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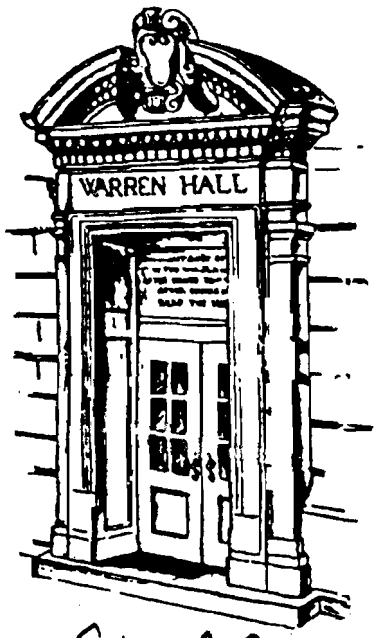

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Agriculture in Sao Tome e Principe:
Policy and Investment Options

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AGRICULTURE IN SAO TOME E PRINCIPE: POLICY AND INVESTMENT OPTIONS

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SUMMARY

Sao Tome e Principe is an island country whose particular physical circumstances and economic history have important implications for agricultural policy and investment. Located in the Gulf on Guinea just north of the Equator, the two islands have fertile volcanic soils, high mountains and rainfall that varies from more than 7000 mm annually to less than 1000 mm depending on elevation and orientation toward prevailing winds. Basic conditions for agriculture are good - a wide variety of crops can be grown, though the country has historically devoted the majority of its cultivated area to monocropped plantations. At the present time cocoa is the most important crop in terms of area, revenue, and exports.

Uninhabited before the arrival of the Portuguese in the second half of the 1400's, the islands are populated with a mixture of peoples from various parts of Africa and Europe. At the present time, population is approximately 140,000, with all but around 6,000 of these on the island of Sao Tome. Until independence in 1975 the island economies were dominated by plantations (called "rocas") which were taken over by the state after independence in 1975. The government initiated a process of land tenure reform and privatization in the 1990's which has resulted in a mixture of small, medium and large size holdings. The government is currently in the process of considering the breakup of the remaining large cocoa plantations.

This history has resulted in a smallholder sector that is different from that in any continental African country. Simply put, there is no indigenous tradition of smallholder agriculture. Rural poor typically have had home gardens (glebas) but have no history of operating their own farms, having instead worked as employees on the large estates which dominated the islands. The newly settled smallholders (as well as owners of many of the larger holdings) are embarked upon an enterprise in which they have no experience and for which supporting institutions and market mechanisms do not and never did exist.

Accordingly, the problem for the government is to promote the development and growth of the agricultural sector while promoting the welfare of a large newly created smallholder sector. The government has some clearly defined goals recently enunciated in its Carta de Politicas Agricolas e Desenvolvimento Rural (CPADR). In addition to the goal of promoting the welfare of rural populations, important aims include diversification of exports to avoid excessive dependence on cocoa, increasing food production to eliminate food imports, and protection of the environment, particularly the forests which cover most of the islands.

In terms of comparative advantage, studies have shown that Sao Tome and Principe (STP) can efficiently produce food crops such as taro, breadfruit, cassava and vegetables as well as tree crops such as citrus. In fact, the newly created smallholder sector has already shifted away from cocoa and toward these food crops, partly in response to their own consumption needs, but also in response to favorable prices in the capital city of Sao Tome and on the continent, especially in Gabon. It is to be expected that smallholders will continue this trend,

particularly if the government can negotiate a reduction of import tariffs in Gabon, currently greater than 50%. There is every reason to think that STP can efficiently become self sufficient in food production and even produce substantial exports.

However, there is a natural limit to the extent to which this shift in crop mix can occur. Much of the island is very mountainous and also has very high levels of rainfall, making soil erosion a very real danger. Accordingly, it is likely that annual food crops, especially root crops such as taro and cassava, will eventually tend to dominate flatter areas to a far greater degree than they have historically while the steeply inclined areas currently under cocoa will continue to be used for that purpose or for some other perennial capable of holding the soil in place. An extension effort to communicate the dangers of planting root crops on steep inclines is clearly necessary since some smallholders have already started to do this.

In terms of crop choice, the government has made a clear break with the past and will leave these decisions to the private sector. However, there is still much that the government can do to influence and or promote the direction of development, in terms of investment, research, extension, etc. Here it is important realize that the islands are now, as a result of their history, heavily biased toward cocoa production, not just because of the more than 20,000 ha. are planted to this crop but also because input supply and output marketing arrangements are already in place and rural populations have experience with and knowledge of cocoa. In spite of this, many years of heavy investments in cocoa projects have not resulted in improved welfare or higher returns.

This means that while existing cocoa plantings should be managed to maximize their returns, massive investments beyond those currently contemplated (which include a program of replanting with improved hybrid varieties) are not the best option. Rather, new investments in diversification into other tree crops with proven potential are likely to provide better returns. Even so, given the fact that cocoa is likely to remain a very important crop for the foreseeable future, it makes sense to try to optimize its production and marketing systems in the newly created smallholder context.

Here, there is much to recommend promotion of cooperatives at the village level to deal with input supply, and postharvest processing (fermentation and drying) and marketing of cocoa. In fact, STP's smallholders have virtually textbook conditions for viability of producer cooperatives given the fact that they are geographically close, have nearly identical input needs, have virtually identical processing needs which require capital investments too great for individuals to undertake, and can avoid the potential of monopolistic exploitation on the output side by selling on a cooperative basis. Initial processing at the village level would also reduce transport needs by more than half, given the transformation ratio of raw to dry cocoa of about 40%. It should be emphasized that this process is at an extremely early stage in STP - social development and cohesion in the former "dependencias" of the large estates is at a very low level, with the current smallholder organizations providing little more than information services at the present time. This means that the goal of forming cooperatives capable of performing a wide range of economic functions must be a long term one.

However, before any substantial increase in marketed production can occur, there are some key preconditions that must be met. It would be very difficult to overstate the need for investment in rural infrastructure, especially roads. The extremely poor condition of rural roads has resulted in a condition of isolation for rural communities that is remarkable in so small a nation. Without improvement in this situation, it is difficult to imagine any substantial increase in marketed surplus beyond the immediate environs of the major population centers.

Also important, given the export orientation of the overall agricultural strategy, is improvement of port conditions in Sao Tome. New or improved facilities capable of accommodating larger vessels would reduce costs, but in the short run improved management of the port and of customs could greatly facilitate trade. Privatization of port operations is an option which should be seriously considered.

Another important area for investment is that of rural extension. Currently, these needs are met through the PNAPAF project, but will be institutionalized in an autonomous agency when this project comes to an end. There are extremely high potential returns from investment in an extension system given the near total lack of experience of smallholders not only in various phases of agricultural production itself, but also in management of their farms. It is important to note that while smallholder associations and coops may at some point in the future provide a viable mechanism for self provision of extension services, this is simply not possible at present, given the near total destitution of client populations. There is also a strong public policy interest in providing this assistance - there is a danger of creating a new class of urban poor if smallholders fail and migrate to cities rather than stay on their holdings.

A corollary to the need for an improved smallholder extension system is research geared to their needs. An agricultural research institute, CIAT, exists and has benefitted from financial and technical assistance from France and other donors. Historically, this institute has concentrated on cocoa and is at present engaging in the multiplication and distribution stage of new cocoa varieties for smallholders. In the future an increased emphasis on other crops and issues could play an important role in a smallholder based strategy.

One factor which can assist in this is a completion of the land reform process. While many smallholders have received plots and are occupying them, they still have not had their holdings legally confirmed and have not received legal usufruct titles. Swift legalization and confirmation will be a key element of any future agricultural strategy, along with a simplified land registration system and a completed cadastral survey.

Other policy related initiatives would be negotiation of commercial accords with Gabon and other mainland countries to reduce current tariff barriers to STP exports. In addition, STP itself can do much to promote international trade through reform or privatization of the port authority and a simplification of customs procedures together with a reduction or elimination of export taxes. Implementation of the planned reforms for input markets should also be done as soon as possible.

Rural credit is another area of major debate within STP where the government has stated clearly in the CPADR its intention to promote a system of rural savings and loan associations along the lines of the Caixas Rurais which have been started by the CIDR under the auspices of the PNAPAF project. These Caixas work on the principle self management at the village level and pooling of savings in order to make small loans. While there has been some success to date, there have also been some problems, with repayment rates at around 86% and a seasonal lack of funds in some cases. Nevertheless, this route has promise for the long run, though it should be noted that the original example of lending via mutual solidarity groups, the Grameen Bank, did not rely solely on client savings in its initial phase. Rather, it initiated the savings/investment cycle with small injections of outside money lent according to the strict principles which are being adhered to by the Caixas Rurais. Such a policy could be considered in the STP context.

A final consideration is environmental protection. In STP the most important issue is that of deforestation. It is inevitable that any program of road building or improvement will increase access to forest areas with a consequent increase in potential for deforestation. Measures to deal with this must accompany any infrastructure improvement program and could include improved cookstoves (which are the main source of demand for firewood) as well as increased community awareness of the value of standing tress and feeling of ownership for them together with improved policing.

The best strategy for assistance is an integrated approach capable of addressing the above issues in a related manner. Some of the more important areas for investment include:

- A program of road improvement in rural areas

- Social and productive capital at the village level, including schools, health posts, and capital needed to process and market cocoa

- Assistance to promote the continuation of extension efforts and the strengthening of producer associations

AGRICULTURE IN SAO TOME E PRINCIPE: POLICY AND INVESTMENT OPTIONS

Steven Kyle
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Introduction

The purpose of this paper is to provide an outline and evaluation of government policy toward the agricultural sector and a discussion of the various options for investment. The advantages and tradeoffs inherent in the various investment options will be elaborated.

The government has enunciated four main goals for its rural development strategy:

- Improve the living conditions of the rural population

- Increase and diversify agricultural production

- Develop food production for internal consumption

- Promote the preservation and rational management of natural resources

A recent study of comparative advantage indicates that Sao Tome e Principe (STP) can efficiently increase production both of export crops and of crops destined for domestic production. Overall conditions for agriculture in the islands are excellent. What is key for the welfare of the rural population is to move beyond production for own-consumption to increased marketing of foods for internal sale and both traditional and non-traditional crops for export.

The growth strategy for the government depends primarily on smallholders and some medium sized enterprises. These holdings were established through the past decade as a comprehensive land reform program has split up the large estates which dominated the colonial and post-colonial economy. This has strong implications for the most effective methods for promoting growth, as well as for ensuring that the benefits of that growth are spread to the maximum possible number of people.

Natural Resource Base

Sao Tome and Principe are islands of volcanic origin situated almost on the Equator, with

high mountains (rising to more than 2000 meters on Sao Tome and almost 1000 meters on Principe) and regions where rainfall exceeds 7000 mm annually. In spite of its small size (857 km^2), the location of Sao Tome's high mountains together with prevailing winds generate distinctly different weather patterns in different parts of the island. Those areas exposed to the humid Southwest winds are extremely wet while the more protected parts of the Northern and Eastern parts of the island have rainfall of less than 1000 mm annually with a dry season usually running from June to September.

Soils on Sao Tome are of volcanic origin and are generally of high fertility, while those of Principe are somewhat less so, but still provide a good base for agriculture. Most of the islands remain forested, and even much of the cultivated area remains under tree cover, given the need of the main crop, cacao, for shade to grow properly. Most of the cultivated areas on Sao Tome lie in the Northeast and Southeast, where there is a relatively less inclined coastal area. Much of the Southwestern part of the island is extremely difficult to access, where steep inclines drop directly into the sea and no roads have been built. Principe also has areas where there is little or no access, and has relatively fewer paved roads, though it is much smaller (139 km^2) and less populated than Sao Tome. It has been estimated that Principe has only around 6,000 out of a total population estimated to be approximately 140,000.

History and Current Production

The history of Sao Tome e Principe is distinct from that of all other countries in Africa in that they were uninhabited prior to the arrival of the Portuguese in the second half of the 1400's. The current population is comprised of a mixture of former slaves, Portuguese settlers and various others who came from different places at various points during the past 500 years. This, together with the subsequent establishment of a plantation economy has very important implications for agriculture and policy at the present time.

Simply put, there is no history of indigenous agricultural production in the islands. That is, unlike countries on the continent, there is no traditional agriculture or social structure to which people can look for guidance given the breakup of the large holdings over the decade of the 1990's. There were no small farms prior to the land reform - while each household had its own garden plot, all other agricultural production was performed by workers on a wage basis.

The first of the major plantation crops was sugar, which predominated from the 1400's until the latter part of the 1500's when the superior conditions for sugar production in Brazil led to a decline and eventual virtual disappearance of sugar as a major crop. The next major plantation crop was coffee, which reached a maximum production of 2,500 tons in 1898. Declining soil fertility together with pest problems led to the decline of coffee and its replacement with cacao, which remains the dominant plantation crop to this day.

After independence in 1975 the government took over the large colonial plantations with

the intention of operating them as had been done previously. These large units suffered from a lack of investment and from poor management, and gradually declined from a pre-independence production level of about 8,000 tons a year to a level which has fluctuated at a level of around 4,000 tons.

Table 1 through 5 in the Annex provide information on the evolution of production of the main products over the past decade. As can be seen, cacao, palm oil and copra are the most important cash crops, with cacao by far the most important in terms of exports. Of food crops, the most important are banana, cassava and matabala (taro) while maize is the most important cereal crop grown domestically. Of animals, small ruminants (with goats predominant) and poultry (mostly chickens) are most important, with the majority of animals in both of these categories raised by smallholders.

Land, Labor, Inputs and Support Services

Land and Tenure Reform

Most important, and most fundamental is the issue of land. The government has for the past decade planned and implemented a major land reform which has so far been quite successful in distributing the land of the former large state plantations to farm workers. A priority for action at the present time is the finalization of this land reform to move beyond distribution of use rights to regularize smallholder tenure legally and to recognize and regularize the existing trade in land rights.

This area is one in which many people have strong political, philosophical and economic opinions, and STP is no exception. There are some who do not believe on philosophical grounds that a free and open land market is a desirable goal while others do not believe smallholders will be able to successfully operate their new holdings. However, the stated government policy is to assure tenure security both for cultivated land and for housing in former dependencias of the large estates. The exact form of the guarantees to be given to smallholders has yet to be determined, though the need for revision of the existing land law is recognized.

The position of the government at the present time is clear: it does not intend to grant definitive titles to farmers both because they wish to assure that farmers actually farm their land and to avoid reconcentration of large estates and/or sale to foreigners. Just how incentives to invest and improve land will be promoted without granting definitive title has not been made explicit, and it is entirely possible that this issue will remain at the forefront of agricultural policy debate as long as smallholders feel that they are not definitive owners of their parcels.

Regardless of the speed at which these legal problems are resolved, there is a great need to strengthen support services for new landholders. New beneficiaries are typically near destitute

in terms of both financial and physical assets and are also usually inexperienced not only in running the operations of an independent farm but also in many of the individual farming operations required for successful cultivation. Extension services are of key importance but it is also important to bear in mind that the absence of input supply systems and well developed output marketing systems means that they cannot be expected to be self sustaining through their earliest years in their new landholding.

It is worth noting that there is already in existence an informal land market which is based on unregistered trade in use rights for parcels which were distributed under the current reform program. This is one reason for the government's desire for a complete cadastral survey - it will permit regularization and regulation of these transactions as well as providing a basis for imposition of land taxes. It is also the case that the first steps recommended by the government strategy - simplification of reform and registration procedures, finalization and legalization of title to use rights as currently contemplated, and completion of an accurate cadastral survey - are the appropriate first steps to any reasonable land tenure regime.

It is apparent that foreigners are permitted to own houses and other structures, and may also have use rights to land, but cannot get definitive title as this is not an option even for citizens. In general, there is a lack of a well defined policy toward foreign investment, and this is true in agriculture as well. Some statement of the government position vis a vis foreign capital would be quite useful in moving beyond the current ad hoc case by case treatment of foreign investors.

Tables 6 through 9 show figures on the progress of the land reform to date, totaling more than 30,000 hectares by the end of 1997. Most of the area redistributed to private holdings has gone to smallholders, though more than 11,000 hectares is held in medium sized farms. As can be seen in Table 9, a substantial amount of cacao area is now held by smallholders.

Labor

A rural labor market appears to function both in Principe and in Sao Tome. Indeed, most of the households interviewed had at least one member who earned money from occasional day labor on other farms or larger holdings. It is likely that opportunities for such off-farm labor will remain an important component of rural household income, especially if medium to large size holdings evolve into the growth poles that the government would like them to be. However, it is clear that at the present time rural incomes are extremely low and that demand for casual labor is less than potential supply.

Seeds, Fertilizers, Pesticides and Implements

At the present time supply of inputs such as seeds, fertilizers, pesticides and tools is

nominally under the auspices of the Sociedades Agro-Comerciais (SAC's) which are government entities designed to purchase agricultural outputs and sell inputs and consumer goods. In actual fact, while they have been active to some extent in purchasing (e.g. cocoa) they have fallen well short of expectations on the input side with only one SAC having significant inventories which it has not been successful in selling in rural areas. To date SAC's have not been active at all in selling consumer goods in rural areas.

This has resulted in a somewhat anarchic situation in which inputs, if they are available at all, are supplied by a variety of foreign donors, NGO's and projects such as PNAPAF. Each of these has its own policies regarding what will be provided, how much and at what price. Consequently, it is virtually impossible to identify a consistent policy or for potential private sector agents to have confidence that a viable business can be built in this area.

In response, the government plans to implement a policy to rationalize and unify input supply under the management of a single private sector entity. A management group will be chosen after a competition and will have a monopoly on input supply. All inputs from all sources will be required to be channeled through this new organization, which will ensure uniform pricing and subsidy policies across supply sources. A decree has already been drawn up delineating the new system but has yet to be implemented.

The government has stated that this new arrangement is not viewed as a permanent solution - rather, it is seen as a necessary rationalization of the current chaotic situation. The current version of the government's policy document states the intention to privatize the SAC stores and warehouses at the end of their initial 5 years of operation. This points to an eventual privatization of the entire system, a goal that should be attainable in the near future.

One very attractive possibility is the use of farmer cooperatives for input purchase and supply. Given the similar needs of most farmers and the fact that most live in close proximity in the former dependencias of the large plantations, there is much to recommend this strategy in the long run. Current farmer associations could thereby transform themselves into a far more important economic role beyond that which they are fulfilling at the present time. However, given the current absence of social cohesion or community action at the village level, this must be considered a long term goal.

Credit

The most recent version of the Carta de Politicas Agricolas e de Desenvolvimento Rural (CPADR) represents a marked shift in government thinking about credit. In the past, discussions of credit have been linked explicitly with subsidies, with no apparent realization of the importance of savings mobilization. This has now changed, with the government expressing an intention to promote the spread of the existing network of Caixas Rurais, which are savings and loan organizations operated on community principles. Though initially small, this program,

sponsored by the CIDR of France, has made substantial progress so far and shows promise in being able to provide the nucleus of a sustainable rural financial system.

However, it is clear that for the poorest communities a "bootstrap" approach to creating a rural financial market cannot be successful within any reasonable time frame. In other words, the poorest farmers are so poor that even pooling their savings cannot generate a self sustaining credit cycle without some initial injection of funds. This injection need not be large - indeed, the experience of the Grameen Bank and subsequent related efforts show that small initial injections can produce impressive results based on a system such as that of the Caixas Rurais. If, on the other hand, farmers remain dependent on own-funds, it will be a very long time before many areas on the islands will be able to support their own savings and loan institution.

The CPADR correctly recognizes the inability of the commercial banking system to provide services for any agricultural producers apart from the remaining large plantations, and so supports the creation of financial instruments capable of being used to benefit medium size farmers. However, the CPADR also emphasizes the need to maintain positive real interest rates, as well as adequate loan recovery procedures, something that is much easier to achieve with the stabilization of the dobra over the past year.

There remain several bilateral donors which promote directed credit programs on a subsidized basis. Among these is the Portuguese program directed at medium size farmers, which includes subsidized credit lines among other components. There are other donors who also appear willing to fund such programs, though the government's stated strategy of promoting a network of Caixas Rurais would seem to indicate that assistance would be better aimed in this direction.

Extension

At the present time, extension services are provided though the PNAPAF project. Limited as these are by the size and duration of this project, it is the government's intention to institutionalize these services in an autonomous entity supported by the government. It is recognized by the government that a strong national extension program is an essential component of the strategy to transform the former plantation economy into a viably smallholder sector.

In addition to traditional extension messages relating to technical issues of agriculture, it will also be important to assist new smallholders in various other aspects of farm operations relating to business, management and marketing. Given the near total lack of experience in running a small farm of any description, it is to be expected that such efforts can have large payoffs in the long run, though it may indeed be a substantial time period before full returns can be realized.

Two major constraints (apart from funding which is and will likely remain the most

important constraint of all) are:

- The shortage of qualified extensionists who have both on-farm experience and a sufficient level of education

- Lack of linkages with research in order to generate appropriate extension messages, technology and advice. While it is a truism that extension must start from a dialogue with the farm population itself, there are various technical improvements, particularly in the area of improved varieties of both traditional and nontraditional crops, which can be usefully derived from in-country research.

It is worth addressing the question of private sector extension. There is a school of thought which holds that public extension efforts are wasteful, inefficient, and often counterproductive in that they often tend to center on a top-down mode and do not address issues of real importance to farm populations. However, in the context of STP it is entirely unreasonable to think that the private sector can constitute a viable mode for provision of services for the destitute smallholder sector. While large enterprises may be able to pay for needed services, and medium enterprises may be able to do so in the medium run, it will be a very long time before the same can be expected of the majority of poor farmers.

Indeed, there are public good aspects to some extension services which provide a sound economic reason for promoting a publicly funded extension program. Apart from the extremely high rates of return that can be generated over the long run of 20-60% (See Ruttan 1982 Agricultural Research Policy pp 237,261) there is a strong public interest in providing whatever services are necessary to help prevent an exodus from rural areas of destitute former plantation workers. Public good attributes are even more evident in the case of livestock, where simple extension messages can help promote hygiene and vaccination programs which can prevent epidemics among the animal population.

Research

The Centro de Investigacoes Agronomicas e Tecnologicas (CIAT) is an agricultural research institute which was originally founded to study cocoa in the colonial era. It is now dedicated to a wide range of crop research, and has benefitted from aid and technical assistance from CIRAD. With almost 100 employees, including 10 scientific staff, it conducts crop breeding and research and also engages in multiplication and distribution of varieties through PNAPAF.

Cocoa remains the most important crop and CIAT has a breeding program based on crossing native varieties with imports from the continent of Africa and Trinidad. These improved varieties should, according to CIAT help raise smallholder yields from the current 80-200 kg/ha to approximately 400 kg/ha over the next 1- years. This would allow exports to regain

the levels of about 8,000 tons/yr. of the pre-independence period. CIAT also has a post-harvest processing research program which they say has the potential to increase yields of dried cacao from raw cacao to a transformation ratio of about 43% from current smallholder levels of 33%. At the present time, CIAT is pursuing a strategy of multiplication of improved hybrids for dissemination by PNAPAF, which helps local communities bring this material from seed to field and replanting.

CIAT also has a program in tree crops, which includes multiplication and distribution to smallholders via PNAPAF. Among the varieties are citrus, mangos, guayabas, and others. Smallholders are reported to plant many of these in association with cacao, but the program is not yet advanced enough to judge its success. What is clear is that there is a domestic market for these products as well as export potential. In addition, the steeply inclined nature of much of STP's cultivated land makes tree crops an attractive option for crop diversification.

Other efforts include research into various food crops including maize, banana, beans cassava, taro as well as various horticultural crops and coffee. It is also in the preliminary stages of a cattle program, which will be aimed primarily at medium size farmers.

Education/Training

One of the most valuable capital assets STP has is the relatively high literacy of the adult population, estimated at over 70%. Many studies demonstrate that higher educational levels, particularly minimal literacy, have a strong positive effect on agricultural productivity, especially in adoption of new technologies and other extension messages. At the present time, STP is in danger of losing this asset as rural schools have been abandoned and many children do not attend schools even when available. Accordingly, restoration of an adequate primary school system should be regarded as a very high priority, even though the benefits are long term rather than short term.

In terms of agricultural training and education per se STP is fortunate in already possessing adequate infrastructure in the form of CATAP (Centro de Aperfeicoamento de Tecnologia Agropecuaria) a post secondary school for agricultural education which has modern facilities rehabilitated under projects from the EU and Italy some years ago, and CENFOPA (Centro de Formacao Profissional Agricola) a training center for agricultural technicians and employees of agricultural enterprises. These facilities include dormitories with a capacity of 50 students and classrooms and experimental plots and animal facilities with a capacity for as many as 150 students at one time. At the present time these facilities are largely unused due to lack of financing, though still in good condition, and could be put back into use at minimal cost. Those faculty members who have moved to other positions could be recalled on a part time or full time basis, making a reactivation a relatively low cost proposition.

Such a reactivation would be an integral part of an expansion of extension activity given

the need to provide further education and training to extension workers. Short courses and seminars are still given on a sporadic basis as financing is available, but the facilities are at the present time severely underutilized. The government intends to join CENFOPA with CATAP in order to save money and consolidate scarce resources.

Infrastructure

The need for improved primary and secondary roads is universally recognized as one of the main prerequisites for sustained growth in the agricultural sector. The abysmal state of roads throughout much of the islands, as well as the complete absence of roads in some zones, results in a situation of almost total isolation for many rural people. Road improvements are the single most important factor in improving effective farm gate prices and lowering costs of getting needed inputs. Without improved roads, it is unlikely that any effort to substantially increase marketed production can be successful.

The most important obstacles to improved roads are the high cost of road construction in very mountainous and wet terrain as well as the high cost of maintenance. This second item is key to any sustained program of road improvement given the government's almost total lack of resources to maintain roads. The only other alternative is a system of labor intensive road maintenance performed by the local communities through which the roads pass. To date, one road in the Agua Ize area is maintained by this method, with mixed results. While the road is functional and in far better condition than others, it has been reported that community response to maintenance needs has been uneven. This particularly problematical given the fact that the greatest need for work arises from the passage of large trucks which do extensive damage and which typically belong to woodcutters from other parts of the island.

It is important to recognize that even though daily wage rates for manual labor are low, this does not mean that a rural road strategy based on maintenance performed by manual labor is viable. In fact, such a maintenance program is not really low cost at all since the organizational and administrative inputs needed to actually get the maintenance done are very scarce and expensive. In short, though day labor is cheap the work does not actually get done because the necessary complementary inputs at the administrative level are simply not available. This means that while some level of manual maintenance is certainly feasible, the most labor intensive roads made of packed earth are not likely to last very long.

This is particularly true in those areas covering most of the islands where rainfall is heavy and terrain is steeply inclined. In such areas dirt roads wash out constantly, indeed far faster than they can be repaired. Numerous examples of this can be seen throughout the islands, making construction of more durable roads from rocks and gravel an attractive alternative. It was reported by some observers that such roads are not substantially more expensive than dirt roads to construct and maintain given their longer useful life, but are much better able to withstand climatic conditions in STP. This is a question that needs investigation.

One aspect of infrastructure that would support an export oriented growth strategy is an improved port on the island of Sao Tome. Currently, no deep water freighters can dock at the island, having to off-load to smaller lighters to reach the island. While viable sites for deep water ports exist, there is no current plan to develop them, largely due to the high cost involved. In addition to the inadequate physical port facilities, there are also problems of poor management of the facilities that do exist. In the short run, this is the most important change that could be made - more efficient operation of existing facilities and a simplification of customs procedures would do more to facilitate trade than any other initiative and would not cost a great deal to implement.

Rural housing is another area in need of improvement as former plantation owned housing for workers remains under the ownership of the state, giving residents little incentive or ability to provide upkeep. The government is contemplating legislation which will rectify this situation, but this will take some time to implement.

Crop Specific Policies

Cocoa

It is clear that cacao is the single most important crop in the islands, accounting for more than 60% (24,000 ha.) of cropped area and the vast majority of agricultural exports. Production levels at the present are only around half of those achieved prior to independence. This situation is in part due to lack of investment in infrastructure and replanting, part to disease, part to breakdown in marketing, and part due to the inevitably disruptive effects of the land reform program. While it is unlikely (indeed undesirable) that cocoa can attain the dominant, even pervasive, role in the islands' economies that it had under the colonial regime, the existence of a huge area of cocoa together with the associated human and physical capital make exploitation of this crop a attractive way to generate surpluses to invest in future development. In essence, while export diversification is a good goal, the existing cocoa export capacity can provide the wherewithal to finance this strategy. Accordingly, the issue is how to maximize the returns from this existing capacity.

The government has proposed a variety of measures to address this situation which it hopes will restore production at least to pre-independence levels There are a variety of technical measures which can clearly help the situation. It is recognized that a strong extension effort will be necessary given the fact that the majority of cocoa plantings are now in the hands of smallholders and medium size farms, though approximately 8,000 hectares remain in large estates. (See Annex Table) Among the measures proposed are training in cultural, harvest and post-harvest techniques which are particularly important to production of high quality output. Other important initiatives involve replanting of old or diseased trees, introduction of new higher yielding hybrids, and efforts at control of disease and pests.

It is also clear that there are problems with institutional and marketing arrangements in the cocoa subsector as well. The biggest issue is that of the breakup of the old plantations. Both input supply and postharvest operations including processing and marketing were set up on the basis of these large entities, and have yet to be reconfigured in line with the new situation. In particular, input supply has been a major problem as smallholders have few options but to purchase from processors who they then promise their output at an agreed price. There have been numerous reports of failure to comply with these agreements, with smallholders instead selling to independent traders rather than to their input suppliers as originally agreed. This situation has caused a breakdown in input supply as large enterprises cannot continue to provide them if they do not in turn process the crop at the end of the season.

Another problem is that of theft from large enterprises. There is little ability to police the large areas under cocoa to prevent theft, and once taken there is no way to identify stolen output which can then be sold to traders along with own-production. The only apparent solution to this in the absence of adequate policing capacity would be to privatize the remainder of the cocoa plantings in order to eliminate the problem for large estates, which could remain as

processing and marketing centers. While theft could still occur, incentives to prevent it would be much greater if holdings were in the hand of the farm workers themselves.

Finally, there has recently been considerable debate regarding marketing efficiency (i.e the danger of monopolistic practices) as well as the need to implement a system capable of rewarding higher quality. On the first issue, the existence of approximately 10-12 major cocoa buyers together with various smaller ones appears to be sufficient to prevent any ability to exercise monopoly power. In order to promote visible linkages between domestic and international prices, it has been proposed that the farmer organization FENAPA publish indicative prices on a monthly basis derived from international market prices. In addition, premia would be paid for cocoa which, upon fermentation and drying, is shown to be of higher quality. One option which makes sense is to eventually move fermentation and drying operations to the village level as is common in cocoa growing areas on the continent and elsewhere. The benefits of doing this include both a reduction of transport needs of approximately 60% (given an average transformation ratio of raw to dried cocoa of between 34 and 43%) and also the ability of farmers to retain a greater share of value added at the farm level.

This discussion supports an argument for a smallholder strategy in cocoa centered on a strengthening of village level farmer cooperatives to take on post harvest processing and marketing as well as input supply functions. As discussed below, STP's smallholder cocoa sector has virtually textbook conditions for successful farmer coops. Exploitation of such a strategy could also be linked to social development and to address rural social capital needs.

Food Crops

The government has made explicit its desire to increase production of food crops in order to replace both food aid and commercial imports. While the focus on assisting smallholders to expand production in order to achieve this goal is both feasible and appropriate, it is, as noted above, important not to limit the focus only to internal markets.

While there is scope for import substitution in the area of food items, this will clearly be a short run phenomenon, as the domestic market will be quickly saturated. In the long run, food security can best be assured by a policy which promotes additional production of whatever food crops can be most efficiently grown, whether for domestic consumption or for export. In the event that overall output in any particular crop year proves to be less than anticipated, the best way to avoid domestic food supply problems is to be in a position where incomes and savings are sufficient to avoid major problems and where average production levels are far enough above domestic needs that extreme fluctuations can be absorbed by export fluctuations rather than shortfalls in meeting the nutritional requirements of STP itself.

Recent data show that smallholders have already increased food production. Given the low levels of technology typically used and the generally good agroclimatic conditions, additional increases of food production in line with the countries comparative advantages can be reasonably expected given appropriate incentives and investments.

A strong caveat is in order here. Annual food crops, especially root crops such as taro, cannot be grown sustainable on steeply inclined fields due to the danger of erosion. Accordingly, there is a natural limit to the extent to which production can be expanded in that there is a limit to the amount of land that is flat enough to support annual cropping of this type. It is not unreasonable, however, to expect that in the long run, cocoa and other tree or perennial crops will be grown on all land too steep for annual crops, and that these food crops will predominate in less inclined areas.

Non-Traditional Exports

Government policy is to promote non-traditional export crops such as flowers, aromatics, pepper, and others. While there is clearly a potential for STP to take advantage of various opportunities, it must be realized that this will not happen in the short run. Problems of promoting production are only one step toward the ultimate goal. Every subsequent step in the marketing chain for each of these products remains to be developed and exports cannot happen at all until this is done. Most immediately is the problem of road access to producing areas, lack of which makes exports of some very perishable items (such as flowers) impossible. Issues of production itself remain a problem for one crop, pepper, which has been promoted but which has recently been found to be suffering from diseases of as yet unknown origin. There has already been some success with aromatic crops, showing that non-traditional exports have potential.

Even given a resolution of such physical obstacles inside the country, the issues of transportation and marketing in destination countries are equally important, and will take some time and effort to resolve. While research into basic production feasibility must be performed, it can be made more focused by linking it to investigation of downstream possibilities for marketing and sales. In the long run, it is likely that a variety of crops can be profitably grown given the necessary research and development efforts.

Livestock

Table 5 shows figures for the animal population in 1996. As is evident from these figures, both poultry and small ruminants are important while pigs have historically been very important in the Sao Tomean diet. Primarily raised by larger farms, bovines do exist but are relatively few compared to other animals.

The smallholder sector is the most important in terms of animal production, since most families have at least some small ruminants such as goats as well as some chickens. Pigs are also widespread and are the subject of some contention since they are typically permitted to run around loose and often cause damage to crops.

The government has an extension effort devoted especially to livestock with ten extensionists operating under the auspices of the Direcao Nacional de Pecuaria. Focusing on smallholder issues of animal health, management and hygiene, this effort is important to an improvement in the numbers and condition of the animal population. General awareness of the need for hygiene and disease control is very high given the memory of an outbreak of African Swine Disease some years ago which necessitated the slaughter of the majority of pigs in the islands.

One possibility for the longer term is the introduction of animal traction to the islands, given the steep terrain and poor infrastructure. While equines did exist in the islands in colonial times, there are none now and there is no tradition of animal traction or of keeping burros or other equines at the household level. However, this is an option which would be worth investigating.

Forests

While the government has a stated policy barring exports of wood, forests are still in some danger given the dependence of the family sector on firewood as an energy source. In addition, housing and furniture are also almost predominantly made of wood, and constitute an additional source of demand for timber. To date, as much as a third of the islands remain in primary forest, while much of the rest is under tree cover, which is necessary to successful cocoa cultivation.

In the recent CPADR it was estimated that sustainable fuelwood production on the islands is about 90,000 cubic meters annually, compared to consumption of about 235,000 cubic meters. The majority of this consumption is based on demand for fuel for home cooking (200,000 cubic meters per annum) though there is also some demand for cocoa drying and for bakeries. It is obvious that these figures imply pressure on forests which will increase as population rises. Policies to address this problem include dissemination of more efficient designs for stoves as well as investigation of alternative energy sources.

The government has stated its intention to police forest removal via a dedicated forestry force, but it is inevitable that the demands of a growing population will put additional pressure on forest resources. Perhaps most important is the link between roads and deforestation. Experience in many other contexts has shown that road construction can lead to timber extraction. Recent experience in Sao Tome confirms that this is as true there as it is in other

parts of the world. Given the key role of road improvement in any strategy of agricultural growth, the danger of increased deforestation cannot be ignored. Any project with a road building component must, therefore, also allow for measures to protect forested areas.

One big exception to the policy of not promoting wood exports is the Zona Franca in the island of Principe. This area, comprising about one third of the island, is open to logging, though none has occurred to date. Some government control on logging would be important to prevent irreversible damage.

Output Markets

At the present time, there are no direct subsidies of agricultural products at the wholesale or retail levels. Distribution and sale of food is in the hands of the private sector and the government has stated its intention to leave all of these activities to private sector entities.

In several places in the current version of the government's strategy document there is an emphasis on increasing production of food items for the internal market. This general policy goal is one which has been part of the national consensus for quite some time, though the means chosen for achieving it will be different under a liberalized agricultural policy regime. It is clear from the comparative advantage studies and from the experience and performance of producers themselves that STP can efficiently produce the majority of the food that it needs; this is not only a function of the islands' climate and soils, but also of their isolation, which lends "natural protection" to domestic producers in the form of high transport costs.

However, it is also clear that production for the domestic market cannot be the engine of a long term strategy for sustained and high rates of growth. Though in the short run there is scope for import substitution of both commercial imports and food aid, the small population (and even smaller when one considers that the majority are themselves agricultural producers) and low level of per capita incomes make an inward oriented strategy self limiting in the medium to long term.

Accordingly, an orientation toward export markets is the only viable method for a substantial and sustained improvement in rural welfare. An important point: this does **not** necessarily imply an emphasis on non-food cash crops. In fact, there are several reasons to think that food crops (both annual and perennial) can themselves be successful vehicles for export expansion. First, comparative advantage measures cited above indicate that smallholders and medium size farmers can produce food crops at levels of private and social profit which compare quite well with those that can be obtained from traditional export crops such as cocoa. Second, there is already a substantial export trade with the mainland, particularly Libreville, even in the absence of commercial accords between STP and Gabon or of low cost transport. This discussion means that as food production is encouraged, it is important to avoid the idea that it must necessarily be directed toward domestic markets - rather, a production increase together

with efforts to increase exports has far greater potential for increasing both incomes and food security in the long run.

An emphasis on non-food cash crops is also an important element of long run strategy, as recognized in all of the government's policy documents. Chief among these is cocoa, which has historically provided the bulk of export revenues as well as accounting for a large share of planted area. At the present time (as noted above) the biggest challenge to cocoa production is to shift from the traditional large plantation mode of production to one based on smallholders, but a long term decline in international prices over the past decade, culminating in extremely low levels at the present time make it inevitable that smallholders and larger farms alike will convert more and more to alternative crops.

While cocoa has the potential to provide good returns if plantings can be rehabilitated with high yielding hybrids and good management and cultural techniques employed, it also generates problems if dependence on it is too great. Export earnings and farm incomes from this source are subject to high volatility both because of international market conditions and because of internal problems such as the recent outbreak of thrips. Accordingly, alternative possibilities for high value export crops will receive attention, particularly flowers and aromatic plants. Here, STP's small size has some benefits in that a very small niche market can nevertheless represent a major boon to producers.

Processing and Value Added

In the past, the Ministry of Agriculture did not concern itself to any great extent with downstream value added activities, focusing instead on technical issues related directly to agricultural production. However, given the overall goals enumerated of improving rural welfare and increasing domestic food supply as well as exports, the need to broaden this view to include processing and other downstream activities is inescapable. While there are various activities related to cocoa which are best dealt with as part of the overall issue of cocoa production and export, there are several opportunities which merit serious consideration and study.

One of these is a study of the feasibility of a small animal feed production facility which could provide a ready market for domestic producers of inputs such as maize, cassava, cocoa byproducts, fish meal and other items. In addition, there is already an existing demand for the output of such a facility which is currently supplied from imports. One way that such an activity could be promoted would be to fund a feasibility study and given a positive outcome, to explore the possibilities for a government credit guarantee (analogous to that provided under the PROBARCO project to enable the purchase of a ship capable of supporting regular trade between STP and the mainland). Such a specific guarantee would be intended to address the problem of excessive risk premia associated with external financing of private sector ventures in STP without having the government assume either management responsibility or all business risk.

Other areas that merit consideration are the possibilities for transforming existing export products into less perishable forms. Both fruits and vegetables are currently exported to the mainland as well as being sold domestically. Simple preservation and conservation techniques could increase marketing possibilities far beyond the current range. Examples include drying or juice processing facilities, both for existing fruits and vegetables and for others which could be profitably grown but for which at present there is limited ability to export. All of these efforts require an extension program in order to be effective. It is worth noting that the need for such an effort was specifically mentioned at the recent national seminar held to discuss the forthcoming agricultural policy statement.

Food Aid

Food aid has been an important addition to total grain availability in recent years, with total cereal aid imports of:

1996	4,020 tons
1997	3,133 tons
1998	3,417 tons

Some non-cereal food aid has also been received, and the bulk of all aid has come from the World Food Program, the European Union, and recently from Japan. The government has estimated that nearly one third of domestic food demand is satisfied with imports, and has stated that it wants to end food aid in the medium term, replacing food aid with general balance of payments support. At the present time, food aid is channeled primarily to new beneficiaries of the land reform, to assist them until they can establish their own production. However, the totals cited above amount to a substantial portion of domestic demand, as cereal aid averaged more than 24 kg per person in 1998.

Much of this aid has been distributed in conjunction with the land reform program. New settlers have received food aid for their first year in order to allow them time to start producing food for themselves. As domestic food production rises the need for food aid will decrease but an important point is that food aid is itself a disincentive to marketing of domestic food crops, making a phasing out a prerequisite for realization of the potential that exists for local producers to meet domestic demand.

Indeed, as noted elsewhere in this document, various studies have shown that STP has a strong comparative advantage in food crop production, implying that merely replacing food aid or commercial imports with domestic production is a goal which falls short of the potential. STP can become a net food exporter to the continent as domestic production expands and marketing problems are resolved.

Macroeconomic Considerations

The exchange rate is key to the incentives facing agricultural producers in STP, directly affecting the returns to export production as well as the price of food in urban areas. However, there is little direct acknowledgment of this in government policy documents, reflecting the lack of influence of the agriculture ministry in macroeconomic management. Even though this situation is no doubt to be expected, it would be useful for policy makers to recognize the importance of these influences in policy statements.

This is particularly true in light of the persistent tendencies toward appreciation of the currency caused by the large inflows of foreign exchange relative to the size of the local economy. These tendencies toward appreciation are unavoidable if the country continues to accept foreign assistance - and make it all the more important to ensure the implementation of an investment program which will improve the efficiency and cost structures of current export activities.

This case is made even stronger when the possibility of oil production in the future is added to the current situation. The effects of oil receipts, especially on so small an economy as that of STP, will drastically alter relative prices and incentives for traditional export sectors such as agriculture. The experience of numerous other oil exporting countries such as Nigeria, Gabon, and others demonstrates the need to implement a long run strategy capable of sustaining the viability of other sectors of the economy if the most pernicious effects of the oil export syndrome are to be avoided. This implies both careful exchange rate management and investment in traditional export sectors.

Overall, there is little appreciation within the government of the likely effects of large oil exports on the economy. While there is recognition that the economies of the continental oil countries have not performed well, there seems to be no real understanding of the linkages through which oil receipts produce these effects or of the policies which might be appropriate to deal with the situation.

Reorganization and Reform of Government Institutions

The government itself has recently been reorganized, with the Ministry of Agriculture being absorbed into the Ministry of the Economy along with other line ministries representing important economic sectors. This process of consolidation is generally beneficial given the need of the government to retreat from some of its former roles in running the economy and its intention to decentralize those functions which can be performed more efficiently at local levels.

Here, however, it is important for donors and other outsiders to remember that decentralization in STP is somewhat different from that in larger mainland countries. This is due to the fact that the entire country is smaller than many administrative districts at which

governmental functions are performed in even the most decentralized of arrangements elsewhere in the world. Accordingly, while decentralization may in general be a desirable goal, both economies of scale and shortage of personnel dictate a cautious approach in the context of STP.

Generally speaking, there is a need to try to increase the overall educational level of government employees, and to maintain adequate compensation to retain good workers in government service.

Principe

With a population of only 6,000 there is a tendency to neglect the case of Principe when speaking of national strategy. Indeed, in most respects there is little reason to differentiate given the similar problems confronting the two islands. However, there are some issues which are distinct.

First, it would be extremely beneficial to the island to allow it to trade directly with the mainland rather than requiring all exports and imports to first go through Sao Tome. There is no reason why this cannot be done in the very short run by simply placing a customs office in the city of Santo Antonio. In this way, the costs of transhipment will be eliminated from Principe's cost margins with consequent beneficial results for incentives. Similarly, any remaining bureaucratic obstacles to trade between the countries (fees, taxes, regulations) should be eliminated in order to allow free trade between the two parts of the country. In particular, some observers have remarked on what they consider to be excessive port fees in Sao Tome. This issue could be resolved with a privatization of port operations.

The other major issue regarding Principe is the proposed Zona Franca (Free Trade Zone) conceded to a South African company, WADCO, covering approximately a third of the island. The concession was granted at a very high level, making lower level policy makers somewhat reluctant to take an official position regarding it, but it is clearly the most important development facing the island.

The terms of the concession grant a virtual free hand for 100 years to the concessionaires. While nothing has happened yet, WADCO apparently intends to build a servicing facility for offshore oil drilling platforms and facilities for rest and recreation for platform workers. There have also been preliminary investigations regarding logging. There are various reasons to be apprehensive about this arrangement. First, the enclave nature of the development planned by WADCO promises little in the way of benefits for the citizens of Principe while the social consequences of injecting hundreds of off duty oil workers into the island are unpredictable at best.. Apart from that, the ecological consequences of oil drilling platform servicing, not to mention logging, are extremely undesirable. Principe is at the moment a beautiful and unspoiled tropical island. There are opportunities for development which can truly benefit the inhabitants -

not only does the Zona Franca appear not to be such an opportunity, but its consequences may spoil large parts of the island beyond retrieval and foreclose other more beneficial economic options in the future.

Investment Options and Priorities

Basic Needs

It would be difficult to overemphasize the importance of rural infrastructure, especially roads. Regardless of the direction of strategy in terms of crop choice or internal/external orientation, some basic infrastructure needs must be met if progress is to be made. First among these is the need to improve roads, thereby lowering costs for farmers and increasing farmgate prices for outputs. Trunk roads are currently being rehabilitated and repaved, and this is essential. However, secondary roads are in terrible condition with many of them impassable except on foot. Serious study should be given to the best way to rehabilitate them given the extremely short life of dirt roads in a climate where rains reach 7000 mm/yr. over terrain that is extremely inclined over much of the country. In the past, it is reported that some roads rehabilitated in the form of packed earth have lasted less than half a year in these conditions. While the labor intensive maintenance possible with dirt roads makes them attractive under some circumstances, this method has not had good results in STP. Alternatives such as stone or gravel should be investigated given the fact that they are also amenable to labor intensive construction and maintenance methods while avoiding the prohibitive expense of pavement.

In terms of institutional change, it is of fundamental importance to finalize the land reform program so that farmers can have the confidence and ability to make the investments in their holdings that must underlie any growth strategy based on the smallholder sector. The medium size enterprises can be expected to produce primarily for the market and as such might be expected to be capable of providing a quicker response than smallholders. However, it is not clear that this is universally the case, as many medium size holdings are run by owners with little more experience than that which smallholders have. These producers have many of the same issues vis a vis the land reform process as do the smallholders, again making it essential to provide as secure title as possible as quickly as possible to this group as well.

Inward vs. Outward Orientation

It is clear that the only viable option for sustained agricultural growth over the long run in STP (or indeed for growth in general) is to base it on an export promotion strategy. There are simply too few people on the islands who represent too small a potential demand (given their incomes and food demand net of own-production) for any sustainable strategy to be based on an orientation toward the domestic market.

Accordingly, the first priority is to promote agricultural exports capable of generating high levels of returns to national producers. The options here fall into two main categories: exports of crops currently grown and exports of crops which might be promoted in the future. If we look at those crops which are currently grown it is clear that cocoa is by far the most important in terms of area cultivated and export earnings. Accordingly, measures to maximize the return from areas which are currently under cocoa have the potential to generate immediate returns in terms of higher productivity which directly translates into increased export earnings.

Given the existence of infrastructure and marketing channels, several of the technical options listed by the government in its policy documents make sense, particularly those related to rehabilitation of existing plantings and training of new small and medium sized producers in appropriate cultivation, harvest and post harvest technologies. However, it must be emphasized that all of this will be for nought if problems with input supply (discussed above) cannot be resolved and incentives to produce cannot be improved.

In spite of the fact that the extensive areas under cocoa dictate that it be a part of any short run strategy, it is clear both from comparative advantage studies and from continued volatility in international cocoa prices that export diversification is key in the medium to long run. This need has been recognized by both the government and international donors and is the reason for various attempts to promote non-traditional exports in the past.

One area which seems very attractive but which has not received the emphasis that it probably deserves is the possibility of increasing production of food items for export. The reason for the lack of emphasis is clear: in a situation where STP receives substantial quantities of food aid and where food imports are substantial, the government is thinking in terms of import substitution rather than exports. However, there is strong reason to believe that STP could in a relatively short time become not only self sufficient in food, but enjoy substantial income from exports as well.

Evidence in support of this abundant. First, recent studies of comparative advantage (including both the AGROGES-CINFORMA study in 1999 as well as studies in support of the 1991 appraisal of the Agricultural Privatization Project) show that smallholder food production is very efficient in STP and compares well with cocoa for smallholders. Second, smallholders have shown a tendency to shift in this direction over the past few years as production choice has become possible for them. Third, there are several viable markets on the continent where STP is already selling food, most notably Gabon.

A push to increase food production could very easily result in substantial exports over the medium run, with national self sufficiency achieved en route to this goal. What is key here is the fact that though import substitution may be a reasonable and viable goal from the point of view of national economic policy, the stated goal of increasing rural welfare requires a much broader view. Put another way, while a national level goal of replacing food imports is reasonable and attainable, it cannot by itself achieve the equally important stated goal of raising rural incomes

and welfare.

In addition to the need for improved roads noted above, an export promotion strategy would require a strong extension effort for smallholders focused on improving productivity and also post harvest conservation and preservation techniques so that food exports can expand beyond that which can be transported rapidly via the current transportation system. At the present time, spoilage is a serious obstacle both internally (farm to port) and externally en route to the continent.

A note on coconut production is in order. It is unlikely that this can outweigh other export crops in terms of new areas for investment over the medium to long run in most parts of the islands. While existing stands of palms can be maintained and rehabilitated, a large expansion is unlikely to prove more profitable than other options given the current depressed state of the world market and the lack of prospects for improvement in the near future. However, there is a good domestic market for coconut products (both copra and coconuts for milk) as well as an export market in Angola, where the city of Luanda is currently dependent on imports given the insufficiency of local production. In those sandy, high rainfall areas of the southern coast which are not well suited for other crops it is likely that coconut production will remain profitable and that replacement of existing stands of old trees is a viable proposition.

In the longer run, exploitation of niche markets for crops such as pepper, flowers or aromatics has substantial potential to generate exports. This effort would be dependent on research and extension efforts, but even a small niche market in Europe or North America could prove to be a substantial growth opportunity for STP. Even more important than production issues for these crops is the ability to market them successfully to destination countries. STP is capable of producing a wide range of crops - what is key is that decisions focus on a well researched and reliable marketing opportunity. At the moment, there has been some success in the area of aromatics, while peppers, introduced some years ago, are not spreading to disease problems.

CIAT has research and distribution programs for a variety of tree crops, among them citrus, mango, guayaba, and others. These efforts are still in their early stages but may well provide additional options for export promotion.

Infrastructure and Policy Needs for Export Promotion

If STP is to base its long term growth strategy on export promotion, it will be essential to improve the port facilities that now exist. Not only would it be useful in the long run to have facilities capable of accommodating larger ships, but the current bureaucracy and mismanagement associated with the port are a substantial obstacle to exports and imports. While an improvement in this situation would both lower import prices and increase farmgate prices for all exports, it is particularly important for exports of perishable products such as many of the

food items which STP produces.

STP cannot pay for large infrastructure investments any time in the foreseeable future. Accordingly, it will be dependent upon donors to achieve even part of the port outlined in a feasibility study performed some years ago. In the meantime, there is much to be gained from a radical reform of the manner in which current port facilities are managed. Privatization has met with success in some other contexts where this has been a problem.

In addition, policy induced obstacles to exports should be reduced or eliminated as soon as possible. Among these are export taxes, as well as the absence of a commercial accord with continental countries such as Gabon which would allow exports to proceed on regularized rather than an informal basis.

Research and Extension

Extension is a key component to an agricultural growth strategy. The peculiar circumstances of STP and its smallholder and medium farm sectors mean that there is a huge potential for an extension program to generate very high returns. Indeed, absence of assistance of this type could well mean the failure of many of the new farms created by the reform. This means that there is an immediate concern in getting new farm households to the point where they can be self sustaining, but there are also sizable long run benefits from raising the general level of technology and management skills from the current very low level. As argued above, it cannot be expected that the private sector can perform this activity, making government assistance a prerequisite to progress.

Research can center on the existing institution, CIAT, but given financial constraints must be both very focused and closely linked to identified farm needs. High returns can be had from very simple adaptive research based on existing crop varieties. That is to say, there is an extensive menu of technologies and crop varieties available which can, with relatively small investments, be adapted or screened for STP's conditions and needs. At the present time, both research and extension efforts emphasize cocoa. This emphasis must be redirected if the stated desire for diversification is to be realized. While this does not imply an abandonment of cocoa, it does mean that research and extension efforts are a necessary prerequisite for success in widespread adoption of alternative crops, and that this is unlikely to occur if the current priorities are not reexamined.

Also important in the long run is education and training, both of extension workers themselves, but also of farmers and farm workers. Given the existence of rehabilitated infrastructure at CATAP designed for this purpose, only operational funding is necessary to reactivate this type of education and training.

Credit and Financing

As noted above, the government's most recent policy statements support the idea of promoting the growth of rural savings and loans in the form of the Caixas Rurais which have been initiated by the CIDR project under the auspices of PNAPAF. This is clearly a very good strategy for the long run, but cannot necessarily provide all desired financial services in the short run. There is already a project designed to assist medium size farmers sponsored by Portugal, though it is still uncertain in precisely what form the credit component of this project will take.

However, there may be some individual cases which merit government assistance if they are to be viable. One example is the PROBARCO project which will assist in achieving financing for a ship to provide transport for horticultural and other products to the continent. Via a project financed guarantee, financing can be obtained at market rates. In effect, the (often prohibitive) risk premium inherent in lending in STP can be eliminated. Such a vehicle is a reasonable alternative to general subsidized credit programs for individual, well appraised and important projects which require financing to be feasible. Other possibilities which have been suggested for study include fruit preservation, juices, and animal feed production.

The Potential of Farmer Organizations and Community Development

The particular history Sao Tome which has resulted in a rural population which has little internal social cohesion or sense of community, makes it a priority to engage in community building programs which can at the same time contribute to recapitalization of social infrastructure such as schools, health posts, roads, etc.

However, apart from this, and far more importantly in terms of production agriculture, STP presents almost textbook conditions for success of smallholder cooperatives. As a result of the land reform the following conditions characterize most of the smallholder sector:

- Large numbers of similar sized holdings

- Near total homogeneity in input requirements

- Identical output marketing needs

- Reliance on a crop with relatively large capital needs for transformation post-harvest

These characteristics indicate that most (if not all) of the problems identified above in terms of input markets and the danger of monopolistic practices in output markets can be addressed via farmer cooperatives based at the village level. Input purchasing can be far more efficiently done on a bulk basis and the problem of excessive market power of cocoa buyers (if, indeed, it exists at all as discussed above) can be effectively addressed by a farmer federation composed of village level cooperatives. Indeed, there is no reason why the initial stages of cocoa processing (fermentation and drying) cannot be performed at the village level as is commonly

done on the continent. This would not only allow greater value added to be captured at the farm level, but also reduce transport needs by more than half.

In effect, this means that the current farmer associations under FENAPA should be encouraged to take on real economic functions beyond those that they currently perform. In addition to the production agriculture based functions noted above, there are many obvious social capital needs which could be productively addressed via village level organizations.

While the goal of community building is obviously a long run one, the means to achieving it can be used to generate high returns in the shorter run. There has been substantial success in other parts of Africa with Social Action Funds designed to provide communities with assistance in social capital needs identified by the communities themselves. These could be in the form of schools, roads, health posts, or whatever the community decides is the most pressing need.

One pertinent example of a project of this type comes from Angola, which has produced explanatory literature geared toward local communities which could be relatively easily adapted for use in STP given that it is written and illustrated in Portuguese for village level use. The benefits of such programs in promoting a culture of community awareness and respect for the need for joint action to achieve goals can be quite substantial.

The Caixas Rurais provide a start in community based organizations which could be used as a starting point for such a social action fund. Given the relatively small size of STP, a small project would be capable of making a substantial contribution to development and community building.

Enabling Policy Environment

STP is fortunate in that most of the necessary macroeconomic adjustments have already, in large measure, been achieved. Inflation has been contained at a level below 10% p.a. and the exchange rate has been stabilized. The government deficit appears to be under control. This context is extremely important and the government appears to have a strong commitment to maintaining the progress achieved in this area. The only potential development which would be likely to cause major real exchange rate distortions is the possibility of large oil exports. This possibility depends on world market conditions but the implications for agriculture are clear: Agriculture, being the most important trade-exposed sector in the traditional economy is the sector most likely to suffer if typical oil-exporter real exchange rate distortions occur. This fact makes investments in improving agricultural efficiency and cost structure even more important in order to avoid the worst problems associated with oil-induced distortions and maintain equitable and well distributed growth and development.

Other policy initiatives which are fundamental to success are:

- Finalizing the land reform process.

- Implementing the planned reforms in input supply markets

- Reaching a trade accord with continental trading partners, especially Gabon

- Eliminating or reducing barriers to exports such as taxes, port charges, and poor port management

TABLE 1

PRODUCTION OF MAIN AGRICULTURAL PRODUCTS, 1990-1996

	1976-89	1990	1991	1992	1993	1994	1995	1996
A. Cacau (*1000 tons*)	5.0	3.6	3.6	4.1	4.3	3.4	4.6	3.5
% Growth (Base year = 76/89)	100	72	72	82	86	68	92	70
B. Copra (*1000 tons*)	3.7	1.2	0.6	0.7	0.7	0.9	0.7	1.2
% Growth (Base year = 76/89)	100	32	16	19	19	24	19	32
C. Palm Oil (*1000 tons*)		0.2	1.0	1.5	1.0	0.7	0.7	102
% Growth (Base year = 1990)		100	500	750	500	350	350	600
D. Banana (*1000 tons*)		7.1	10.0	12.0	13.0	13.7	12.7	13.5
% Growth (Base year = 1990)		100	141	169	183	193	179	190
E. Breadfruit (*1000 tons*)		1.9	0.9	1.5	1.8	1.5	1.6	1.8
% Growth (Base year = 1990)		100	47	79	95	79	84	95
F. Maize (*1000 tons*)		2.7	3.6	4.0	4.0	4.3	4.3	4.5
% Growth (Base year = 1990)		100	133	148	148	159	159	167

Source: Ministério de Plano e Finanças

TABLE 2

AGRICULTURAL EXPORTS OF SÃO TOMÉ E PRINCIPE (*1000 kg*)

	Year								
Product	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Cinnamon	25	25	25	25	25	25	25	n.a.	n.a.
Cocoa	3245	4759	4363	3725	3160	4577	4415	2935	2698
Coconut	20	20	15	0	20	40	40	n.a.	n.a.
Coffee	0	4	0	5	6	0	0	5	6
Copra	453	159	0	200	200	200	180	n.a.	n.a.

Source: Instituto Nacional de Estatistica

TABLE 3

AGRICULTURAL EXPORTS OF SÃO TOMÉ E PRINCIPE (*1000 $US*)

	Year						
Product	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**
Cinnamon	15	15	15	15	15	15	15
Cacao	3900	4414	3684	3838	5168	2400	3200
Coconut	3	3	7	0	3	10	10
Coffee	0	10	0	19	33	0	0
Copra	100	36	0	50	50	50	50
TOTAL	**4018**	**4478**	**3706**	**3922**	**5269**	**2475**	**3275**

Source: FAO

TABLE 4

CROP MIX, 1996

Food Crops (87.5%)	**Tons**	**Percent**
Banana	12,685	27.1
Cassava	8,500	18.2
Matabala	8,245	17.6
Tomato	4,500	9.6
Maize	4,000	8.6
Breadfruit	1,600	3.4
Various Horticultural Crops	1,385	3.0
	40,915	**87.5**
Cash Crops (12.5%)		
Cocoa	4,578	9.8
Palm Oil	720	1.5
Copra	507	1.1
Coffee	29	0.1
	5,834	**12.5**

Source: AGRO.GES/CINFORMA

TABLE 5

ANIMAL POPULATION, 1996

Species	Head
Bovines	500
Small Ruminants	36,000
Swine	12,000
Poultry	90,000

Source: AGRO.GES/CINFORMA

TABLE 6

AREAS PRIVATIZED UNDER PPADPP

(area in *hectares*)

Year	Gross Area	Area Distributed to Smallholders	Area Distributed to Medium Holdings	Area of Medium Holdings Reconfirmed	Area of Medium Holdings to be Given	Forest Area and Other	Number of Families Benefitted
1993	4,462	1,520	0	1,287	228	1,427	821
1994	8,870	3,008	168	308	653	4,901	841
1995	6,305	2,337	2,152	118	106	1,594	782
1996	4,433	1,764	321	66	22	2,260	730
1997	6,360	2,472	1,719	0	0	2,179	1,151
TOTAL	**30,430**	**11,101**	**4,360**	**1,779**	**81**	**12,360**	**4,325**

Source: Gabinete de Reforma Fundiária

TABLE 7

AREAS OF RESTRUCTURED LARGE ESTATES

Name of Estate	**Area (*ha*)**
Bela Vista	1810.5
Uba Budo	2703
Diogo Vaz	1490
Agostinho Neto	2670
Santa Margarida	1430
Monte Café	1423
TOTAL	**11526.5**

Source: Gabinete de Privatização

TABLE 8: LAND REDISTRIBUTION

ISLAND:	SÃO TOMÉ													PRÍNCIPE		TOTAL
Zone:	NORTE				CENTRO						SUL					
Estate:	Ponta Figo	Diogo Vaz	St°. Catarina	Agostinho Neto	Bela Vista	Mila-grosa	Monte Café	Uba Budo	St°. Mar-garida	Agua Izé	Ribeira de Peixe	Colénia Açoreana	Porto Alegre	Porto Real	Sund y	
Total Area	3434	911	2889	3264	65	2775	300	185	405	4525	4509	2020	106	3432	1611	30430
Area distributed prior to Sept. '91	355		272		5	1155	300			134	1612	155			114	4102
Area to Small-holders	1353	360	1193	1232	60	876		185	268	2363	880	881		1053	398	11101
Area to Medium Holders			85	250		432	48		100	709	1430	240	106	454	505	4360
Area Reconfirmed to Medium Holders	355				5	512					806	31			70	1779
Area to be Given to Medium Holders		155	130	144						91	133			312	44	1009
Forest & Other Areas	1725	396	1481	1782		955	252		37	1386	1270	869		1614	594	12360
No. of Families Benefitted	465	99	441	380	111	347		424	155	939	290	220		318	136	4325
No. f Persons Benefitted	1538	317	1164	1308	191	1230		424	558	2924	1016	915		673	357	12615
FAMILIES RECEIVING HOLDINGS BY HEAD OF HOUSEHOLD																
% Headed by Men	64	69	70	70	84	67		67	49	65	81	68		70	69	68
% Headed by Women	36	31	30	30	16	33		33	51	35	19	32		30	31	32
% Headed by Youths (18-25yrs.)	25	30	31	25	1	18		0	16	25	16	24		24	31	21
%Headed by Non-residents	39	43	59	38	9	54		0	35	42	36	50		37	31	38
AVERAGE SIZE OF FAMILY HOLDINGS (in *hectares*):																
Family Holdings	2.8	3.4	2.4	3.1	0.5	2.4		0.4	1.7	2.6	2.5	3.2		3.4	2.9	2.4
Headed by Men	3.0	3.6	2.4	3.1	0.5	2.4		0.4	1.9	2.7	2.5	3.5		3.1	3.1	2.5
Headed by Women	2.6	3.1	2.1	3.0	0.5	2.4		0.4	1.6	2.2	2.3	2.5		2.4	2.4	2.2
DOMINANT CROPPING PATTERN (in *percent*)																
Cacau	100	100	100	100		89			100	41	37	100		53	85	
Cacau & Food Crops						11				59						
Food Crops					100			100								
Cacau and Coconut/palms											63			47	15	

Source: AGRO.GES/CINFORMA

Table 9

Sao Tome e Principe: Area Cultivated by Farm Type

	Before 1992				End 1998			
	Areas (ha.)			Number of Farms	Areas (ha.)			Number of Farms
	Total	Farmed	in Cacao		Total	Farmed	in Cacao	
Large Estates	66,000	37,000	22,000	15	20,000	18,960	8,000	8*
Medium Farms		7,000	2,000	60		11,500	5,500	144
Family Farms						13,540	10,500	5,167
Small Plots		5,000		13,700		5,000		13,700
Total	100,000	49,000	24,000	13,775	100,000	49,000	24,000	19,019

Large Estates - Holdings greater than 150 hectares
Medium Farms - Holdings between 10 and 250 hectares
Family Farms - Holding smaller than 10 hectares
Small Plots - Plots of 0 to 1 hectare cultivated by both urban and rural households

* Includes Porto Alegre and EMOLVE

Source: Carta de Politicas Agricolas e de Desenvolvimento Rural

TABLE 10: MAIN ECONOMIC INDICATORS

	1990	1991	1992	1993	1994	1995	1996
A. Exchange Rates (*dobras/US$*)	143.3	201.6	324.2	430.1	738.0	1,411.0	2,203.6
B. Products and Prices							
1. GDP (*millions of current dobras*)	8,250	11,482	14,565	20,783	38,968	57,271	80,918
2. Real GDP (growth rate, *percent*)	1.2	1.2	0.7	1.9	2.5	2.6	1.8
C. Financing (*millions of US$*)	24.90	22.90	18.10	17.30	20.70	17.10	18.90
1. External	20.30	19.80	16.30	15.70	19.70	15.40	18.50
2. *Percent* of total	82	86	90	91	95	90	98
3. Internal	4.60	3.00	180	1.50	1.00	1.70	0.40
D. External Debt (*millions of US$*)							
1. Total	187.10	213.80	238.30	253.20	261.40	253.60	265.80
2. *Percent* of GDP	346	399	524	532	528	558	550
3. *Percent* of Export of Goods and Services (before rescheduling)	93	128	114	110	100	108	66
E. Money and Credit (*millions of current dobras*)							
1. Total Internal Credit	6,730	7,483	12,003	7,843	12,275	9,756	21,419
2. Credit to Government	4,309	5,091	7,521	6,078	8,551	10,290	21,263
3. Government Credit/Internal Credit	64	68	63	77	70	105	99
4. Monetary Base (M2)	2,684	3,451	4,805	8,482	13,798	18,674	30,798
5. Government Credit/ Monetary Base	161	148	157	72	62	55	69
F. Investments (*millions of US$*)							
1. Total	24.9	22.9	16.1	17.3	20.7	23.9	18.9
2. Agriculture	8.9	9.1	8.3	9.2	8.5	8.1	6.9
3. Agriculture (*percent* of total)	36	40	52	53	41	34	37
4. Fishing	0.2	0.1	0.2	0.2	0.3	0.4	0.6
5. Fishing (*percent* of total)	1	0	1	1	1	2	3

Source: Banco Central, Direcção de Planificação Económica

TABLE 11: COMMERCIAL BALANCE, 1988, 1990-96

	1988	1990	1991	1992	1993	1994	1995	1996
A. EXPORTS								
TOTAL f.o.b. (*millions of US$*)	10.90	4.40	5.50	5.40	6.60	6.50	5.10	4.90
% Growth (Base year = 1988)	100	40	50	50	61	60	47	45
1. CACAU								
Volume (*MT*)	7,000	3,640	3,607	4,188	4,305	3,392	4,577	3,500
% Growth (Base yr.=1988)	100	52	52	60	62	48	65	50
f.o.b. (*millions of US$*)	9.80	3.74	5.09	4.23	4.15	4.97	4.71	4.76
% of Total		85	93	78	63	76	92	97
% Growth (Base yr.=1988)	100	38	52	43	42	51	48	49
2. COFFEE								
Volume (*MT*)	72	37	11	14	24	24	29	20
% Growth (Base yr.=1988)	100	51	15	19	33	33	40	28
Value (*millions of US$*)			0.09	0.05	0.05	0.05	0.04	0.00
B. IMPORTS								
TOTAL CIF (*millions of US$*)	-33.50	-26.60	-30.60	-28.10	-32.00	-30.40	-22.50	-29.50
Food Products			-4.70	-4.63	-5.64	-5.24	-5.90	-4.70
Food Aid			-3.70	-3.68	-3.55	-3.98	-1.79	-0.50
Total Food			-8.40	-8.31	-9.19	-9.22	-7.69	-5.20
Food/Cacau exports (%)			165	196	221	186	163	109
C. COMMERCIAL BALANCE (*millions of US$*)			-25.10	-22.70	-25.40	-23.90	-17.40	-24.60
D. BALANCE OF SERVICES (*millions of US$*)			-21.20	-18.05	-16.91	-16.32	-23.80	-21.20
Technical Assistance			-6.40	-5.54	-3.77	-4.64	-10.17	-9.50
Debt Service			-6.30	-4.92	-5.51	-5.48	-5.48	-4.70

Source: Customs, Central Bank and Ministry of Planning and Finance.

Table 12 - Structure of GDP
(millions of dobras)

	1994	1995	1996	1997	1998
Primary Sector					
Agric. Forest and Fish	19.6	30.1	39.6	70.8	104.3
Secondary Sectors					
Manuf. and Energy	2.1	2.7	5.0	10.4	16.4
Construction	6.1	9.6	13.2	19.8	32.7
Tertiary Sectors					
Commerce	15.3	22.4	31.7	51.5	72.4
Public Administration	14.7	20.6	27.6	66.7	88.5
Financial Institutions	1.0	2.1	6.5	23.2	35.1
Other Services	6.6	9.7	12.6	22.2	30.1
Total GDP	65.4	97.2	136.2	264.6	379.5

Source: Instituto Nacional de Estatisticas

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