

Agricultural Development Management and Operational Strategy (ADMOS)

(TCP/BELIZE/2003A)

Synthesis

The ADMOS is a means to increasing the competitiveness of the agricultural commodity sector in order to reduce food insecurity and poverty, and promote dynamic processes of rural and agricultural development in Belize. The strategy is directed at facilitating the private sector to access value-added commodity opportunities through addressing several of the major constraints facing agricultural and rural development in Belize. The strategy is characterized by three major programs targeted at the agricultural and rural sectors. The total strategy is estimated to cost BZ\$8.35 million and the three programs are designed to a) improve incentive policies and agricultural support institutions(BZ\$1.39mn) b) promote development of agricultural markets and enterprises (BZ\$2.38mn) and c) strengthen the agricultural technology development and transfer frameworks(BZ\$4.58mn). A clear management and monitoring process, that includes a computerized management tool and specific institutional points and collaborating partners responsible for the implementation of the strategy over a five year period is presented. Four reports prepared by national consultants and an international consultant serve as background for the more detailed strategy report and this synthesis report.

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1 Introduction

The general objective of the FAO project (TCP/BEL/2003A) is to work with the Ministry of Agriculture in the design of an ‘Agricultural Development Management and Operational Strategy’(ADMOS) as a means to increasing food security, reducing poverty and promoting dynamic processes of rural and agricultural development. The strategy is characterized by the following fundamental principles:

- it embodies an enterprise market oriented approach that emphasises private, public and community sector linkages
- it recognizes the importance of agricultural trade policy and trade negotiations in shaping consumption, production and marketing outcomes
- it seeks to establish improved information, technology and management systems as critical catalysts to change and sustainability
- it pursues competitiveness as the basis for the creation, accessing and maintenance of market opportunities
- it is a practical tool that facilitates operationalization, implementation and monitoring of the strategy

The approach to the development of the operational strategy incorporates the seven elements presented in Figure 1. This synthesis presents a brief summary of the first five elements (economic context, constraints, opportunities, goals and policy), with more detail on the last three elements (policies, programs, implementation & monitoring). The context (Chap. 2) outlines the economic challenges nationally and internationally which influence the direction (goals) and capacity (resources) for the agricultural sector but generally are outside of the immediate jurisdiction of the main institutional body responsible for agricultural sector development. The major constraints (Chap. 3) are those factors that need to be addressed in the effort to promote the establishment of a dynamic and growing rural and agricultural sector. Opportunities (Chap. 4) are areas where it is concluded on the basis of current evidence that Belize can produce efficiently and competitively in particular markets at the national, regional or international levels. The agricultural sector objectives (Chap.5) are summarized as stated by the Government of Belize, both in terms of its structure and outcomes. The policies (Chap. 6) characterize and influence the production environment and incentive framework that stimulates and facilitates the programs and their implementation for successfully achieving the goals and establishing a dynamic and sustainable agricultural sector.

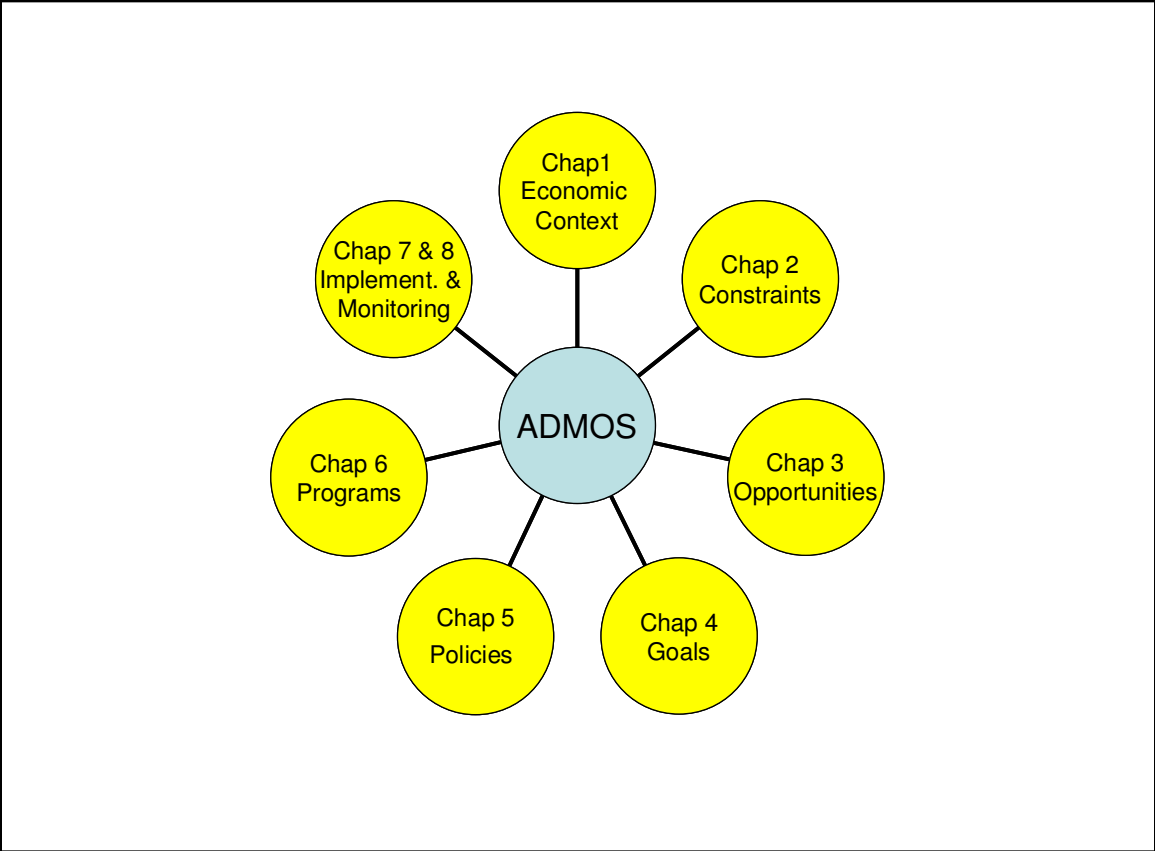
The agricultural sector strategy emphasizes a commodity approach taking into consideration the economic context and the short to medium term expected trends. It also builds on the vision and goals stated by the Government, by pursuing an increase in competitiveness, particularly of small farmers, market development at both the domestic and international level, institutional coordination and collaboration strengthening, and by placing special attention to disadvantaged areas and social groups.

Accordingly, the structure of the strategy (Chap 7) proposes three main interlinked programs which focus on incentives and institutional strengthening, development of agricultural markets

and enterprises, and agricultural technology development and product diversification. Each of the programs is presented in terms of three main components (outputs, actions and budget).

In the last chapter (Chap 8) a brief illustration is provided of preliminary computerized framework for: i) measuring the progress of the implementation of the programs,; ii) managing the human and financial resources allocated; iii) ensuring consistency with other related programs and leveraging funds.

Figure 1: Conceptual Approach to Development of the Operational Strategy



2 Economic Context

When considered over the past fifteen years it can be concluded that the small population of Belize (260,000), the solid growth performance of the economy (an average of 7.2% between 1997 and 2003), the positive investment environment (low inflation and stable exchange rate), the specific preferential commodity opportunities (sugar, bananas, citrus), and an expanding tourism sector, have enabled Belize to achieve a relatively higher standard of living among developing countries as measured by per capita income, BZ\$ 3,612 (2003).

Recently, several factors have caused concern and point to the need for change. Most fundamentally, while the need for increased export earnings has expanded, the traditional

opportunities have declined. On the one hand, the outstanding external debt (public debt and publicly guaranteed debt) as a percentage of GDP increased from 32 % in 1998 to 86 % in 2002 and the external public debt service ratio more than doubled between 1998 and 2003, increasing from 3.6 percent to 9.8 percent. Further, Central Bank data shows that while merchandise exports increased from BZ\$194 Million in 1998 to BZ\$316 Million in 2003, merchandise imports increased from BZ\$294 Million to BZ\$526 Million during the same period, thereby giving rise to a trade balance that widened from approximately BZ\$ -100 million to BZ\$ - 209 million. On the other hand, trade liberalization as reflected by the Uruguay Round Agreement has placed increased pressure for reform of agricultural markets in both developed and developing countries and this has contributed to increased competition, decreased returns and declining market opportunities for the traditional agricultural products, sugar, bananas and citrus from some developing countries that traded under preferential schemes. Changes in the Common Agriculture Policy (CAP) of the European Union as it relates to sugar, and ongoing negotiations under the World Trade Organization (WTO) affecting bananas are important examples of the uncertainty and dismal outlook. Further, under the CBI Belize enjoys duty-free access for several exports to the U.S.A., the most important being citrus concentrate. It is projected, however, that with NAFTA these benefits are likely be eroded in the long-run, unless future trade agreements provide “more favourable” benefits to Belize and other Caribbean countries. Duty-free market access for other commodities such as papayas, peppers, fish products, dried fruits and other ‘niche’ products will similarly be threatened when the CBI agreement ends and/or the preferences are eroded. Given this context and outlook for these commodities, the focus on competitiveness, diversification and value added products was established at the outset as essential dimensions of the strategy.

More recently, the Government of Belize has responded to the imbalances in its macroeconomic accounts by introducing austerity measures affecting both the public and private sector. This has resulted in a loss of resources, both human and financial by the Ministry of Agriculture. For the private agricultural sector it has led to increased land taxes and other disincentives to production. While the efforts to achieve a better national financial equilibrium are proceeding, it is essential that the measures decided on and implemented arise out of a careful process of evaluation in order to ensure that future years bring an improved situation. In this regard, the importance of the agricultural sector to GDP and its role as a productive sector and growth pole for the economy needs particular analysis as decisions are made at the national level and specifically in the macro financial management context. Given the foreign exchange income earning capacity of the agricultural sector and its considerable linkages and multiplier effects throughout the economy, perhaps the net effect of the current macro financial management measures on the agricultural sector should be an increased allocation of resources not a decrease. In other words, adjustments for increased efficiency should be made by the agriculture sector just as any other sector but the growth and expansion of the agriculture sector as a source of income should, in the final analysis, perhaps be promoted.

While reference is made to a relatively high average per capita income in Belize it is recognized that the distribution of income is skewed toward the urban areas. Thus, while the 2002 poverty estimates indicate that nationally about 11 percent of the population was very poor or indigent and that some 34 percent was poor, the equivalent rates for the Toledo district were 56 % and

79%. Cognizant of this poverty situation, ADMOS is targeting disadvantaged social groups and geographical areas.

The risk of food insecurity in Belize arises from essentially two situations. Firstly, chronic situations that undermine income earning capacity and purchasing power resulting in limited access to the food that is needed. This is a poverty and income earning opportunity problem and is evidenced by the more than 35 % of the Belizean population that is estimated to be at risk of food insecurity, with some 15 % of school children between six and nine years old suffering from growth retardation (cited in the Food and Nutrition Security Policy for Belize). Secondly, there are transitory situations that exacerbate the vulnerability of the population, such as natural disasters that sharply increase the risks of food insecurity.

3 Major Constraints

The major constraints to be addressed are presented as failures in four areas – markets, institutions, technology system and more general system failures:

3.1 *Market (information, investment) failures*

The failures that characterize the Belize agricultural sector in this area are:

Lack of a market information system that provides price, volume and other market data on a timely basis - this limits effective decision-making, efficient allocation of resources and the required dynamism to compete in a more open trading environment.

Limited incentive systems, especially for small farmers - this increases the level of risk involved in investing in new agricultural ventures. Increasing access to credit, especially reducing its cost and related transaction costs is particularly important.

Weak marketing system services (inadequate transportation, storage, packaging and lack of adequate levels of grades/standards) – this reduces ability to access several value added markets (processed and organic, supermarket and hotel outlets) because of unreliable quality, consistency and timeliness. This also results in higher post harvest losses.

Limited emphasis on market and financial analysis - this results in production, processing and marketing decisions that do not advance competitiveness and sustainability.

Inadequate attention to market development – this results in continued dependence on uncertain markets and increases impacts when a particular market outlet is no longer attractive. This includes lack of adaptation to changing market demand.

3.2 *Institutional (policy, infrastructure, services) failures*

The failures that characterize the Belize agricultural sector in this area are:

Inadequate policy commitment – this often results from poor promotion and weak participation by stakeholders in the identification of agricultural and food policy objectives, including public and private sector personnel as well as development partners.

Inadequate infrastructure – this results in high costs of fuel, electricity, telecommunications, and a limited amount of secondary and feeder roads in rural areas, all contributing to high costs of production

Inadequate agricultural sector services – weak input support and education systems as well as those related to standards, surveillance and quarantine results in the productive sector not having the appropriate technology, inputs and protection measures.

Inadequate drainage and irrigation facilities – this limits the length of the cropping season, resulting in low yields and low product quality.

Weak institutional coordination and partnerships – increased efficiency could be achieved at all organizational levels, within the public sector, between the private and the public sector and with local organizations and development partners to better create and access opportunities for development.

Uncertain land tenure – this limits investment and natural resource protection.

3.3 Technology system (research, technology transfer, human resource development) failures

Lack of adequate technology planning and policy systems – this is a particularly weak area in Belize. Identification of research priorities should better emphasize stakeholder needs. An institutional system for technology development needs to be defined.

Inadequate research and technology development – particular attention should be paid to the requirements of main food crops and products of export interest in order to increase the chances of being competitive in quality and price.

Inadequate technology transfer and dissemination systems, both in terms of conventional extension systems and more decentralized farmer and community based systems, and linkages with other complementary services - – this limits the transformation of technology products into usable information and as a result improved marketed products

Lack of a comprehensive and coherent policy on agricultural education – a low level of education is a barrier to accessing information and livelihood opportunities, therefore compounding poverty, especially for women.

3.4 *More general system failures*

Weak linkages between agriculture and other sectors – this is especially so in terms of governmental bodies (e.g., Health and Agriculture Ministry linkages) and other productive sectors (such as the private agricultural and tourism sector)

Inadequate integration at the international, regional, national and local levels leading to weak coordination, increased duplication and less synergies in tackling shared objectives, often with the same target beneficiaries.

Weak governance and institutional response capacity - this results in an unattractive investment environment. This includes inadequate responses on issues such as praedial larceny and social safety nets.

4 Opportunities

There are a number of opportunities that are repeatedly identified as being a part of any successful strategy to further develop rural areas across Belize. The most fundamental is **diversification** within the traditional sector (more value added products and to a greater number of markets) and other sectors (both for food crops and livestock, for the domestic and international market). The concentration of current production activity on a few traditional exports at the primary product level can be interpreted as an opportunity to use already developed infrastructure and other resources expand current production as well as to produce different and greater value-added products. The specific alternative markets where products have been traded, but only to a very limited extent, is an opportunity. The potential to increase productivity by moving away from a reliance on rain fed agriculture in the non traditional production systems can be capitalized on. The unique position of Belize close to large markets in the USA and Mexico and the perception of Belize as a part of both the Central American and Caribbean regional market should be made into a more effective trading advantage.

Belize's diversified hydrographical network creates opportunities to use available water resources for **irrigation**. This could expand year-round agricultural production through higher yields and improved quality, alleviate some of the urgent problems of food supply and increase income generation and employment. The potential for irrigation also increases from south to north, corresponding with some of the geographical areas of greatest need and also some of the niche market production experience. The current irrigated acreage of Belize is assessed to be about 8% of the cropped land or about 9,134 acres with 1862 acres under permanent irrigation and 7272 acres under temporary irrigation (Belize Farm Registry). About 66% of the current irrigation is located in the mid-south region and more than 94% is delivered by systems of low water use efficiency, sprinkler and surface.

Mixed cropping systems supplying the domestic market (**import substitutes**) are also seen as a major opportunity. Analysis of various systems has shown that mixed cropping systems reduce risk, reduce crop losses from pests and diseases and make more efficient use of farm labor. Belize has potential for reducing its food and agriculture imports (greater than BZ\$150 million in 2003) in the areas of animal feed, fruits/vegetables and some processed agriculture products.

The establishment and development of an **organic agriculture industry** in Belize is a highly rated opportunity area. The potential local and international market opportunity for organic produce from Belize is also based on small-scale farm production in areas that are considered the poorest (Toledo). The Ministry of Agriculture supports the development and strengthening of the Belize Organic Producers Association (BOPA), an association that has been established to promote organic production and marketing in Belize. The Ministry will collaborate with BOPA in the implementation of Belize Organic Agriculture Standards and the establishment of a Belize Organic System. This effort is also linked to initiatives to develop local markets for Belizean organic products through the Belize Marketing and Development Corporation (BMDC) and for visitors through the Belize Tourism Industry Association (BTIA). Most importantly, there are initiatives to exploit international market opportunities for Belizean organically produced crops. Support will also be given and opportunities sought for programs to develop the technology required for organic production, crops and livestock in Belize

The **tourism** market is seen as a direct way to partially overcome the small population and low population density that are major constraints to food and agriculture development in Belize. In 2003 tourist arrivals generated inflows of \$118 million, and this sector represents an export market that so far is largely dependent on imported fruits/vegetables and imported processed food products. To capture this large potential market, small farmers need to be better organised for distribution/marketing and for engaging in production that meets the price/quality demanded, and to be educated on the concept of contract farming and on the benefits of selling to larger reliable markets at more stable prices. The **supermarket trade** is similarly attractive considered as food purchases in supermarkets are expanding and require high quality, reliable and timely deliveries of products. These linkages remain weak in Belize and large quantities of food and related products continue to be imported.

Diversification into non traditional product **niche export markets** has had some success for large farmers (aquaculture, papayas, juices, red kidney beans and cowpeas), but there has been limited success for small farmers (hot peppers, organic cocoa, honey, plantains, coco-yam, cassava, rice and corn). Diversification into niche products by *milpa* farmers such as deer rearing, fresh water aquaculture, coco-yam, cassava, hot peppers and organic fruits/vegetables is an opportunity to contribute to the sustainability of small farmers in Belize. These products represent niche markets that are generally not of interest to the big multi-nationals due to their small size relative to other product lines. Further, they are markets where demand loyalty and consumer social commitments can be developed.

5 General Agricultural Sector Objectives

The Belize Government's vision, mission and objectives for the agricultural sector are stated in different documents as follows:

Vision

A transformed/modern sector that is fully competitive, diversified and sustainable.

Mission

To continue as the economic pillar of Belize, ensuring food security, generating income and foreign exchange, creating employment, and conserving natural resources, in order to grow the economy, reduce poverty and empower the local population for sustainable development.

Strategic Objectives

- Increase the efficiency, profitability and competitiveness of the agriculture, fisheries and cooperative sectors
- Accelerate the diversification in production, processing and exports
- Improve and conserve the natural and productive resource base to ensure long-term sustainable productivity and viability
- Improve access to productive resources and services and create economic opportunities for small/young farmers, women and indigenous people, particularly in poor, marginal areas
- Strengthen the institutional capacities to provide effective support in marketing and trade, research and extension, as well as relevant education and training
- Increasing food production, enhance food security and improve the nutritional status of the population.
- Strengthen inter-sectoral linkages, in particular with the social sectors of health and education, as well as with the strategy and action plan for poverty eradication.

Recently, and clearly building on the above, the National Food and Agricultural Policy identified seven major objectives :

- Greater efficiency in resource allocation in the long run;
- Minimizing sharp fluctuations in market prices and reducing investment risks and uncertainty in the sector;
- Promoting specific commodities for which there are identified and growing markets;
- Achieving a higher level of self-sufficiency in food production;
- Reducing financial outlays of the Government on the sector;
- Expanding inter-sectoral linkages; and
- Increasing the country's competitiveness in regional (CARICOM) and extra-regional markets.

The Ministry of Agriculture, Government of Belize is firmly committed to sustainable rural development and sees the agricultural sector (including livestock and fisheries) as providing the economic base for enhanced economic growth of the country (in particular the rural areas) and addressing poverty alleviation. The agricultural and food policies are accordingly designed to make the agricultural sector more efficient and competitive, while at the same time, contributing to the improvement of the economic and social well being of the population.

6 Policies

Several areas for policy development which require a coordinated, systematic and integrated approach are highlighted for decision and action in order to complement the strategy presented in the next sections of this document. These policy areas and actions are:

6.1 *Commodity and Trade Policy*

Diversification and competitiveness of both the traditional and non-traditional sectors are central components of the commodity and trade policy. This is driven by the need to diversify commodity production and market destinations. Obviously, the uncertainty of traditional product competitiveness and market destinations underpins this policy position. The production and marketing policies are also tied closely to trade negotiations which considerably influence a country's trade policy given the commitment to trade liberalization globally. In this regard commodity and trade policy should be both defensive in terms of maintaining border policies that protect current markets (national and international) and offensive in terms of negotiating additional market access and turning it into market entry. A clear and committed agricultural trade policy in the context of the WTO is an essential part of the stable environment that is needed by investors. The position of Belize in several areas of special and differential treatment, for instance the identification of special products and use of safeguards is important in this regard. These positions should be articulated, transparent and publicized. The latter policies would determine the effectiveness of investment incentives and link directly with marketing, information and technology policies that emphasise product differentiation, product standards, and product promotion. Further, the flexibility for Belize and other developing countries to use domestic policy measures to support its agricultural sector should be ensured. Finally, as the regulations on export competition are agreed these should not unduly restrict the role of state trading enterprises and food aid as these instruments might be important in contributing to rural area development.

6.2 *Small Farmer Development Policy*

Small-scale farming typically has a different set of constraints than the large-scale agricultural producing sector. These constraints must be taken into account in the development of strategies to promote greater added value at the smallholder level. While large farms are characterized by large acreages (in most cases over 100 acres), capital intensive and business oriented systems, producing commodities mostly destined to the export market; small farms are less than twenty acres, are labour intensive and use few off farm inputs. A small farmer targeted policy emphasizing the development of entrepreneurs and enterprises that includes aspects of all of the policies mentioned in this section is essential to achieving the goals for the sector. Small farmers producing traditional export crops are also an integral component of this policy emphasis.

6.3 *Geographical area and Territorial Policy*

Recognizing the shortage of resources generally and the importance of promoting synergies a geographical territorial approach is recommended. From the geographical standpoint a prioritization of disadvantaged areas is proposed. At the same time in each geographical area a territorial approach, emphasizing the linkages between the different agricultural and non/agricultural enterprises should be promoted. In this regard, the Toledo District as a disadvantaged area is prioritized and tourism linkages are targeted.

6.4 *Technology Policy*

The institutional approach to establishing and implementing a technology policy remains uncertain and critically needed. The commitment to the concept of Belize Institute for Agricultural Research and Development (BIARD) which was intended to address the weakness that research was scattered among different government Ministries and private institutions with little capacity to generate demand driven technologies remains unclear. In most cases, research continues to operate independently with little involvement of stakeholders in the identification of research priorities, implementation, testing and evaluating the impact of the technologies. Often technologies have not been adequately tested under producer circumstances so as to assess their suitability and performance. Further, the technology delivery mechanisms have often been ineffective and at times non-existent or not linked with the technology generation process. The linkages to a complementary input supply system for the packages that are essential to exploit the benefits arising from any given technology have also been at best weak. A technology policy that addresses these weaknesses would include a focus on scientific and socioeconomic issues - including adaptation and adoption of improved high yielding, disease and pest resistant plant materials. It would also place emphasis on farm power and tillage, post harvest handling and agro-processing technologies to increase productivity, reduce losses, add value and improve quality.

6.5 *Extension Policy*

A national agricultural extension services policy that is consistent with the strategy presented in this document would address the main issues and problems in the delivery and financing of extension services. This is a policy area that has been neglected considerably over the past decade and should be considered a high priority. The role of key players, including that of the private sector and community organizations need to be clearly specified. The extension policy would be tailored to a rural development strategy for the geographical location and would be fully integrated with all programs and projects being implemented in the area. The policy would have the input of all relevant stakeholders to ensure ownership of the agricultural development process by those who inevitably will determine its success. Particular attention should be paid to ensuring that technology transfer officers have an appreciation of entrepreneurship and enterprise development, including the ability impart related knowledge to the producing community.

6.6 Marketing Policy

This would include price policies, market development policies and marketing policy. In the context of pricing policies several thrusts are important, including continued lobbying to keep access to remunerative prices in external markets, protecting domestic producers from import surges that lower domestic prices and managing the macroeconomic environment to ensure that the terms of trade do not penalize the rural sector by increasing prices of inputs and lowering prices of outputs.

Market information is a critical dimension of market development and there is a great need for improved policy in this area. Different types of stakeholders require many different types of information on a timely basis in order to make informed decisions crucial for the success of their business operations.

Facilitating their needs (transportation, packaging, storage, agro-processing) at different points of the commodity and marketing chain is a key part of the incentive framework and may speak to the role of state trading enterprises in the marketing process. The functions of BMDC or another provider of these services in the early stages of development needs careful analysis.

The development of agricultural promotion and product marketing campaigns is another important area. BELTRAIDE and the Belize Chamber of Commerce could contribute to the organization of and participate in international trade promotion fairs, where they take Belizean products and business owners. Organic Food fairs are also important in this regard. Developing Belize brands and jointly targeting different market segments through national and regional collaboration is another area where policy should promote collaboration. The results of promotional campaigns can be twofold: a) increasing the level of demand for agricultural goods domestically and abroad and b) also increasing the visibility of potential agricultural enterprises and attracting necessary investment.

6.7 Input Policy

A critical issue connected with the low level of input usage is the virtual absence of an efficient input distribution network at affordable prices. Incentives to private sector participants to provide a dynamic, competitive and sustainable service are therefore needed. These would include lowering transaction costs of the suppliers and possibly subsidizing low income resource poor farmers. A priority in this area would be seed importation, production, multiplication and distribution in keeping with market opportunities. The important role of government in the input supply system development should also be recognized. Regarding seed supply, the public sector has a role to play in small developing countries in terms of organizing seed research including production of foundation seed (grains and legumes, hot peppers) and developing a germplasm bank for the country. The private sector should be encouraged to enter in the multiplication of both foundation seed and registered/certified seed and seed processing and marketing. MOA should collaborate with CARDI and BAHA to set up a seed certification service for quality control and issuance of phytosanitary certificates. The distribution of a wide range of agricultural inputs including mechanical inputs, chemicals, feeds, and agricultural implements will remain largely in the domain of the private sector. MOA should ensure that the linkages between all of these different input supply points and the extension service are strong in order to promote more efficient and effective access to and use of inputs.

6.8 Credit Policy

Available evidence shows that farmers need financial services for both production and consumption activities. Thus credit should be made available for the purchasing of off-farm inputs and for consumption expenditures when this needed to tide farmers over a season. Insurance schemes to facilitate risk taking and address emergencies is also needed. Credit policy should make linkages between agricultural activities and off-farm, non-agricultural activities, promoting diversification as a risk management activity.

The public sources of credit (DFC and the Small Farmers and Business Bank) have not provided sufficient credit to small farmers and non-traditional crops. Alternative sources, such as La Inmaculada in Orange Walk, St. Francis Xavier in Corozal and St. Martin's in Cayo have built up solid reputations for prudent financial management and the provision of credit to their members. More recently, the newly formed Citrus Growers Credit Union, from all reports, has been doing a creditable job in assisting small citrus growers with savings and loans opportunities. The lessons from successful credit organizations should inform credit policy and provision of credit use should be encouraged and expanded.

6.9 Institutional Policy

The Ministry of Agriculture should be more active in mainstreaming the agricultural sector in the national economy. This is essential to ensuring that the deliberations at the national level understand the important role of the agricultural sector and that needed policies to enable the agricultural sector to perform as expected are enacted. In this regard institutional policy should emphasize development of clear policies and programs that support and protect the agricultural sector. This includes importantly the coordination of the interests of the sector, and provision of information affecting outcomes of the sector. A stronger and more formal linkage to other service and production institutions should be promoted. These include the interface with institutions and organizations such as the International Regional Agricultural Sanitary Organization (*OIRSA*), the Belize Agriculture Health Authority (BAHA), Belize Marketing Development Corporation (BMDC), BELTRAIDE, and the farmer organizations representing different production systems (Mennonite community, Organic Crop Producers).

There should also be an institutional policy on coordination across projects, including NGO and community projects. Currently, not even the government managed projects, such as the CARD project sponsored by the International Fund for Agricultural Development (IFAD), are well integrated into the Ministry of Agriculture's policy and program framework. This capacity is very dependent on adequate human and financial resources and given the difficult resource situation of the Ministry with a loss of personnel and financial resources, the need for adequate institutional policy that prioritizes, decentralizes and phases is even more critical. Building the capacity of farmers' organisations for the management of activities and resources may be a good use of scarce resources when the government is facing an austerity budget. Improved policies on mobilization and management of Partner funds (international and regional banks and development institutions) is essential. Strategic alliances should be promoted enable the national and international private sector to offer some of the services formerly provided by government.

6.10 *Agricultural Education Policy*

Agricultural Education policy in practice changed as the Belize College of Agriculture moved from under the Ministry of Agriculture to the University of Belize. Wherever agricultural education is being coordinated from, the policy should emphasize the promotion of agriculture as a business, treating agriculture as a branch of applied science focusing on experiential learning, including the application of multi-disciplinary approaches and diversified enterprises. Further there should be more recognition of indigenous knowledge, directed at promoting greater self reliance of rural communities. There should be a policy of increased dialogue and collaboration in resource mobilization between the Ministry of Education and the Ministry of Agriculture in order to promote an agriculture education that is truly the cornerstone in achieving agricultural transformation.

6.11 *Investment and Incentive Policy*

Investment and incentive policies in Belize have changed in recent years as Belize has sought to comply with its international commitments, especially those within the framework of the WTO and the Common External Tariff of CARICOM. The policy has shifted from pricing policies offering guaranteed prices and high border taxes. It is now one that provides incentive frameworks that exempt duties on selected categories of imports and exempt income taxes on investments by new or existing enterprises. To qualify small and medium-sized enterprises must be net foreign exchange earners, and may benefit from incentives once their activity is in one of the following areas: agriculture and forestry; agro-processing; auto rental; arts and cultural activities; computer and information technology; fishing, operation of fish hatcheries and fish farms and service activities incidental to fishing; health care services; hotel, restaurant and other tourism services; manufacturing; and handicraft, woodcarving, and jewelry making. The Fiscal Incentives Act is in a similar vein and provides full or partial exemptions from import duties and income taxes on investments by new or existing enterprises. However, the experience indicates that these policies need more effective promotion if they are to stimulate the agricultural sector, especially given that very few small and medium sized agricultural enterprises have benefited from the programs. Promoting strategic investment alliances as a component of investment policy is one way to overcome the exclusion of small and medium sized farmers.

Investment policies should be considered in an integrated approach that not only stimulates the investment through revenue allowances but also applies policies that protect the interests of the investment. Examples of this abound in the area of complementary trade policy as well as in agricultural sector policy as it applies to areas such as agricultural health and safety policies and infrastructure needed to meet sanitary and phytosanitary regulations and quality and safety standards. Further, market promotion policies that assist the acceptance and market expansion for Belize's products are also important.

7 Main Programs of the Integrated Operational Strategy for the Agricultural Sector

The strategy for creating sustainable growth of rural areas in Belize and contributing to achieving food security and poverty reduction emphasizes the development of value-added, exports crops, both traditional and non-traditional, and food products. Successful expansion of the volume and value of these products will require strengthening the domestic production and trading environment, with particular emphasis on improving policies, stimulating greater entrepreneurship in Belize, and strengthening the institutional framework to facilitate agricultural sector transformation.

Accordingly, the overarching goal of the operational strategy (S) is to:

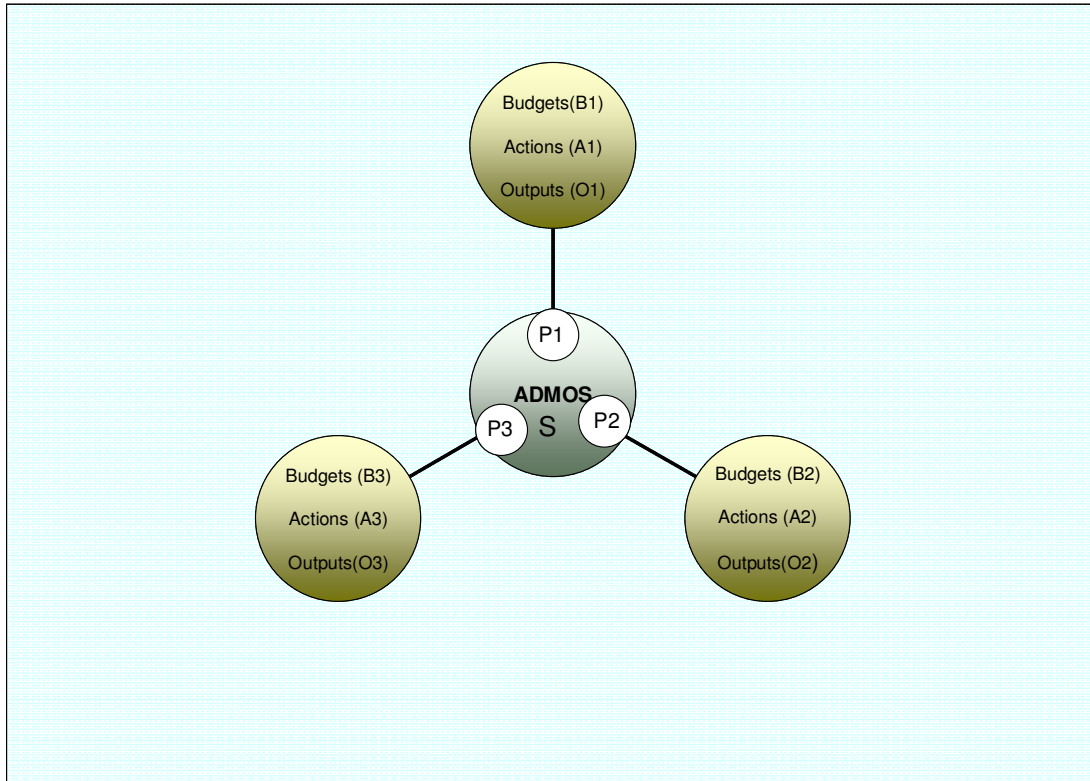
increase the competitiveness of the agricultural commodity sector in order to reduce food insecurity and poverty, and promote dynamic processes of rural and agricultural development.

Based on the challenges and opportunities faced by the sector and the country in a globalizing world, the strategy identifies three major programs to be implemented bearing in mind the economic context, constraints, opportunities, national goals and the policy framework described in the earlier sections of this document.

The strategy proposed is organised in such a way as to ensure consistency, coherence and a logical sequence between all its components.

Figure 2 below illustrates the structure of the operational strategy. It indicates that the overarching strategic goal (S) will be achieved through the implementation of three major programs (P1, P2 and P3), which are further specified by other elements including strategic outputs and actions as well as budgets. Overall, ADMOS comprises 16 outputs and 22 actions or activities which are summarized in **Table 1**. The details of the main components of the strategy are provided in the following sections.

Figure 2 Main Components of ADMOS



S = overarching goal of the operational strategy – *to increase the competitiveness of the agricultural commodity sector in order to reduce food insecurity and poverty, and promote dynamic processes of rural and agricultural development.*

P1 - Program 1 - Incentive Policies and Institutional Development

P2 - Program 2 - Development of Agricultural Markets and Enterprises

P3 - Program 3 - Agriculture Technology Development and Diversification

Table 1 Structure of ADMOS

	Program	Outputs	Actions
1	Incentive Policies and Institutional Development	1 Strategy Implementation and Monitoring Process (SIMP) established	Set up the SIMP for the implementation and monitoring of the programmes and train staff of the Policy Unit of MAF.
		2 National Agriculture Advisory Committee (NAAC) reactivated to assist management of the strategy	Reactivation of and Rename the National Agricultural Advisory Committee (NAAC) "National Agricultural Advisory Council"
		3 National Agriculture and Food Policy (NAFP) operationalized and strategy disseminated	Public Information Campaign (PAC) and Agricultural Policy Strategy dissemination
		4 Strengthened national agricultural support bodies	Identify resources to finance the agricultural support bodies
			Establish clear linkages between the institutional and organizational frameworks affecting agricultural and food sector development, and the private sector together with the Policy Unit and the projects division of MAF. Formulate new projects to fund act
		5 Strengthened capacity of national agricultural technical personnel	Identify and Prioritize Staff Training Needs and deliver training activities addressed in particular to the Policy Unit of MAF.
			Identify and Prioritize Staff Training Needs and deliver training activities addressed in particular to the Policy Unit of MAF.
2	Development of Agricultural Markets and Enterprises	6 District Development Committees (DDC) strengthened	Revise mandate of DCCs and promote private sector leadership.
		7 Farmer and Community Organizations strengthened nationally	Identify and Prioritize Training Needs and deliver training activities
			Identify and Prioritize Training Needs and deliver training activities.
		1 Cost-effective Inter-agency market intelligence system	Development of a National Market Intelligence system
		2 Current food grades, standards and certification.	Development of Grades, Standards and Certification Requirements
		3 Established agri-enterprise incubator facilities.	Promoting the Establishment of Agri-Enterprise Incubator Facilities
		4 Marketing services improved	Improving the Services at Domestic Marketing Centers
3	Agriculture Technology Development and Diversification	5 Increased trade to diversified markets	Strategic participation in trade negotiations emphasizing national product opportunity (market access)
			Promote strategic alliances nationally, regionally and internationally (market entry)
		1 Improved research and extension planning & monitoring	Establish coordination and collaboration processes to better integrate national level research and extension processes
			Improve linkages to national, regional and international research centers
		2 Improved genetics, plant protection, and input supply	Improve genetics, plant protection, and input supply
		3 Improved management of natural resources	Sustainable agriculture practices and technology
		4 Establishment of demonstration farms for diversification and increasing income earning opportunities	On-farm demonstration models of sustainable mixed farming systems with linkages to processing and marketing
	On-farm demonstration models of sustainable livestock development with linkages to processing and marketing		
	Improvement of extension services to low income farmers with linkages to processing and marketing		
	On-farm demonstration models for sustainable and organic farms development with linkages to processing and marketing		

7.1 Incentive Policies and Institutional Development

The Incentive Policies and Institutional Development program promotes the policy and institutional framework that should be put in place to facilitate the achievement the overarching objectives of agricultural development as well as the specific objectives of the strategy. Thus, the actions seek to establish an enabling and supportive policy environment, providing clear goals, transparent regulations, and meaningful incentives. The policy actions and institutional changes presented as a part of the strategy are at the national, sectoral, micro and community levels. The importance of ensuring the commitment by stakeholders at all these levels is emphasised and decentralized processes are promoted. Particular attention is given to the coordination between agricultural related institutions emphasizing public and private sector linkages as well as to the institutional set up for the management and monitoring of the strategy implementation.

Seven outputs are expected to be delivered by this program through **eight** associated actions. A detailed description of outputs and actions is provided in *Table 2*.

Table 2 Program 1: Outputs and Actions Description

Program 1 Incentive Policies and Institutional Development		
Outputs	Actions	Brief description
1 Strategy Implementation and Monitoring Process (SIMP) established	Set up the SIMP for the implementation and monitoring of the programmes and train staff of the Policy Unit of MAF.	The SIMP will manage the implementation and monitoring of the strategy. It will comprise all the concerned stakeholders and rely on three major entities: the Policy Unit of MAF (PU); the Senior Management of MAF; and the NAAC. The PU will be in charge of the daily operations for the implementation of the strategy as well as for the implementation of NAFFP. It will ensure the secretariat of SIMP. The Senior Management will be responsible for the monthly review of SIMP operations and NAAC for the three monthly review. The Senior Management and with NAAC in close collaboration with the concerned stakeholders will be in charge of the validation of the progress reports on the status of implementation and the strategic decisions regarding the modification of the plan of action.
2 National Agriculture Advisory Committee (NAAC) reactivated to assist management of the strategy	Reactivation of and Rename the National Agricultural Advisory Committee (NAAC) "National Agricultural Advisory Council"	Develop new Terms of reference for the NAAC and, with the Minister of Agriculture, institutionalize its operation. The NAAC is an advisory policy body to the Minister of Agriculture and will have several roles including reviewing performance and suggesting actions for the modification of the strategy and assisting with coordinating across institutional points affecting the agricultural sector. The private sector should be very involved with the NAAC.
3 National Agriculture and Food Policy (NAFFP) operationalized and strategy disseminated	Public Information Campaign (PAC) and Agricultural Policy Strategy dissemination	The Policy Unit of the Ministry of Agriculture will operationalize the NAFFP and develop a Public Awareness Campaign Strategy that will include a concise summary of the documents for presentation to the DACs and their Extension Officers, counterpart government agencies, NGOs, Town/City Councils, Community-Based Organizations in all the districts. Short Public Service Announcements (PSA) will also be prepared for both local radio and TV, in addition to printed material to hand out at stakeholder meetings.
4 Strengthened national agricultural support bodies	Identify resources to finance the agricultural support bodies	
	Establish clear linkages between the institutional and organizational frameworks affecting agricultural and food sector development, and the private sector together with the Policy Unit and the projects division of MAF. Formulate new projects to fund act	Support the activities of the bodies to improve their performances. The specific service institutions to be strengthened and the actions in this regard will be determined by the MAF and NAAC.
5 Strengthened capacity of national agricultural technical personnel	Identify and Prioritize Staff Training Needs and deliver training activities addressed in particular to the Policy Unit of MAF.	Train technical agriculture sector personnel and field staff in business management to to promote more effective linkages between the agricultural production activities and finance and marketing. It is considered essential that Staff be equipped with these skills so that these are passed on to the farmers, agro- and food processors for better business decision-making.
6 District Development Committees (DDC) strengthened	Revise mandate of DCCs and promote private sector leadership.	MAF and NAAC to meet to facilitate the revision of the mandate of the DDCs to better serve the agricultural development of the districts. CAO and Policy Unit to prepare concise TORs to be reviewed by DAC. Every district has a District Development Committee (DCC), comprised of farmers organizations, NGOs, agro-processors and related government departments, to advise the MAF on agricultural development policies, plans, programs, projects and activities at the district level. Chaired by the District Agricultural Coordinators.
7 Farmer and Community Organizations strengthened nationally	Identify and Prioritize Training Needs and deliver training activities.	Farmer and community leaders trained in strategic planning, the development of business plans, project proposals sourcing technical and financial assistance, and project implementation

The identified responsible institutions as well as the possible partners or collaborating institutions/organizations for the implementation of the specific actions are illustrated in **Table 3**.

Table 3 Responsible and Collaborating Institutions for the Implementation of the Actions of Program 1

Program 1	Actions	Responsible and Collaborating Institutions
Incentive Policies and Institutional Development	1 Set up the SIMP for the implementation and monitoring of the programmes and train staff of the Policy Unit of MAF.	Policy Unit-MAF, Senior Management-MAF, NAAC,FAO
	2 Reactivation of and Rename the National Agricultural Advisory Committee (NAAC) "National Agricultural Advisory Council"	GOB, BRDP of the EU, FAO
	3 Public Information Campaign (PAC) and Agricultural Policy Strategy dissemination	GOB, FAO, BRDP of the EU, Media
	4 Identify resources to finance the agricultural support bodies	PMU, MAF, Private Sector, FAO, IICA
	Establish clear linkages between the institutional and organizational frameworks affecting agricultural and food sector development, and the private sector together with the Policy Unit and the projects division of MAF. Formulate new projects to fund act	MAF, DDC, IICA
	5 Identify and Prioritize Staff Training Needs and deliver training activities addressed in particular to the Policy Unit of MAF.	MAF, BMDC, FAO, BRDP of the EU. IICA
	6 Revise mandate of DCCs and promote private sector leadership.	MAF
	7 Identify and Prioritize Training Needs and deliver training activities.	GOB, FAO, EU, IDB

Concerning the institutional process for the management and implementation of the strategy, the leading role will be played by the following institutions: Policy Unit of MAF, Senior Management of MAF, and the NAAC. The detailed tasks of these entities are described in **Box 1** below.

Box 1 Institutional Framework for SIMP

Strategy Implementation and Monitoring Process (SIMP)

The ADMOS will be monitored and implemented through an interface of three institutional points, each with distinct responsibilities, but all directed to the common goal of creating sustainable growth of rural areas in Belize, through emphasizing the development of value-added exports and food products.

The three institutional points are:

- a) the Agricultural Policy Unit of the Ministry of Agriculture – this unit will have the daily responsibilities for i) the ongoing analysis that informs the agricultural planning and policy framework ii) the drafting of plans, policies and projects that will define the enabling environment; iii) the preparation of projects to seek funding for the implementation of the three programs of the strategy and iii) the monitoring and reporting on strategy implementation based on the use of the management tool created for the implementation of the strategy.
- b) the Senior Management Committee of the Ministry of Agriculture – this committee will have the monthly responsibility for coordination of the management and implementation of the strategy across the different sections of the Ministry of Agriculture, specifically i) the monthly review of the status reports prepared by the Agricultural Policy Unit ii) the assignment of tasks to different sections of the Ministry of Agriculture for implementation of the programs of the strategy iii) the linkage to other Ministries, Private Sector and Community Level organizations as required for the implementation of the strategy and iv) the conduct and preparation of the meetings with stakeholders and most importantly the NAAC.
- c) the National Agricultural Advisory Council(NAAC) - this council has an advisory role and will meet four times a year to provide inputs to the Ministry of Agriculture on its policies and programs. The role of the private sector should be prominent in the NAAC. The specific responsibilities of the NAAC will be i) to react to a quarterly status report of the Ministry on the Implementation of the Strategy ii) to provide feedback to the Ministry regarding the needs and challenges facing all rural and agricultural sector stakeholders, primarily as these issues affect the implementation of agriculture and rural development programs nationally iii) to suggest policy and program approaches and assist in the coordination of these efforts to achieve the goal of sustainable rural development in Belize iv) to assist with sourcing of funds

The total cost of this program has been estimated at 1.39 million BZ\$ over five years (*Table 4*). The expenditures will peak in the second year and then decline gradually until the completion of the program (*Figure 3*). The first year will absorb 26 % of the total budget. The distribution of the budget by output reveals that the strengthening of the agricultural technical personnel at the national level will absorb the largest amount (32%) followed by the strengthening of farmer and community organizations (22%) and the establishment of the process for the implementation and

management of the strategy (19%) (*Figure 4*). The detailed plan of expenditures by action is provided in *Table 4*.

Table 4 Budget and Timeframe of the Program

Program 1		Incentive Policies and Institutional Development					
Outputs		Total cost (000 BZ\$)	Year 1	Year 2	Year 3	Year 4	Year 5
1	Strategy Implementation and Monitoring Process (SIMP) established	260	60	80	40	40	40
2	National Agriculture Advisory Committee (NAAC) reactivated to assist management of the strategy	120	24	24	24	24	24
3	National Agriculture and Food Policy (NAFP) operationalized and strategy disseminated	110	40	40	10	10	10
4	Strengthened national agricultural support bodies	82	28	28	26		
5	Strengthened capacity of national agricultural technical personnel	450	120	150	60	60	60
6	District Development Committees (DDC) strengthened	60	12	12	12	12	12
7	Farmer and Community Organizations strengthened nationally	310	80	80	50	50	50
Total Cost ((000 BZ\$)		1392	364	414	222	196	196

Figure 3 Distribution of the budget per year (%)

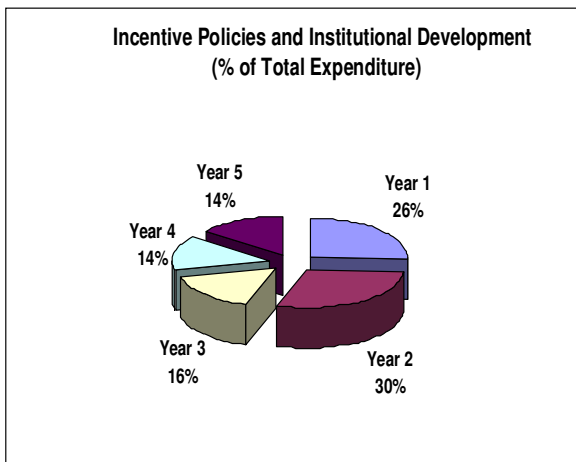


Figure 4 Budget distribution by output

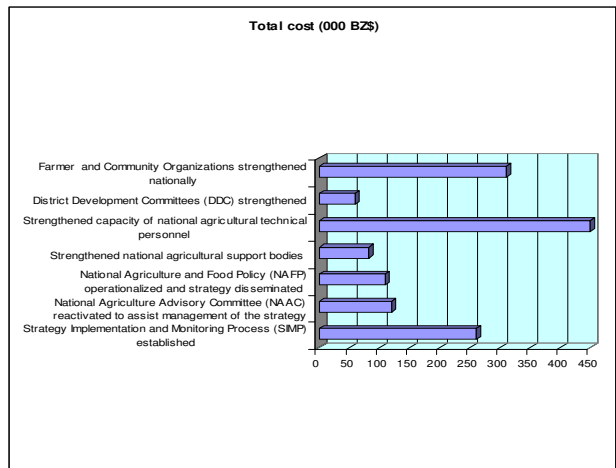


Table 5 Budget Allocation by Action and Quarters of Year

Program 1 Actions	Incentive Policies and Institutional											
	Total cost (000 BZ\$)	1st quarter Year 1	2nd quarter Year 1	3rd quarter Year 1	4th quarter Year 1	1st quarter Year 2	2nd quarter Year 2	3rd quarter Year 2	4th quarter Year 2	Year 3	Year 4	Year 5
Set up the SIMP for the implementation and monitoring of the programmes and train staff of the Policy Unit of MAF.	260	15	15	15	15	20	20	20	20	40	40	40
Reactivation of and Rename the National Agricultural Advisory Committee (NAAC) "National Agricultural Advisory Council"	120	6	6	6	6	6	6	6	6	24	24	24
Public Information Campaign (PAC) and Agricultural Policy Strategy dissemination	110	10	10	10	10	10	10	10	10	10	10	10
Establish clear linkages between the institutional and organizational frameworks affecting agricultural and food sector development, and the private sector together with the Policy Unit and the projects division of MAF. Formulate new projects to fund activities of the strategy. Target national private sector and development partners.	34	3	3	3	3	3	3	3	3	10		
Identify resources to finance the agricultural support bodies	48	4	4	4	4	4	4	4	4	16		
Identify and Prioritize Staff Training Needs and deliver training activities	450	30	30	30	30	30	40	40	40	60	60	60
Revise mandate of DCCs and promote private sector leadership.	60	3	3	3	3	3	3	3	3	12	12	12
Identify and Prioritize Training Needs and deliver training activities to private sector.	310	20	20	20	20	20	20	20	20	50	50	50
Total (000 BZ\$)	1392	91	91	91	91	96	106	106	106	222	196	196

7.2 Development of Agricultural Markets and Enterprises

The Development of Agricultural Markets and Enterprise program implements actions needed to address weaknesses related to markets and marketing. Market information and intelligence development is emphasized in order to strengthen linkages between the farm sector, the non farm sector and both domestic and international markets. In particular it sets priority actions to improve decision making to increase competitiveness at both the farm and agro-processing levels. These actions are implemented in a value chain approach. From a marketing perspective the emphasis is on creating and entering new markets by meeting the required specifications and standards demanded by these markets. The importance of developing strategic alliances,

including private and public sector partnerships is emphasized and will be promoted. The actions will facilitate exchange of pertinent information among market participants and strengthen collection, sorting, grading, bundling and trading of agricultural products.

This program has **five specific outputs** and **six actions** as described in *Table 6* below. The identified responsible institutions as well as the possible partners or collaborating institutions/organisations for the implementation of the specific actions are illustrated in *Table 7*.

Table 6 Program 2: Outputs and Actions Description

Program 2 Development of Agricultural Markets and Enterprises		
Outputs	Actions	Brief description
1 Cost-effective Inter-agency market intelligence system	Development of a National Market Intelligence system	Strengthening the current components and developing a fully functional market intelligence system will be critical for improved research and analysis of national and international markets and the delivery of timely and relevant information to sector participants to inform their investment decisions. The goal of a market intelligence system is to provide ongoing and accurate information regarding domestic and international markets to facilitate the investment in productive activities needed to enter these markets.
2 Current food grades, standards and certification.	Development of Grades, Standards and Certification Requirements	In collaboration with the Public Health Authority, BAHA, Pesticide Control Board, producers associations, BMDC and others, the MAF should partner with the Bureau of Standards to develop the grades and standards for regularly traded agricultural commodities. The development of basic specifications and standards among primary and processed goods will improve Belize's ability to protect consumers from low-quality imports and to increase the quality of domestically produced goods. Price information and transparent pricing will be enhanced with more practicable grades and standards in place. Once a list of certification programs and required modifications is completed, appropriate organizations will need to be identified that are capable of certifying and monitoring participating enterprises. A Belize Standard of Quality should be developed to provide consumers with confidence that a specific level of quality has been met by all foods carrying this certification. Certification can include organic, USDA, HAACP, GAP and the suggested Belize Standard of Quality.
3 Established agri-enterprise incubator facilities.	Promoting the Establishment of Agri-Enterprise Incubator Facilities	Facilities for testing and receiving training in the development of processed food items will be developed to facilitate the ability of entrepreneurs to invest in viable agro-processing activities. Existing infrastructure (ROC, CET-Toledo, and Orange Walk Facility) should serve as a base and be complimented by additional equipment and human resources. The facility should serve as a support center for potential agro-processors and will need to be staffed by a business manager and food technologist (part-time). It is intended that users will rent the space and the assistance of the technologist as a contribution to its financial sustainability. Intended facilities will benefit from existing infrastructure such as stoves, dehydrators, sinks etc. that are currently in place at each site and improvements will ensure compliance with export market food safety and HAACP standards. It will also be essential that these facilities are linked with the market intelligence unit to assist in the development of products with domestic, tourism, and/or export market potential. Business investment plan.
4 Marketing services improved	Improving the Services at Domestic Marketing Centers	The efficiency and increased competitiveness of Belize domestic marketing can be improved by enhancing the level of organization and services offered among and to market participants. Developing market-oriented services in tandem with existing nationwide municipal markets through a coordinated effort between producers, traders, purchasers, the MAA/BMDC and associated private sector organizations (producers, importers) will increase the effectiveness and overall efficiency of agricultural marketing in Belize. The intention is to build upon existing infrastructure and not invest significantly in new buildings and elaborate automation. Attention should be paid to developing effective services (sorting, bundling and development of buyer/seller linkages).
5 Increased trade to diversified markets	Strategic participation in trade negotiations emphasizing national product opportunity (market access)	The country is to be proactive in the international arena to benefit from opportunities of trade negotiations and to protect its domestic and export interests.
	Promote strategic alliances nationally, regionally and internationally (market entry)	Alliances will be fostered at the national, regional and international level to promote national products and increase their penetration in international markets

Table 7 Responsible and Collaborating Institutions for the Implementation of the Actions of Program 2

Program 2	Actions	Responsible and Collaborating Institutions
Development of Agricultural Markets and Enterprises	1 Development of a National Market Intelligence system	Producers, MAF, BMDC, BELTRAIDE, USDA, BAHA, PCB, FAO, Producer Associations, Supermarkets, Hospitality Industry, Processors, CARDI, EU
	2 Development of Grades, Standards and Certification Requirements	GoB, BAHA, PCB, Public Health, IICA, USDA, Bureau of Standards, Organic Producer Association, Importer Associations, BMDC,
	3 Promoting the Establishment of Agri-Enterprise Incubator Facilities	ROC, potential processors, GoB, BAHA, EU, Private Sector
	4 Improving the Services at Domestic Marketing Centers	EU, GoB, Private Sector (supermarkets, producer associations, traders, hotels), BMDC, IICA
	5 Strategic participation in trade negotiations emphasizing national product opportunity (market access)	GOB, MAF, FAO, IICA, RNM, Private Sector
	6 Promote strategic alliances nationally, regionally and internationally (market entry)	GOB, IICA, Private Sector

The total cost of this program has been estimated at 2.38 million BZ\$ over five year period (**Table 8**). The highest share of the expenditures will be in the first two years (roughly 23% each) and will then decline gradually (**Figure 5**). The distribution of the budget by output reveals that trade diversification absorbs 27% of the total budget, followed by the establishment of agri-enterprise incubator facilities (23%) and development of an inter-agency market intelligence system with 19% (**Figure 6**). The detailed allocation of budget expenditures by actions and quarters of year is provided in **Table 9**.

Table 8 Budget and Timeframe of the Program

Program 2		Development of Agricultural Markets and Enterprises				
Outputs	Total cost (000 BZ\$)	Year 1	Year 2	Year 3	Year 4	Year 5
Cost-effective Inter-agency market intelligence system	480	40	80	120	120	120
Current food grades, standards and certification.	430	80	80	90	90	90
Established agri-enterprise incubator facilities.	560	200	200	100	60	
Marketing services improved	270	60	60	50	50	50
Increased trade to diversified markets	640	160	120	120	120	120
Total (000 BZ\$)	2380	540	540	480	440	380

Figure 5 Distribution of the Budget per Year (%)

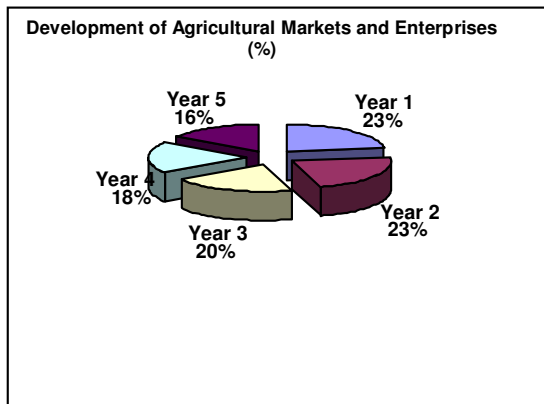


Figure 6 Distribution of the budget by output

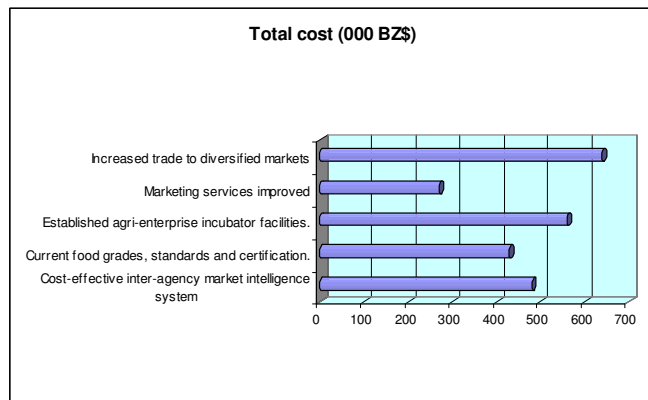


Table 9 Budget Allocation by Action and Quarters of Year

Program 2		Development of Agricultural Markets and Enterprises										
Actions	Total cost (000 BZ\$)	1st quarter Year 1	2nd quarter Year 1	3rd quarter Year 1	4th quarter Year 1	1st quarter Year 2	2nd quarter Year 2	3rd quarter Year 2	4th quarter Year 2	Year 3	Year 4	Year 5
Development of a National Market Intelligence system	480	10	10	10	10	20	20	20	20	120	120	120
Development of Grades, Standards and Certification Requirements	430	20	20	20	20	20	20	20	20	90	90	90
Promoting the Establishment of Agri-Enterprise Incubator Facilities	560	50	50	50	50	50	50	50	50	100	60	
Improving the Services at Domestic Marketing Centers	270	15	15	15	15	15	15	15	15	50	50	50
Promote strategic alliances regionally and nationally (market entry)	320	20	20	20	20	15	15	15	15	60	60	60
Strategic participation in trade negotiations emphasizing national product opportunity (market access)	320	20	20	20	20	15	15	15	15	60	60	60
Total	2380	135	135	135	135	135	135	135	135	480	440	380

7.3 Agriculture Technology Development and Diversification

The Agriculture Technology Development and Diversification program seeks to improve coordination and strengthen collaboration across the current technology development and transfer institutions (Central Farm, CARDI, ROC) to contribute to the development of technologies that are responsive to farmers needs as indicated by the demands of the market. The institutional structure for research coordination and implementation needs to be decided. The emphasis is on promoting competitiveness and diversification through productivity increases per unit area or animal, production cost reduction, the expansion of income earning opportunities for small farmers including those that will be displaced from the traditional export crops, and the development of farming systems that are profitable and sustainable. Given the thrust of the overall strategy it is anticipated that this will require farmers to adopt high yielding, pest- and disease-resistant crop varieties, using appropriate crop and land husbandry practices, use of organic manure or inorganic fertilizers to maintain soil fertility, in addition to developing skills for water conservation for hedging against the dry season. To increase yield per animal will require farmers to raise improved animal breeds that are less susceptible to diseases, and adopt improved feeding practices. The specific nature of the activities should arise from a new approach to agricultural research and extension services that is market driven and is more responsive to the farmers needs.

This program has **four outputs** and **eight actions** as described in the *Table 10* below.

Table 10 Program 3: Outputs and Actions Description

Program 3 Agriculture Technology Development and Diversification			
	Outputs	Actions	Brief description
1	Improved research and extension planning & monitoring	Establish coordination and collaboration processes to better integrate national level research and extension processes	Establish a coordination process to better integrate national level research and extension processes. The recommended strategy will emphasize market specific crops such as onions, carrots, potatoes sweet peppers, cabbage and hot peppers. It will consist of : i) increasing crop yields and reduce production costs; ii) developing the appropriate techpacks for the above selected vegetables; iii) developing appropriate Post Harvest Technology and improved storage; iv) developing standards for the selected crops.
		Improve linkages to national, regional and international research centers	Improve linkages with national, regional and international research centers
			Improve linkages with national, regional and international research centers, especially CARDI, Universities, and the CGIAR system.
2	Improved genetics, plant protection, and input supply	Improve genetics, plant protection, and input supply	Improve the regulatory and legal framework for seed production. The main interventions will be: a) seed production and improved genetics; b) use of Integrated Pest Management (IPM) and Good Agricultural Practices (GAP) technology in collaboration with BA
			Improve the regulatory and legal framework for seed production. The main interventions will be: a) seed production and improved genetics; b) use of Integrated Pest Management (IPM) and Good Agricultural Practices (GAP) technology in collaboration with BAH
3	Improved management of natural resources	Sustainable agriculture practices and technology	Establish guidelines and protocols for agricultural practices for improved management of natural resources, including agro-forestry and soil/water and fertility conservation and provide training to farmers.
4	Establishment of demonstration farms for diversification and increasing income earning opportunities	On-farm demonstration models of sustainable mixed farming systems with linkages to processing and marketing	Development and dissemination of improved practices and management for mixed farming systems, for example fruit trees and small ruminants for milpa farmers. Focus also on specific crops such as onions, carrots, potatoes, sweet peppers, cabbage and hot peppers. In particular it will consist of : i) increasing crop yields and reduce production costs; ii) developing the appropriate techpacks for the above selected vegetables; iii) developing appropriate Post Harvest Technology and improved storage; iv) developing standards for the selected crops. Training in enterp[ri]se development will be an essential component of this activity.
		On-farm demonstration models of sustainable livestock development with linkages to processing and marketing	Development and dissemination of improved practices and management in the livestock sector (dairy, beef, sheep). The recommended strategy will include: a) promotion of the use of improved genetics for beef, dairy and sheep; b) nutrition to enhance growth rates and quality of meat; c) improved management for the selected livestock. Training in enterprise development will be an essential component of this activity.
		Improvement of extension services to low income farmers with linkages to processing and marketing	Improvement of extension services for low income resource poor farmers, which will a) demonstrate the comparative return on different crops; b) inform farmers as to the management requirements and; c) inform farmers as to the range of market outlets and the types of products sought on these markets. Diversification would emphasize the supply of value added products to niche markets.
		On-farm demonstration models for sustainable and organic farms development with linkages to processing and marketing	Promoting research and development in organic crop production and processing and certification to increase Belize's share in organic product markets, with a special focus on Toledo region. Training in enterprise management related to this action will be an essential component.

The responsible institutions as well as the possible partners or collaborating institutions for the implementation of the specific actions are listed in **Table 11**.

Table 11 Responsible and Collaborating Institutions for the Implementation of the Actions of Program 3

Program	Actions	Responsible and Collaborating Institutions
Agriculture Technology Development and Diversification	1 Establish coordination and collaboration processes to better integrate national level research and extension processes	MAF, CARDI, IICA, ROC, Prosser, Brodies
	Improve linkages to national, regional and international research centers	MAF, FAO, CARDI, IICA
	2 Improve genetics, plant protection, and input supply	MAF, PCB, CARDI, OIRSA, BAHA, ROC, Private Sector (Prosser and Brodies)
	3 Sustainable agriculture practices and technology	OIRSA, BAHA, BLPA, MAF, IICA, CARDI
	4 On-farm demonstration models of sustainable mixed farming systems with linkages to processing and marketing	MAF, NGO's, Farmers Assns., ROC, FAO, CARDI, IICA
	5 On-farm demonstration models of sustainable livestock development with linkages to processing and marketing	BAHA, BLPA, OIRSA, FAO, MAF, CARDI
	6 Improvement of extension services to low income farmers with linkages to processing and marketing	FAO,MAF, ROC, IICA, BOPA, CARDI
7 On-farm demonstration models for sustainable and organic farms development with linkages to processing and marketing	MAF, PCB, CARDI, OIRSA, BAHA, ROC, Private Sector (Prosser and Brodies), IICA	

The total cost of this program has been estimated at 4.58 million BZ\$ over the five year period (**Table 12**). The expenditures will peak in the third year and then decline gradually until the completion of the program (**Figure 7**). The first year will absorb 14% of the total budget whereas the maximum disbursement will occur in year 4 with 25 % of the total budget. The establishment of demonstration model farms for diversification and income generation absorbs 50% of the total budget allocated to this program; improvement of research and extension, and improvement of genetics and input supply will both receive roughly 18% of the budget (**Figure 8**). The detailed allocation of the budget by actions and time is provided in **Table 13**.

Table 12 Total Budget and Timeframe of Program 3

Program 3 Agriculture Technology Development and Diversification							
Outputs	Total cost (000 BZ\$)	Year 1	Year 2	Year 3	Year 4	Year 5	
Improved research and extension planning & monitoring	904	112	180	289	299	24	
Improved genetics, plant protection, and input supply	860	100	160	200	200	200	
Improved management of natural resources	500	100	100	100	100	100	
Establishment of demonstration farms for diversification and increasing income earning opportunities	2320	312.5	547.5	550	530	380	
Total	4584	624.5	987.5	1139	1129	704	

Figure 7 Distribution of the Budget per Year (%)

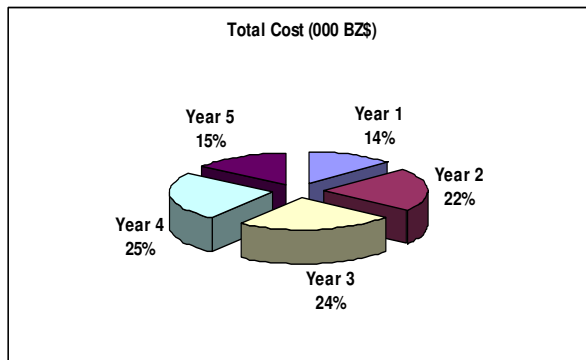


Figure 8 Budget Distribution by Output

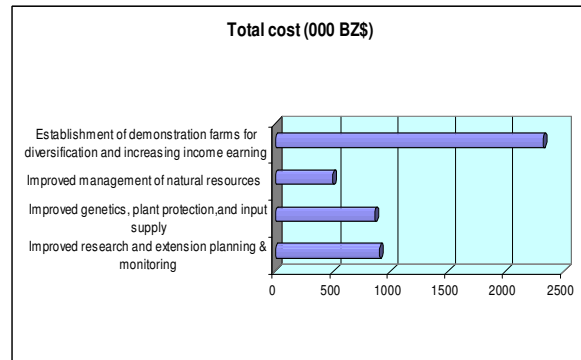


Table 13 Budget Allocation by Action and Quarters of Year

Program 3													
Agriculture Technology Development and Diversification													
Actions	Total cost (000 BZ\$)	1st quarter Year 1	2nd quarter Year 1	3rd quarter Year 1	4th quarter Year 1	1st quarter Year 2	2nd quarter Year 2	3rd quarter Year 2	4th quarter Year 2	Year 3	Year 4	Year 5	
Establish coordination and collaboration processes to better integrate national level research and extension processes	800	25	25	25	25	40	40	40	40	265	275		
Improve linkages to national, regional and international research centers	104	3	3	3	3	5	5	5	5	24	24	24	
Improve genetics, plant protection, and input supply	860	25	25	25	25	40	40	40	40	200	200	200	
Sustainable agriculture practices and technology	500	25	25	25	25	25	25	25	25	100	100	100	
Improvement of extension services to low income farmers with linkages to processing and marketing	880	20	20	20	20	50	50	50	50	200	200	200	
On-farm demonstration models for sustainable and organic farms development with linkages to processing and marketing	440	20	20	20	20	30	30	30	30	80	80	80	
On-farm demonstration models of sustainable livestock development with linkages to processing and marketing	500	12.5	2.5	12.5	25	32	32	30	33.5	170	150		
On-farm demonstration models of sustainable mixed farming systems with linkages to processing and marketing	500	25	25	25	25	25	25	25	25	100	100	100	
Total (000 BZ\$)	4584	155.5	145.5	155.5	168	247	247	245	248.5	1139	1129	704	

7.4 Budget and timeframe

The total cost of the strategy has been estimated at 8.356 million BZ\$ (**Table 14**). As shown in **Figure 9**, 17% of the total budget is allocated to program 1 (Incentive Policies and Institutional Development), 28% to program 2 (Development of Agricultural Markets and Enterprises), and 55% to program 3 (Agriculture Technology Development and Diversification).

The expenditures pattern by year (**Figure 10** and **Figure 11**) highlights that the disbursements will amount to 18% of the total budget in the first year. They will then increase to 24% in year 2 and decrease gradually to 22%, 21% and 15% in the following years.

Table 14 Budget allocation by program and year

Programs	Total cost (000 BZ\$)	Year 1	Year 2	Year 3	Year 4	Year 5
1 Incentive Policies and Institutional Development	1392	364	414	222	196	196
2 Development of Agricultural Markets and Enterprises	2380	540	540	480	440	380
3 Agriculture Technology Development and Diversification	4584	624.5	987.5	1139	1129	704
Total	8356	1528.5	1941.5	1841	1765	1280

Figure 9 Breakdown of the Budget by Program

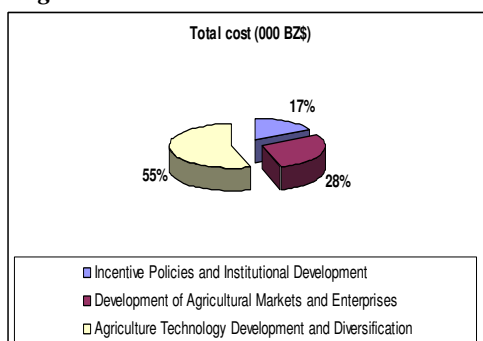


Figure 10 Timeframe and expenditure pattern (000 BZ\$)

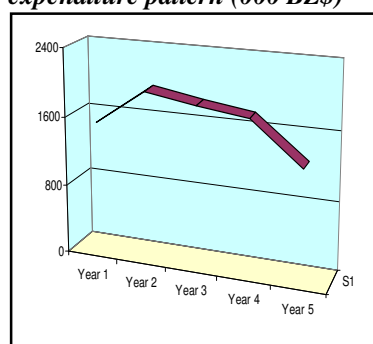
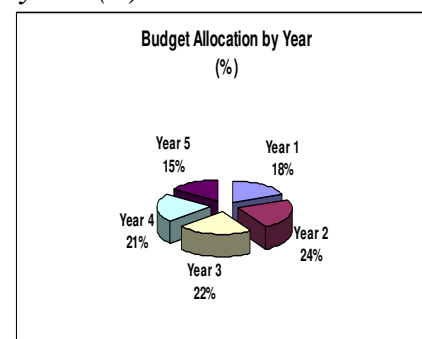


Figure 11 Distribution of the Budget by Year (%)



8 Management of Implementation and Monitoring

An enabling environment is essential for the successful implementation of the strategy. The components of the policy and institutional framework are discussed in Chap.6 and Chap.7 of this document. The development of the enabling policy and institutional context for the implementation of the strategy is part of the responsibility of the three institutions in charge of the strategy implementation: the Policy Unit of MAF (PU), the Senior Management Committee of MAF (SM) and the NAAC.

A computerized management tool (CMT) is proposed to facilitate the management and monitoring of the strategy. The tool reflects the current formulation stage of the strategy, thus, though it encompasses all the information needed to fulfil the main management tasks, it is understood that a more tailored and accurate system reflecting the needs and requirements of the concerned stakeholders should be developed by the units in charge of the implementation and monitoring.

The CMT is based on a computerized information system developed with Excel, which provides a full set of detailed quantitative and qualitative information regarding the following main elements of the strategy:

1. Goals and strategic objectives;
2. Identified programs to achieve them;
3. Expected outputs from the implementation of the programs;
4. Actions that will be put in place to produce the desired outputs;
5. Activities and inputs required;
6. Location of the actions;
7. Budget needed for each action;
8. Timeframe for the implementation of each action;
9. Linkages with other projects/programs;
10. Possible partners and responsible organizations/institutions;
11. Expected beneficiaries;
12. Sustainability;
13. Impacts on food security and equity;
14. Implementation risks.

The computerized management tool allows the users responsible for the implementation and monitoring of the strategy to fulfil the following main tasks:

1. Measure the progress in the implementation of the strategy and the extent to which the objectives are achieved. This is possible because all the information contained in the database is linked to indicators and signposts, which provide the benchmarks against which to measure progress, either in quantitative or qualitative terms (see samples in *Annex 1*).
2. Manage resources (time, human and financial). In this task, the users will be assisted by the work plans and timeframe available in the database (see example in *Annex 2*).
3. Ensure a more efficient use of resources and facilitate leveraging of funding through a continuous updating process of consistency, synergies and links with other projects/programs and partners (see example in *Annex 3*).

In addition, it provides a quick instrument for the preparation of technical action sheets that could be used for mobilising funds from development partners. An illustration of a possible action sheet is given in *Annex 4*.

Annex 1 : Example of CMT Based on the Database: Goal Management for Program 2

Program 2 Development of Agricultural Markets and Enterprises										
Goal	Goal Indicators	Goal Means of Verification	Strategic objectives	Objectives Indicators	Objectives Means of Verification	Outputs	Output Indicators	Output Means of Verification	Activities	Activities Indicators
Developing the non-traditional subsector as a means to increasing food security, reducing poverty and promoting dynamic and market led processes of sustainable rural and agricultural development	Increase in revenues generated by agro-processors	Company registries	A strategic implementation plan for enhancing the growth, competitiveness and efficiency of Belize marketing systems and agro-processing enterprises.	Greater emphasis and support for the provision of market related services	Number of market related trainings.	Marketing services improved		Report and presentation of recommendations in business development plan.	Initiate discussions with producer, trader, wholesaler, retailer groups or associations and conduct assessment of stakeholders needs	Business investment plan
	Increased number and value of agricultural products being marketed domestically and abroad.	CSO import/export statistics	Enhancing the growth, competitiveness and efficiency of Belize marketing systems and agro-processing enterprises both in the domestic and international markets	GoB adoption of implementation strategy.	GoB endorsed strategy document	Marketing services improved	Articulation of service improvements specific to key market centers.			
	Poverty alleviation among vulnerable groups	Poverty studies	A strategic implementation plan for enhancing the growth, competitiveness and efficiency of Belize marketing systems and agro-processing enterprises.	Greater emphasis and support for the provision of enterprise development services	Number of enterprise development related trainings	Marketing services improved			Assess current municipal market and BMDC depot infrastructure and outline potential requirements and assess infrastructure and human resource needs.	Business investment plan
			A strategic implementation plan for enhancing the growth, competitiveness and efficiency of Belize marketing systems and agro-processing enterprises.		Increase in funding allocated to marketing and enterprise development programs.	Marketing services improved			Evaluate administrative responsibility in collaboration with private sector and articulation and agreement on roles and responsibilities	Outline of administrative responsibilities and MOU.
						Cost-effective Inter-agency market intelligence system	BMDC coordinated market intelligence unit.	MOU among collaborating agencies, website, informational publications		
									Continue dialogue and meetings among MAF, BELTRAIDE, CAMID, BCCI, BMDC and partner organizations.	Meeting minutes

Annex 2 Example of CMT Based on the Database: Resource Management for Program 2

Programme		Development of Agricultural Markets and Enterprises											
Action	Inputs	Inputs cost (BZE\$)	Total cost (000 BZE\$)	1st quarter Year 1	2nd quarter Year 1	3rd quarter Year 1	4th quarter Year 1	1st quarter Year 2	2nd quarter Year 2	3rd quarter Year 2	4th quarter Year 2	Year 3	
Development of a National Market Intelligence system	Yr 1 Equipment for 6 dist and hqtrs. (hardware \$software)	30000											
	Yr 1 Training, travel, communication	70000											
	Yr 2-5 Staffing, support, communication (BZE\$ per year)	95000											
	Sub-total	195000	480	10	10	10	10	20	20	20	20	20	120
Development of Grades, Standards and Certification Requirements	Yr 1. Assessment and gap filling	70000											
	Yr 1-5 Development and maintenance	72000											
	Sub-total	142000	430	20	20	20	20	20	20	20	20	20	90

Annex 3 Example of CMT Based on the Database: Partnership Management

Programme	Agriculture Technology Development and Diversification	
Action	Partners	Links with other programmes
Animal breeding Registry and specialized technical assistance	OIRSA, BAHA, BLPA, MOA	
Demonstration models of sustainable Farms		
Demonstration models of sustainable Farms: livestock	BAHA, BLPA, OIRSA, FAO, MOA,	
Demonstration models of sustainable mixed farming systems	MOA, NGO's, Farmers Assns., ROC, FAO, CARDI, IICA	
Establish coordination and collaboration processes to better integrate national level research and extension processes	MOA, CARDI, IICA, ROC, Prosser, Brodies	
Improve linkages to national, regional and international research centers		
Improved genetics , plant protection, and input supply	MOA, PCB, CARDI, OIRSA, BAHA, ROC, Private Sector (Prosser and Brodies)	
Improvement of extension services to low income farmers	FAO,MOA, ROC, IICA, BOPA.	
	MOA, PCB, CARDI, OIRSA, BAHA, ROC, Private Sector (Prosser and Brodies), IICA	
Soil/Water and fertility conservation	OIRSA, BAHA, BLPA, MOA,	
Sustainable agriculture practices and technology	OIRSA, BAHA, BLPA, MOA,	

Annex 4 Example of Action Sheet)

Program Development of Agricultural Markets and Enterprises																									
Output Cost-effective Inter-agency market intelligence system																									
Action Development of a National Market Intelligence system																									
Brief description	Activities	Inputs	Inputs cost (BZ\$)	Total cost (000 BZ\$)	Responsible and Collaborating Institutions	Links with other programmes	Timeframe (years)	Phasing (N, phases)	Location	Alternative actions	Expected benefits	Beneficiary Small Farms	Beneficiary Large Farms	Beneficiary Vulnerable Groups	Beneficiary Women	Beneficiary Farmers Associations	Beneficiary Traders	Beneficiary Processors	Beneficiary Government	Implementation risks	Sustainability impacts	Food security impact	Equity impacts		
The development of a market intelligence system has been occurring in Belize, however it currently functions on an ad hoc basis and spans several agencies without a clear coordinating mechanism. Strengthening the current components and developing a fully	Continue dialogue and meetings among MAF, BELTRAIDE, CAMID, BCCI, BMDC and partner organizations.	Yr 1 Equipment for 6 dist and hqtrs. (hardware and software)	30000	480	Producers, MAF, BMDC, BELTRAIDE, USDA, BAHA, PCB, FAO, Producer Associations, Supermarkets, Hospitality Industry, Processors, CARDI, EU		5 years		1 BMDC	Separate price collection Unit in MAF.	Greater market understanding, efficiency, access and investment.	Low									Medium-Low	High	Medium	Medium	
	Detail and coordinate administrative responsibilities (by product, market channel, region)	Yr 1 Training, travel, communication	70000																						
	Determine type of data to be collected.	Yr 2-5 Staffing, support, communication (BZ\$ per year)	95000																						
	Develop a fee-for-service scale and collection mechanism												High												
	Develop a system to prioritize marketing systems, channels and products																								
	Development a monitoring system																								
Train data collector, data input and data analysis personnel.																									