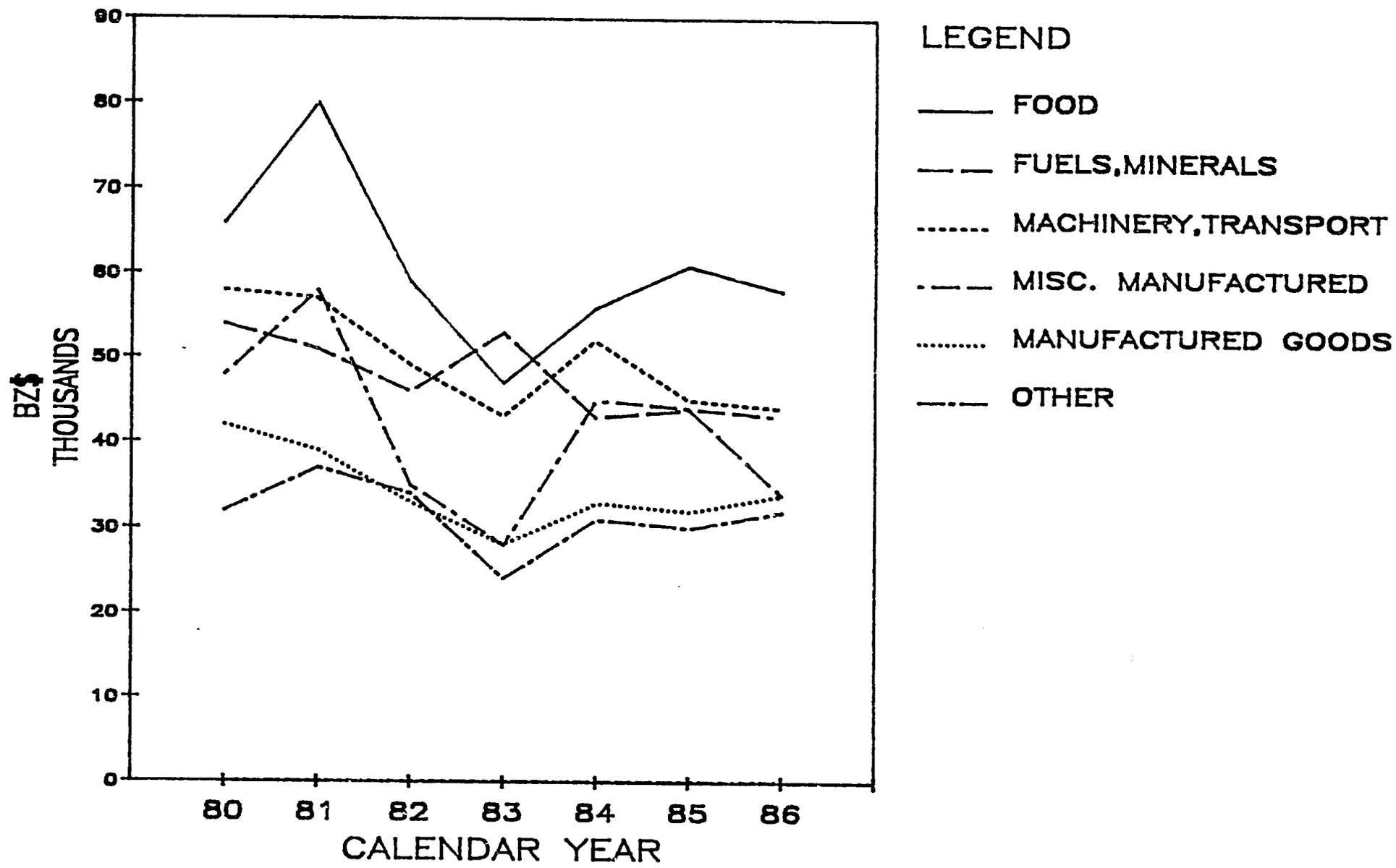


Annex B - Table 2: MAJOR EXPORTS, 1980-1986

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
TOTAL VALUE (million BZ\$ in current prices)	164	150	120	130	142	129	146	164
<u>Category</u>	<u>Percentages</u>							
Sugar and Molasses	61	59	56	54	48	37	44	39
Citrus Products	8	9	12	11	14	19	16	19
Fish Products	5	10	11	11	8	12	7	10
Timber	2	2	3	2	1	1	1	3
Garments	18	15	11	13	21	24	22	19
Other	<u>6</u>	<u>5</u>	<u>7</u>	<u>9</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>10</u>
TOTAL	100	100	100	100	100	100	100	100

Source: Central Statistical Office, 1987.

GROSS IMPORTS 1980-1986



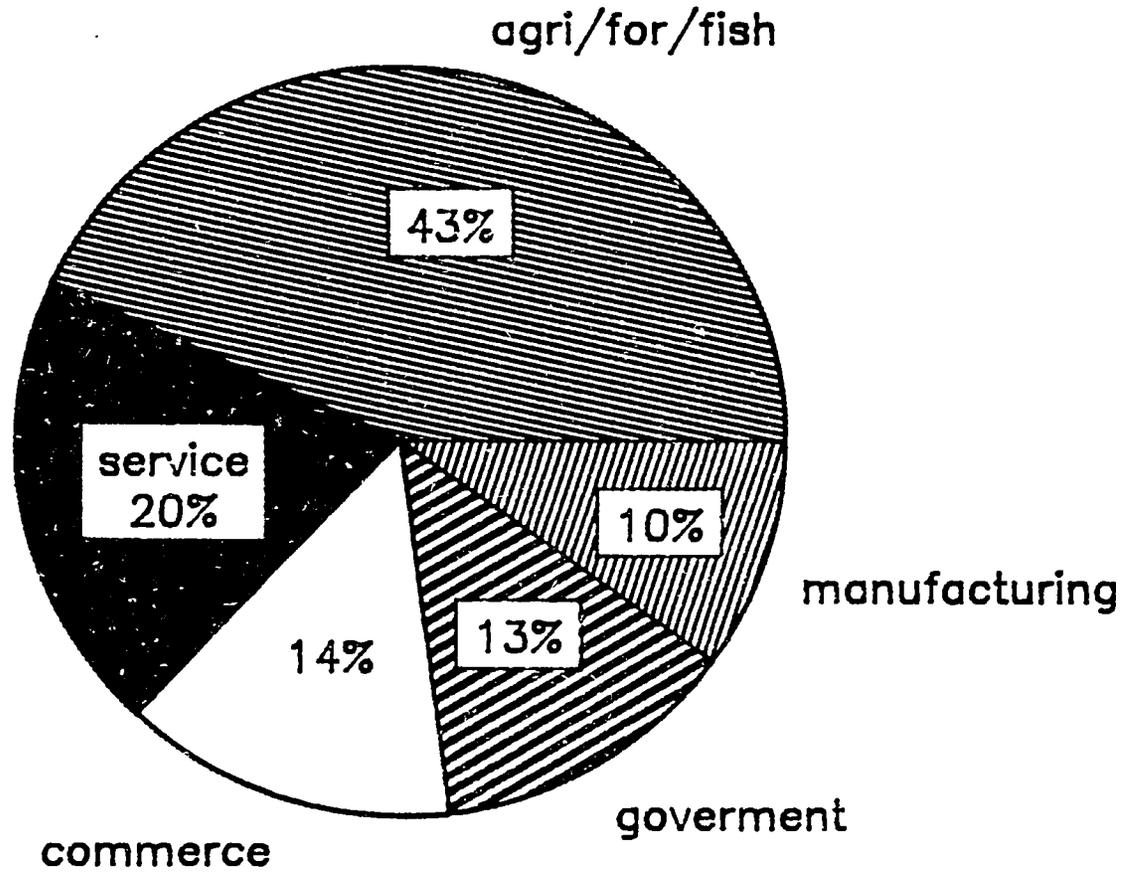
Annex B - Table 3: MAJOR IMPORTS BY COMMODITY GROUPING, 1980-86

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
TOTAL VALUE (million BZ\$ in current prices)	300	324	256	224	260	256	244
<u>Category</u>	<u>Percentages</u>						
Food, Beverages, Tobacco	24	27	35	26	24	27	27
Manufacturing	30	30	26	26	30	30	31
Machinery	19	18	18	17	20	18	18
Fuel, Minerals, Lub.	18	16	18	20	17	17	14
Chemicals	7	7	9	9	8	8	8
Other	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>2</u>
TOTAL	100	100	100	100	100	100	100

Source: Central Statistical Office, 1987.

H6

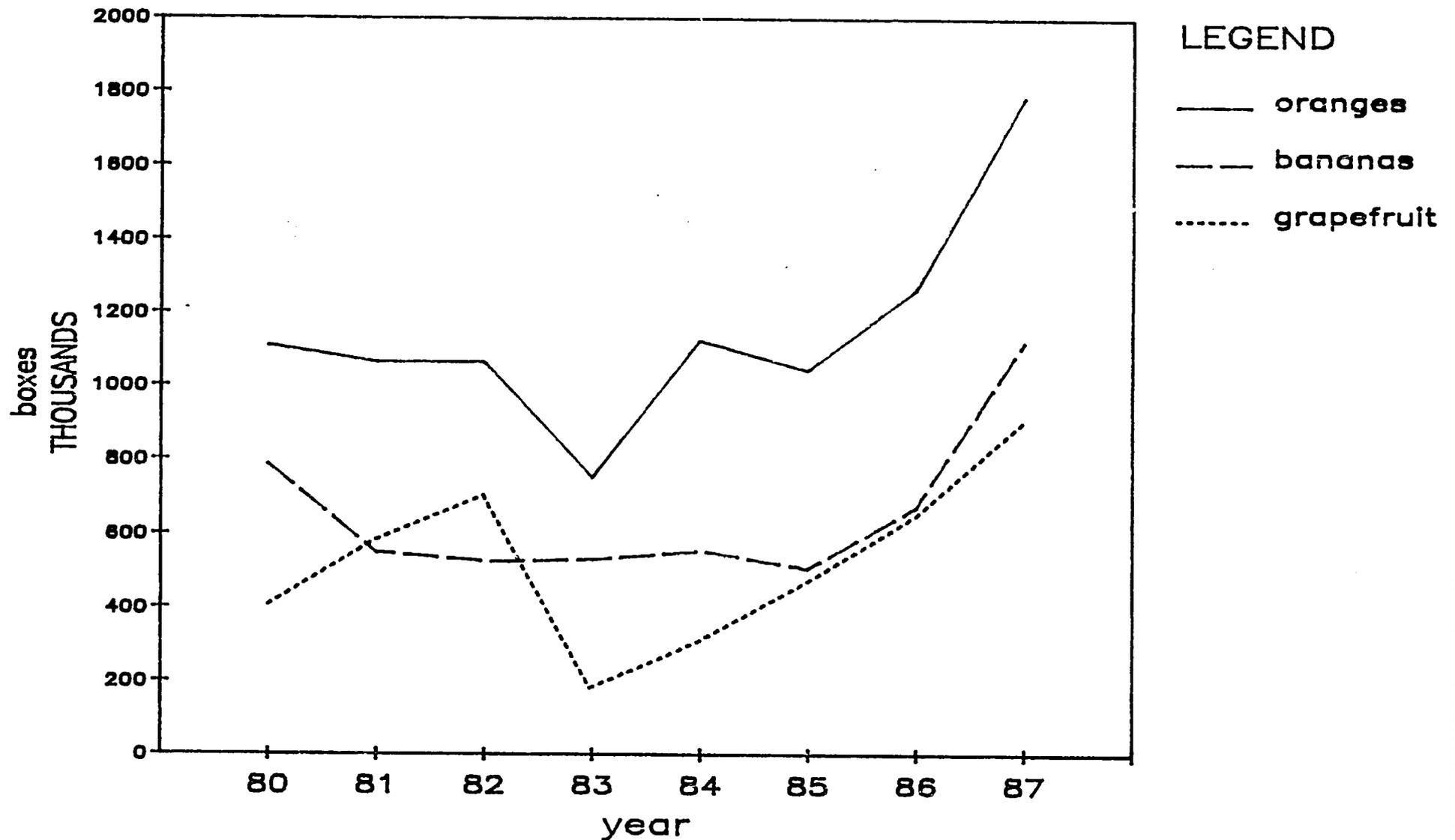
labor force utilization 1982



B-8

1982

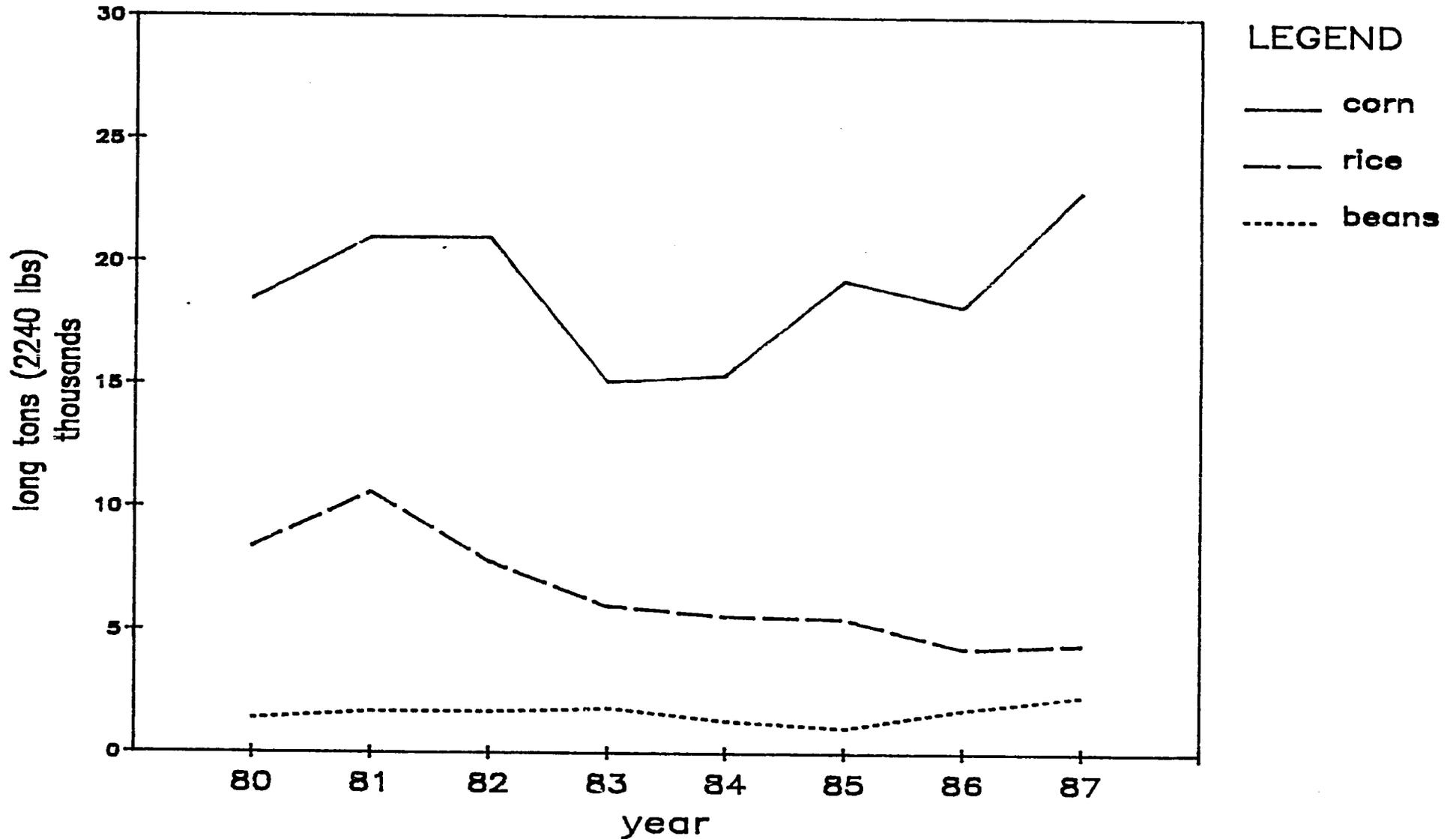
production citrus and bananas 1980-1987



B-9

Annex B - Figure 7

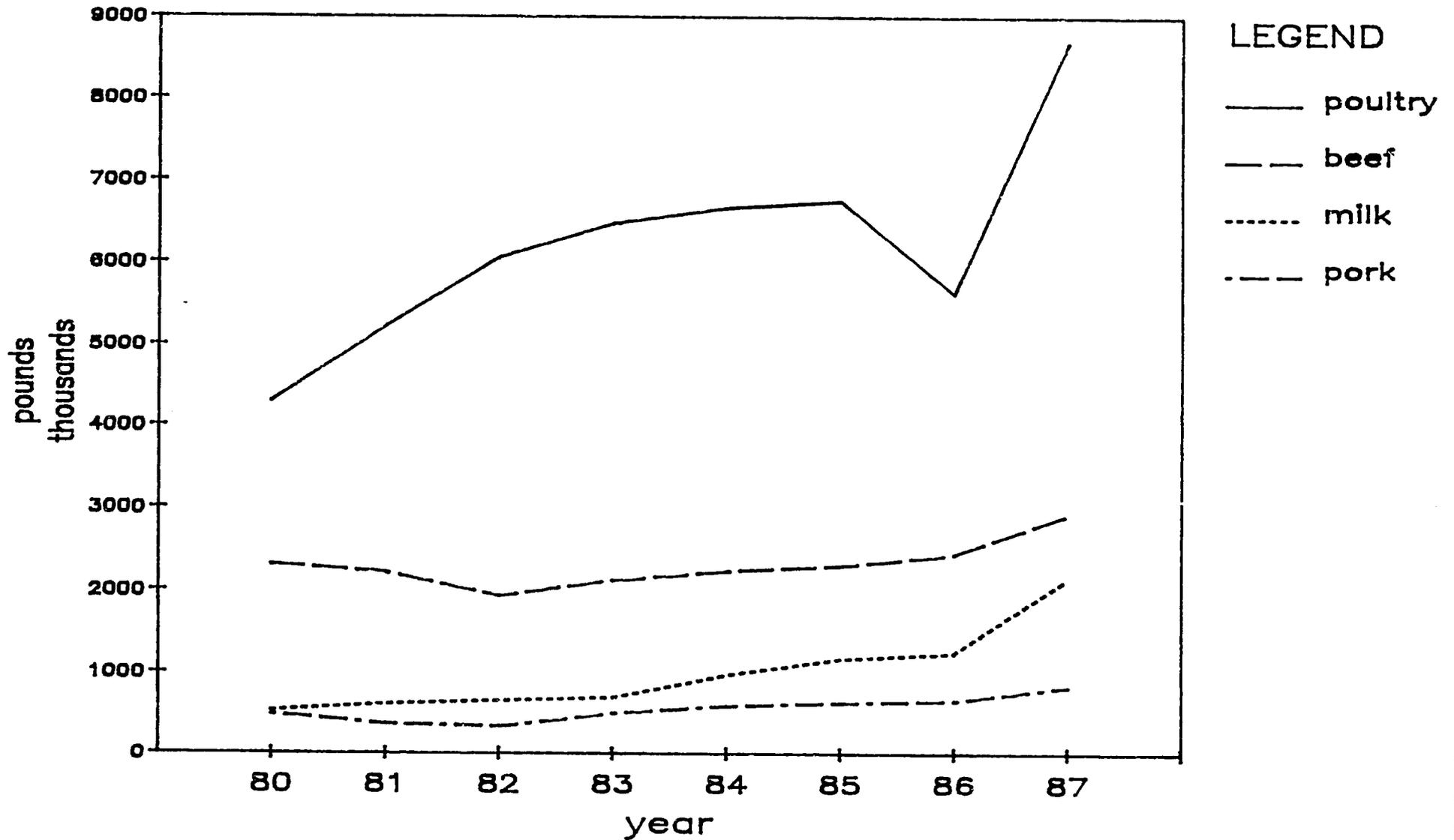
production basic grains 1980-1987



B-10

Annex B - Figure 8

production livestock industry 1980-1987



Annex C

Policy Option Priorities Developed
by MOA Working Groups With the
Support of the USAID Program to
Strengthen the Belize Ministry of Agriculture

- . Crops
- . Livestock
- . Inputs

Annex C: Commodities and Production Inputs Included in the Policy Driven MOA Work Plans and Their Policy Option Priorities

CROPS

- C - 1 Corn/Sorghum
- C - 2 Rice
- C - 3 R K Beans
- C - 4 Sugar
- C - 5 Citrus
- C - 6 Mango
- C - 7 Bananas
- C - 8 Cocoa
- C - 9 Vegetables
- C - 10 Soybeans
- C - 11 Root Crops

LIVESTOCK

- L - 1 Beef
- L - 2 Dairy
- L - 3 Swine
- L - 4 Poultry
- L - 5 Aquaculture
- L - 6 Honey

PRODUCTION INPUTS

- I - 1 Animal Feeds
- I - 2 Fertilizer
- I - 3 Credit
- I - 4 Pesticides
- I - 5 Plant Protection

C-1

Annex C continued: Policy Action Priorities

<u>Crops</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1992/93</u>
RICE C-2	Harvesting and drying research Dev. milling facilities in other districts	Increase production and productivity Standardize varieties in seed certification programme	Price stabilization Ongoing
<u>BEANS C-3</u>	Increase production through research and extension (Identify appropriate varieties and cultural practices Post harvest practices Regularize seed procurement(certification, varieties) and time of procurement	Production of certified seed Irrigation with BABCO beans Coordinate internal marketing activities with BEIPO-other markets and other import agencies	Ongoing Ongoing
<u>CORN C-1</u>	Marketing Post-harvest processing	Improve productivity through research/extension; seed production-synthetics and hybrids	Ongoing
<u>SOYBEANS C-10</u>	Utilization processing into animal feed Production and post-harvest Seed production	Production expansion if feasible; on farm utilization for feed	Oil-extraction
<u>VEGETABLES C-9</u> Cabbages	Plant protection Variatal identification Production post-harvest	Work with MOC to restrict imports and encourage year-round production of cabbage, onions, tomatos, sweet peppers, cucumbers	

<u>Crops contd)</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1992/93</u>
<u>ROOT CROPS C-11</u>	Identify varieties and multiply seeds for distribution	Research-introduce new accessions (tissue culture) from UWI, IITA	Ongoing
<u>MANGO C-6</u>	Expand production Fruit fly control	Ongoing	Ongoing
<u>CITRUS C-5</u>	Market lobbying overseas	Ongoing	Ongoing
<u>BANANAS C-7</u>	Nursery expansion Expand production	Ongoing	Ongoing
<u>SUGARCANE C-4</u>	Increase production through productivity	Alternative uses Diversification	Ongoing
<u>COCOA C-8</u>	Intensify vegetative propagation as alternative to hybrid seeds Increase acreage	Ongoing	Ongoing

POLICY ACTION PRIORITIES

<u>Livestock</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
<u>BEEF</u>			
<u>CATTLE L-1</u>	Improve production efficiency	Ongoing Training at MSC level of animal breeder	Ongoing
	Protect animal and human health by ensuring imported standards and trade obligation	Ongoing Employment of three vet officers and two livestock officers plus one pasture officer	Ongoing
	Improve performance of livestock marketing	Establish facilities at PMP showgrounds and establish grading standards	Ongoing
	Freedom to export and residue testing	Expand lab facilities at Central Farm and purchase lab equipment for C/F and Belize Lab	Transfer equipment and personnel from Belize Vet Lab to C/
	Eradicate Screwworm	Employ Biochemist or vet officer inspectors Purchase equipment and vehicles	Ongoing
	Reduce Cattle Rustling	Continue enforcing law and upgrade legislation	Ongoing

POLICY ACTION PRIORITIES

<u>Livestock</u> (contd)	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
<u>DAIRY L-2</u>	Increase produc- tion, productivity	Ongoing	Ongoing
	Training in Animal Breeding	Ongoing	Review/design breeding pro- gramme for implementation
	Increase dairy extension and improve product quality	Ongoing	Ongoing
	Expand Pasture Improvement Pro- gram		
	Establish an Arti- ficial Insemination Program in Cayo and Orange Walk Dists.	Ongoing	Ongoing
	Establish quality enforcement stan- dards for milk and dairy products by enactment of legi- slation	Ongoing	
	Continue to inte- grate livestock production and health activities of the MOA		
	Encourage the man- ufacture of diver- sified dairy prod- ucts such as cheese, yogurt, etc.	Ongoing	

POLICY ACTION PRIORITIES

<u>Livestock</u> (contd)	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
	Upgrade Vet Lab for ELISA Serology		
	Determine how to address fowl typhoid situation and implement decision	Continue implementation	
	Encourage satellite production near processing plants	Ongoing	Ongoing
	Restrict import permits-MOC	Ongoing	
	Encourage use of rations containing local agric. byproducts	Ongoing	
	Evaluate alternative sources of production inputs		
<u>Aquaculture & Fishery L-5</u>	Evaluate adequacy of processing and forecast need (shrimp)	Encourage expansion of Coops	Provide for inspection of quality
	Expand, complete development plan for fisheries department	Expand facilities and equipment	Expand staff
	Investigate with MOWH roads, bridges, etc. required for aquaculture	Proceed with construction	Expand construction
	Train and upgrade management of Coops	Expand courses	Ongoing
	Diversify by survey of species available profitably	Assist in development fundable private projects	Assist growth

Markets/price Work with coops on development of markets Monitor prices and volume	Develop fair domestic market pricing	Continue domes- stic and export market develop- ment
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POLICY ACTION PRIORITIES

<u>Livestock</u> (contd)	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
<u>SWINE L-3</u>	Increase pork production and improve efficiency Extension pkg Improve nutrition	Ongoing Importation of breeding stock	Ongoing Ongoing
	Extend output and efficiency of pork processing	Ongoing training of meat inspectors, meat pro- cessor, livestock technicians and ex- tension staff	Ongoing
	Improve marketing	Establish central buying centre at BMP showgrounds. Establish grading systems	Ongoing
<u>POULTRY L-4</u>	Monitor industry Design and imple- ment enabling legi- slation to regulate industry	Enforce	Ongoing
	Implement, enforce legislation where possible	Improve laboratory testing facilities	
	Train Poultry Specialist		
	Monitor supply, demand and prices	Ongoing	Ongoing
	Expand Output Assessment of di- sease conditions affecting industry	Ongoing	Ongoing

<u>Livestock</u> (contd) <u>HONEY L-6</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
	Increase exports Upgrade training Expand work with coops Expand extension training	Maintain quality Ongoing Inspection require- ments Added training and apiary insectors	Increase in- spection. On- going. Upgrade sampling Added training of beekeepers
	Improve control & management of Afri- canized bee	Emphasize utiliza- tion of Africanized bee	Expand utiliza- tion of Afri- canized bee
	Establish Queen rearing programs	Expand Queen program	Provide virgin Queens to all beekeepers
	Prepare Cabinet Paper on: -African Bee -Beekeeping Council	Enact legislation	Establish bee- keeping council
<u>Animal Feed</u> <u>I-1</u> (as treated by livestock group)	Expand manufacturing of animal feeds by use of by-products	Ongoing research	Ongoing
	Animal Nutrition a) silage b) pasture expansion	MSc training in animal nutrition On farms research at Central Farm and private farms	Ongoing Ongoing
	Establish seed bank	Increase seed pro- duction of nursery establishment Continue research on adaptable varieties	Ongoing

POLICY ACTION PRIORITIES

<u>Production Inputs</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
<u>Animal Feeds</u> <u>I-1</u>	Continue research on animal feeds	Introduce and initi- ate legislation re- quiring a license to operate a feed mill	Consider use of soybean in feed rations for the shrimp industry
	Address the use of local by-products	Ongoing	Encourage in- vestors in set- ting up addi- tional feed mills
	Include soybean in feeding trials	Expand	Ongoing
	Address the area of quality control in feed rations	Enforce	Ongoing
	Review and enforce feeds and fertili- zers act	Ongoing	Ongoing
	Regulate and control importation of animal feed and feed in- gredients emphasising domestic production	Ongoing	Ongoing
	Promote continued pasture improvement	Ongoing	Ongoing

POLICY ACTION PRIORITIES

<u>Production</u> <u>Inputs(contd)</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
<u>Plant Protec-</u> <u>tion I-5</u>	Improve and regulate quarantine services	Develop an Integrated Pest Management Program	Ongoing
	Reactivate and intensify the trapping programs	Ongoing	
	Increase training on plant protection and distribution of available information	Ongoing	
	Assure control and eradication of current and other diseases or pest	Ongoing	
<u>PESTICIDES</u> <u>I-4</u>	Implement the pesticide control act	Ongoing	Ongoing
	Disseminate information and increase public awareness on use of pesticides	Ongoing	Ongoing
<u>CREDIT</u> <u>I-3</u>	Sensitize farmers and lending agencies in acquisition, availability of credit	Ongoing	Ongoing
	Educate farmers in effective use of credit and management control	Ongoing	Ongoing

FERTILIZERS
I-2

Ensure quality	Advise and recommend provision of concessions on establishment of an additional fertilizer factory	Ongoing
Extend educational activities on fertilizer use		Ongoing
Encourage and evaluate use of organic fertilizers		Ongoing

ANNEX D

List of Persons Contacted

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ANNEX E

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