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RWANDA FOOD AID PROGRAM:

AN ASSESSMENT

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I. INTRODUCTION

In early 1986, OAR/Kigali began to reconsider the role of food aid in Rwanda. This reconsideration was initiated in large part because Rwanda was receiving large food aid shipments from a variety of donors when at the same time the country had a food surplus. By May 1986, the Mission had concluded that an overall food aid program assessment was needed. The assessment would have six principal objectives:

1. To describe the Rwandan food situation and the role food imports (commercial and concessional) have played in the past and should play in the future. Special emphasis would be given to PL 480 Title II food imports, but not to the exclusion of other forms of concessional food assistance.
2. To describe the Rwandan nutrition situation -- the extent to which malnutrition exists in the country, and why.
3. To assess Government of Rwanda (GOR) food policy, with a special emphasis on international trade policy, agricultural pricing policy, and food distribution policy.
4. To assess the effectiveness of the implementation of the various components of the Title II program. The principal components were the maternal and child health (MCH) program implemented primarily by the Catholic Relief Service (CRS) and the food-for-work (FFW) program implemented primarily by the Adventist Development and Relief Agency

(ADRA).

5. To assess the nutritional and developmental impact of food aid (especially the Title II program) on the beneficiaries, the Rwandan economy, and Rwandan food security. This would help to identify alternative ways in which food aid might be programmed to be more effective at both the micro and macro levels.
6. To identify areas in which further in-depth research was needed to provide the information required for more effective management of the food aid program.

A three-person team carried out the assessment in Rwanda in September and October 1986. The team consisted of an economist who served as Team Leader and focused on the macro-level aspects of food aid and food policy, an anthropologist who focused on the development and economic impact of food aid on recipients, and a physician who focused on the nutritional and health aspects. The conclusions of the assessment are based on a thorough review of published and unpublished analyses of the food and food aid situation in Rwanda; discussions with officials representing various entities of the Government of Rwanda, key bilateral and multilateral donors, and the principal private voluntary organizations, both in Washington, D.C. and in Rwanda; and visits to several nutrition centers and food-for-work projects where food aid was being, or had been, distributed. The annexes to the assessment provide a complete list of documents consulted, persons interviewed, and sites visited.

II. THE RWANDAN FOOD SITUATION

Rwanda does not experience substantial food shortfalls on a regular basis; it is clearly not a chronic, food deficit country. There are, however, chronic nutritional deficiencies in the Rwandan diet, primarily protein and fat deficiencies.

A. Food Crop Production

About half of Rwanda's total land area (2,559,000 ha.) is suitable for agriculture and livestock. Agricultural production accounts for 46% of Rwanda's GDP (1982) and 88% of total exports (1984). The principal objective of agriculture in Rwanda is to satisfy household food need: almost 90% of production comprises food crops such as sweet potatoes, maize, sorghum, bananas, beans and cassava, crops which form the basic diet of the population. Coffee and tea are the main cash crops, comprising 82% of agricultural exports and the principal sources of foreign exchange.

Table 1 provides an overview of the performance of the food crops sector in Rwanda since the mid-1960s.

TABLE 1. -- Average Annual Percent Increase of Food Crops,
Rwanda, 1966-83

<u>Crop</u>	<u>1966-1983</u>	<u>1974-1983</u>	<u>1979-1983</u>
Legumes	<u>2.4</u>	<u>4.0</u>	<u>6.8</u>
Beans	3.8	6.8	9.6
Cereals	<u>3.6</u>	<u>4.4</u>	<u>5.6</u>
Maize	5.2	0.9	6.9
Tuber/Root Crops	<u>7.5</u>	<u>5.9</u>	<u>2.5</u>
Total Food Crops	4.3	4.9	4.0

Source: G. Delepierre, "Evolution de la Production Vivriere et les Besoins d'intensification," Seminaire National sur la Fertilisation, Kigali, June 1985.

The average annual increase in the production of 15 major food crops during the 17 year period 1966-83 was 4.3 percent, a remarkable achievement for any country by any standard; during this period, root and tuber crops out-performed both cereals and legumes: 7.5%, 3.6%, and 2.4%, respectively.

In contrast, during the most recent five year period, 1979-83, legumes out-performed both cereals and root and tuber crops; the average annual rates of growth for these three categories of food crops were 6.8%, 5.6%, and 2.5%, respectively. The production of beans, the most important legume in Rwanda, increased by almost 9.6 percent per year, on average, during this more recent period, and the production of maize, the most important cereal, increased by 6.9 percent per year.

In 1984, food crop production declined substantially due to the severe drought. However, in 1985 it is estimated to have risen by about 15 percent

over its 1984 level, more than compensating for the decline reported in 1984.

Therefore, if one discounts 1984 as an exceptionally poor year due to unfavorable weather, growth in food crop production during the 1979-85 period (which was about 4 percent per year) remained marginally above the growth of population (estimated at 3.7 percent per year during this period). The general consensus in Rwanda is that food production during the next development plan (1987-91) will increase at about the same rate as population growth. Compared with seven other countries in the region (Zaire, Malawi, Burundi, Tanzania, Madagascar, Kenya, and Zambia), Rwanda was the only country to increase per capita food production from 1969/71 to 1980/82 (PAAD for the PRIME project). Thus, Rwanda has been unusually successful in producing enough food to feed her burgeoning population.

Measured in terms of calories, the food supply per person remained relatively stable during the 1966-84 period, close to an average of 2,100 calories per day (Delepierre 1985). When combined with nutrients from meat, fish, and other sources, that amount was sufficient, on average, to cover caloric need. But given an imperfect income distribution, it was not sufficient to cover the needs of the whole population.

B. Demand for Food

The Rwandan population has for the past ten years been growing at an average rate of 3.7% per year (3.8% in 1985). Now estimated at roughly 6.2 million people, it is expected to double within the next 20 years. By the year 2000

the population will probably be more than 9 million, and whatever measures are taken now to lower the current growth rate are not likely to be reflected in reduced numbers before then.

Without taking into consideration other factors related to the improvement of food consumption, the current growth rate will require almost a doubling in the Rwandan food supply within the next 20 years just to maintain present food availability and consumption levels.

Demand estimates are generally based upon standard average energy requirements or mean ratio of total national consumption over total population, depending on data availability. However, human food needs in developing countries are usually above average because of higher energy expenditures in work and also because of the high proportion of growing children and pregnant and lactating women. In addition, requirements must be increased to reflect food crop losses due to pests.

In 1981 The Futures Group projected food demand and availability in Rwanda for the next 20 years. Their demand estimates are based on a per capita consumption level of 563.3 kg of food crops per year. On this basis current demand is 3.5 million MT. At the present rate of population growth, 5.8 million MT will be needed in the year 2000, 4 million MT in 1990. The Ministry of Planning recently conducted a National Budget and Consumption Survey, but the analysis has not been completed.

C. The Magnitude of Food Aid

Table 2 indicates the relative importance of food aid in Rwanda. At least three implications are apparent. First, food aid constitutes an almost negligible proportion of total domestic food crop production in Rwanda -- less than one-half of one percent per year. Indeed, it is probably an even smaller proportion than stated in the table, because some of the food aid commodities that are provided, such as edible oil, are not included in the table as part of domestic production.

Second, even though the proportion of food aid is negligible, the trend is upward. That is, over the past six years food aid to Rwanda has more than tripled, from about 10,000 tons in 1979 to 36,000 tons in 1985.

Third, cereals are the major commodities provided as food aid, comprising about two-thirds of all food aid imported. While food aid provided as cereals represented less than three percent of domestic cereal production in 1979, it increased to over six percent in 1983. Cereals imported as food aid include wheat, wheat flour, rice, maize, and maize flour, all of which are commodities which Rwanda produces or processes.

TABLE 2.--Food Crop Production and Food Aid Shipments, Rwanda, 1979-86, 000 MT

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Domestic Production	4099.6	4195.4	4599.2	4848.6	4640.6	3858.9	n/a	n/a
of which Cereals	253.0	- 270.6	284.2	314.0	309.2	282.6	n/a	n/a
Food Aid	10.6	12.6	17.7	17.7	25.3	21.2	36.0	26.9
of which Cereals	6.9	8.3	12.2	11.3	19.7	15.3	23.1	
of which U.S.								
Food Aid as a % of Domestic Production	0.3	0.3	0.4	0.4	0.5	0.5	n/a	
Cereal Food Aid as a % of Domestic Cereal Prod.	2.7	3.1	4.3	4.0	6.4	5.4	n/a	
Cereals as a % of Food Aid	65.1	65.9	68.9	63.8	77.9	72.2	64.2	
U.S. Food Aid as a % of Total Food Aid								

- a/ Includes bananas, potatoes, sweet potatoes, cassava, sorghum, maize, rice, wheat, beans, peas, and groundnuts.
- b/ Includes cereals, legumes, dried milk, edible oil, fish, and sugar.
- c/ The 1986 food aid estimate is from Henri Neel; also, Neel's estimate of 1985 food aid shipments is 36,700 metric tons, not 36,000 tons.
- d/ Includes sorghum, maize, rice, and wheat.
- e/ Excludes rice due to lack of data.
- f/ From 1979-83, 79 percent of cereals food aid comprised wheat and wheat flour, rice, and maize and maize flour.

D. The Disincentive Effect

Rwanda does not require additional food aid to meet current demand. Adequate food is available on the market for those who have the money to buy it.

A different question, unrelated to demand, is whether or not current levels of food aid sold on the open market are harmful because they have a disincentive effect on domestic production. The answer to this question requires an understanding of the relative importance of food aid in the Rwandan economy. Table 3 indicates the relative importance of domestic production, commercial imports and concessional imports.

TABLE 3.-- Domestic Production and Imports (Commercial and Concessional) of Cereals,
Rwanda, 1979-83, 000 MT

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
<u>Wheat and Wheat Flour</u>								
Local Production	3.0	2.2	1.0	2.4	3.3			
Commercial Imports	5.0	7.4	8.3	7.6	14.0			8.9
Food Aid	<u>5.1</u>	<u>4.9</u>	<u>6.3</u>	<u>5.9</u>	<u>11.8</u>			
Total	13.1	14.5	15.6	15.9	29.1			
Food Aid as a % of the Total	38.9	33.8	40.4	37.1	40.5			
Com. Imp. as a % of the Total	77.1	84.8	93.6	84.9	88.7			
<u>Maize</u>								
Local Production	3.5	4.4	5.8	5.6	7.1			
Commercial Imports	1.4	5.7	6.0	4.4	4.2			2.8
Food Aid	<u>--</u>	<u>0.7</u>	<u>0.7</u>	<u>0.9</u>	<u>1.0</u>			2.9
Total	4.9	10.8	12.5	10.9	12.3			
Food Aid as a % of the Total	0.0	6.5	5.6	8.3	8.1			
Com. Imp. as a % of the Total	28.6	59.3	53.6	48.6	42.3			
<u>Maize and Maize Flour</u>								
Local Production	83.3	85.0	84.8	92.0	110.3			
Commercial Imports	n/a	1.5	1.7	2.0	2.8			
Food Aid	<u>0.7</u>	<u>1.6</u>	<u>1.9</u>	<u>2.3</u>	<u>2.3</u>			
Total	84.0	88.1	88.4	96.3	115.4			
Food Aid as a % of the Total	0.8	1.8	2.1	2.4	2.0			
Com. Imp. as a % of the Total	0.8	3.5	4.1	4.5	4.4			

It is evident from Table 3 that food aid imports and commercial imports constitute a large part of the total market for wheat and wheat flour (77% of total supply in 1979 and over 93% in 1981). Wheat and wheat flour imported as food aid constituted from 34% to 40% of total supply -- high enough to have an adverse impact on domestic production. The U.S. provided wheat products to Rwanda as emergency food aid in response to the 1984 drought.

Total rice imports have ranged from 29% to 59% of total supply. Commercial imports are far more important than concessional imports, the latter representing less than 8 percent of total supply in any one year. The U.S. provides rice to ADRA, and ADRA uses the rice as payment under its food-for-work program. To the extent the rice is targeted to vulnerable groups and can be viewed as supplemental to the normal diet (rather than as a substitute), and to the extent the rice is not sold on the local market, one may assume that it is not having a substantial disincentive effect on local cereal production. However, these assumptions are not valid in Rwanda. Rice can be, and probably is, a substitute for other cereals (such as wheat or maize) and some portion of the rice provided as food-for-work (probably about 50 percent) is sold on the local market (monetized) by the recipients. Therefore, it is not unlikely that the rice imports could be harmful to domestic rice and wheat producers. This is particularly true of commercial imports which are imported and sold at relatively low prices.

Rwanda is self-sufficient in the production of maize. Imports are limited to maize flour, and these represent less than 5 percent of total maize and maize flour in the country. These imports are divided about equally between

commercial and concessional imports. The U.S. provides imports of maize flour to CRS for use as one of the three commodities supplied under its MCH program. It is probably not having any significant effect on domestic cereal production.

As suggested above, it is important to distinguish between food aid which is sold on the market, and that which is used for direct feeding programs; a third category is that provided to meet emergency needs. Table 4 disaggregates food aid provided to Rwanda since 1979 into these three categories. It shows that from 27% to 79% of total food aid is sold on the market (indirect), but the proportion fluctuates over time and no clear trend is apparent. The rest is distributed directly to the beneficiaries. The U.S. provides direct food aid (Title II), and of the total provided, the U.S. provides __%. Approximately 50% of the direct food aid provided by the U.S. is sold on the market by the recipients, and therefore ought to be considered indirect, rather than direct, food aid. Because it is sold, it has the potential to have an adverse effect on domestic producers.

Concessional food aid, whether direct or indirect, comes from various sources, including the EEC, Japan, Canada, and the U.S. The U.S. is by far the most important food donor.

Project food aid has represented almost 30% of total food aid provided to Rwanda for the past 10 years. This type of food aid consists mainly in cornmeal, vegetable oil, and powdered milk, and practically all of it is imported from the U.S.

TABLE 4.--Food Aid Imports to Rwanda, 1979-85, tons

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Indirect of which U.S.	4,924	3,450	7,280	4,589	14,854	8,485	3,000	
Direct of which U.S. rice edible oil maize flour dried milk	5,670	9,176	10,425	10,787	7,670	9,770	7,429	
Emergency of which U.S.	--	--	--	2,340	2,811	2,967	25,537	
Total of which U.S.	10,594	12,626	17,705	17,716	25,335	21,222	35,966	
U.S. Food Aid as a % of Total								
Indirect Food Aid as % of Total	46.5	27.3	41.1	39.1	69.7	54.0	79.3	

a/ Approximately 50% of the rice distributed as direct food aid is actually sold (monetized).
 About 50% of the edible oil is sold, but this is not calculated as indirect assistance.
 Virtually no milk or maize flour is sold. All emergency food aid is assumed to be indirect.

Source:

Emergency food aid was delivered to Rwanda by the international community following the 1984 drought. A little more than 3,000 tons has arrived this year (1986) and about 9,000 more tons is yet to arrive.

Program food aid is growing in importance to the Rwandan economy. Intended to be sold on the internal market to generate local currency, program food aid helped finance 6% of the GOR development budget in 1984 (compared to 3% in 1982-83). Program food aid consists almost exclusively of cereals, primarily wheat and wheat flour, rice, and maize, but the amount of edible oil is increasing. Most program food aid is provided by donors other than the U.S.

To the extent Rwanda enjoys a comparative advantage in the production of these commodities (or wishes to be self-sufficient in these commodities regardless of the social profitability of producing them), it is important that their import not adversely affect producer prices, and therefore domestic production.

There is some evidence that this has not always been, and may not now, be the case. Henri Neel provides examples to show that prices of local products (rice, milk, wheat flour) are higher than the prices of imported products, including those that are imported by private traders. Neel offers four possible explanations for this.

1. The exporting countries produce these commodities more efficiently than they are produced in Rwanda.

2. The exporting countries subsidize the production and export of these commodities.
3. The exchange rate favors cheap imports including food commodities.
4. Producer prices and/or processing and distribution costs in Rwanda are too high to attract consumers.

All of these factors may provide a partial explanation. Certainly Rwandan food price policy plays a part (see Part IV.) If current prices are to be maintained, three measures must be taken, according to Neel.

1. Food provided for direct distribution (such as Title II) should only be used to alleviate starvation and should be purchased on the local Rwandan market, as has been done by WFP.
2. Food that is to be sold on the market should be sold at prices higher than similar commodities that are produced domestically.
3. Commercial importation of food should be discouraged by adjusting the foreign exchange rate and/or by imposing taxes and/or quotas.

A fourth measure that might merit consideration is to modify the commodity mix of imported food aid, emphasizing commodities such as edible oil, the sale of which is not likely to harm domestic production because it is negligible in relation to domestic demand. However, there is a danger that these imports

may compete with Rwandan processing facilities such as the oil facility. An analysis would need to be undertaken to determine if, from an economic point of view (maximizing social profit), Rwanda should process imported oil, or should import oil already processed.

Similarly, imported wheat flour may have a negative impact on the Rwandan flour mill which processes domestically produced wheat. Again, though, it is not clear that Rwanda should, on the basis of social profitability analysis, be producing wheat or importing wheat. A analysis of comparative advantage is needed.

If Rwanda should be processing oil and wheat domestically, then it is likely that oil and wheat flour imports have had an adverse impact on employment, not only in processing but also in producing these commodities. For example, Neel points out that the 8,900 tons of wheat flour imported in 1986 (see Table 3) is equivalent to a cash crop for over 72,000 families -- assuming a yield of 1,500 kg. per ha. and 10 ares (1,000 sq. meters) per family. Similarly, he notes that the 3,548 tons of rice imported as of June 1986 is equivalent to a cash crop for 17,740 families -- assuming 5 ares per family and 4,000 kg. per ha. per year.

Employment creation, while positive, must be viewed in the context of alternatives. For example, it may be more efficient for Rwanda to invest in those commodities in which she has a comparative advantage, and use the foreign exchange earnings to import other commodities, rather than produce these other commodities domestically. Indeed, the government's policy to

achieve food self-sufficiency, together with its reluctance to export food commodities, appears to discount the benefits that may be derived from international trade.

E. Conclusions

Based on the production trends summarized above and the nutrition information presented in the next section, one can conclude:

1. There is not now a need to provide additional food aid to Rwanda to satisfy existing effective demand; that is, a food aid sales program whereby the food is sold on the open market is not called for -- unless the commodity for sale is edible oil or possibly milk. While a sales program saves foreign exchange and can benefit consumers in the short run, it may also impose costs on producers by causing market distortions.
2. There continues to be a need for targeted food distribution programs to meet the nutritional needs of populations at risk; in short, a Title II food aid program, whereby the food is given to the beneficiary, is called for -- on the condition that the food is explicitly targeted on groups at risk. However, to the extent a portion of the Title II food aid is sold on the market, then the same arguments against a sales program apply to the monetized portion of Title II food aid.

These two conclusions reflect an important distinction between "demand" for food and "need" for food. There is sufficient food on the local market in

Rwanda to satisfy domestic demand. At the same time, there is a need for food by certain vulnerable groups who lack purchasing power and/or productive capacity.

III THE RWANDAN NUTRITION SITUATION

A. The Extent of Malnutrition

In its most recent Country Profile on Rwanda, the World Food Programme estimates the average energy requirement at 2,320 kcal per capita per day. In 1979 it was estimated that Rwandan domestic production of the main staple foods covered 94% of energy needs.

For the past three years, USAID estimates that 87% of energy requirements and 75% of protein requirements are supplied by local production. If one takes into account official food imports and commerce with neighboring countries, theoretically food availability covers 100% of the energy requirements and more than 80% of the protein requirements. Availability of fats, however, is low, and only about 50% of the lipid requirements are being met.

Globally, then, there would not seem to be an alarming situation as far as nutrient consumption is concerned. It is necessary, though, to keep in mind that according to the FAO these requirements are "set at levels sufficient to maintain the health of a person engaged in only essential physical activity—eating, washing, dressing, and communicating". Also, these estimates of percentage of requirements met do not take into account seasonal shortages, regional disparities and storage losses.

The few nutritional (as opposed to consumption) surveys or studies that have

been conducted during the last ten years in Rwanda all seem to reach the same conclusion: protein-energy malnutrition (PEM), acute and chronic, affecting an estimated 30% to 40% of young children, especially between two and five years old. Though poorly documented, micronutrient deficiencies may also be a problem. These are affected by seasonal variation as well as socio-economic status. PEM linked with cyclical variations in household income and food supply may also be a problem among adults, particularly in rural areas.

Prevalence of malnutrition in young children can be used as a relatively sensitive indicator of the nutritional status of the population as a whole, since changes in the growth performance of children are usually the first "reflectors" of any shortfall in the family food supply.

In 1985, out of 80,000 children aged birth to five years examined in the 98 CRS-supported nutrition centers, an average of 31.5% were suffering from malnutrition. The prevalence of young child malnutrition was higher in some areas: 33.4% in Kibuye Prefecture, 36.8% in Cyangugu, 33.6% in Rukungu and 33% in Ishyamba. CRS data also show that malnutrition is the second cause of death (17.5%) among children below five years of age.

Partial reports from the remaining public nutrition centers also indicate that 34.9% of all infants were malnourished in 1985. 10% of the children seen suffered from severe PEM (less than 60% of the reference median weight for age). A nutritional survey of 2,000 households (3,000 children aged birth to five years) has just been completed by the Bureau of Nutrition of the Ministry of Health and Social Services (MINISAPASO). Exact figures are

not available yet but seem to suggest a lower general rate of malnutrition than do reports from nutrition centers.

As for now, the current nutrition situation in Rwanda can be summarized as follows:

1. Seasonal acute shortages of food and problems of under-nutrition;
2. Widespread and serious nutritional deficiencies, especially among the rural poor, infants, and young children;
3. Acute and chronic PEM, affecting 30 to 40% of children under five years of age.

B. The Determinants and Causes of Malnutrition

The direct cause of protein-energy malnutrition (PEM), identified in the previous section as the most common and widely distributed nutritional disorder in Rwanda, is inadequate dietary intake of essential nutrients. Particularly in young children, the effects of marginal or inadequate nutrient intake can be exacerbated by the effects of infectious or parasitic illness, including respiratory, diarrheal, and/or febrile illnesses. Nutrient consumption and patterns of morbidity are in their turn affected by a host of linked social, cultural, economic and environmental factors, making the identification of specific determinants of malnutrition a complex undertaking. It is clear that multiple interacting variables are associated

with the distribution and severity of nutritional disease in Rwanda.

Previous syntheses of available data on Rwanda and the surrounding area do little to isolate the factors of greatest significance in explaining the incidence and distribution of malnutrition. The authors have tended to regard it as an undifferentiated, country-wide problem; McCook (1980), for example, lists lack of adequate food, low income, ignorance, and social customs and taboos as the principal causes of undernutrition throughout the Great Lakes region. The draft Rwanda SIP is no more specific, singling out an inadequate and unbalanced diet, poverty, short birth intervals, and traditional food habits as the primary causes. Such generalized statements do little to assist the Government of Rwanda, donors, and PVOs to identify the fundamental causes of nutritional problems or to develop effective strategies for reducing their incidence and prevalence.

Although most previous studies (cf. Vis 1975, Vis et al. 1975, Vis 1982, Meheus et al. 1977, Klaver 1979, van Sprundel et al. 1983), have identified PEM of early childhood as the most widespread form of malnutrition in Rwanda, this disorder is by no means evenly distributed throughout the country. Data provided from nutrition centers administered by Catholic Relief Services for the first nine months of 1985 show considerable regional variability in the incidence of low weight-for-age; (measurements of height, weight and age, with reference to international means or medians, are the primary criteria for diagnosing PEM). Two nutrition centers in Cyangugu Prefecture, close to the border with Zaire, consistently report the lowest mean weight-for-age of participant children and the highest proportion of

seriously malnourished children (defined as those with a weight-for-age of less than 60% of the reference median) of all 98 CRS-sponsored centers in Rwanda during the nine-month period. Partial data for the last quarter of 1985, confirm the generally poor growth performance of children attending Ministry of Public Health and Social Affairs, Nutrition Bureau nutrition centers in Cyangugu which are not part of the CRS network. CRS and Nutrition Bureau data also indicate relatively high percentages of moderate and serious malnutrition in portions of Gikongoro and Ruhengeri Prefectures. These more recent data are in accordance with the regional distribution of low weight-for-age recorded in the national nutrition survey conducted in 1976 (cf. Meheus et al. 1977, van Sprundel et al. 1983) and even earlier consumption studies carried out by Vis and colleagues (Vis et al. 1975). The geographical pattern is also confirmed by the as-yet unreleased results of a national survey done by the Bureau of Nutrition with support from the WHO in 1985 (J-D Munyamasoko, pers. comm.).

Malnutrition in Rwanda is also affected by seasonal variation in the availability and price of foodstuffs, but the extent and importance of seasonality is not well understood. This is due in part to the fact that most nutritional surveys involving weight and height assessments are conducted at one point in time, so that seasonal variation in growth cannot be detected. Seasonal changes in protein and calorie intake have been demonstrated in food consumption studies (cf. Vis 1982, Laure 1982), but the impact of these consumption patterns on actual nutritional status has not been confirmed by concomitant anthropometric and clinical assessment. CRS data for January through September 1985 show very small changes from month to month in mean

weight-for-age figures and no regular pattern of seasonal variation within or among the prefectures. Analysis by Hitchings (1979) of CRS Rwanda data controlled for age and duration of program participation shows a regular seasonal effect on growth in young children; but this effect is not nearly so pronounced as such seasonal patterns appear to be in many other African settings. Nonetheless, Hitchings recommends a strategy of seasonal targeting of food aid. Morris (1979) has concluded that the Rwandan food production system appears to provide a relatively even calorie supply over the year; fluctuations in protein availability, derived principally from vegetable sources such as beans and cereals, are more marked (cf. Vis 1982).

The geographical distribution of undernutrition in Rwanda is clarified somewhat by an examination of agricultural production data from the National Agricultural Survey. According to the analyses of Craig, agricultural output in Gikongoro and Cyangugu prefectures consists of fewer calories per capita than anywhere else in Rwanda: 1,427 and 1,568 kcal/person/day respectively, against a World Food Programme recommended daily allowance for Rwanda of 2,320 kcal/person/day. Gikongoro also ranks last in cultivated area and value produced per capita. Cyangugu performs much better in these areas, but much of the cultivated area and the value added derive from coffee and tea production, two crops for which real returns to producers have been declining steadily since 1980. The heavy dietary reliance on bananas and cassava in Cyangugu is also relevant; these crops produce large amounts of kcal per ha but are low in calories in relation to their bulk, and severely deficient in protein.

Although available data suggest that Cyangugu and Gikongoro are regions of Rwanda where malnutrition is of particular concern, no part of the country--including those areas which produce a per capita calorie surplus--is devoid of undernutrition. According to the unreleased Nutrition Bureau study, 27.5% of all children surveyed have achieved less than 80% of the reference median weight for age, and 6% are seriously malnourished (less than 60%). In interviews, Ministry of Health and Social Services officials and nutrition center staff identified the following factors as underlying the incidence and prevalence of undernutrition: low yields from poor soils, inadequate size and/or quality of landholdings, late introduction of supplementary foods and infrequent feeding of young children, competition between production for consumption and production for sale, inadequate off-farm income-generating opportunities, and the prevalence of impoverished female-headed households. Some of these factors are more significant than others. Poor soil quality was identified by nutrition center staff throughout the country as an important factor, even in areas where such an assessment is contradicted by local agricultural authorities and the work of Delepierre (1974). The health chapter of the SIP, citing no direct evidence, indicts female-headed households, yet studies from many other African countries have demonstrated a strong relationship between management of a household and its resources by women and good nutritional status among member children (cf. von Braun and Kennedy 1986). Nor is total household income or food production capacity directly related to nutritional status, although regularity and type (cash vs. kind) of income do seem to have an effect, with regular or in-kind income positively associated with nutritional status. In Fleuret's and Kennedy's Kenya studies, children in landless households are as well or better nourished

than those in land-owning households, and there is no necessary relationship between size and extent of landholdings and nutritional outcome.

On the basis of the data at hand it is not possible to conclude positively that these various income and management related factors are significant in Rwanda, but, given the consistency of the results of studies conducted elsewhere in Africa their role should be investigated. The significance of commercialization of production on nutritional status among Rwandan farmers is currently being addressed in a project carried out in Gisenyi Prefecture under the auspices of the International Food Policy Research Institute. Data collection is still ongoing and analysis is incomplete, but preliminary results indicate that the very low rate of undernutrition is unrelated to the introduction of tea cultivation to the area (Csete, pers. comm).

The question of infant feeding practices, including introduction of supplementary foods and frequency of feeding, was mentioned by nutrition center personnel throughout the country as a significant factor in the determination of nutritional status in Rwanda. Following a pattern not limited to Rwanda alone, birthweight of infants is slightly below the reference median, possibly as a result of both maternal undernutrition and deliberate efforts on the mother's part to limit weight gain during pregnancy and reduce potential difficulties in labor occasioned by a large baby. Nonetheless, available data indicate that mean birthweight in Rwanda is within normal limits.

Substantial declines in weight-for-age as a percentage of the reference median

begin in the fifth or sixth month of life and seem to be a consequence of a culturally-conditioned reluctance to introduce supplementary foods at that point in a baby's life when breastmilk alone is inadequate to supply the child's calorie needs. Although according to the National Fertility Survey initiation of breastfeeding is almost universal in Rwanda and continues for a mean of 20 months, the calories supplied by the breastmilk of even a well-nourished mother must be supplemented by the introduction of other food items by the age of five to six months. Many authorities advocate the gradual addition of these foods--usually cereal or tuber-based gruels or pastes--beginning at the age of three to four months so that the infant can become accustomed to swallowing food rather than sucking.

By the age of 12-14 months the child should be consuming the same foods as constitute the typical adult diet, with the continuation of breastmilk if possible. According to the testimony of many of the nutrition center personnel interviewed, Rwandan mothers often do not introduce supplementary foods to their children until the age of nine months or more, and these children do not receive the full range of foods consumed by their parents and older siblings until the age of 18-24 months. In this way intra-household distribution of available nutrients is skewed away from those conventionally viewed as being at greatest risk. Staff at Butaro Nutrition Center identified the age range of seven to 15 months as the most vulnerable period in the lives of young children brought to that center, because of these feeding practices.

Along with the late introduction of solids, the nature of the supplementary foods and the frequency with which a baby is fed also affect his nutritional

status. Most of the gruels which constitute additions to infant diets are relatively high in bulk and low in calories, with cereal-based dishes containing more nutrients on the whole than tuber-based concoctions. When infants are infrequently fed with these exceedingly dilute substances, calorie intake remains inadequate and if the gruels are allowed to sit and become contaminated with bacteria or parasites the risk of infection also is increased. The infrequency of infant feeding has in turn been linked to the heavy work burdens imposed on Rwandan women and the increasing scarcity of fuel, which renders frequent preparation of separate meals for young children impractical.

To summarize, there is still a good deal that remains to be learned about the indirect determinants of nutritional status in rural Rwanda. Although there is no direct evidence linking variability in rates of undernutrition to such factors as female household management, source and amount of income, and increasing commercialization of production, the evidence from non-Rwandan studies suggests that they do play a role and would bear further investigation. Level of education of the mother also is significant and must be examined, particularly given that the infant feeding patterns described above do not alone account for the existing distribution of undernutrition. It does seem clear that current infant feeding practices are significant factors in the nutritional status of some young children, and that nutrition education efforts should address the question directly. Regional disparities in per capita calorie production also seem directly related to what is known about the geographical distribution of undernutrition; such disparities could conceivably be ameliorated if stated GOR policies of increased inter-regional

exchange were implemented.

Although there is some evidence that Rwanda is even now slightly deficient in total production of calories, protein and lipids, and that increasing population growth will continue to reduce per capita nutrient availability, there is no direct evidence that distribution of food aid under Title II as currently organized has the capacity to provide nutrients to those actually in need of them, since this population remains to a large degree unidentified, or of itself to precipitate changes in infant feeding practices and intra-household distribution of foodstuffs that are most clearly linked to nutritional problems.

IV. GOVERNMENT FOOD POLICY

Increases in area under cultivation explain most of the production increases summarized in Table 1. Indeed, with the exception of maize and groundnuts, significant yield increases have not occurred over the last 10 years. To what extent can acreage expansion continue to meet the food needs to Rwanda's rapidly growing population?

Delepierre has estimated that by the year 2000, slightly over 1,016,000 hectares of cultivable land will be available, of which 632,000 (about 62 percent) are currently under cultivation. If, as a result of population pressure, cultivated area continues to grow at the rate of 3.1 percent, as it did from 1974-83, the available supply would be exhausted by 1998 or 1999. Thus, the need to intensify agricultural production is inescapable.

A. Agricultural Intensification

The key elements of an agricultural intensification program in Rwanda include investments in the following:

- ← agricultural research to develop new yield increasing technologies, with an emphasis on the "farming systems" approach;
- agricultural extension to transfer the new technologies, including anti-erosion measures and composting procedures, to farmers;

- the assurance of a market, not only to absorb the surplus production but also to provide the income needed to purchase inputs;
- increased availability of inputs needed to improve the production potential of the poor natural resource base that exists in many parts of Rwanda.

B. Food Price Policy

Until recently, Rwandan legislation required that food and agriculture prices be conditioned by free market forces operating through demand and supply. However, in order to prevent excessively high prices and to insure basic market equilibrium, a price control service was created whose role consisted mainly in fixing maximum and minimum prices of commodities and services. Over the past ten years, a series of decrees were adopted fixing ceiling and floor for bananas (1975), beans (1976), potatoes (1977), and wheat (1984).

The government is now supporting the commercialization of the food crop sector through a program of price supports. Support prices, which were announced January 21, 1986, establish the price at which OPROVIA, a government parastatal, will buy a predetermined quantity of virtually all food crops produced in the country. However, because the support price is higher than the current market price of most of these commodities, the policy would seem to invite one or more of the following problems:

-- OPROVIA will need to store the commodities until the market price is

higher than the price at which it purchased the commodities; storage normally has a high opportunity cost;

- OPROVIA may need to sell the commodities at a loss, if the market price does not rise sufficiently at least to equal the fixed price at which OPROVIA purchased the commodities;
- OPROVIA can sell the commodities to the prisons, the army or other entities that will pay higher prices than other buyers are willing to offer;
- if the fixed price set by OPROVIA is above the prevailing market price in neighboring countries, similar commodities from these countries may flow into Rwanda, thereby depressing the Rwandan market price even further;
- if OPROVIA is legally bound to purchase only a predetermined, relatively small quantity of a given commodity, as distinct from serving as a buyer of last resort, then producers will quickly learn that the price support program does not represent a guaranteed market.

Indeed, by October 1986 the support prices were not being honored, and current market prices were far below the fixed ones as reflected in Table 5. This was due primarily to a good harvest for some commodities (such as potatoes and beans) as well as to the market being flooded with imported commodities (including rice, wheat flour, and milk) that are competing with those that are produced locally. It is expected that the government will soon develop a

series of new measures to reinforce the existing ones. But it is not certain to have the desired results, since the fixed prices do not apply to imported commodities competing with, and usually sold at a lower price than, locally produced commodities.

An alternative food pricing policy might be designed to support the prices only of those staple food commodities that are needed for food security at the national level and in which Rwanda has a comparative advantage. This policy would involve a stocking scheme under which market prices would operate within fairly wide price bands: if the price exceeded the ceiling for key "food security" commodities, then these commodities would be released onto the market; conversely, if the price fell below the predetermined floor, or support, price, the government would purchase all that was offered at that price.

This policy would also explicitly endorse the benefits to be achieved from international trade by supporting the production of those commodities in which the country had a comparative advantage, facilitate the export of these commodities, and use the foreign exchange to purchase commodities in which Rwanda may not have a comparative advantage. (The World Bank plans to support a study that will assess the comparative advantage of various crops, including rice, sugar, and wheat, and the extent to which they compete with other crops for scarce resources, especially land; the expected completion date is late 1987.)

A pricing policy that provides an incentive to the producer, assures food

TABLE 5. Official Market Prices, Selected Food Products

Product	Official Jan. 1986	Market (rural) Sept. 1986	Market (urban) Sept. 1986
Beans	35	22	30
Irish potatoes	10	12	5-8
Maize (whole)	31	10-15	15
Wheat (whole)	39	25	35
Sorghum	22	20	25
Wheat flour	64	n/a	30
Sweet potatoes	17	10	10
Bananas	14	200 (regime)	200 (regime)
Cassava (tubers)	14	n/a	n/a
Cassava flour	n/a	30	30

Source: OPROVIA figures and market surveys by team members

security at the national level, and does not at the same time cause OPROVIA to go bankrupt (as seems likely under the present pricing policy) would seem desirable.

C. Food Distribution and Marketing Policy.

Public Sector. Two parastatals are responsible for the distribution and commercialization of food commodities in Rwanda. The government is presently reinforcing the financial and technical support of these two organizations.

OPROVIA, the office for crop and animal food, has as its main responsibility to sustain and improve the commercialization of basic food crops. In order to regulate current prices to have direct links with producers through cooperatives and the pesantry, it intends to control at least 15% of the market. OPROVIA is also responsible for the commercialization of other basic food commodities (salt, sugar, oil) locally produced and imported and for the management of the food aid program. Usually, OPROVIA buys 85% to 90% of existing stock from traders. Recently, it decided to buy half from traders and half directly from producers and cooperatives. The government presently is considering buying only from the cooperatives.

The prices established by the government in January 1986 are putting OPROVIA in a difficult position, since it must buy at a higher price than it can sell, especially for potatoes and corn. Consequently, it is obliged to buy less.

The second parastatal is Grainery. It has constituted a minimum food security

stock of about 8,000 tons, mainly of beans and cereals.

Private Sector. The private sector plays an essential role in surplus collection and market supply. Although government permits are required to import food, there is effectively no control over the amount of food imported by the private sector.

TRAPIRO, a (national) private cooperative owns 31 selling points throughout the country. This organization does not buy food from the local market, and it sells only imported commodities. It shares with OPROVIA the responsibility of selling food aid.

The tendency is for the GOR to limit the speculative role of the private sector by supporting producers groups and cooperatives.

V. THE TITLE II FOOD AID PROGRAM

A. Background

Catholic Relief Services (CRS). Title II food aid to Rwanda commenced in 1963, when CRS established its program to assist mothers and young children through nutrition centers (MCH distribution). Until 1980 CRS remained the sole PVO distributor of U.S. food aid in Rwanda, at which time the program included MCH distribution, school feeding, emergency relief and general relief components. Throughout its history the CRS/Rwanda program has emphasized MCH distribution through nutrition centers above all other components, an emphasis which has until recently been a common feature of CRS programming in sub-Saharan Africa. In FY 1986 CRS/Rwanda distributed some 7,500 metric tons of soy-fortified cornmeal, nonfat dry milk, and soybean salad oil through its system of 98 nutrition centers located all over the country. MCH distribution accounted for over 77% of all CRS food aid distributed in 1986. This aid constitutes less than one-half of one percent of the total food needs of the country and according to CRS reaches about 3% of the population. Principal beneficiaries are intended to be women in their childbearing years (who in Rwanda are frequently pregnant, lactating or both) and their children aged five years and under.

CRS programming in sub-Saharan Africa is based on the premise that the objectives of food aid are both the direct improvement of nutritional status and the delivery of economic aid to the recipient household in the form of food. CRS argues that providing appropriate nutrition education together with

additional resources (e.g. food) to household members will give that household more flexibility in the allocation of all its resources. As a result, food consumption, especially among vulnerable members, will increase, and their health and nutritional status will be positively affected. A crucial condition of such an approach is that the economic value of the food aid package be sufficiently large to have a significant effect at the household level; it is assumed that the food aid will be shared by all family members rather than reserved for the exclusive use of just some of those members.

CRS nutrition center programs do more than simply distribute food. As a means of assuring that program objectives are met, staff monitor the growth achievements of recipient children. Mothers and where possible fathers (whose participation is encouraged and in some cases mandated) are provided with general health and nutrition education and information. Food-processing and cooking demonstrations utilize locally-available foodstuffs, often provided by the participants themselves, in the preparation of suitable infant foods. Most nutrition centers have both demonstration gardens, which adult participants cultivate as a group, and small animal husbandry projects or demonstrations. These services, the salaries of some nutrition center employees (moniteurs, monitrices, animateurs) and some transport costs are supported by the collection of a participant contribution (cotisation) of 75 FRw (U. S. \$0.85) per ration per month. The nutrition centers thus attempt to satisfy Rwandan needs by providing a program that not only addresses nutrition problems, but also which tries to integrate improvements in health, food production, household income, and other objectives into a comprehensive program. Until now, the objective

of simultaneous improvement in household economic status and nutritional status of vulnerable members has had priority, and the way to achieve these simultaneous improvements has been held to be the provision of an "economic" ration of food bolstered with nutrition education.

Until recently CRS/Rwanda's target population for food assistance has been the entire population of children aged birth to five years, although for 1987 the target age group has been narrowed to include only those aged six months to three years. The birth-five year age group is the group in the population most vulnerable to nutritional stress. No criterion is used to screen program applicants, so that many CRS food aid recipients are not malnourished at the time they enter the program. CRS wishes to operate the program with a ~~family~~ preventive focus, although variable proportions of the children are malnourished at entry and presumably for them the program will function both as a curative and a preventive regime. The basic rationale is that all children are vulnerable and to exclude some because they are not currently malnourished increases the possibility of their future nutritional decline. This can be avoided as nutrition education, food aid, and income effects of the ration package function jointly to prevent such an adverse change.

Adventist Development and Relief Agency (ADRA). Title II food aid delivered through ADRA has a very different history and rationale. The program began in 1980 and initially consisted almost totally of school feeding. According to the Director of ADRA/Rwanda, this focus was discouraged by the Government of Rwanda on grounds that it was a disincentive to some families' production for their own needs. At the same time that school feeding was

being discouraged, several local organizations (communes and churches) approached ADRA with requests that they be supplied with food to use as wages in various development projects, especially roadbuilding. A larger and larger share of ADRA Title II supplies has subsequently been dedicated to food-for-work activities. ADRA staff state that the two principal objectives of the food-for-work program are creation of employment and improvement in nutritional status.

ADRA has a number of criteria and a set of priorities which are employed to evaluate the various food-for-work activity proposals submitted. Foremost among the criteria are "bottom-up" initiative, feasibility, equitability, and congruence of the project with both local and national development strategies. Particular categories of projects are preferred, especially rural health, food production and soil conservation. In all cases the initiating organization--commune, school committee, etc.--must bear a portion of the costs.

The underlying philosophy of ADRA activities is equitable, sustainable, beneficiary-initiated development. The "bottom-up" initiative, coupled with the requirement that the proposers support some of the project costs, means that participants have a real commitment to the activity and that they will get something enduring that they both need and want. ADRA officials regard the program as an unqualified success, claiming that none of the 300-plus projects undertaken so far has failed. Unfortunately it is unclear precisely what criteria are used to evaluate success vs. failure.

B. Implementation: Uses of Food and Money

CRS. Catholic Relief Services in Rwanda is the cooperating sponsor for providing Title II food commodities as nutritional supplements at nutrition and social centers throughout the country. CRS began operating its Title II food program in Rwanda in 1964 under an agreement signed with the GOR in October 1963.

Distribution of Title II commodities is made from a central warehousing facility in Kigali to all categories of recipients including nutrition centers, boarding secondary schools, vocational centers and various other child feeding programs. It is made in three month allotments, except for areas inaccessible during the rainy season and to which it is often necessary to provide a six-month supply of food in one delivery, and is made on the basis of monthly reports submitted by the centers, according mainly to the number of current beneficiaries and the stocks on hand. CRS personnel have full latitude to control the distribution of Title II commodities.

Commodities currently distributed are soy-fortified cornmeal, nonfat dry milk, edible oil and bread flour. Each recipient center has to sign an agreement with CRS, stating clearly the source of the food aid commodities and the program requirements. All centers pay FRw 3 (U. S. \$0.03) per kg for transportation of the commodities to their centers, and a small storage and handling fee of FRw 4 per kg.

TABLE 6. CRS Food Commodities: Rations by program in kg/recipient/month.

Program	Cornmeal	Milk	Oil	Wheat Flour
MCH: mother	2	2	1	-
MCH: child	2	2	1	-
Other child feeding	3	1	0.5	4.5
School feeding:				
secondary	2	1	0.5	5
School feeding:				
vocational	1	0.5	0.25	1
General relief	4.5	1	0.5	-

Most of the commodities are directed toward maternal and child health. For FY 1985, 70.5% of the recipients were concentrated in this sector, which is recognized as the highest-priority in the nutrition sector by both the GOR and CRS. In FY 1986, emphasis again was on MCH, which received 77.3% of the food aid distributed by CRS. The provision of blended and fortified foods in the MCH setting is meant as a nutritional supplement to the diets of participating mothers and their children under the age of five years, as well as providing economic assistance to the family.

Initially the nutrition centers functioned largely as a source of health and nutrition education (including demonstration gardens and small animal raising) and growth surveillance. Only one child at a time per family was admitted as a recipient, for a three year period. The program is mainly a preventive

one. Once every month, at some centers more frequently for severely malnourished children, mothers and children come to the nutrition center for weighing, education, and food distribution.

In 1984, after realizing certain limitations in the existing approach, CRS attempted to increase the likelihood of the child receiving the food as a supplement by introducing a "family" or "multi-ration" to the program. This multiration program, besides providing short-term food assistance, also attempts to have a long-term impact by assisting families in their efforts to improve their economic status so that, at the time of their discharge from the program, the family will have means to sustain increased budgetary needs.

The pilot multi-ration program was started in late 1984 with about 800 families selected from four nutrition centers which had expressed an interest in the approach. The families, while receiving a doubled monthly ration of 4 kg cornmeal, 4 kg NFDM and 2 kg oil, are also engaged in development activities in the home setting with the assistance of a hired animator. Most families receive and attempt to raise chickens or rabbits.

CRS has had support from Title II Outreach grant funds since 1983. These funds have been used to improve the delivery system for Title II food commodities and to strengthen commodity management and accountability. The funds have also supported increased supervisory visits to nutrition centers and have facilitated the implementation of the pilot multi-ration and associated development activities program.

ADRA. ADRA receives about 7,000 metric tons of Title II food aid per year, and uses it to support food-for-work activities. In FY 1986 approximately 50,000 beneficiaries (10,00 workers, plus an estimated four household members per worker) received varying quantities of non-fat dry milk, oil, and rice, and in exchange worked on development activities initiated by communes, schools, churches and other Rwandan institutions. During 1987 approximately 70,000 beneficiaries are expected to be served, even though ADRA has not requested an increment in its programmed level of food. Although ADRA's stated preference is for the construction of health facilities and even more emphatically the carrying out of agricultural development activities, of the 225 projects completed in 1986 and 1987, 61% involved the manufacture of bricks, and another 23% were road-building projects. Another 21% of projects used the bricks to build schools, prefectural buildings, and staff accommodations. Most projects required between three and six months for completion, and were carried out primarily during the dry season when agricultural activity is less intense than at other times of the year. Most of the direct recipients of food in exchange for work are men, and the quantity of food they are provided is sufficient to provide only 1,200 kcal/person/day in the five-member household.

ADRA plans some modifications to its program for 1987, most notably an increased emphasis on agricultural activities. This will be accomplished in several ways: food production and soil conservation projects initiated by local organizations to which ADRA will contribute food as wages; creation of demonstration gardens at the eight ADRA nutrition centers, where men will learn innovative food production methods at the same time that women receive nutrition education; and large-scale garden development where farmers will be paid in food-for-work until their harvests are ready. Some of these plans

show an unfortunate lack of appreciation for the nature of the existing agricultural division of labor and labor availability in Rwanda. Since women produce the bulk of the food consumed in the rural household it is inappropriate to target men as the recipients of training in food production methods, and as most households are at least seasonally short of agricultural labor (cf. Clay 1986, Loveridge n.d.), the teaching of "intensive gardening techniques" that demand an even greater labor input is somewhat misguided. A program involving men and women equally in both nutrition and health education and agricultural activities and that rewards both partners--not just men--for their participation is a much more realistic approach.

ADRA-supported food-for-work projects are initiated by communes or other social or political institutions or organizations. Their proposals are routed through the Prefecture in which the activity is to be located and ultimately to the relevant Ministry for review. Once approved by Rwandan authorities ADRA makes its support decisions in accordance with its criteria and priorities. A contractual relationship is established between ADRA and the responsible organization. That organization must thereafter undertake most management duties, except for the actual distribution of the food to the workers.

ADRA counts on the local authority or institution which initiated a project proposal to do its own recruitment of workers. For ADRA the principal criterion for worker recruitment is poverty. Site visits to several activities made it clear that when criteria are applied to worker selection they are quite variable, and that neither economic nor nutritional needs is

necessarily among them. Some assume that self-selection takes place, in that only the poorest and the most needy would step forward to accept work when the wage is paid in food rather than in money. Most workers and receive 45-50 kg of rice for 20 days (in one month) of work. Although oil and milk powder are also provided to ADRA for such distribution, no one we met is currently receiving milk and only some workers get oil, which seems to be delivered once per three months rather than semiweekly or monthly as the rice is. The quantity of rice provided to each worker is based on a 10 kg ration for each person in a family of five, five being the approximate mean household size in Rwanda. No rationale is stated for the oil and milk components of the ration, 1/2 and 1 kg respectively, but in any event delivery of these two foods is less frequent than the provision of rice.

As with CRS, an unstated assumption underlying the ADRA approach is that virtually the entire rural population is potentially vulnerable to poverty and hunger. Hence there is an essentially uncritical approach to recipient recruitment on ADRA's part, especially since recruitment is carried out by presumably knowledgeable local official. On the part of both ADRA and the commune, it is also assumed that only those in serious need do not have anything better to do than to work for food rather than cash, thus virtually guaranteeing the delivery of benefits to truly needy persons.

In all cases the commune or other initiating or sponsoring organization is supposed to bear a portion of project costs. In the case of roads ADRA supports 80-85% of costs because of the labor-intensive nature of the work. For other types of projects the sponsor must provide materials, such as

concrete, corrugated iron sheets, doors, etc. and usually ends up providing about half of project costs, including topping up the food-for-work salaries of skilled workers with cash, and providing day to day management and oversight.

In the past two years ADRA has also monetized small quantities of oil (a total of 103 metric tons) in order to generate local currency. The money was used to buy local materials that permitted completion (and thus ensured success?) of some of the projects. A more ambitious monetization proposal for a total of 500 metric tons of oil and milk powder has been submitted to AID for this year. Purchase of materials, payment of transportation costs, construction of warehouse space, and payment of 25% of workers' salaries in cash rather than food are some of the uses to which these funds would be put. The payment in cash is expected to reduce the extent to which workers sell the rice with which they are provided. Informants estimate that currently the workers sell about half the rice and that the household members eat the rest. According to some observers this food-for-work rice is sold for a lower price than domestically-produced rice, hence undercutting the local market and discouraging the local producer. A working hypothesis is that partial monetization of the food-for-work wage would discourage such sales, thus removing the possible disincentive to local rice growers and encouraging a resumption of production, if in fact sales by food-for-work recipients have had such a disincentive effect.

C. Evaluation of Implementation: Recipients

CRS. CRS/Rwanda is presently providing 98 nutrition centers with Title II commodities and thus is supporting the majority of the 170 centers in the country. According to the CRS Annual Report for 1985, the program has increased the number of children under the age of five years who benefit from the MCH program from 34,000 in 1978 to 91,800 in 1985. In 1985 about 7,000 tons of food were distributed, reaching a total of 124,000 beneficiaries; in addition to young children, 6,454 pregnant or lactating women, 25,000 students, and about 8,000 orphans and indigent persons were assisted.

As indicated above, malnutrition and poverty are not equally or randomly distributed in Rwanda, so that some areas of the country as well as some groups in the population are more seriously affected than others. One of the basic assumptions underlying the humanitarian and human resource development utilization of food aid, which is most clearly articulated with reference to Title II aid, is that strategies will be employed to make sure that most of the food is delivered to the people most seriously in need of it. Various definitions of the most needy or vulnerable groups in the population are employed, and various strategies are used to direct, or target, the food aid to these vulnerable people.

CRS broadly defines the vulnerable as all children aged birth to five years (albeit more recently, if not yet effectively, those aged six months to three years) but has made no effort to refine their approach or to employ criteria

to isolate well-nourished preschoolers from malnourished ones; this is at least partly because of their preventive orientation and their conceptualization of this entire population as an at-risk group. However, when food aid resources are inadequate to serve the entire population at risk, as is the case with CRS/Rwanda, it seems reasonable to expect a refinement of the approach so that those at particular risk or those more severely affected might be better targeted. CRS' own data show that areas of Cyangugu, Gikongoro and Ruhengeri Prefectures experience comparatively high rates of malnutrition. For example, children registered at Mushaka and Mibilizi nutrition centers in Cyangugu Prefecture in the first nine months of 1985 had a mean weight-for-age of 81.5% of the reference median, and over four per cent were severely malnourished. A simple concentration of services in these areas would be likely more to reach more children who already are, or who are likely to become, malnourished than the present fairly even distribution of facilities throughout Rwanda. The current distribution is almost certainly a matter of convenience, with facilities being established at pre-existing institutions such as religious missions, rather than of deliberate efforts to serve known areas of high risk.

A number of previous studies of health services utilization in Africa have suggested that consumers of modern health care are different in a number of socio-economic respects from non-consumers. They tend to be wealthier, better-educated, and more informed than those who do not utilize the services. Thus the fact that CRS permits program participants to be self-recruiting or self-selecting suggests also that these consumers are materially and socially better-off than those who do not participate. The

failure to apply economic or preferably nutritional criteria to the selection of participants, or to seek the assistance of commune officials or social service personnel in recruitment rather than permitting self-selection, means that those least at risk are often the principal beneficiaries.

Given their broad definition of the at-risk population, and the random distribution of nutrition centers, CRS has no effective strategy for ensuring the delivery of food aid to those who most genuinely need it. Rather, the food is disproportionately delivered to children who are not malnourished, and to the more advantaged members of the population.

ADRA. ADRA officials claim that the majority of ADRA food-for-work projects are located in the most disadvantaged parts of Rwanda, which they identify as Cyangugu, Gikongoro and Kibuye Prefectures. On the other hand, they also state that ADRA food-for-work projects have been implemented in about 70% of the communes in Rwanda, so clearly a substantial proportion of the activities has taken place in areas not defined as disadvantaged. Since the projects are ostensibly originated by the commune or other institution, and approved on the basis of ADRA's criteria and priorities, need does not stand out as the principal determinant of project approval. Many other considerations enter the decision-making process before nutritional or economic hardship does.

Since the selection and recruitment of workers are left to the commune or organization to manage, there is no necessary guarantee that the needy will end up obtaining this employment. ADRA officials carry out the actual

distribution of the food and claim to check on the socio-economic status (SES) of the workers as they do so, but it is difficult to see how the SES of 10,000 workers on 90 projects could possibly be "checked" in the course of a once-per-month food distribution exercise. Local officials too are asked to confirm the needy status of the workers, but would be unlikely to state that such need does not exist for fear of losing the food for work support. Furthermore, the number of workers who turned out for recruitment at the projects visited by the team was reported to be at least twice the number needed. The most-frequently stated principle of recruitment is first-come, first-served. For one brick-making project, the final choice was based on the worker's residential proximity to the work site and his physical capacity to carry out the task. In this project, as in the others visited, there were no female workers recruited. The only exception is the case of female health agents at one site in Ruhengeri Prefecture who do community and household-level health promotion on a permanent basis. For this they are paid a small amount of cash and 25 kg of rice per month, and an unknown quantity of milk and oil once per three months. ADRA officials state that women are too "weak" to participate in the other work activities.

The value of the 50 kg sack of rice with which the workers are paid is estimated by people in the vicinity of the projects to be between 2,500 and 3,000 FRw, as rice sells for 50 to 60 FRw per kg in the rural areas. OPROVIA pays 65-70 FRw per kg, and one kg of rice currently sells for 90 FRw at Ruhengeri market. Thus the 2,500 to 3,000 FRw value per sack is a minimum cash equivalent. Although many informants claim that only the poor would work for food, the value of the rice translated into cash seems sufficiently high

to attract more than just the destitute. Studies of cash income in Rwanda have shown that net returns to coffee per household may be as low as 6,000 FRw per year (Bart 1980). Since working for two months on, for example, a dry season food-for-work brick project does not compete at all with growing coffee—or producing food crops for that matter since most of that work is done by women, who do not often participate in food-for-work--there is nothing to prevent relatively prosperous people from engaging in food for work and effectively boosting their income by a substantial margin. Conceivably, public ridicule might be an effective sanction against the very well-to-do, but there do not seem to be any measures in place to ensure the unequivocal delivery of food-for-work benefits to the needy.

VI. IMPACT OF THE TITLE II FOOD AID PROGRAM

A. Development Impact

Until recently, development was promoted only indirectly by CRS distribution of Title II food aid. The improvement of the health and nutritional status of needy people contributes indirectly to the development process by increasing work capacity, productivity, concentration, and the like. Recent studies of roadworkers in Kenya by Latham and colleagues, for example, have shown that productivity among moderately malnourished men and women increases substantially if they receive food supplements sufficiently large to improve their energy balance. Schoolteachers and other observers contend that well-nourished children are more alert and perform better in school than poorly nourished ones. Thus, supplementary food aid contributes to human resource development, and the beneficiaries are in turn better able to improve their own situation through their improved work capacity and performance.

It is difficult to estimate the impact of such "human capital formation" in development terms. The CRS ration provides about 160 kcal/person/day in the five-member Rwandan household. Estimates of actual per capita kcal consumption in Rwanda vary, but a mean figure is 2,000 kcal/person/day, slightly below estimated requirements. If the ration is consumed exclusively as a supplement it represents an 8% increment over current consumption but total intake is still below the recommended level. A 200 kcal daily supplement to Kenyan roadworkers raised work output by 3%; larger supplements were required in order to produce more substantial effects

cf. Latham et al. 1982). Thus the impact of the food aid on work performance is likely to be negligible, even if the ration is consumed totally as a supplement--which almost certainly is not the case.

In Rwanda, CRS Title II distribution activities have also clearly contributed quite substantially to the development of the primary health care sector. 98 of the 170 nutrition centers in Rwanda are supplied with Title II food. The ~~FR~~ 75 cotisation, or service charge, paid by the recipient covers the major part of the recurrent costs of these centers, especially staff salaries. At one of the CRS nutrition centers visited by the team, six of the seven employee salaries derived from recipient copayments; only one was paid by the government, in this case the commune, not the Ministry of Health and Social Services. It seems fairly evident that the revenues generated at CRS nutrition centers play a critical role in supporting and sustaining health care delivery in rural Rwanda. This is an important development benefit which cannot be overlooked.

More recently, CRS has tried to promote development in food aid recipient households by the implementation of "associated development activities". The emphasis is on small animal production, although livestock activities have also been promoted in at least one nutrition center. What this means is that individual food aid recipient households are provided with animals--usually chickens or rabbits--which will improve household economic and nutritional status through the consumption and sale of offspring and products. People who receive animals under this program are expected to repay the center from which they obtained them. In this way the program becomes

self-maintaining, and more and more families in the future can receive the animals and improve their socio-economic condition. At this time the program does not seem to be faring too well. The chickens have proven very susceptible to disease and their large water requirements have placed an additional burden on the women of the household, who must supply the chickens' needs. Rabbits are not commonplace in the Rwandan countryside, there is no market for the meat, and the people themselves are reluctant to consume the meat because they have had no previous experience with rabbits. No information is yet available on the impact of the larger animals. Economic and dietary improvement from small animal raising is so far negligible at best and in some households may be negative because of the way that patterns of female labor allocation have been affected.

Nutritional supplements provided as food aid also contribute to human capital formation by improving the health and nutritional status, life expectancy, and academic performance of young children. This is in fact one of the primary objectives of the CRS Title II program; it will be treated in depth in the following section.

ADRA food-for-work activities are explicitly intended to contribute directly to development by the creation of beneficiary-initiated public works and facilities which might not otherwise have been available and which are consistent with overall national and regional development strategies. Thus far most projects have created infrastructure (e.g. roads) or contributed to the expansion of services (e.g. school buildings, health centers, communal bureaus, and the like). At the same time, the provision of work remunerated

in food to some of the adult men in the area contributes to such development goals as employment generation and skills training; for example, since many of the projects involve construction, workers learn the rudiments of such trades as brick manufacture, masonry, carpentry, plumbing and cement finishing.

Of the 225 ADRA food-for-work projects supported in 1985 and 1986, the breakdown of projects by type and location is provided in Table 7.

TABLE 7. ADRA food-for-work projects , 1985-1986

Prefecture	Bricks	Roads	Construction	Other	Total
Gitarama	13	7	10	3	33
Ruhengeri	9	12	8	1	30
Gisenyi	11	8	4	-	23
Kibuye	10	7	5	1	23
Gikongoro	14	6	2	-	22
Byumba	8	6	4	3	21
Kigali	6	3	4	3	16
Butare	7	1	8	-	16
Kibungo	5	1	2	-	8
Cyangugu	5	1	-	-	6
Not indicated	27	-	-	-	27
Total projects	116	52	47	11	225
% of projects	51	23	21	5	100
Total workers	8,110	6,085	3,140	660	17,990

This distribution of projects is not consistent with ADRA's own priority rankings which put health facilities and agricultural development in first place. Brick-making and road-building head the list of completed projects in terms of frequency. Many of the bricks are later used in ADRA construction projects. During the two years only eight projects involving agriculture or forestry were undertaken, and even fewer relating to health even if two brick-making projects undertaken by health centers are included. The distribution of projects by Prefecture also clearly does not favor those areas which ADRA officials claim are both disadvantaged and targeted, e.g. Kibuye, Gikongoro and Cyangugu.

The team visited a number of ADRA projects in three different communes in Kibungo and Ruhengeri Prefectures. These projects included brick-making, road building, construction of commune office buildings, staff housing for an Adventists medical center, and construction of Adventist school buildings. Some of these projects had followed the procedure described above for a proposal initiated by the commune and approved by Prefecture and Ministry before submission to ADRA. Others had followed a less clear path, having been submitted to interest groups recruited from among the local population, who were clearly interested in promoting their own self-interest as well as development goals. Two group leaders from among the projects visited are Seventh-Day Adventist Church leaders. The extent to which some of these projects are serving the development objectives and priorities of Rwanda is not clear. Certainly the interests of the Church and its adherents are being advanced by such activities.

B. Nutritional Impact.

Although CRS/Rwanda refers to recent FAO estimates that a considerable improvement in the nutritional status of rural Rwandans has taken place over the past 10 years, it does recognize that a positive nutritional impact of its MCH program is hardly discernable.

Out of 80,000 children examined during 1985, an average of 31.5% were suffering from malnutrition, with a higher prevalence during certain months (April, October, November and December). Some areas, Cyangugu and Kibuye Prefectures in particular, are more seriously affected, with rates of 36.8% and 33.4% respectively. Compared with previous years, this seems to show a constant improvement, as overall figures indicate a malnutrition rate of 38.2% in 1983 and 37.4% in 1984. The proportion of severely malnourished children has also declined: 14.6% in 1983, 11.7% in 1984, and 12% in 1985. However, the percentage of marasmic children increased over the same period: from an average of 5.6% in 1983 to 5.7% in 1984 and 8.6% in 1985.

This globally positive trend is not dissimilar to what has been observed in the non-participating public nutrition centers in Rwanda. Furthermore, in some centers with no food distribution program dramatic improvements in nutritional status have been accomplished. In the case of Butaro Health Center in Ruhengeri Prefecture, with the implementation of an education, surveillance, and health services program, the percentage of malnourished children declined from a mean of 56% in 1984 to 35% in 1985.

According to a 1979 study by Hitchings, nutritional status of children enrolled at CRS centers improved as a function of the duration of participation in the program when age at entry was controlled for. However, it is not possible to conclude that such improvement is attributable to the impact of food aid, for several reasons. First, there are no data from a comparable group of non-recipients of food aid, so that such improvements over time might not be unique to the CRS population. They may be indicative of a pattern of recovery with increasing age or of mortality among the severely malnourished that skews the sample. Second, as already noted, consumers of health services are not necessarily representative of the population at large, so that the CRS group is already biased by self-selection. Third, some component of the program other than food aid might account for the improvement, for example, nutrition education or immunization. The impact of individual program components cannot be disaggregated.

Examination of the clinic cards of individual CRS food aid recipients also does not provide convincing evidence of nutritional improvement. 27% of 100 recipients at three CRS nutrition centers whose weight charts were studied by team members suffered a decline in weight for age as a percentage of the reference median, 25% showed substantial improvement, and 48% showed neither improvement nor decline over a seventeen-month period of program participation. 15 participants in one center's multiration program who were graduated from the program because they had reached their fifth birthday declined as a group from an aggregate 83% to 75% of the reference median weight-for-age while receiving food aid. These figures in themselves are not a sufficient basis for stating that the clinic program does or does not

improve nutritional status, because there are no comparable data from non-participants. We know nothing about the dynamics of growth over time in the population at large. A study by Mbonyumuvunyi (1984) which concludes that nutrition centers have a positive effect on nutritional status of participants must be rejected because of the age incommensurability of the populations being compared, and there are no other studies available for Rwanda. It is clear from CRS data, however, that in the majority of children the combination of food aid, nutrition education, and other program activities does not lead to an improvement in growth performance.

ADRA officials state that one of the two primary goals of the food-for-work program is the improvement of nutritional status. However, there is no nutritional surveillance of the recipient population and no evidence that the food-for-work wages are used as a dietary supplement. Money generated from that portion of the food aid that is sold is said by informants to be used for both food and non-food purposes. Since rice is expensive both per kg and per kcal, household calorie supply could be increased by selling some or all of the rice and buying cheaper food with the proceeds. But there is insufficient information on transactions involving rice or on the nutritional state of food-for-work beneficiaries to make any generalizations about the possible nutritional impact of ADRA food-for-work activities.

C. Economic Impact

Since much of the CRS rationale for its current programming strategy in Rwanda depends on the delivery of economic as well as nutritional benefits to

participants, it is important to examine the economic tradeoffs that program participation involves. The food aid recipients receive five kg of food per month. The calorie value of this package of 2 kg nonfat dry milk, 2 kg soy-fortified cornmeal, and 1 kg soybean salad oil is 23,920 kcal. Its cash value is derived from the current market price of the items in Kigali, which almost certainly inflates the value because Kigali prices are higher than elsewhere in the country. The value of the individual components is as follows:

Oil: 180 FRw/kg
NFDM: 240-260 FRw/2kg
Maize meal: 60 FRw/2kg
Total: 480-500 FRw

One day of adult female labor is required for the collection of the package as mothers (and occasionally, fathers, but not regularly or frequently) participate in a number of activities at the nutritional center, including cultivation of the demonstration plot, small animal raising activities, "causerie" or nutrition education lessons, preparation of appropriate infant foods, nutritional surveillance and distribution of the foodstuffs. In addition, each recipient pays a service charge (cotisation) of FRw 75 per five kg ration. Analysis by Craig of data from the National Agricultural Survey shows that one day of agricultural labor on a one-hectare holding planted in a mixture of the usual Rwandan food crops plus coffee yields over 19,000 kcal in food, plus coffee with a putative cash value of about 30 FRw. Calorically the household has a net gain from participation of about 5,000 kcal for one month, but simultaneously experiences a net cash loss of just over FRw 100. One day

of labor can be replaced for 75-100 FRw, the daily rate paid to a casual farm worker hired by the day. If the labor of the absent woman is replaced, there is a net cash saving of 5 FRw and a calorie increment of 23,920 kcal, or 160 kcal per household member per day. If the food aid is sold rather than consumed, net cash returns of FRw 425 are offset by 19,000 lost calories if labor is not replaced; if it is replaced, the calories are recouped and net cash return is FRw 355-380.

According to Craig, the food that returns the most calories to the consumer for the expenditure of 1 FRw in Rwanda is maize, which sells for about 10-15 FRw/kg of shelled whole grains and yields about 3,500 kcal per kg. If the entire food aid package is sold for FRw 500, and that money is used to purchase maize, per capita kcal available to the household would be over 900 rather than the 160 provided by the ration. Over the course of a year, if a household employs a strategy of hiring labor to replace the mother during her visit to the nutrition center, and sells the entire food aid package, household caloric production is unaffected and total cash income amounts to over Frw 5,000, nearly equal to the average coffee income discussed by Bart (1980). Under these circumstances the economic impact of the ration can be quite high; but if absent labor is not replaced or if the food aid package is only partially converted to cash, economic impact is much less, and may be negative if the ration is not sold at all--or if the proceeds are spent to purchase a preferred replacement commodity at a higher price, as happens when soybean oil is sold and replaced with palm oil. Partial sale of the package does seem to be the general rule, so that net income effects are lower; in addition, households studied in the National Agricultural Survey sold

substantially more labor than they purchased, so a deliberate strategy of replacing the absent female labor seems unlikely. At best, most households probably break even.

ADRA's food-for-work program is supposed to provide food equivalent to a wage and limits participation to just one member of a given rural household. The cash value of the 50 kg rice ration is FRw 2,500 to 3,000 and it provides 181,500 kcal. Since the oil and milk components of the ration are provided intermittently to some types of workers they are not taken into consideration in this analysis. The calories could be replaced by 9.6 days of agricultural labor, but 20 days of food-for-work labor are extracted in exchange for the rice; in theory, then, this labor would be more productively employed in farming as twice as many calories could be produced on the farm during the same time. However, most food-for-work workers are men, and most food production in Rwanda is carried out by women. Under these conditions the food-for-work leads to a net calorie gain for the household. Men and women also have the possibility of performing agricultural or other cash-remunerated labor or producing beer and other "artisanal" products rather than participating in food for work. Rural labor is compensated at a rate of 75-100 FRw/day, so that cash returns to 20 days of labor would generate just FRw 1,500-2,000. This is considerably less than the market value of the rice received in exchange for an equivalent amount of food-for-work. It also negates the contention that wage work is more remunerative than food-for-work and makes rice-compensated employment an attractive option even for the well-to-do.

Households that brew banana beer generate a monthly income of about 1,000 FRw from beer sales, according to Godding and Bart (1984). Food for work again has a comparative advantage. Calorie advantage can be increased further by sale of a portion of the rice and its replacement with maize, which has approximately the same calorie content per 100 g as rice but costs one-fourth as much.

On the basis of the foregoing analysis, it must be concluded that both these forms of food aid, food for work and MCH, can offer substantial economic benefits to the recipient. These benefits are more clearly discernable in the case of food for work than in MCH distribution.

D. Other impact issues: Views of Recipients vs. Non-recipients

It has already been noted that coordination of the multiple sources of food aid in Rwanda is difficult, to which should be added the observation that information about its availability is not necessarily equally accessible across the rural population. It is therefore not surprising to find that some households are well-informed and have access to more than one source of food aid, others are aware of its availability but do not receive any, and yet others have neither knowledge nor access. In order to obtain comparative information of the views of both recipients and non-recipients of food aid, interviews were carried out in rural areas of Gisenyi, Ruhengeri, Kibungo, Cyangugu, Gikongoro, and Byumba Prefectures. Informants included participants in the CRS program, beneficiaries of CCF, WFP, ADRA, and commune or

parish-managed food aid distributions (both emergency relief and food-for-work), local officials, and nutrition center and project administrators. Some interviews were conducted at nutrition centers and food-for-work sites, others during visits to informants' homes. The procedure is certainly not scientific and the total number of persons contacted in this way was small, but the consistency of responses from locality to locality and between recipients and non-recipients alike suggests that the results are useful as a general indicator of perceptions and attitudes.

The socio-economic status of the informants contacted varied. A number of households controlled substantial quantities of agricultural land (one man claimed to have over 20 parcels, many cultivated by hired laborers) and livestock holdings and had access to cash income from wage labor and/or remittances as well. On the other hand, several households were headed by widows or unmarried women with limited access to land, labor resources and cash. Recipients and non-recipients alike ranged from comparatively well-to-do to quite impoverished. There are both rich people and poor people who receive food aid, and similarly wealthy and poor who do not.

Of those currently receiving food aid, the majority are CRS MCF recipients whose ration consists of the monthly five kg package. World Food Programme recipients obtain 10 kg monthly, consisting of dry peas, sorghum, nonfat dry milk, oil, and sugar. This program will continue only until the stocks remaining from the 1984 emergency relief effort are exhausted. CCF provides intermittent supplies of whole maize as well as a regular cash supplement intended to defray educational expenses of a sponsored child. Parish and

commune distributions are peripatetic and have consisted of nonfat dry milk, maize, sorghum and beans. The food-for-work activities are sponsored by communes, parishes, WFP, and ADRA and ration sizes are highly variable from program-to-program and month-to-month--as is the availability of work.

Recipients and non-recipients of food aid both have clear and definite preferences concerning the kind of food assistance they would like to obtain. Among commodities currently available through one or more of these programs, the preferred items by far are rice and nonfat dry milk. The preference for rice is not surprising given the economic benefits derived from the ADRA food-for-work rice ration as discussed in the previous section. Although some informants expressed a preference for remuneration in cash rather than food, most seemed fully aware of the value of the rice ration and stated a preference for one 50 kg bag of rice rather than two or even three equivalently-sized bags of maize.

Those who currently receive MCH packages containing nonfat dry milk universally identify the milk as the preferred commodity. It is known that some of the milk makes its way onto the market after distribution to the recipients, but most households seem to consume at least part of the milk and in some areas seem also to target the milk to young children. However, in Kibungo Prefecture the team was told that much of the milk is used in the preparation of tea and that some of the milk is sold in order to obtain cash for purchasing sugar. Unlike much of the rest of Rwanda, people in this area close to the Tanzanian border seem to have adopted the widespread East African

habit of drinking heavily sweetened milky tea, especially in lieu of or in addition to a morning meal.

No informant identified either oil or cornmeal as the most useful component of the CRS MCII ration package. The two kg of maize flour that recipients obtain is sufficient only to prepare two meals for the household. Those who claim to use the flour only in the preparation of infant foods utilize the entire quantity within two weeks of receiving it. In any event, although maize is widely grown in Rwanda, it is generally consumed green or in the form of pounded kernels which are cooked together with beans. Delivery of whole maize rather than maize in the form of meal or flour would be in better accordance with existing Rwandan consumption patterns.

There is an explicit consumer preference in Rwanda for palm oil over other forms of dietary fats or oils. Palm oil has a pronounced flavor which is appreciated in particular dishes. Recipients often sell the food aid soybean oil in order to purchase palm oil at a much higher price. Another strategy is to sell some of the soybean oil, buy palm oil, and mix it with the remaining quantity of food aid oil. In some cases recipients have not been able to market the oil, nor can they find a role for it in Rwandan cuisine. In one household four bottles of oil had accumulated because it could neither be sold nor used. Although oil has a higher cash and calorie value per kg than the other food aid commodities, consumer preferences in rural areas prevent either of these values from being fully realized.

All of the informants, recipients and non-recipients alike, were also asked what food item(s) they would prefer to receive if they could choose from the whole range of foods customarily eaten, rather than being limited only to those presently available through food aid. In all areas of the country the food item most frequently identified by both groups was beans. According to the Rwandan national budget and consumption survey, beans are the food item most frequently purchased and least often sold of all agricultural commodities. Loveridge found that the agricultural households he studied were more often deficient in beans than in the other foods they produced. Although the data cited in Part II indicate that production of beans and other legumes has been increasing in Rwanda over the past several years, current population growth rates and land and labor constraints are likely to have a negative effect on production of legumes in the future. Beans in Rwanda generally produce less than 1,000 kg/ha, while bananas, cassava and sweet potatoes may produce five to six MT/ha and employ less labor. Fleuret and Fleuret found, in highland Tanzania, that cultivation of maize was declining in favor of cassava because of its superior calorie production per ha.

Regardless of the cropping strategies they currently pursue, householders in many different parts of Rwanda clearly regard both their production and purchasing capacity for beans to be deficient, and hence select beans as the food item they would most like to receive. The only other commodities mentioned in answer to this question were sorghum and rice. Cash value and convertibility explain the interest in rice; sorghum was mentioned only twice and may be of interest due to its relatively high cash value when converted into beer.

There are several summary points that can be made on the basis of the preceding information.

- while some food aid is being received by extremely poor and/or undernourished people, ~~many truly needy people do not receive any food aid assistance,~~ while others who do not need it do obtain food aid;
- information about the availability of food aid is unequally distributed, and some households have been able to tap into multiple channels of food aid;
- soybean oil is an inappropriate commodity for distribution to rural food aid recipients as neither its cash nor its calorie value assists the household to the fullest extent possible;
- edible oil would function more effectively in Rwanda if it were monetized by sales to urban consumers and the funds generated used for purchase and distribution of preferred local commodities, or for development activities implemented by local PVOs such as Duhamric-ADRI;
- monetization is also an appropriate strategy for nonfat dry milk, although explicit targeting to malnourished children may also be effective.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. The Rwandan Food Situation

Conclusion. There is not now a need to provide additional food aid to Rwanda to satisfy existing effective demand.

- Rwanda does not experience substantial food shortfalls on a regular basis; it is clearly not a chronic, food deficit country. To the contrary, Rwanda has been unusually successful in producing enough food to feed her burgeoning population: from 1966-83, average annual food crop production increased at a faster rate than population, something few other countries in sub-Saharan Africa have achieved.
- Under normal conditions, there is adequate food on the local market to satisfy domestic demand, virtually all of it from domestic production. At the same time, certain vulnerable groups who lack purchasing power or productive capacity need food. (See B. below.)
- Most of the agricultural growth to date is due to acreage expansion, and this cannot continue indefinitely.

Recommendation. OAR/Kigali should not request a food aid program for Rwanda whereby the food is sold on the open market -- unless the commodity for sale is edible oil or possibly milk. If a sales program were implemented with oil or milk, it would be similar to a CIP program, and the principal objectives would be (a) to leverage policy reform, and (b) to generate local currency. The principal objective would not be to ameliorate a food deficit. (See C. below.)

Recognizing that future increases in food production in Rwanda must be based primarily on new yield-increasing technologies that have yet to be developed, OAR/Kigali should monitor the food situation to determine whether or not a structural deficit in food grains emerges, thereby possibly triggering the need for a sales program.

B. The Rwandan Nutrition Situation

Conclusion. There continues to be a need for targeted food distribution programs to meet the nutritional needs of populations at risk.

- In spite of increased per capita food production over the past five years, ~~there has been a decline in per capita calorie and protein production.~~ This is largely attributable to changes in the cropping pattern, such that relatively more acreage is allocated to the production of commodities that have fewer calories and proteins.
- There are chronic nutritional deficiencies in the Rwandan diet, primarily

protein and fat deficiencies, which are concentrated in specific areas of the country.

- Although there seems to be a plethora of data in Rwanda, there are no reliable analyses that examine key characteristics of vulnerable groups who need food aid, including where they live and what food commodities they consume.

Recommendation. OAR/Kigali should continue to support a Title II food aid program in Rwanda on the condition that the food is explicitly targeted to groups at risk.

OAR/Kigali should continue to support data collection and analysis activities, specifically for the purpose of identifying vulnerable groups.

C. Government Food Policy

Conclusion. GOR food policy appears to: (a) discount the benefits that might be achieved from international trade; (b) encourage the commercialization of the food crops sector with a price support program that seems internally inconsistent; and (c) neglect to assure markets for the surplus production that will result from increased intensification.

- The GOR policy of food self-sufficiency will not necessarily lead to the most efficient allocation of resources because it does not encourage investment in the production of those crops in which the country may have a comparative advantage. The World Bank plans to undertake a study of rice, wheat, and sugar to determine whether or not Rwanda has a comparative advantage in the production of these commodities.
- In view of Rwanda's variable climatic pattern, it may well be the country can produce a wide variety of crops efficiently. Moreover, GOR policy of encouraging food self-sufficiency should not be interpreted as rejecting a policy of food self-reliance (a concept for which there is no French word). To the contrary, the GOR is well aware of the fact that it must rely on international trade to import some commodities. However, producing food crops for export has apparently not been accepted by the GOR.
- GOR (OPROVIA) support prices are higher than market prices for most food crops, which may have the following implications: (a) OPROVIA may need to sell the commodities it buys at a loss; (b) OPROVIA may need to sell the commodities to the prisons, army, or other entities that are subsidized by the GOR; (c) OPROVIA may need to store the commodities, which typically has a high opportunity cost; or (d) relatively high Rwandan prices may attract similar commodities from neighboring countries, thereby depressing market prices in Rwanda even further.
- OPROVIA is not a buyer of last resort, and therefore, even though farmers

may have a guaranteed price, they do not have a guaranteed market.

- It is likely that imports of rice and wheat (commercial and concessional) are hampering GOR policy to encourage increased food production by depressing market prices.

Recommendation. OAR/Kigali should condition future program assistance, if any, on policy reform designed to support food self-reliance. In that context, floor prices should be established (if at all) only for those commodities in which the country has a comparative advantage, and which are needed to meet national food security objectives. If the program assistance were in the form of food aid, Food for Progress would be an appropriate vehicle.

Conclusion. The need to intensify agricultural production is inescapable.

- If, as a result of population pressure, cultivated area continues to grow at the rate it did from 1974-83, the available supply would be exhausted by about 1998.
- Since acreage expansion is no longer a viable solution to meeting the country's food needs, investments will be needed in: (a) research to develop new yield-increasing technologies and extension to disseminate those technologies to farmers; (b) assured markets, domestic and regional, to absorb the surplus production and to provide the means for purchasing agricultural inputs designed to increase land productivity; and (c) measures to ensure an adequate supply of labor.

Recommendation. OAR/Kigali should program local currency that has been, or may be, generated from the sale of food aid to support agricultural land intensification, develop markets, and promote inter-regional trade of crops in which Rwanda has a comparative advantage. If a sales program such as Food for Progress were implemented, the specific uses of the local currency generations should be stated explicitly in the agreement.

D. Food Assistance to Rwanda

Conclusion. Some imported food commodities that have been provided to Rwanda for sale on the open market, primarily by other donors, may be having a disincentive effect on domestic food production.

- Food aid constitutes an almost negligible proportion of total domestic food crop production in Rwanda -- less than one-half of one percent per year, on average.
- Even though the proportion of food aid is negligible, the trend is

upward. Over the past 6 years, food aid to Rwanda has more than tripled, from about 10,000 tons in 1979 to 36,000 tons in 1985.

- About two-thirds of all food aid provided to Rwanda is in the form of cereals. Cereals provided as food aid represented about 3% of domestic cereals production in 1979 and over 6% in 1983.
- About 80% of the cereals provided as food aid comprise wheat and wheat flour; rice; and maize and maize flour.
- Imported wheat and wheat flour (commercial and concessional) equaled 89% of total supply in 1983. The portion imported as food aid equaled 40% of total supply. There is a strong likelihood that imports of wheat and wheat flour have had an adverse impact on domestic wheat production and on employment. The U.S. supplied wheat products to Rwanda in response to the 1984 drought.
- Rice imports were 42% of total rice supply in 1983. Commercial imports of rice are far more important than food aid, the latter representing less than 8 percent of total supply in any given year. The U.S. provides rice to ADRA, and a substantial portion, perhaps half, is sold on the open market by the recipients. This may adversely affect not only domestic rice producers but also domestic wheat producers, since rice and wheat are probably close substitutes.
- Maize flour, oil and milk are the other commodities that the U.S. provides as food aid to Rwanda. It is unlikely that any of these commodities harms the Rwandan economy.

Recommendation. OAR/Kigali should discontinue the provision of rice under the Title II program which is used to support ADRA's Food for Work program. More appropriate commodities, those that would not adversely affect domestic production, include maize or maize meal, edible oil and/or milk, depending in part on the region in which the commodity will be distributed. Alternatively, OAR/Kigali should continue to provide rice to ADRA under the Title II program only if ADRA agrees to sell one-half of it, the approximate quantity now being sold by the recipients. Food for work participants would then be paid half in food (rice) and half in cash. The rice should be sold at the prevailing market price.

B. The Impact of the Title II Program

Conclusion. The impact of the Title II program is mixed.

- Title II food aid is having no discernible impact on nutrition levels of the recipients.
- The MCH program helps to sustain a substantial part of the rural primary health care network, and is a critical resource in a country without

private health care and where less than 6% of the national budget is devoted to health and social affairs.

- The Food for Work program is having some developmental impact by creating rural infrastructure and employment.
- The Title II program, and food aid in general, may be substituting for commercial imports, thereby having a negative affect on commercial markets of exporting countries. This reflects the GOR decision to accommodate the possible disincentive effect of food imports and at the same time save foreign exchange.

Recommendation. OAR/Kigali should support a gradual phase-out of the MCH program being implemented by CRS under Title II, and at the same time ensure that some viable mechanism is instituted to ensure the continuity of the primary care system and the nutrition education and surveillance functions of the nutritional centers. Alternatively, if the MCH program continues, or during its phase out, it should be restructured to ensure delivery of food aid and other services to those who genuinely need them. This can be accomplished by concentrating services in needier areas of the country, by involving local officials in the identification of malnourished and/or at-risk households, and by applying a nutritional criterion to selecting program participants.

OAR/Kigali should encourage Food for Work activities to support, explicitly, agricultural intensification activities in accordance with previous recommendations in this report, stated GOR policy, and ADRA's own priorities. Explicit criteria for project evaluation should be stated and applied by ADRA. Women should be actively involved in Food for Work activities as workers and direct beneficiaries.

OAR/Kigali should discourage the substitution of concessional imports for commercial imports, thereby upholding the principle of UMRs.

ANNEX A

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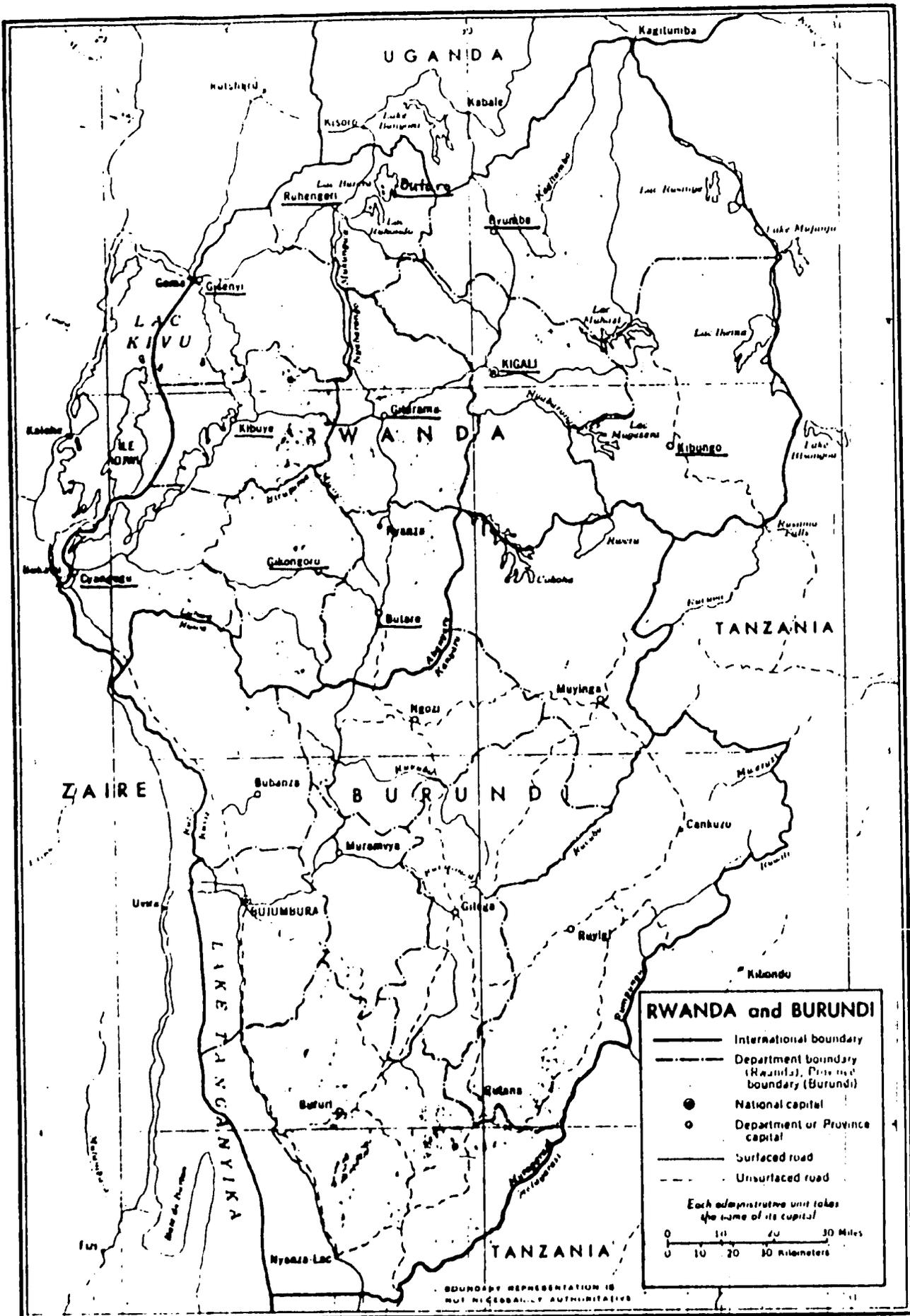
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