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FOOD NEEDS ASSESSMENT: MADAGASCAR

June 1989



PN-ABF671

MADAGASCAR: FOOD NEEDS ASSESSMENT

CALENDAR YEAR 1989

June 30, 1989

Melanee Lowdermilk

MADAGASCAR

FOOD NEEDS ASSESSMENT: 1989

I. SUMMARY:

Five commodities were included in the 1989 national level food needs assessment: rice, wheat, maize, vegetable oil, and manioc. The assessment for the calendar year shows deficits for rice, wheat and vegetable oil. Surpluses were evident for both maize and manioc. Deficits/surpluses were calculated without including food aid. When taking into account 1989 food aid imports/commitments, rice shows a substantial surplus of 74,000 MT (milled), while deficits for wheat and vegetable oil are reduced to 18,200 MT and 340 MT respectively (unmilled). Per capita availability of principal commodities has been declining over the period of analysis. The above deficits/surpluses were calculated using per capita consumption levels based upon a linear trend of 5 years of historical data, 1984 - 1988. If average per capita consumption over the base period is used, however, deficits emerge for all commodities except maize after including 1989 food aid commitments. (Tables 1 and 2 present the current food balance situation. A breakdown of 1989 food aid imports by commodity and donor is shown in Table 3).

Due to data constraints, a commodity gap analysis for tallow was not possible. No data on local production of tallow is collected in Madagascar; data for 1984 - 1987 show that on average 1,782 MT of tallow valued at \$1,000,000 were imported for soap production each year. These data suggest that there may be a case for USAID providing tallow to Madagascar as balance of payments support: 'commodity aid' in the form of tallow would provide foreign exchange savings, while counterpart funds generated by local sales could be used to support development activities/programs.

II. METHODOLOGY:

The FNA methodology provides decision-makers with a view of the food balance situation -- deficit or surplus -- in a given year. The methodology is based on an analysis of aggregate data to generate a picture of the food supply and utilization situation. The data used in an assessment are aggregated at a national level and include the following variables: population, (levels and growth rate), consumption, production, imports/exports, and stocks. Adjustments to gross production are made to account for non-food uses, milling rates, and base commodity equivalent conversion. Five years of historic data are

MADAGASCAR:

TABLE 1

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FOOD NEEDS ASSESSMENT: CALENDAR YEAR 1989

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=====
                                     RICE                WHEAT                VEGOIL
=====
FOOD DEFICIT (UNMILLED)              19594                38845                2011
X MILLING EXTRACTION RATE              0.65                 0.75                 0.90
= FOOD DEFICIT MILLED                  12736                29133                1610
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FOOD AID COMMITMENTS:  MILLED          86791                15450                1505
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UNCOVERED FOOD DEFICIT:  MILLED        *   -74055                13683                305
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*: A NEGATIVE (-) FOOD DEFICIT IS A SURPLUS

NOTES:

- A) ALL QUANTITIES IN METRIC TONS
- B) BASE PERIOD: 1984 - 1988
- C) PER CAPITA CONSUMPTION: LINEAR TREND GENERATED FROM BASE PERIOD CONSUMPTION LEVELS
- D) VEGOIL: DOMESTIC PRODUCTION IN 1989 APPEARS TO BE STABLE AT APPROXIMATELY 3,350 MT.
LOCAL VEGOIL INCLUDES: COTTON, COPRA, GROUNDNUT, PALM, AND SOYA.

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E) NON FOOD USES:
                                     RICE                WHEAT                VEGOIL
                                     ====                =====                =====
SEED                                0.05                 0.14                 0.00
FEED                                0.00                 0.00                 0.00
WASTE/LOSSES                        0.15                 0.03                 0.00

MILLING EXTRACTION RATE:            0.65                 0.75                 0.90

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F) POPULATION:

POPULATION BASED ON IMF ESTIMATES WITH 3% GROWTH RATE PER YEAR

MADAGASCAR:

TABLE 2

FOOD NEEDS ASSESSMENT: CALENDAR YEAR 1989

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	RICE	WHEAT	MAIZE	VEGOIL	MANIOC
PER CAPITA CONSUMPTION (UHMILLED KG/YEAR)	169.8	4.7	12.1	1.0	138.6
X POPULATION (THOUSANDS)	11205	11205	11205	11205	11205
= TOTAL CONSUMPTION REQUIREMENT	1902671	52995	136094	11205	1553327
GROSS DOMESTIC FOOD PRODUCTION	2350000	5000	220000	3350	2277000
- TOTAL NON-FOOD USE	470000	850	35200	0	705870
= NET DOMESTIC FOOD PRODUCTION	1880000	4150	184800	3350	1571130
NET DOMESTIC FOOD PRODUCTION (FROM ABOVE)	1880000	4150	184800	3350	1571130
- NET CHANGE IN STOCKS	-3077	0	0	-5844	0
- TOTAL FOOD EXPORTS	0	0	5500	0	0
= DOMESTIC FOOD SUPPLY	1883077	4150	179300	9194	1571130
TOTAL CONSUMPTION REQUIREMENT (FROM ABOVE)	1902671	52995	136094	11205	1553327
- DOMESTIC FOOD SUPPLY (FROM ABOVE)	1883077	4150	179300	9194	1571130
= IMPORT REQUIREMENT	19594	48845	-43206	2011	-17803
- TOTAL COMMERCIAL FOOD IMPORTS	0	10000	0	0	0
= FOOD DEFICIT (UHMILLED)	19594	38845	-43206	2011	-17803
X MILLING EXTRACTION RATE	0.65	0.75	0.82	0.90	0.95
= FOOD DEFICIT MILLED	12736	29133	-35429	1810	-16913

NOTES:

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ALL QUANTITIES IN METRIC TONS UNLESS NOTED

A NEGATIVE (-) FOOD DEFICIT IS A SURPLUS

used to generate trends and to provide a base period reference when calculating a current year balance.

1) Commodities:

Five commodities were included in the 1989 food needs assessment: rice, wheat, maize, vegetable oil and manioc. These commodities represent over three quarters of per capita daily calorie consumption, (1). Figure 1 shows the share of the diet by commodity. Rice, the aliment de base, represents 55% of calorie consumption, followed by manioc (13%), maize (4%), vegetable oil (3%), and wheat (2%).

2) Period of Analysis and Data Sources:

The base period of analysis for the 1989 assessment includes calendar years 1984 - 1988. Five years of historic data and the current year balance are stored on the Mission's computer, and can be updated in future years.

Data used in the assessment were collected primarily from MPARA/SMTIS, (Ministere de la Production Agricole et de la Reforme Agraire: Service de la Methodologie et du Traitement des Informations Statistique), DSA, (MPARA: Direction de la Securite Alimentaire), PNSAN, (MPARA: Programme National de Surveillance Alimentaire et Nutritionnelle), MIEM, (Ministere de l'Industrie de L'Energie et des Mines), and PAM, (Programme Alimentaire Mondial). For a complete list of data sources please see Annex 1.

3) Non-Food Uses:

Adjustments were made to gross production to account for seed requirements, feed-use, and post-harvest losses. Using country specific data from the 1985/86 Agricultural Census and the FAO, total non-food uses were estimated as follows: rice (20%), wheat (17%), maize (16%), manioc (31%). Previous assessments applied a value of 7% to all non-food uses of rice, greatly underestimating post-harvest losses. Numerous sources note that post-harvest losses for rice are very high in Madagascar; the average value for losses used in this assessment is 15% of gross production. Table 4 presents a detailed breakdown of caloric values and technical coefficients by commodity.

Commodity deficits/surpluses are presented both in milled and unmilled form. Milling extraction rates have been applied to all commodities: rice (.65), wheat (.75), maize (.82), vegetable oil (.90), and manioc (.95).

III. CEREALS:

A) Rice:

Production: Production estimates for the 1989 rice harvest are favorable at 5 - 8 % above the base period average. Preliminary estimates of production announced in January were low due to poor rainfall at the beginning of the planting season. However, adequate rainfall in late January - February and improved water management through rehabilitation of irrigated perimeters is expected to result in a rice crop higher than last year. Particularly good harvests are expected in the Haut Plateau and Lac Alaotra regions. In the mid-1980's rice production represented over two-thirds of cultivated area at approximately 1,067,700 hectares; yields for the same period have averaged 2.1 MT/hectare (2).

Per Capita Availability/Consumption: Per capita rice availability levels have fallen sharply in the past 5 years, from 133 kilos/year in 1984 to 112 kilos/year in 1988 (milled). The results of this assessment show average per capita availability over the base period of 124 kilos/year. This estimate is substantially lower than the MPARA figure of 130 kilos/year for the same period. To reflect the decline in apparent consumption, per capita availability for 1989 was estimated using a linear trend of consumption over the past 5 years. Interviews with several Malagasy during the TDY suggest that there has been a shift in the diet in recent years, with manioc and maize substituting for rice. This substitution effect is most marked during the period of the soudure ('lean' season prior to the harvest) when rice prices rise.

Rice is the primary staple in Madagascar, representing 55% of daily per capita calorie consumption. Rice is consumed three times a day; a rice porridge varisoa is served at breakfast, while mid-day and evening meals consist of plain rice varymaina served with various sauces. Rice forms the base of the Malagasy diet, and is eaten by rich and poor alike. Although regional differences in consumption are apparent, particularly in the South where manioc and maize are eaten as staples, rice remains the aliment de base for the majority of the population.

Data from a 1987 urban expenditure survey conducted by MPARA, shows that on average households allocate 32% of total expenditures to rice. The share of the food budget allocated to rice is likewise high, ranging from 32% in Toliary to 56% in Fianarantsoa. Clearly, a substantial portion of household income goes towards purchases of this preferred cereal. If total expenditure in urban areas can be taken as a proxy for income (expenditures plus the value of home production), nearly one third of income is allocated to rice consumption. Table 5 presents household food expenditure patterns by urban center.

Imports: In Madagascar rice dominates not only consumption, but politics as well. Rice imports have shown a sharp increase in 1989, reflecting the political realities of an election year. Clearly, supplying urban voters with imported rice has preoccupied the government, as presidential and legislative elections were held this Spring. Imports have exceeded the 40,000 MT level agreed upon with the World Bank as part of the market liberalization/structural adjustment program. Since January 1989, 66,125 MT of rice have been imported with 20,666 MT expected to arrive in the Summer and early Fall.

Food Balance: With the influx of imports and an estimate of domestic production of 2,350,000 MT, rice shows a surplus of 74,000 MT (milled) in calendar year 1989. If average per capita consumption over the base period is used -- a value higher than the trend estimate -- the surplus situation moves into one of deficit. (Annex 2 presents the rice balance situation using average or 'status quo' consumption levels, 1984 - 1988).

B) Wheat:

In the early 1980's local production of wheat averaged 70 MT per year. However, with the implementation of Operation Ble Kobama, wheat production has increased from 314 MT in 1984 to 4000 MT in 1988. The estimate for 1989 wheat production used in this assessment is 5,000 MT. Since 1984 total imports of wheat have averaged 45,000 MT per year; food aid, primarily from the EEC and European donors, represents approximately 80% of wheat imports on an annual basis. Wheat is mainly consumed in urban areas; the per capita consumption figure of 4.7 kilos/year represents national availability and does not reflect rural-urban differences. Consumption levels of 8 - 10 kilos/person/year are a more likely representation of urban wheat consumption. Results of the 1987 MPARA survey indicate that urban households spend on average 4% of their food budgets on bread; the share of bread out of total food expenditure ranges from 2% in Fianarantsoa to 6% in Toanasina.

Food Balance: To date, 10,000 MT of wheat have been imported commercially with 20,600 MT provided as food aid by the EEC and WFP in 1989. After subtracting imports and food aid from net domestic production, a deficit of 18,200 MT (unmilled) remains uncovered.

C) Maize:

Maize production has been increasing steadily since 1984, with an estimate for 1989 of 220,000 MT. Per capita consumption levels have remained stable over the base period, averaging 12 kilos/year, (unmilled). Madagascar has been exporting maize in past years, primarily to Mauritius as animal feed. Estimates of exports in 1989 range from 5,000 to 5500 MT. In 1989 the food balance situation is one of surplus: 43,206 MT (unmilled).

IV. NON-CEREALS:

A) Vegetable Oil:

Production: Domestic production of refined vegetable oil is quite low, averaging 2,798 MT over the base period. Domestic oil is produced from groundnuts, cotton seed, copra, palm-nuts, and soybeans. Growth in local production, however, has leveled off this year, with local production stabilizing at approximately 3,350 MT. (Data on artisinal production of vegetable oil is not available in Madagascar; domestic production figures include only oil processed by refineries).

Per Capita Availability/Consumption: Extremely low per capita consumption of edible oils characterizes the Malagasy diet. A per capita availability figure of 1 kilo/year is calculated using either the status quo consumption or the linear trend estimation. From a nutritional perspective, the minimum edible oil consumption requirement established by the FAO/WHO is 2.5 kilos/person/year. As noted in previous assessments, other fats must be substituting for refined vegetable oil in the diet. Consumption data is sketchy in Madagascar, with the last national rural food/nutrition survey taking place in 1962, (Francois, Patrick: Budgets et alimentation des menages ruraux en 1962, INSRE, Republique Malgache). Informal interviews suggest that pork and beef fat is often used in preparing sauces for rice and may be traditional substitutes for oil. The implementation of a survey by the GDRM of the production and consumption patterns of edible oil in Madagascar is still pending. This sub-sector survey is one of the five self-help measures of the FY 1988 Title II, Section 206 program; no action, however, has been taken to date.

Imports: Since 1987 there have been no commercial imports of vegetable oil in Madagascar. PL 480 food aid from the US -- Title I (1987) and Title II: Section 206 (1988) -- represents the bulk of vegetable oil imports. Significant carry-over stocks from PL 480 FY 1988 resulted in the FY 1989 vegoil allocation being returned to the reserve. The FY 1988 Section 206 allocation of 5,000 MT of crude soya oil arrived in-country at the end of calendar year 1988, and has been included in the

beginning stock level -- i.e. available for consumption -- in the current year balance. In addition to U.S. crude vegetable oil, other donors have provided 1,100 MT of refined vegetable oil to Madagascar in 1989.

Food Balance: Assuming a per capita consumption level of 1 kilo/year and a donor stock drawdown to zero, Madagascar will have a vegetable oil deficit of 340 MT (crude) in calendar year 1989. In 1988 drawdowns of vegetable oil stocks averaged 600 MT per month. Stock information from the refineries processing PL 480 vegetable oil in 1989 --SEIM, Huilerie Centrale, SCIM, and SOMAPALM -- show stock drawdowns of 627 MT for the month of May.

The high consumer price of locally refined vegetable oil is often cited as one of the reasons for the slow drawdown of stocks. The Antananarivo market price for vegetable oil in June 1989 is 2,300 FMG/liter. In some urban markets vegetable oil is sold by the teaspoon as households cannot afford to purchase large quantities at one time. Data from the 1987 MPARA survey shows that urban households allocate less than 1% of the food budget to vegetable oil purchases; the oil share of food expenditures was zero in all urban centers except Antananarivo (1%) and Toanasina (1%). (The price per liter of vegetable oil has ranged from 2,600 -2,800 FMG/liter in recent months; the lower price of 2,300 FMG/liter is that of refined vegetable oil provided by Italy in May, 1989. Annex 3 presents Antananarivo market prices for vegetable oil and the four other commodities included in the assessment, mid-June 1989).

B) Manioc:

The trend in manioc production shows a steady increase for 1984 through 1989. A per capita availability level of 138.6 kilos/year (unmilled) is used to calculate the current year balance. Per capita availability of manioc has been declining over the past 5 years, from 145 kilos/person in 1984 to 139 kilos/person in 1988. In 1989 the assessment shows an apparent surplus for manioc of 18,000 MT (unmilled). Data on manioc production was provided by MPARA/SMTIS and should be viewed as indicative. Manioc is cultivated throughout the year, and as with other racines actual production levels are difficult to estimate.

C) Tallow:

Due to data limitations the envisaged commodity-gap analysis for tallow was not possible. No data are available on the domestic production of tallow. According to government officials production is quite low; local tallow is used to make traditional soap or is consumed directly as a fat substitute in the diet. Import data, however, suggests that there may be a case for USAID providing tallow as balance of payments support. Data provided

by the DGBDE, (Direction Generale de la Banque des Donnees de l'Etat) and the Chambre de Commerce show that Madagascar on average imports 1782 MT of tallow per year. In 1987 tallow imports were valued at approximately \$900,000. Aid in the form of tallow would provide foreign exchange savings, while counterpart funds generated by local sales could be used to support development activities/programs. Table 6 presents import tonnages and costs for tallow 1982 - present. A study of the local soap manufacturing industry is necessary, however, prior to any commitment of resources. Information on tallow production, imports, and utilization in soap production should be available from the major soap manufacturer in Antananarivo, la Savonnerie Tropicale. Unfortunately, the Directeur Generale was in the United States during the 2 week TDY, and personnel at la Savonnerie Tropicale would not give out information in his absence. (Annex 4 presents an outline of the methodology used to estimate a commodity-gap for tallow if data were available).

V. ISSUES RAISED:

A) Per Capita Availability versus Consumption:

The 1989 assessment shows that per capita availability of basic foods is adequate on a national basis. Aggregate data on calorie availability levels -- converting per capita availability in kilos into calorie equivalents -- shows that average availability levels are above the minimum FAO/WHO recommended requirement of 2,200 calories/person/day. The FAO and World Bank cite average per capita intake in Madagascar at approximately 2,400 calories/day.(3) This average figure, however, masks large variations in caloric intake levels by income group, season, and region. At a national level, a decline in per capita availability of staple foods is evident in the past 5 years. The balance sheet approach to food needs, however, provides information only on what is available for consumption in a given year, not actual calorie intake at the level of the household or the individual. Regional and rural-urban differences are likewise obscured in the national level aggregate analysis. In the 1980's, significant increases in urban malnutrition have been documented by UNICEF and the GDRM. Inadequate access to food, either through purchases or home production, appears to be a growing problem in urban Madagascar during this period of structural adjustment. Clearly, the issue is not one of overall food availability, but rather that of distribution.

B) The Need for a Nation-Wide Food Consumption/Nutrition Survey: Dissaggregation by Region, Season, and Income Group.

Information on food consumption and nutrition in Madagascar is sketchy at best. The last national household survey assessing consumption and nutrition was conducted in 1962. Population estimates are likewise based upon information collected over 10 years ago; the last demographic census was completed in 1975. There is a need for a nation-wide food consumption/nutrition survey. Issues to be addressed include:

- (i) Food consumption patterns and nutritional status.
- (ii) Food deficit households: identify who they are and where they are located.
- (iii) Target vulnerable groups by:
 - (a) region, income group, season
 - (b) commodities: inferior goods
- (iv) Identify viable local institutions that can implement programs to augment calorie intake levels of vulnerable groups.

C) Coordination with other Donors:

A number of donors are currently collecting data and information on the food and nutrition situation in Madagascar. In terms of coordination there is a need to: (i) synthesize the data that exists, and (ii) join forces with other organizations to minimize the overlap of effort in data collection and analysis. For example, UNICEF is currently financing the Programme National de Surveillance Alimentaire et Nutritionnelle. There is scope for USAID/Madagascar to coordinate efforts and exchange information with this new unit in MPARA.

D) Data Reliability:

There is a need to strengthen the institutional capacity of the government to systematically collect and analyze agricultural data. Information on the agricultural sector is available in Madagascar, yet the quality of data varies from institution to institution. Given problems with reliability, data should be viewed as indicative.

MADAGASCAR:

TABLE 4

FOOD NEEDS ASSESSMENT: 1989

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TECHNICAL COEFFICIENTS:

Melaree Lowdermilk: June 1989

COMMODITY	CALORIES/ UNMILLED KILO:	MER	SEED USE	FEED USE	POST HARVEST: LOSSES	INDUST PROCESS	% SHARE OF DIET
RICE, (PADDY)	3530.00	0.65	0.05 (FAO)	0.00	0.15	0.00	55% (FAO)
WHEAT	3320.00	0.75	0.14	0.00	0.03	0.00	2% (FAO)
MAIZE	3560.00	0.82	.04 (FAO)	.05 (FAO)	.07 (FAO)	0.00	4% (FAO)
MANIOC	1460.00	0.95	0.00	.10 (FAO)	.21 (FAO)	0.00	13.3% (FAO)
VEGOIL	8810.00	0.90	0.00	0.00	0.00	0.00	3% (FAO)

SOURCES:

(FAO) = FAO Food Balance Sheet, Madagascar, 1984

Caloric Values: Table de Composition des Aliments Usuel, (Prepreee par la Division de la Nutrition et de l'Alimentation du Ministere de la Sante Publique et de la population, Tananarive, Juillet-Aout, 1968).

Coefficients: 1985/86 Agricultural Census, Madagascar.

FOOD EXPENDITURE PATTERNS BY URBAN CENTER

TABLE 5

MADAGASCAR: 1987

	ANTANANARIVO	ANTSIRIBE	FIANARANTSOA	TOANASINA	MAHAJANGA	ANTSIRAHANA	TOLIARY
PER CAPITA MONTHLY EXPENDITURE, (FMG)	12600	11800	9900	14600	11500	15700	17500
PER CAPITA MONTHLY FOOD EXPENDITURE, (FMG)	8708	7713	6804	11641	7919	10745	11379
PER CAPITA MONTHLY RICE EXPENDITURE, (FMG)	4400	3512	3785	5400	3641	4647	3696
FOOD SHARE OF TOTAL EXPENDITURE, (%)	0.69	0.65	0.69	0.80	0.69	0.68	0.65
RICE SHARE OF TOTAL EXPENDITURE, (%)	0.35	0.30	0.38	0.37	0.32	0.30	0.21
RICE SHARE OF FOOD EXPENDITURE, (%)	0.51	0.46	0.56	0.46	0.46	0.43	0.32
BREAD SHARE OF FOOD EXPENDITURE, (%)	0.04	0.04	0.02	0.06	0.05	0.04	0.03
OIL SHARE OF FOOD EXPENDITURE, (%)	0.01	0.00	0.00	0.01	0.00	0.00	0.00
N =	216	72	72	72	72	72	72

N = Number of Households

MADAGASCAR:

FOOD/COMMODITY NEEDS ASSESSMENT 1989:

TABLE 6

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TALLOW:

IMPORTS: TONNAGE AND PRICE/KILO

=====							
YEAR	POPULATION	IMPORTS, (MT)	PER CAPITA UTILIZATION PER YEAR (KG)	PRICE PER KILO, (FMG)	TOTAL VALUE (FMG)	TOTAL VALUE (\$)	
=====							
1982	9200000	1342	0.15	197	265000000	757143	
1983	9457000	20	0.00	350	7000000	16317	
1984	9718000	1962	0.20	401	786300000	1362738	
1985	9983000	927	0.09	410	380500000	573906	
1986	10254000	2249	0.22	324	728100000	1077071	
1987	10562000	1989	0.19	482	959165200	896319	
1988	10879000	2168 *	0.20 *				
1989	11205000	2301 *	0.21 *				
=====							

* = Estimate

DATA SOURCE: DGBDE, (DIRECTION GENERALE DE LA BANQUE DES DONNEES DE L'ETAT)

Figure 1:

COMMODITY COVERAGE

Share of Total Diet

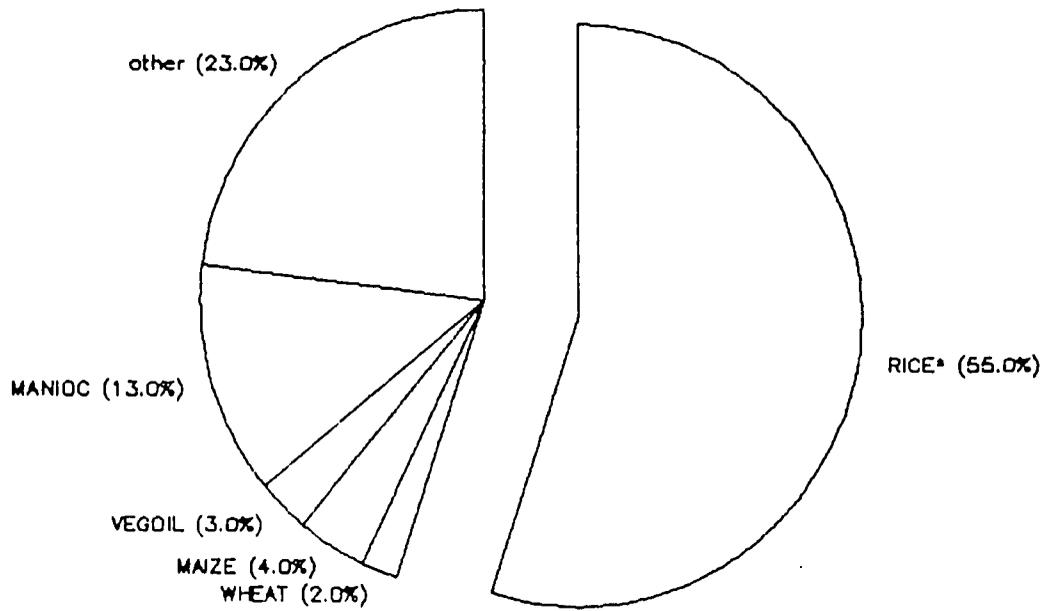


Figure 2:

Per Capita Consumption (Cereal)

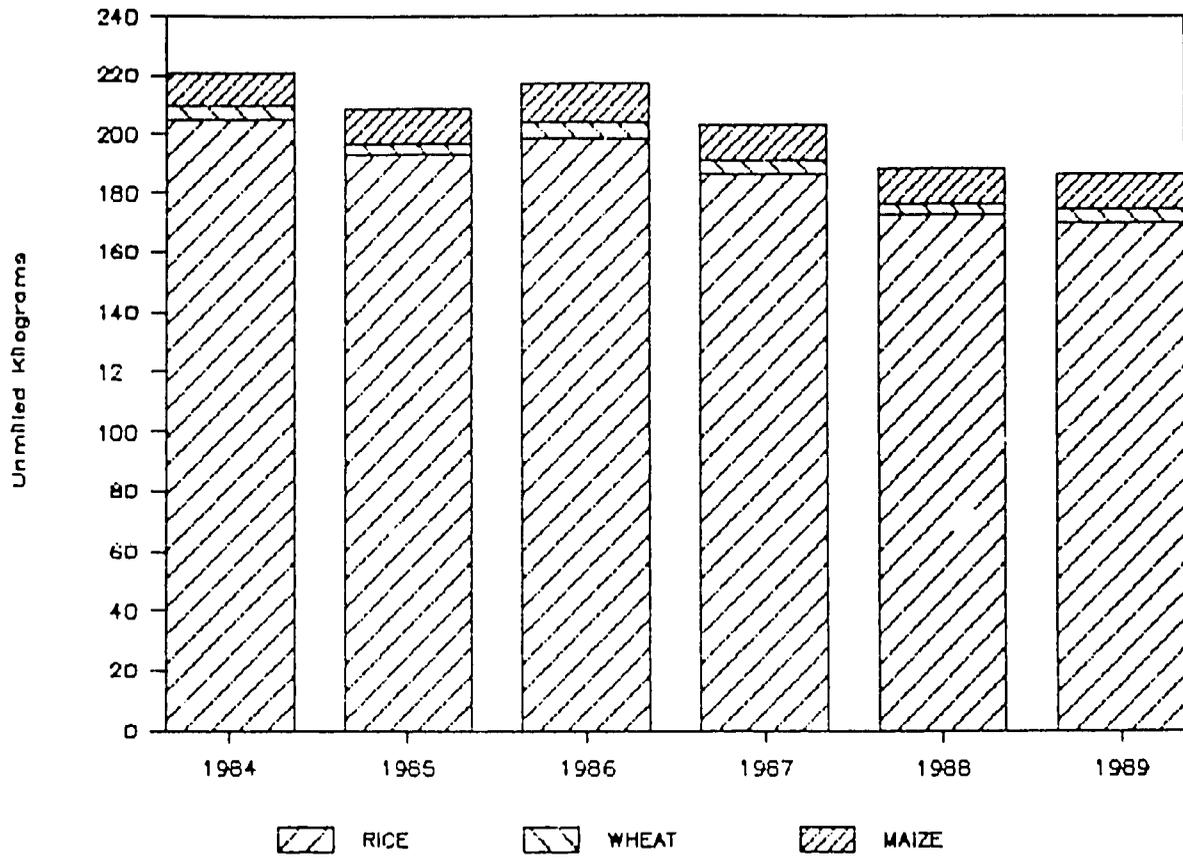


Figure 3:

Per Capita Consumption (Non-Cereal)

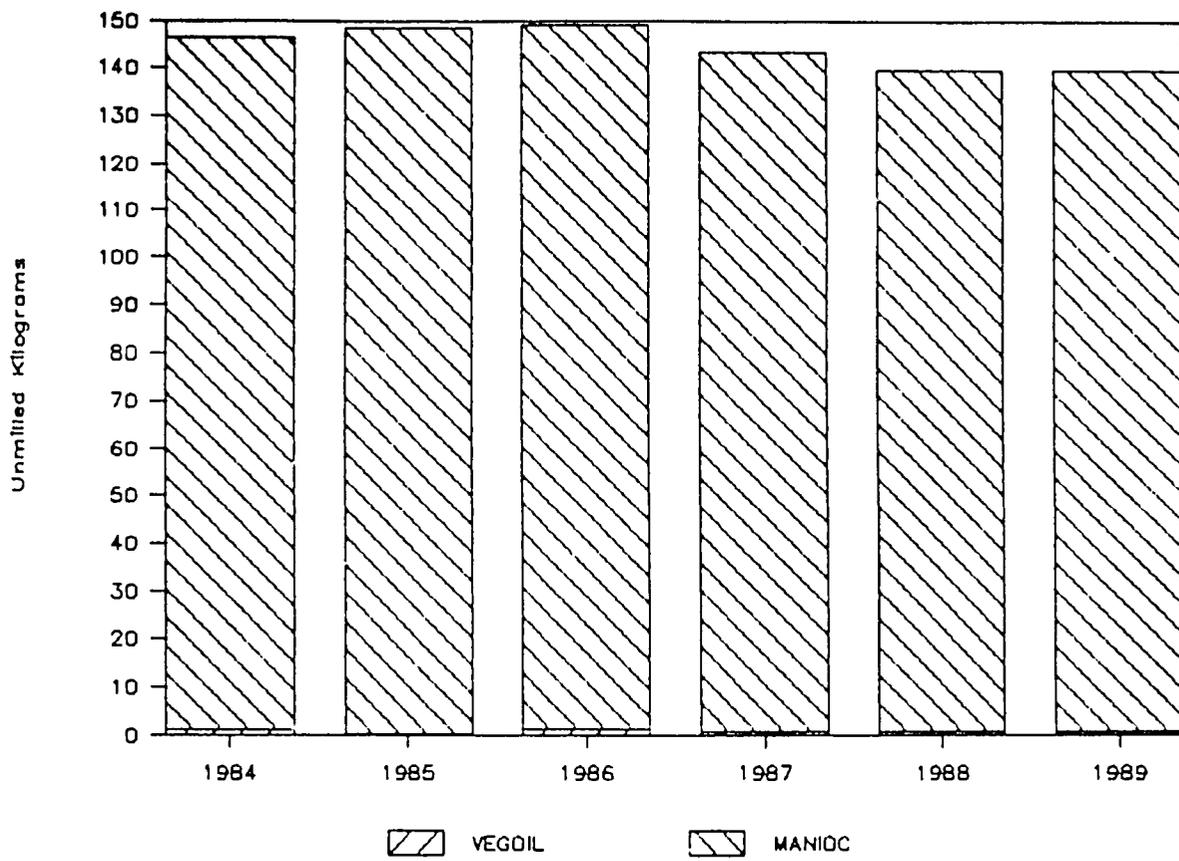


Figure 4:

Gross Domestic Production (Cereal)

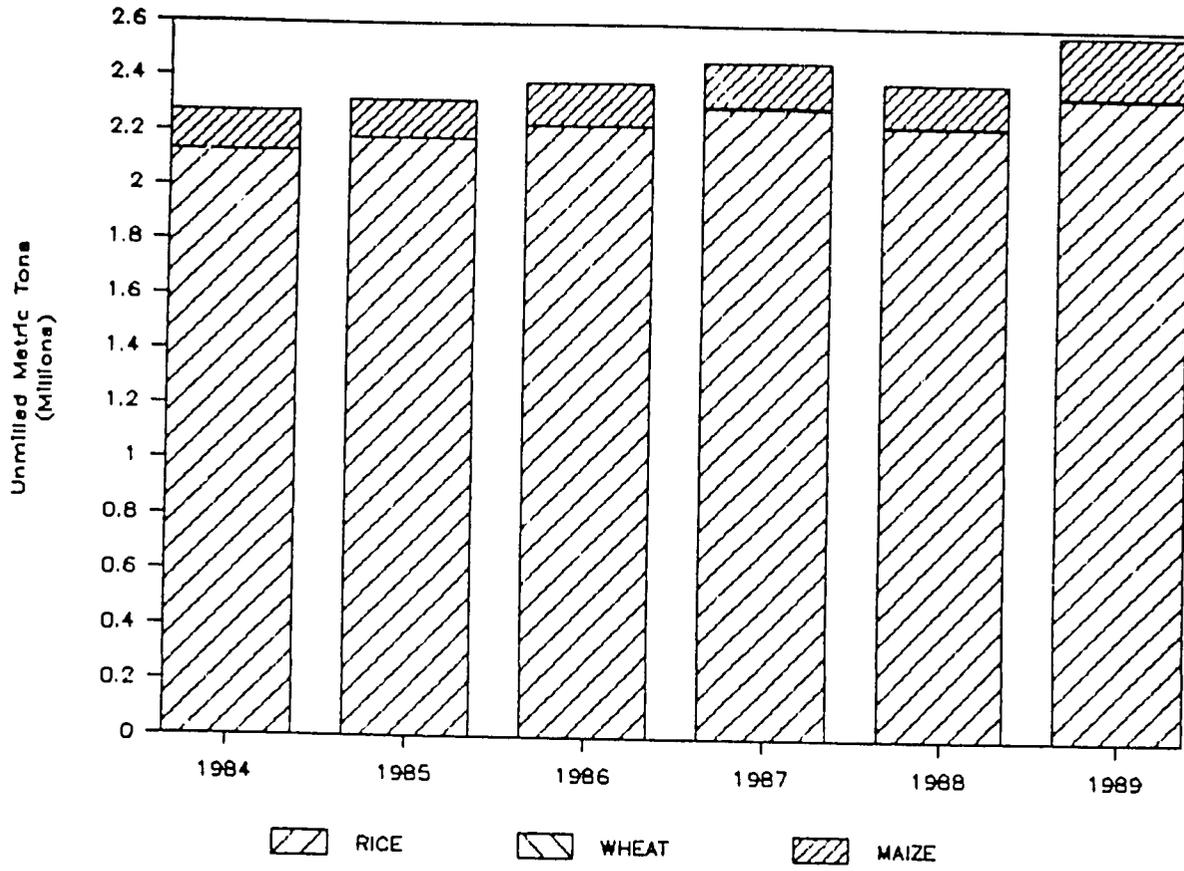
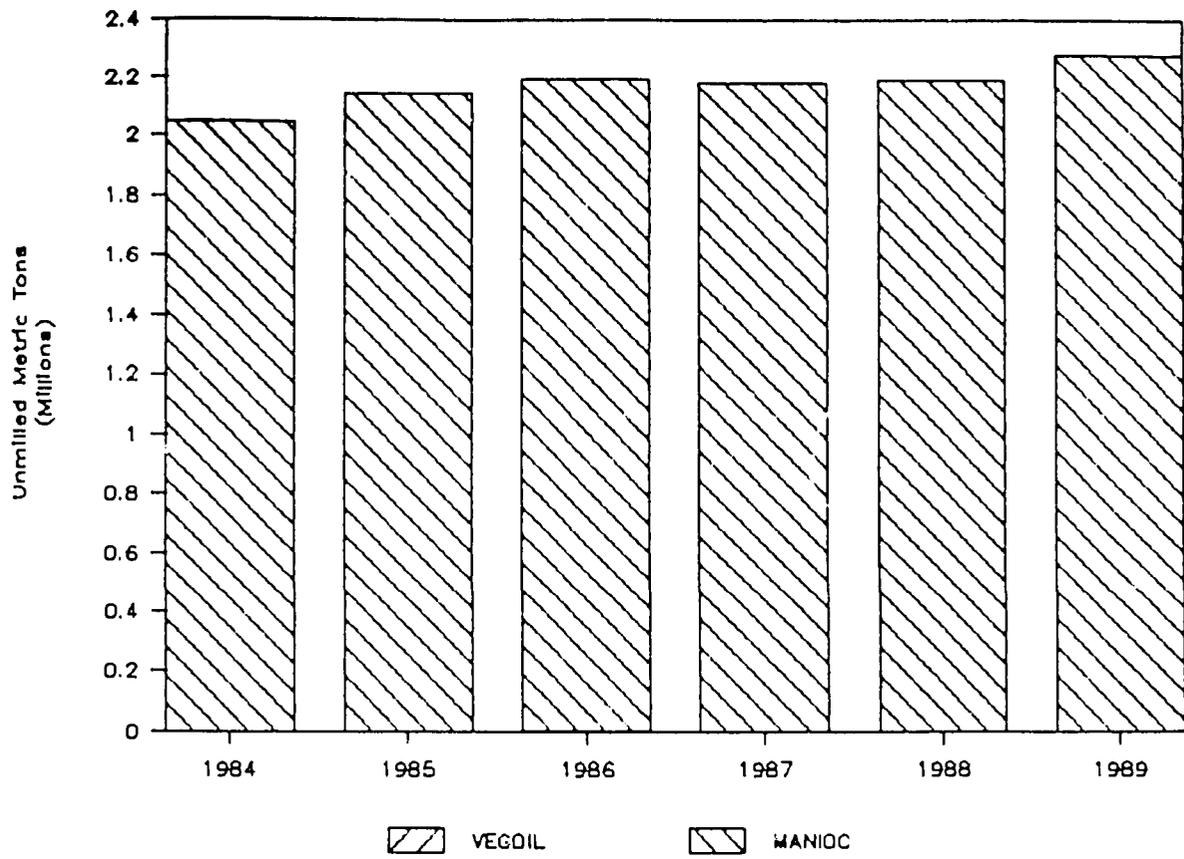


Figure 5:

Gross Domestic Production (Non-Cereal)



I. CONTACTS:

1) UNICEF:

Beatrice Gakuba, (Project Officer: Nutritional Surveillance/Food Security)

Beverly Carlson, (Senior Project Officer: Food and Nutrition Surveillance).

2) FAO:

Jacques H. Lepissier, (Representative)

Jean-Marie Buresi, (Consultant: Agronomist)

3) WFP:

Charles Vincent, (Program Administrator)

4) FED:

Henry B. Sprietsma, (Conseiller Economique)

Pierre Bertholon, (Consultant: Wheat Sector Study).

5) CRS:

Robert Bell, (Assistant Country Representative)

6) MPARA: MINISTERE DE LA PRODUCTION AGRICOLE ET DE LA REFORME AGRAIRE

Monsieur Theophile Raminintsoa, (Division Chief: SMTIS)

7) MPARA: PROGRAMME NATIONAL DE SURVEILLANCE ALIMENTAIRE ET NUTRITIONNELLE.

Monsieur Havoson Rakotoarivelo, (Director)

Shawn Baker, (Consultant: Tulane University)

8) DSA: DIRECTION DE LA SECURITE ALIMENTAIRE

Madame Vololana Rodanielson, (Director)

II. TRAINING IN FNA METHODOLOGY AND TEMPLATE/SOFTWARE:

1) MPARA: PROGRAMME NATIONAL DE SURVEILLANCE ALIMENTAIRE ET NUTRITIONNELLE.

Madame Simone Rabetokotany, (Agronome)

Madame Voahangy Arijaoma, (Agronome)

2) DSA: DIRECTION DE LA SECURITE ALIMENTAIRE

Mademoiselle Lalaina Rakotomamonjy, (Collaborateur technique)

Monsieur Julien Andriamahajo,
(Collaborateur technique)

III. ADDITIONAL DATA SOURCES:

MIEM, (Ministere de l'Industrie de L'Energie et des Mines)

DGBDE, (Direction Generale de la Banque des Donnees de l'Etat)

RMMF, (Regie Malgache de Monopoles Fiscaux)

KOBAMA, (Wheat Parastatal)

MINISTERE DU COMMERCE

Current Year Balance: Status Quo
Consumption
(Avg. over
base period)

CURRENT YEAR FOOD BALANCE								
Current Year: 1989								
MADAGASCAR								
Commodity	RICE	WHEAT	MAIZE	CEREALS ALL	VEG OIL	MANIOC	TOTAL	TOTAL BCE
Per capita consumption (UNMILLED kg/yr)	191.2	4.5	11.9	207.6	1.0	144.4	353.0	269.6
x Population (thousands)	11,205	11,205	11,205	11,205	11,205	11,205	11,205	11,205
= Total consumption requirement	2,142,751	50,788	132,835	2,326,374	11,205	1,617,456	3,955,035	3,021,423
- Gross domestic food production	2,350,000	5,000	220,000	2,575,000	3,350	2,277,000	4,855,350	3,525,695
- Total non-food use	470,000	850	35,200	506,050	0	705,870	1,211,920	798,245
= Net domestic food production	1,880,000	4,150	184,800	2,068,950	3,350	1,571,130	3,643,430	2,728,450
- Net change in stocks	(3,077)	0	0	(3,077)	(5,344)	0	(8,321)	(17,662)
- Total food exports	0	0	5,500	5,500	0	0	5,500	5,547
= Domestic food supply	1,883,077	4,150	179,300	2,066,527	9,194	1,571,130	3,646,851	2,740,566
Total consumption requirement (from above)	2,142,751	50,788	132,835	2,326,374	11,205	1,617,456	3,955,035	3,021,423
- Domestic food supply (from above)	1,883,077	4,150	179,300	2,066,527	9,194	1,571,130	3,646,851	2,740,566
= Import requirement	259,674	46,638	146,465	259,847	2,011	46,326	308,184	280,857
- Total commercial food imports	0	10,000	0	10,000	0	0	10,000	9,405
= FOOD DEFICIT (UNMILLED)	259,674	36,638	146,465	249,847	2,011	46,326	298,184	271,452
x Milling extraction rate (m.e.r.)	65%	75%	62%		90%	95%		
= FOOD DEFICIT (MILLED)	166,788	27,479	(38,101)	158,160	1,810	44,009	203,985	178,926

12

Rice Production: High Case Scenario

1989: gross production = 2,400,000 MT

CURRENT YEAR FOOD BALANCE								
Current Year: 1989								MADAGASCAR
Commodity	RICE	WHEAT	MAIZE	CERIALS ALL	VEG OIL	MANIOC	TOTAL	TOTAL BCE
Per capita consumption (UNMILLED kg/yr)	169.8	4.7	12.1	186.7	1.0	138.6	326.3	246.3
x Population (thousands)	11,205	11,205	11,205	11,205	11,205	11,205	11,205	11,205
= Total consumption requirement	1,902,671	52,995	136,094	2,091,759	11,205	1,553,327	3,656,290	2,760,180
Gross domestic food production	2,400,000	5,000	220,000	2,625,000	3,350	2,277,000	4,905,350	3,576,695
- Total non-food use	480,000	850	35,200	516,050	0	705,870	1,221,920	808,245
= Net domestic food production	1,920,000	4,150	184,800	2,108,950	3,350	1,571,130	3,683,430	2,768,450
- Net change in stocks	(3,077)	0	0	(3,077)	(5,844)	0	(8,921)	(17,662)
- Total food exports	0	0	5,500	5,500	0	0	5,500	5,547
= Domestic food supply	1,923,077	4,150	179,300	2,106,527	9,194	1,571,130	3,686,851	2,780,566
Total consumption requirement (from above)	1,902,671	52,995	136,094	2,091,759	11,205	1,553,327	3,656,290	2,760,180
- Domestic food supply (from above)	1,923,077	4,150	179,300	2,106,527	9,194	1,571,130	3,686,851	2,780,566
= Import requirement	(20,406)	48,845	(43,206)	(14,768)	2,011	(17,803)	(30,560)	(20,386)
- Total commercial food imports	0	10,000	0	10,000	0	0	10,000	9,405
= FOOD DEFICIT (UNMILLED)	(20,406)	38,845	(43,206)	(24,768)	2,011	(17,803)	(40,560)	(29,791)
x Milling extraction rate (m.e.r.)	65%	75%	82%		90%	95%		
= FOOD DEFICIT (MILLED)	(15,264)	29,133	(35,429)	(19,500)	1,810	(16,913)	(34,663)	(24,072)

MARKET FOOD PRICES:

Annex 3

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ANTANANARIVO: June 1989

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:                                     :                                     :
:      COMMODITY                       :      PRICE                       :
:                                     :      (FMG/Kilo)                   :
:                                     :                                     :
:-----:-----:-----:
:      RICE                             :                                     :
:      Riz de luxe                       :      650                           :
:      Riz Makalioka                     :      500                           :
:      Riz Stock Tampon                  :      450                           :
:      Riz ordinaire local                :      420 - 440                       :
:                                     :                                     :
:-----:-----:-----:
:      WHEAT FLOUR                       :      660                           :
:                                     :                                     :
:-----:-----:-----:
:      MAIZE                             :                                     :
:      Semoule                           :      200                           :
:      Graine                            :      150                           :
:                                     :                                     :
:-----:-----:-----:
:      VEGETABLE OIL                     :      2,300                          :
:      (liter)                           :                                     :
:-----:-----:-----:
:      MANIOC                             :      175                            :
:                                     :                                     :
=====

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MADAGASCAR:

ANNEX 4:

FOOD/COMMODITY NEEDS ASSESSMENT 1989:

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TALLOW:

=====

TO DETERMINE AVERAGE PER CAPITA UTILIZATION: 5 historic years

BASE PERIOD:

(1) Net Domestic Production - Net Change in Stocks - Exports + Imports + Aid = Total Availability
=====

(2) Total Availability/population = Per Capita Utilization
=====

Base Period Average: Kilos/Person/Year

EQUATIONS TO DETERMINE DEFICIT:

CURRENT YEAR:

(3) Net Domestic Production - Net Change in Stocks - Exports = Total Domestic Availability
=====

(4) Average Per Capita Utilization x Current Population = Total Utilization
=====

(5) Total Utilization - Total Domestic Availability = Import Requirement
=====

(6) Import Requirement - Commercial Imports = Deficit
=====

NOTES

(1) FAO, Food Balance Sheet: Madagascar, (FAO: Rome, Italy. March 1984).

(2) MPARA - PNUD - FAO, Le Recencement National de Agriculture. (MPARA: Antananarivo, Madagascar. Avril 1988).

(3) FAO, Food Balance Sheet: Madagascar, (1984), and World Bank, The Democratic Republic of Madagascar: Country Economic Memorandum, (IBRD: Washington, DC, 1986).

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