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AN AGRICULTURAL EXPANSION STRATEGY FOR BURUNDI

AN INDIVIDUAL STUDY PROJECT

by

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As a result of making agricultural production a top priority for the government, production of basic food has been increasing every year. The purpose of this paper is to examine the agricultural situation in Burundi and to develop conclusions and recommendations to improve not only self-sufficient in food production, but also in production some surpluses.



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AN AGRICULTURAL EXPANSION STRATEGY FOR BURUNDI

CHAPTER I

INTRODUCTION

The crisis of agricultural development in sub-Saharan Africa continues to plague many peoples and nations. Even in some countries like Kenya, which has been successful by most standards, political impediments to research and to structural and operational development prevent necessary progress.

Most people think of Africa as a youthful part of the world. It was the last continent to be colonized, the last to gain political independence, the last to embark on the road to modernity. But in terms of human occupation, it is a very old continent.

In sub-Saharan Africa, we analyze the agricultural situation and examine closely the problems we run into to feed our people. At the root of the present crisis on the continent lies the fact that neither African governments nor their friends in the international community have realized that the growth of our population is faster than the increase in production. In their well-intended effort to see Africa's peoples and nation progress, they have neglected to learn from its wisdom; they have insisted, instead, upon teaching Africa to be like the rest of the world. Rather than allowing Africa to move at a pace commensurate with its physical abilities, Africa has been forced to run while others walk. The inevitable outcome of this has been a continent full of countries stumbling over themselves without a sense of proper direction. This tendency to treat Africa as if it were engaged in a sprint race has caused a complex of ecological and economic problems, manifesting themselves specifically in environmental degradation and economic stagnation, people starving and political instability. The effect of these problems has been seriously reduced access to both food and energy.

The Republic of Burundi is situated right in the center of the continent, the heart of Africa. This pivotal place of Africa covered with green hills has common boundaries with the Republic of Rwanda in the north, the United Republic of Tanzania on her eastern and southern flanks, and with the Republic of Zaire on the western side.

At independence, Europeans dominated all major businesses and industrial activities. Asians dominated the retail trade. The result was that local entrepreneurship and agricultural production was stifled. From these analyses, we can take in consideration the following questions:

- o Given that the rapid spread of mechanical equipment has historically been associated with an abundance of land, why has the process of mechanization been so slow in Africa?;
- o Why is the hand hoe so tenacious in sub-Saharan Africa, slower in being replaced than in countries such as India, Pakistan and China, where labor is abundant and wages are low?;
- o Why have animal traction and tractorization spread fairly rapidly in restricted pockets of Africa, but left neighboring agroclimatic regions untouched?;
- o Why have some cattle-owning farm households historically failed to use their own oxen in cultivation?; and
- o Why have attempts of governments and donor agencies to bypass the animal-traction stage for direct tractorization through tractor projects repeatedly failed?

I think these questions are enough to understand why most projects failed. In my point of view, some approaches and conditions will be given to lead to the transition from hand tools to animal traction and the further transition to the tractor. To understand this, the following objectives are assumed:

- o Identify more closely the conditions under which societies evolve from shifting cultivation to permanent cultivation of land;
- o Analyze the way agroclimatic, soil and infrastructural constraints accelerate or retard this evolution of farming systems;
- o Specify the stage in the evolution of farming systems at which the conditions are most appropriate for the transition from the hand hoe to the plow, whether animal drawn or tractor drawn;
- o Explain why despite repeated extension efforts some permanent farming systems persist in the use of the hand hoe; and
- o Evaluate the policy planning and project framework within to promote the future growth of agricultural mechanization, whether based on animal traction or mechanical power.

CHAPTER II

PRESENT SITUATION

GEOGRAPHY

The Republic of Burundi, measuring 10,744 square miles, is about the size of Maryland or Belgium. Mountains rise steeply from the lakeside to almost 9,000 feet along the Zaire-Nile watershed divide to the east of Bujumbura, the capital, which itself is situated at an altitude of 2,600 feet. Green valleys and hillsides intensively cultivated in wheat, peas, corn and tea, typify the rest of the countryside on the divide. East of the divide, the central plateau (4,900 to 6,200 feet) gradually becomes more open and rolling with predominating crops of bananas, corn, beans and coffee.

TRANSPORTATION

Burundi, a landlocked country, has always attached great importance to security and to the effectiveness of transportation of persons and items. This orientation has led the Burundi government to set up strategies adapted

to rapid evolution of transportation sector, this to be sure that transportation is integrated in the politics of National Economy. The Burundi government does its best to be open from its interior to exterior countries by improvement of international routes.

In the interior, most of the routes from province to province are asphalt. Outside the country, Burundi, Rwanda and Tanzania had agreement to asphalt section Muyinga-Kobero (in Burundi) and Kobero-Isaka (in Tanzania). The section is very important for these three countries--Tanzania, Rwanda and Burundi. One hand, import and export of items from Rwanda and Burundi to Tanzania and vice versa will be moved without delay and prices will go down; another hand, Tanzania will get a lot of money from taxes.

Transit Roads³

Most international traffic in Burundi uses three corridors:

- o North Corridor: To Mombasa in Kenya through Rwanda-Uganda to Kenya;
- o Central Corridor: To Dar es Salaam through Isaka-Mwanza in Tanzania;
- and
- o South Corridor: This was created a few years ago and it is opened to the southern countries.

To these three corridors is added air transportation which can be further developed. Transportation by North Corridor represents 30 percent of total tonnage of import and export. This one is more effective and liked by the charters. The situation could change because of improvement of the transportation system in Tanzania and also difficulties of transportation if North Corridor increases. Here are some of the difficulties met by using the North Corridor:

- o Decrease of effectiveness in the seaport of Mombasa;
- o Insecurity in some areas along the routes; and

- o Delay at the borders--Kenya-Uganda border, Uganda-Rwanda border, customs in Kigali (Rwanda), high taxes in customs, and delay of application of transit agreements.

The decrease of effectiveness of the Mombasa port was due to controls, new regulations concerning transit, imposed security by Kenyan authorities, and weigh down procedures which were too complicated. If the Kenyan authorities don't review these problems to facilitate the procedures, this corridor will lose its traffic to the Dar es Salaam route. The North Corridor in the near term will offer Burundi a great advantage for rehabilitation of its railways which will extend to Uganda and Kenya. The advantages we count on could be:

- o Decrease of transportation cost when we compare it to road transportation from Burundi to Mombasa;

- o Reduction of taxes at each border. From the border of Uganda, items will go straight to Mombasa. A quick way, short money for taxes;

- o This corridor will be also less expensive if we compare to what we pay for the Central Corridor (Bujumbura-Kigoma by Lake Tanganyika and Kigoma-Dar es Salaam by railways);

- o Central Corridor: For this corridor, we can send or get merchandise to or from Dar es Salaam by:

- oo Using Lake Tanganyika to Kigoma; railways from Kigoma to Dar es Salaam and vice versa;

- oo Using roads: Bujumbura-Kobero (Burundi); Kobero-Nzega-Dodoma-Dar es Salaam and vice versa; and

- oo Using roads for half way: Bujumbura-Isaka (Tanzania) and using railways from Isaka to Dar es Salaam and vice versa.

By this last way, Zaire-Rwanda and Burundi will benefit from existence of warehouses called "Belbases" at Dar es Salaam which permit sending merchandises quickly and for less cost at the Dar es Salaam port.

- o Talking about facilities and problems of transportation in and outside the country, I cannot finish this point without talking about actual situation of Bujumbura port and Kigoma port, then talking about the new project for the two lake ports:

- oo Bujumbura port was made a rehabilitation project. The goal was to equip the Burundi infrastructures to be capable of supporting import traffic and export traffic which will transit this port in the future. In fact, Lake Tanganyika offers a great strategic importance for Burundi. Statistics of 1988 show that 65 percent of its imports and about 80 percent of its exports went by this route. Kigoma port is being rehabilitated. Infrastructures are already completed, but are waiting to install a crane for containers. This will facilitate loading and unloading.

- o South Corridor: This last route is the connection between Mpulungu (Zambia) and Bujumbura (Burundi). This route was created especially for transportation of cement and sugar from southern countries (Zambia-Zimbabwe-South Africa and Botswana). If we consider sociopolitical developments of these countries, it is reasonable to envisage an intensification of commerce in that area, but unfortunately the port of Mpulungu (Zambia) remains underequipped.

- o Transportation by Air: The government of Burundi has enough infrastructures in the area. We hope to introduce in the future the use of large and mixed airplanes (cargo and passenger) for the first time in any African country. Air transportation because of its qualities of viability and

rapidity should hold a complementary role to other means of transportation for import and export.

CLIMATE

There are two major seasons in Burundi. The rainy season, from the end of September to May, and the dry season from the end of May to the end of September. Climate can be divided into three parts:

- o Tropical climate in the Imbo plain and the Mosso. Depression. Average temperature is 77° F. Annual rainfall is 40 inches. Altitude under 3,250 feet.

- o A high-altitude tropical climate in the Central Plateau Region: Average temperature is 68° F. Annual rainfall is 50 inches. Altitude between 3,250 and 6,500 feet; and

- o Temperate climate on the Crest which divides the watersheds of the Nile and Zaire basins. Average temperature is 58° F. Annual rainfall is 60 inches. Altitude, above 6,500 feet. The sun shines throughout the year. During the rainy season, the rainfall is heavy but short.

DISCUSSION: PRESENT SITUATION OF AGRICULTURAL PRODUCTION: (TABLE 1)

Industrial Products

Coffee (Table 2): For 1937-1988, production of green coffee was estimated at 37,500 metric tons. The Burundian coffee office, OCIBU, reports that in 1986, there were 120 million coffee trees, with 100 million in production. The OCIBU estimates that the production of saleable coffee would be between 48,000 and 51,000 metric tons in 1992. There is no problem in increasing production, but marketing increased production is another story. The international coffee market is an uncertain market. The "Robusta" market price remains low, while the "Arabica" price remains steady. High quality coffee equals good value, but there is much competition. The "Arabica" from

Burundi, competes directly with the best from Kenya and Colombia, which are classified as the best in the world. There is why the Burundian coffee office constantly makes an effort to improve coffee quality.

Tea (Table 3): Tea was introduced as an experiment in 1930's. But it was only in 1962-1963 that tea production moved out of the research phase. In 1966, the first tea handling plant was build in Teza. There are four plants for processing tea: Rwegura, Teza, Ijenda and Tora. They process the production of 12,500 acres of tea plants, from 42,500 acres of industrial cultivation, and 8,000 acres of village parcels formed by 25,000 small farmers.

The Burundian Tea Office, OTB, manages the whole tea industry. Tea is the second source of foreign currency for Burundi, OTB is making a major effort to improve tea production and quality. The forecast is to have 20,000 acres of tea under cultivation in 1992. Unfortunately, the market price is constantly fluctuating. The OTB makes every effort to obtain a profitable price for Burundian tea.

Cotton (Table 4): Cotton has been the second largest export. Since the opening of the Bujumbura Textile Complex (COTEBU) most of the fibers are processed in Burundi. Actual production is 8,000 metric tons of cotton seeds, giving 3,000 metric tons of cotton fiber. Authorities want to improve cotton production and raise the price paid to the farmers. There are some cotton experiments in the Nyanza-Lac region, and the Mosso region. If there is a good result, 12,500 acres will be added and total production will reach 15,000 to 20,000 metric tons.

Rice: In five years, rice production has made a spectacular breakthrough from 4,100 metric tons to 15,000/20,000 metric tons of paddy. Today rice is

growing almost everywhere inside Burundi. Actual production is 30,000 metric tons. Burundi has become a rice exporter.

Sugar: Burundi government considers the "Sosumo Project" (Mosso's sugar company) as a very important project. Besides sugar cane, this project can produce a chain of profitable small industries, such as alcohol, preserves candy and pulp. The sugar plant with a capacity of 20,000 metric tons was opened in 1988. It will reach its full power near 1992, meeting a goal of 17,000 metric tons for national consumption, and exporting the surplus.

Textile Sector: The textile complex of Bujumbura, COTEBU, manufactures beautiful fabrics which are appreciated inside and outside the country. Several cloth factories will be created to respond to the local market, but also to export. Some have already started: A hosiery factory, a clothing factory and a linen factory. Some others were started in 1989-1990. The Industrial Promotion Center through its local planning offices will support the government strategy, and the Chamber of Commerce, Industry and Agriculture of Burundi will promote projects to investors.

Manioc/Cassava: From this commodity, several secondary products can be manufactured--powder and ubuswage (bread).

Tobacco: The industry continues to improve. Currently, there is a plan to diversify the products. So far, only cigarettes are manufactured.

FRUIT PRODUCTION AND MARKETING IN BURUNDI

Production

There were no large scale fruit production units in 1987, although there were small private orchards belonging to Catholic high schools and missions.

Farmers were able to work continuous plots only in the cast of pineapple, strawberries, and pomegranates. However, fruit trees such as the guava, Japanese prune tree, and the avocado tree, as well as citrus trees, were

planted haphazardly in the midst of yam and banana fields. Therefore, individual output reached only a few kilos. The relatively large quantities noticed at harvest time, especially at the start of the rainy season, are thus the result of several yields.

The National Agency for Statistics (SNES) estimated that in 1987, fruit production was 34,600 metric tons (not counting bananas--1,220,000 metric tons), or 6.0 kg. per head, assuming there were no losses.

However, it was estimated that these losses represent 30 percent of total production, because of handling problems and lack of knowledge about storing and packing. The agriculture section estimated that the 1988 fruit production would be as follows:

Pineapple	3,200 metric tons
Shrub tomatoes	215 tons
Papaya	1,600 tons
Pomegranates	1,200 tons
Oranges and Mandarins	110 tons
Lemons	1,200 tons
Pomelos	25 tons
Avocados	12,000 tons
Mangoes	5,200 tons
Guavas	3,200 tons
Beef heart	280 tons
Medlars	320 tons
Total	31,485 tons

Avocados and mangoes account for 37 percent and 16 percent of the total production. This forecast does not include the Japanese prunes, cap boysenberries, strawberries and grapefruit, which are presented on the market also. Total quantity is therefore higher than the following data: Production is expected to increase. Recently, private promoters and projects set up small fruit-processing units for jam and juices (Fruito). The prime target is to export market and Fruito has already begun to export fresh maracouja fruit, as well as mangoes; other promoters also are interested in this promising gap in the market for avocados, papaya, etc. In addition, the Fruito unit has

stated large-scale farming of papayas, mangoes and maracouja; other growers will undoubtedly follow, mainly with the help provided by National Fruit Growing Promotion Program for the exports mentioned above.

EXTERNAL ASSISTANCE

In searching for ways to improve food products to feed the population and gain economic benefits from external markets, Peace Corps Volunteers joined with other groups to support Burundi's people to increase production.

Peace Corps Volunteers began serving in Burundi in 1983 and 45 PCV's have completed tours since that time. Currently there are 29 volunteers at the post. Peace Corps major programs in Burundi are: Inland fish culture, vocational education, nature conservation and management, marketing and management and professional education. The first volunteer arrived in 1983 to work on a cattle tick control project. Peace Corps largest project in Burundi is inland fish culture, with 18 PCV's. Begun in 1985, the project's goal is to increase protein consumption and cash income for small farm families.

The program is under the direction of the Department of Water Fisheries and Fish Culture and is funded by the Food Industry Crusade Against Hunger and Catholic Relief Services' Fisheries. The PCV's work in 14 of Burundi's 15 provinces. With the initiation of the new programs and the continued success of PCV's in established projects, the future of Peace Corps in Burundi seems a promising one. Only six years old, PC/Burundi is a growing program and one that is playing an increasingly important role in the development of Burundi. The interest with which the government has greeted Peace Corps/Burundi's participation in national development codes will for a long-term partnership.

o The government strategy, and the Chamber of Commerce, Industry and Agriculture of Burundi will promote projects to investors. The follow up will

be done by the Department of Industry for all public sector projects, and by the Chamber of Commerce Industry and Agriculture, for all private sector projects. Some financing has been already negotiated: A credit line, APEX, from small and medium size businesses has been allowed by the World Bank. The FED (Development Economic Funds) has opened credits to Burundi for craft businesses. Burundi is looking for other financing to develop its industry.

Higher Yield

WAYS TO IMPROVE AGRICULTURE IN BURUNDI FOR EXPORT MARKET

- o Export Promotion Decree - Laws/04/15/1988 and 07/29/1988. A law was enacted through the issuance of a decree on 15 April 1988; and revised on 29 July 1988. The objective of the law is to facilitate export procedures and grant fiscal incentives to exporters of manufactured products.

Promotion Decree:

- o Exempts qualified exporters from any export taxes;
- o Grants refunds, via drawback privileges, for any and all prior customs fees and duties and imported inputs used in the manufacture or packaging of identified export goods;
- o Allows deductions from corporate tax payments of all expenses, up to a limit, related to marketing, travel, information gathering and other expenses associated with export activities;
- o Decreases the corporate income tax to half the applicable rate for incomes realized through export; and
- o Provides access, for bona fide exporters, to working capital financing at zero percent interest and to foreign exchange for the purposes of: importation inputs, paying, travel expenses and allowing overseas transfer of salaries and profits for foreigners associated with the exporter.

o Personnel

We need technically qualified personnel to train and assist the population in the villages. As you can see in the table below, we have no demographic problem, but rather, the problem lies with the unbalanced distribution of students to professions in the right numbers according to the needs of the country. It is therefore essential that the Ministry of Education should orient the manpower according to the agricultural needs of the country. This results in having one type of technicians in excess of the country's needs and deficiency of technicians in another field.

Province	Agronomist Supervisors in Post	Agronomist Supervisors Needed	Difference Needed	Vulgarizator Assistants in Post	Vulgarizator Assistants Needed	Difference Needed	Agricultural Technicians in Post	Agricultural Technicians Needed	Difference Needed
Bubanza	66	74	- 8	17	9	+ 8	3	7	-4
Bujumbura	124	135	- 11	36	17	+ 19	8	11	-3
Bururi	224	134	+ 90	77	17	+ 60	14	11	+3
Cankuzo	63	46	+ 17	46	6	+ 40	5	7	-2
Cibitoke	73	86	- 13	18	11	+ 7	4	8	-4
Gitega	127	201	- 74	98	25	+ 73	18	12	+6
Karuzi	43	158	-115	134	20	+114	5	9	-4
Kayanza	89	93	- 4	25	12	+ 13	14	11	+3
Kirundo	51	67	- 16	29	8	+ 21	12	9	+3
Makamba	71	57	+ 14	38	7	+ 31	14	8	+6
Muramvya	213	155	+ 58	63	19	+ 44	7	13	-6
Muyinga	95	111	- 16	26	14	+ 12	4	9	-5
Ngozi	18	171	-153	141	21	+120	15	11	+4
Rutana	68	65	+ 3	33	8	+ 25	9	8	+1
Ruyigi	73	75	- 2	22	9	+ 13	3	9	-6
Total	1,398	1,623	-230	803	203	+600	135	143	-8

WHAT CAN BE DONE IN BURUNDI?

Gitega: Center of Iraz

Soil improvement and fertilization in face of soil deterioration and acidity.

In Burundi, 60 percent of the soil is deteriorating because of its acid content and phosphate deficiency. Agronomists must now mobilize to halt soil deterioration while improving soil fertility. In 1989, the Burundi government under the General Director of Agriculture created the Department of Soil Improvement and Fertilization. This department is based in Gitega, the largest city in the country.

The primary mission of the Department of Soil Improvement and Fertilization is to increase agriculture production through soil management and fertilization techniques. The department's responsibilities are to (1) ensure soil conservation of the agricultural patrimony; (2) plan in detail rural exploitation systems; and (3) distribute adequate fertilizer to all growers when needed.

The department is organized of two services: Soil Improvement and Fertilization. Soil Improvement normally carries out its functions by planting a hectare of rapid growing grass in each commune in Gitega. This action achieves two aims. One, it prevents soil erosion and secondly, it demonstrates soil improvement techniques to the populace. The Fertilization Service focused on soil fertilization, whitewash methods, organic fumigators, minerals, and other agricultural techniques. Vegetable inoculation is an example of a fertilization service function.

The first action of the soil fertilization service consisted of providing 3,300 kg. of limestone to the farmers of Karuzi for selected seed production and demonstration purposes. The results produced dolomite stone (whitewash)

for heat while decreasing soil acidity. The soil fertilization service distributed more than 250 tons of fertilizer to selected communities, to agricultural development projects, to cooperatives, and to religious associations. Because of the demonstrated success in December 1990, the Society of Rural Development (SRD) ordered 400 tons more of fertilizer. Additionally, orders from other regions including Gitega, Bujumbura, Mwaro, and Muramvya have multiplied significantly. According to the Director General of Agriculture, the agency can more than adequately support demand requirements. The degree of confidence in using fertilizer is considerably high in Gitega and the use of mineral fumigants is now routine in the SRD region. The SRD in conjunction with the agriculture department routinely tests different types of fertilizers and aggressively demonstrates its use to the population the positive results of fertilizer usage.

The Director of Soil Amelioration together with the Institute of Agronomic Sciences of Burundi (ISABU) has experimented with vegetable inoculations since 1989. This technique uses rhizome vegetables through a symbiotic process to fixate biologically atmospheric nitrogen. This biological process reduces farmers requirement fertilizer while saving import cost. The inoculation of vegetables has boosted crop yield and improved soil fertility.

WHAT MIGHT BE DONE IN BURUNDI

Burundi wants to improve its position as exporter of agricultural products in the Central African Region. The authorities are studying opportunities to diversify fruits, spices, etc., and especially commodities which can be competitive, in the Great Lakes Countries Economical Community (CEPGL), and the Preferential Economical Zone (ZEP). Tobacco cultivation appears promising.

Livestock Farming: Burundi possesses a good collection of livestock, but this sector of the economy is not as productive as it could be. There are: 600,000 cattle, 1,250,000 sheep and caprines, 70,000 hogs, 2,000,000 poultry. President Buyoya supported this sector in his speech on the program on 3 October 1987,

We have been seeing a gradual reduction of livestock production because of the inadequacy of supplies and skills in the sector. The lack of animal lipids and proteins in the people's diet has become a major problem. This is why we have to develop a new strategy for this sector of our economy.

Fisheries: There are three types:

- o Traditional fishery with canoes;
- o Small scale fishery with motor boats going about three miles from the coast; and
- o Industrial fishery: especially by foreigners. But the catch is not large enough to pay for the heavy equipment needed to support this kind of work. Efforts have to be focused on the small scale fishery. Fishermen have been having problems getting the right equipment. This has to be resolved quickly, to increase the catch--13,800 metric tons in Lake Tanganyika and 200 metric tons in other lakes in 1982. Fish culture in ponds has to be developed.

Development of the Land: The principal effort must be to improve the yield. New land for agriculture should be part of the development program (estimated at 1,250,000 acres). Of this, 150,000 acres is marsh. The total square acres of marsh is 300,000 acres. Therefore only one half is being developed. This is not enough.

Efforts to Promote Export: Efforts to promote export are spearheaded and coordinated by the Government of the Republic of Burundi itself. It has sought to use this vehicle to bridge the gap created by the growing deficit in

the balance of trade. The Council of Ministers has adopted several measures, including fiscal incentives, with the purpose of encouraging Burundi firms to seek new markets abroad. The tone for a comprehensive program of export enhancement has been set by a speech delivered by Major Pierre Buyoya, President of the Republic of Burundi. This speech, labelled a "Discours Program," is the starting point for a wide-ranging effort to design a comprehensive program for the promotion of export. The same theme is laid out in more detail in a Ministry of Commerce and Industry document entitled, "Politique Sectorielle." It explains the various policies of the ministry regarding the sectors under its responsibility. With respect to external trade, the intentions of the ministry are:

- o To strengthen and create additional trade centers, which will encourage commercial activities and the emergence of a dynamic group of local entrepreneurs. These trade centers are located in-country and have traditionally served as distribution and collection centers for consumption goods and commodities;

- o To reduce the balance of trade deficit by improving the quality and quantity of traditional exports and by creating new markets; and

- o To decrease the rate of growth of imported goods through the creation of import-substitute industries.

The document acknowledges the presence of several bottlenecks which need to be removed to facilitate the execution of the program. Among these barriers, the ministry specifically identified:

- o The lack of adequate technology/equipment, training, etc.;
- o The insufficient availability of inputs;
- o The lack of marketing structure;

- o The necessity to improve the infrastructure/transport, collection, selection, warehousing and distribution of certain goods, etc.; and
- o The constraints of a rigid financial structure, with respect to credit and foreign exchange.

The Ministry suggests immediate remedies, including fiscal incentives (a system of taxation and tariffs), credit and insurance facilities, and encouragement to offset.

The Burundi government has begun to move towards implementing the recommendations contained in both the "Discours Program" and the Sectorial Policies of the Ministry.

To Encourage the Private Sector: In his speech program on 3 October 1987, the Chief of State, Major Pierre Buyoya, explained the duties assigned to the Departments of Commerce, Industry and Handcraft:

In the future, we will encourage the creation of small and medium size businesses able to create employment and to be competitive in the export markets. We will encourage the creation of industry, making the Burundian economy an integral part of the Central African Market. We will carry on the process of developing our own industry to replace imports. We are calling investors, Burundian and foreigners, to work with us, by bringing their investments (technical, and financial), to contribute to the realization of our program. For our part, we pledge to secure the economical environment, making it more stable than it used to be. The investments, especially protected by the Code of Investment Law.

Examination of the Problem

WAYS TO IMPROVE AGRICULTURE IN BURUNDI FOR THE EXPORT MARKET AND ALSO FOR DOMESTIC USE

o Agriculture for the Export Market

Burundi supplies rice, cassava, cooking oil (palm oil) to East Zaire and the Republic of Rwanda. The Burundi government belongs to ZEP (Preferential Economical Zone). Burundi must make a choice about what to produce from the market basket of consumer goods, and what to purchase from abroad.

Agriculture maybe where Burundi has an advantage over other countries. Areas to focus upon include vegetables and textiles fiber. Market choices include: regional markets (Zaire-Rwanda, Uganda, Tanzania, Zimbabwe, Zambia); and overseas markets (EEC, Eastern Europe, Gulf countries, USA).

An Operational Plan for Export Promotion. The institutional reforms needed include the Government of Burundi removing any disadvantages, vis-a-vis foreign competitors; periodic adjustments in the exchange rate; facilitating import and export procedures, providing easy access to financing; sensibility to quality standards; and the necessity for good infrastructure, particularly transportation and communication. To stimulate the population to produce more and more, the Ministry of Commerce, the Ministry of Family, and the Ministry of Rural Development should promote the population in cooperatives and help them to compete with the private traders.

- o Agriculture for Domestic Use: Agricultural needs often differ among countries, or even among regions within a country. Such diversity makes it likely that production techniques and agricultural policies that work in one area will not work in other areas.

Agricultural products have a great importance in our regions. Some regions produce extra food while others don't get enough to feed their families. This is the case of beans, rice, fish, cassava and bananas.

- o Kirundo-Cankuzo-Makamba-Rutana have a surplus in beans;
- o Rumonge-Kigwena-Nyanza-Buyogoma and Kumoso have a surplus in rice;
- o Rumonge-Cibitoke-Nyanza Lac have a surplus in cassava; and
- o Regions coast to Lake Tanganyika fish or buy fish easily.

The regions around the lakes--Kanzigiri-Cohoha-Rweru-Rwihinda and Gacamrindi-- may get enough fish for themselves and sell the extra to Rwanda or neighboring regions in North the country when they are encouraged.

The regions of Cibitoke-Rumonge-Nyanza Lac are rich in bananas and should supply bananas to the rest of the country. Exchange of food products should be organized by the Ministry of Commerce, the Ministry of Interior to avoid speculation of private traders.

Obstacles

Near the Tanzanian border the altitude drops sharply at some eastern points into the largely uninhabited. This area is very fertile. People don't like this area because of malaria, viral infections and parasites.

In some areas of Buyogoma, or Kumoso, because it is warm and humid in the dry season, dust may create problems for those with asthma or allergies.

Western side from Nyanza Lac to Rugombo (the border of Zaire and Rwanda), the area is a plain, mechanization, traction and hoe are practicable. Land is still available but people from the countryside don't like this area which is very long, about 250 km. (156 miles) from South to Northwest because of malaria.

The risk of bilharzia exists along much of the Lake Tanganyika shoreline, although some beaches and midlake swimming are considered less dangerous.

Another aspect that I think necessary to mention is an unusual aspect of the Burundi countryside, is the scarcity of town and villages.

The traditional social structure is based on scattered farmsteads or "rugos," and about 90 percent of the population live in the rural areas and engage primarily in subsistence agriculture.

In Burundi, the big question is to know if it will be possible to sustain current levels of agricultural productivity with constant growing population (3 percent) on the land. What we know now is that growing population pressure on land is an impetus to technological development. At one time, Burundi's mountainous terrain was covered by afro-montane high altitude forest. Today

that forest exists only in small national reserves, as population pressure has caused a very large percentage of the land to be cultivated.

The cultivated land is limited and the country is overpopulated. Actually there are nearly one million farmers sharing around 2,223,869 acres (22 acres per farm). Aggravating this situation, there is an unequal breakdown of the population. In some regions, farmers are tightly packed together, while other regions are in the position to receive farmers.

ANYTHING ELSE THAT SEEMS TO APPLY

Commerce: The Department of Commerce is charge with two complementary functions:

- o Control the fluidity and supply of goods to the local market; and
- o To promote exports. To find markets for agricultural, industrial and handicraft products. This is vital for the development of the country's production. The Department of Commerce is there to look after the sale of all surplus, both inside the country and outside. But the department's priority is the home market. It must be regularly supplied.

Internal Commerce: The Fifth Plan (1988-1992) describes three main goals for the home trade:

- o Revitalization of the Trade Centers. Some years ago, the inland trade centers were prosperous. Since then, they have started to fall into disuse. The trade centers must be regularly supplied. This will encourage businessmen to settle inside the country, as opposed to only in Bujumbura;
- o The Emergence of Burundian Businessmen. There are now numerous Burundian businessmen, but their investment represent only 1/100 of the economy. They have to be more active; and the Chamber of Commerce, Industry and Agriculture will organize seminars to make them more of the opportunities available in Burundian business; and

o The Stability of Prices. This is the major economic problem. How to prevent large price increases is a difficult question. Burundi is an inland country, far away from the coasts, often at the mercy of the fluctuating international market. High transportation costs are a major problem. To reduce overpricing, and to encourage the domestic market, cooperatives and consumer associations will be created.

External Trade: Ideally situated between Central and Southern Africa, Burundi has an important role in the regional market. Being part of the ZEP, CEPGL, CEAS (Central African Economical Association). Of course, its main products, coffee and tea, are exported to Europe (EEC and Scandinavia and North America), and Burundi makes every effort to develop commercial exchange with the countries that are members of these organizations. It has not been easy to gain access to foreign markets. To promote exports, several measures have been adopted:

o The Bill of 15 April 1988 on the Promotion of Export Trade, allows advantages to businessmen going into the export business;

o To make Burundian products competitive on the export market, there will be tax relief on all products exported and restitution of custom duties on all goods imported (goods necessary to the manufacture of exported products);

o To help businessmen to canvass the external markets, they will be allowed to deduct from their income tax, all expenses of promotion;

o There is a preferential rate of taxation (50 percent of the regular rate) on all benefits and profits from export trade; and

o Loans will be available when financing export operations, and obtaining hard currencies indispensable to buy raw materials necessary to manufacture

and package exported products. Foreigners wishing to invest in Burundi, in export business, will be also able to transfer salaries and distributed benefits.

CHAPTER III
CAPITAL EXPENDITURE NEEDED

DRAFT ANIMAL

While the use of draft animals in Asia and Europe dates from several millennium before Christ, their use in sub-Saharan Africa is barely a century old. In fact, the use of draft animals in several parts of sub-Saharan Africa began as recently as the 1920's and 1930's. Before the 20th century the use of animals for draft was limited mainly to the carrying of loads by donkeys and mules and the carrying of people by mules, horses and camels. When animal draft power began to emerge in sub-Saharan Africa it followed a pattern similar to that followed in other parts of the world. The first operation to be transferred from human to animal power was usually transport, and only then came plowing. Colonization of Africa and the establishment of settler farms began in the 19th century. Settler farmers were often established in cooler areas, where the soil was predominantly sandy loam, which is particularly well suited to plow-based agriculture, and where they could replicate the short-fallow or permanent farming system of Europe.

In the immediate postwar period, animal traction was contained by supply difficulties that were a result of the crash of 1929 and the epidemics that raged among livestock in West Africa, especially after 1935. After the war, the biggest constraint to the use of animal traction was the priority given to tractorization. All this led to the virtual stagnation of animal traction until the late 1940's and early 1950's.

Postwar efforts, especially in French West Africa, were concentrated on the pilot-farm model. The pilot farms were a network of farms that were meant to act as models from which the local farmers could learn. Little thought or attention was given to farming systems or to problems of financing, veterinary

services, and spare parts that prevented the adoption of the techniques by small farmers.

Postindependence Efforts to Promote Animal Traction

The striking feature of postindependence policy was a sudden emphasis on tractorization and a wish to bypass animal traction. The majority of government resources for mechanization were used for the purchase and maintenance of tractors, and little was left for promoting animal-draft power.

Yield Effects

Case study: Kenya and Burkina Faso. Differences of treatment in land-preparation experiments are differences in the tool used to prepare the land, the hand hoe or the plow, or one plow instead of another. Tillage quality varies according to which of these tools is used. Experiment station results show that the effects of improved tillage vary with soil type and crop. The study made in western Kenya by Oluoch-Kosura (1983); he found significantly greater maize yields for farmers who used animal-drawn plows. He also found that farmers who owned both oxen and plows increased their maize acreage by expanding into fallow land.

Since fallow land is more fertile, it may provide large yields, so the average yields per hectare of farmers who use animal draft are larger than those of farmers who use the hand hoe. The adoption of draft animal technology is generally assumed to provide several benefits:

- o Power for tillage operations which can increase farm production;
- o Manure to maintain and improve soil structure and fertility;
- o Red meat which can be sold for additional farm revenue; and
- o The model animal traction farming system takes advantage of interdependencies between the animal and crop subsystems.

Project designers generally assume that animal traction is an appropriate technology for small farmers, and well suited to the resources and institutions.

Animal traction is expected to generate increases in farm size, promote intensive cropping, and stimulate the creation of small-scale manufacture and repair facilities. At least five activities through which animal traction techniques can influence yields:

- o Land preparation;
- o Planting;
- o Weeding;
- o Harvesting; and
- o Soil improvement.

CHEMICAL FERTILIZERS

Consider the case of the eastern regional development organization in Burkina Faso, studied by Michigan State University, farmers using animal traction are reported to have achieved significantly large maize yields than those using the hand hoe (Barrett and others 1982). The casualty between tillage with a plow and larger maize yields has not been established, since four times as much per hectare is spent for chemical fertilizers on animal-traction farms than on hand-hoe farms (Lassiter 1981-1982). The higher yields attributed to animal traction may in fact be attributable to the use of fertilizers. Consider the two instances reported by Faeger (1984) Diapangou in eastern Burkina Faso and Boromo in central Burkina Faso, animal-traction farms in both areas are reported to have significantly larger yields of white sorghum. These instances are influenced by the same confounding effects of fertilizers use.

Profitability of Fertilizer

If agricultural production is to be increased in Kenya, a significant proportion of the increase will be forthcoming from the small farmer sector. Essential crop production inputs and infrastructure for marketing crop produce must be made available to him. Fertilizer is one of the important essential inputs and its use is profitable to the farmer. Studies indicate that currently, marginal returns to fertilizer use are highest for coffee and tea, at about Ksh 10-14 and approximately Ksh 3 for maize and wheat.

Fertilizing sugar cane is not as profitable to the farmer and returns only about Ksh 1-2 for each Ksh invested in fertilizer. The FAO fertilizer trials on potatoes from 1968-1974, indicate a return to fertilizer use of between Ksh 6-7-10-0. Now that fertilizer prices are falling, and with stable cost prices, the returns to fertilizer use in Kenya should be increasing substantially.

CHAPTER IV

FINANCIAL STRATEGY

Agricultural development requires not only physical and human resources, but also technical and financial assistance from other countries. During early stages of development, foreign assistance comes mainly in the form of governmental aid. At later stages, loans and credits come increasingly from private sources.

United States' investment in Burundi has been limited in the past by many factors, and Burundi's long-established trade links with Europe. The investment climate has changed somewhat with the advent of more liberal trade policy and initiatives under the structural adjustment program.

The government of the Third Republic, under the presidency of His Excellency Major Pierre Buyoya, has stated its commitment to promotion of private investment, both domestic and foreign.

The government of Burundi views foreign private investment as an important means of increasing resources and expertise available for Burundi's development. In recent years, the government has revised its laws governing investment and trade with a view toward encouraging both domestic and foreign private sector activity. Burundi's government has also created public and semi-public financial institutions designed to complement private banking resources and provide venture capital and credit to investors.

There is a bilateral agreement between the United States and Burundi which entered into force in 1969, permitting the Overseas Private Investment Corporation (OPIC) to extend loans and insurance coverage to American private investments in Burundi.

Investors interested in Burundi should note the high degree of reliance on foreign technical and financial assistance in Burundi's capital investments.

One strategy for American investors and exporters is to seek contracts for internationally funded development projects. The World Bank and other development organizations use consulting firms, engineering contractors and equipment suppliers for contracts reaching the millions of dollars. American firms could supply equipment such computers, instruments, vehicles and agricultural machinery as well as training and management services.

Other investment potential is greatest in the primary sector. Strong growth in agriculture can stimulate demand for manufactured goods and provide raw materials for food processing industries. Industries geared to providing inputs necessary for agricultural development hold potential promise; these include production of agricultural implements, fertilizers and pesticides. Extractive industries for exploiting Burundi's considerable deposits of minerals, especially nickel, bastnaesite, cassiterite, alluvial gold, and phosphates would offer investment potential if the world market prices increase.

American investors should note that the government strongly encourages foreign investors to form partnership with Burundi nationals, in order to increase employment.

Trade opportunities exist in some areas. Burundi purchases agricultural products, including malt, flour, and a wide variety of high-value processed foods. There is a demand for construction equipment and agricultural machinery, as well as for office equipment and computers. To compete with European firms, U.S. companies interested in supplying equipment must be prepared to provide technical assistance, training and service and to correspond in French. Informations on major opportunities is available to U.S. businesses through the U.S. Department of Commerce or through the U.S. Embassy in Bujumbura.

CHAPTER V

CONCLUSIONS

In conclusion, this paper has discussed agricultural food production in Burundi and recommended ways to increase issues on food strategy with particular emphasis on what can be done in Burundi to improve food products. Present agricultural problems are due to:

- o Lack of market accessibility;
- o Major transportation routes need surfacing;
- o There is a decrease of effectiveness of regulation in Kenya;
- o The Mpulungu port in Zambia is underequipped;
- o Commercial air cargo is nonexistent;
- o Crop yields are low;
- o Lack surplus for exportation; and
- o Farmers persist in the use of hand hoe.

We see that there are problems of transportation, stabilization of prices, amelioration of new methods of agriculture in order to produce more. From these points mentioned above, I conclude the following:

- o To meet these challenges, Burundi agriculture must depend upon increased per hectare yields as land for expanded crop production becomes increasingly scarce. This greater dependence on higher yields, improved soil fertility will be the primary option for increasing food supplies;
- o There can be no meaningful peace in any country or community if the majority of the people are hungry, ignorant, poor and don't have means of income to afford items of first utilities (fertilizers and animal drawn plows) but on which they are incapable to get or to buy; and

o Agricultural development cannot be expected to succeed without a stable economy. Difficulties in the economy are often used to justify measures that discriminate against agriculture, or that delay the investments and policy reforms necessary to help agriculture.

CHAPTER VI

RECOMMENDATIONS

To succeed on agricultural expansion strategy in Burundi, I recommend the following be done:

- o On 15 February 1990 the government of the Republic of Burundi took the decision to sign the Agreement Act on free market for the products coming from the member states of the Great Lakes Countries Economic Community (CEPGL). The government should verify application of this agreement without delay;

- o Landlocked, we should be opened in four areas of the country. So, our government, Kenya, Tanzania, Rwanda and Zambia's governments should finalize the agreements in transportation matter each one for its concern;

- o We hope Burundi government will take its dispositions to get and use large and mixed airplanes to open further the country;

- o Efforts should be improved on the techniques of improvement of fertilizers. In the scope of reduction of importation of these fertilizers, a particular accent should be put on the production of some fertilizers locally. For instance, use of phosphated fertilizers of Matongo (in the province of Kayanza). Concerted efforts should be improved on the other modern techniques of improvement of soils such as plantation of trees, utilization of green fertilizers and integration of agriculture and breeding. A closer observer, I forecast that new methods of using fertilizers will be received promisingly;

- o The government should improve the methods of cultivating. Burundi must make a choice about what to produce from the market basket of consumer goods, and what to purchase from abroad. Agriculture may be where Burundi has an advantage over other countries; and

o Because many of the population have cattle, the government should convince the population to sacrifice a part of its cattle exclusively for land. For the families which are incapable of getting oxen, the government will make a great effort to get money, borrow some to these families. Animal traction is expected to generate increases in farm size, promote intensive cropping, and stimulate the creation of small-scale manufacture and repair facilities.

TABLE 1

COMPARISON OF FOOD PRODUCTS: AVERAGE OF LAST FIVE YEARS
IN RELATION TO 1988-1989 YEAR PRODUCTION

Production	Average of Food Production 1984- 1988 (in tons)	Food Production for Year 1988- 1989 (in tons)	Increase of Loss (decrease)	Percent of Increases or Losses
<u>Vegetables</u>				
Beans	296,200	222,294	- 73,906	- 25%
Peas	29,980	22,594	- 7,436	- 24.8%
<u>Cereals</u>				
Maize(corn)	162,220	138,343	- 23,877	- 14.7%
Rice	21,880	24,513	+ 2,633	+ 12.00%
Wheat	7,940	6,791	- 1,149	- 14.5%
Sorghum	82,451	71,786	- 10,665	- 12.9%
<u>Oleaginous</u>				
Groundnut (Peanut)	29,774	22,454	- 7,320	- 24.5%
<u>Tubercle</u>				
Cassava	551,340	698,479	+147,139	+ 26.7%
Sweet Potato	591,760	658,505	+ 66,745	+ 11.3%
Potato	41,000	31,658	- 9,342	- 22.8%
Colocase	228,580	285,734	+ 57,154	+ 25%
Banana	1,587,320	1,608,051	+ 20,731	+ 1.3%

TABLE 2

EVOLUTION OF EXPORT CULTURES PRODUCTION
PRODUCTION OF GRAIN COFFEE BY YEAR (IN TONS)

SERIE	CAMPAIGN	ARABICA	ROBUSTA	TOTAL
1	1979-1980	25,928	1,862	27,790
2	1980-1981	17,057	1,700	18,757
3	1981-1982	41,785	1,815	43,600
4	1982-1983	18,458	1,811	20,269
5	1983-1984	32,816	1,492	34,308
6	1984-1985	25,190	1,731	26,921
7	1985-1986	31,145	953	32,098
8	1986-1987	29,952	956	30,908
9	1987-1988	36,223	1,040	37,263
10	1988-1989	34,112	1,200	35,312

TABLE 3

PRODUCTION OF TEA

	1987	1988
Production of Tea Leaves (tons)	20,562	16,926
Planted Surface (Ha)	6,229	6,258
Production Surface	4,872	5,030
Yield to a Ha (Kg)	4,220	3,365
Dry Tea Production (tons)	4,382	3,720
Machinery Yield (%)	21.3	22.0

TABLE 4

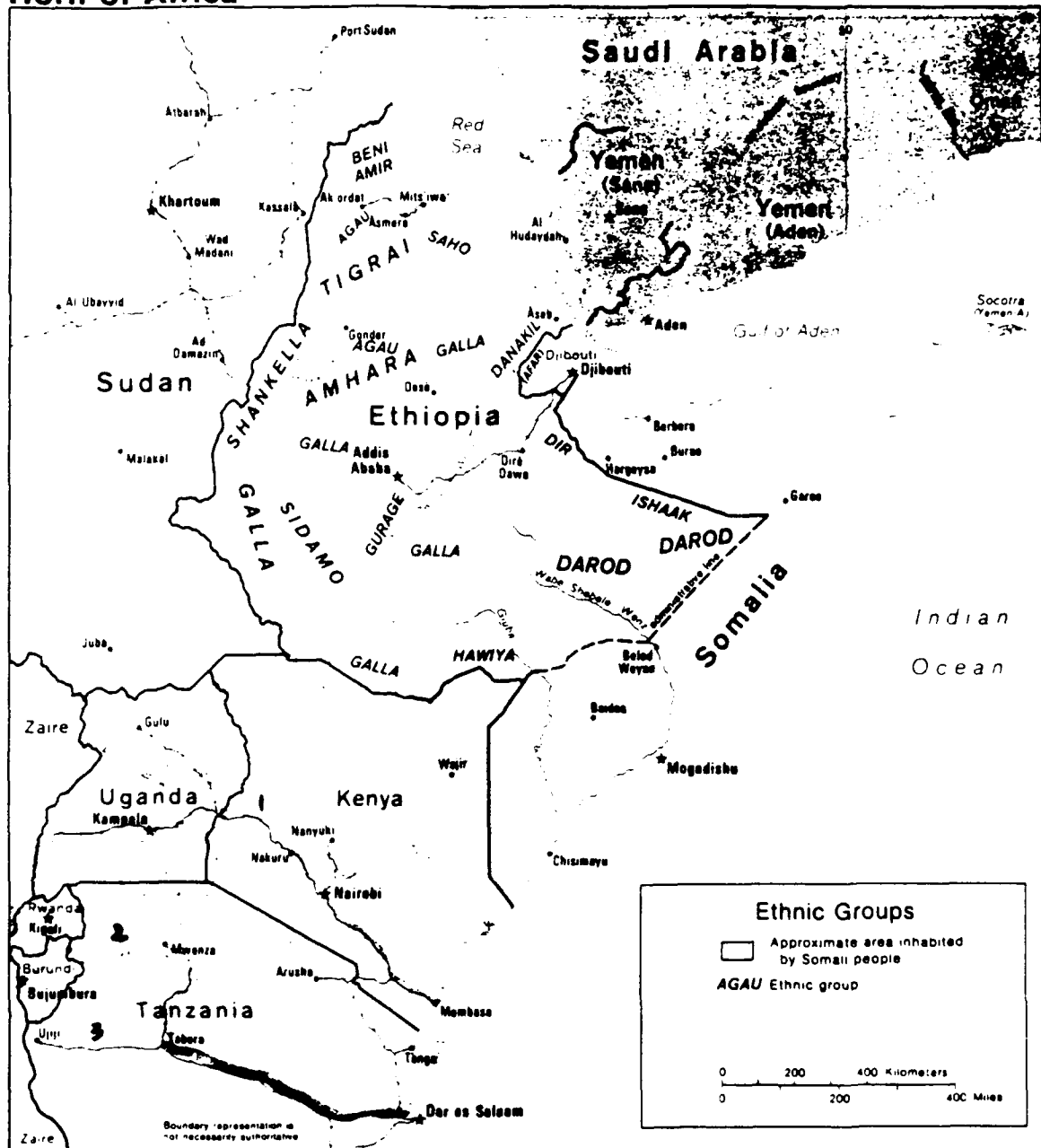
PRODUCTION OF FIBER COTTON (TONS)

Region Campaign	1987	1988
North	2,370	2,024
Center	1,370	1,548
South	3,627	3,363
Southern Extension	603	573
Total	7,970	7,508

ENDNOTES

1. Africa, The Possibility: The Hunger Project-Japan, 1990, by Hiroshi Furuya.
2. Population in Burundi, Agricultural Politics in Burundi.
3. Transportation: Seminaire National sur la promotion des exportations. National Seminaire for Export Promotion, Report 14-17 November 1989, Ministry of Commerce and Industry.
4. PN-AAX-487, Aid Supported Study (62), by Prabhu L. Pingeli, From Hand Tillage to Animal Traction.
5. Use of Draft Animals as a Power Source, African Rural Economy Program, by Merritt W. Sargent and John A. Lichte.
6. Soil Improvement and Fertilization in Face Soil Deterioration and Acidity, Renouveau du 30 November 1990, No. 3357.
7. Importance of the Small Farmer: U.S. Aid Kenya Agricultural Development Program, pp. 36-40 by Lewis B. Williams and John H. Allgood.
8. Favored Aid to Private Sector: Burundi Agricultural and Industry.
9. Efforts to Promote Export: Export Enhancement Program, The U.S. Agency for International Development, Bujumbura, Burundi: 1 December 1989.
10. Financial Strategy: Official Export Guide, 1987.

Horn of Africa



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- 1 : North Corridor
- 2 : Central Corridor
- 3 : South Corridor