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POLICY ISSUES, PROJECT DESIGN AND IMPLEMENTATION
PLAN: FINAL RESEARCH STRATEGIES BASED
ON HOST COUNTRY REVIEW

Report #1 - Zambia

CEAP Project in Zambia
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1. AGRICULTURAL POLICY ISSUES

There is consensus among major donor agencies on agricultural policy issues of current importance in Zambia. The policy issues are clearly stated in the various country economic reports and perspective studies of Zambia. The policy issues are

1.1 Macroeconomic policy issues including;

- (a) A low interest rate policy, encouraging over investment in farm machinery and equipment and tends to reduce total credit, putting a premium on access to credit.
- (b) An overvalued domestic currency in the past is linked directly to a weak balance of payments situation; limits the importation of necessary agricultural inputs and food; and offers the government little incentive to encourage agricultural export production through improved producer prices.

1.2 Agricultural specific policy issues related largely to the existing system of administered prices.

- (a) A uniform pricing system which does not reflect seasonal price variations or regional differences. This pricing system distorts cropping patterns for low and high value crops. The pricing system also distorts consumption patterns in deficit and surplus producing regions. Since there is no seasonal variation in price, private storage of produce is discouraged.
- (b) Producer, consumer and marketing subsidies have tended to benefit urban consumers at the expense of rural producers. On the input side, agricultural subsidies have largely benefited large commercial farmers. Agricultural research and extension

delivery in Zambia must compete with the large expenditures on agricultural subsidies. Losses of government marketing agencies are covered by subsidies. The monopoly status of the government marketing agencies limits incentives to operate efficiently.

- (c) Agricultural research is primarily devoted to a few commercial crops (maize and wheat, for example). Very little research is undertaken on crop selection and soil management to improve the productivity of subsistence farmers.
- (d) It appears that the government credit, subsidy and research policies are more favorable to the large commercial farmers. For nutrition, who produces the food is important since the subsistence farmers depend on production for both consumption at home and as a source of income.

1.3 Nutritional considerations in policy decision

A major issue is how nutritional considerations can be incorporated systematically into food pricing and production policies.

1.4 Importance of policy issues and recommended policy changes

These policy issues have been identified by many observers as being at the heart of the poor performance of the economy in recent years. Other important factors are the declining mineral resource base and mineral prices. Economic diversification away from copper, growing unemployment, budget deficits and the weak balance of payment situation all require changes in the existing policies for measurable improvement in the economy.

A broad synthesis of recommended policy changes which reflect the major donor agencies preferences is:

- maintenance of an economically appropriate exchange rate
- phasing out of producer, consumer and marketing subsidies
- improving efficiency in the marketing system, allowing competition in the marketing of maize
- increased agricultural production for home consumption and promotion of agricultural export
- adoption of a pricing system more sensitive to world market prices
- reduction in the fiscal deficits.

Recommended policy reforms of direct interest to the present research project are:

- Raising the price of maize and fertilizer high enough to attain full cost recovery.
- Tying domestic prices to border prices as an alternative to the current cost based prices.
- Allowing prices to differ by regions to cover transportation and other distribution costs.
- Reducing Namboard's role as primary buyer and seller of maize to the more passive role of managing a national strategic grain reserves and as a partial market balancing agency.

The approach proposed to carry out the latter three recommendations is:

- set pan-territorial producer price floors based on border parity in Lusaka minus the highest cost of efficient transport from major surplus areas
- set a trigger consumer price based on the border parity price for Lusaka plus the highest cost of efficient transport to major deficit area
- establish a price margin sufficiently large for private traders to cover transportation, storage and handling costs they incur

- Namboard buying from sellers at the floor price and selling to any buyer at the consumer trigger price
- Namboard monitoring the stocks of private traders and processors through information provided by other government agencies such as The Ministry of Agriculture and Water Development (MAWD)

To deal with one obvious and immediate short term concern of these changes--the consumption impact of the policy changes on the poor who rely heavily on subsidized maize--a targeted food distribution program to provide short term relief to the hardest hit members of the society is suggested.

1.5 Policy focus

There are important questions surrounding the policy issues on which this research project may focus. These include:

- Donor agencies' views of policy issues and the recommended changes as a total package, all of which must be addressed simultaneously to produce meaningful economic reform.
- While the government of Zambia may share the concerns of the donor agencies, it appears from the current positioning of the economy that some of the issues raised may not be feasible.
- In the specific case of the Planning unit of MAWD, where the project is lodged, it is clear from the recent visit to Zambia that the planning unit is primarily interested in production. The unit is also interested in a research that will provide a basis for more systematic pricing (which may include border pricing) to deal with the regional issues.
- If the research can link food production and consumption, then the Planning Unit of MAWD may consider more fully nutrition issues in pricing decisions. One way of creating this change may be, for example, demonstrating potential flexibility in pricing policies that may be created by well targeted food distribution programs.
- It is clear that the donor identified policy issues as a package will require extensive data and modeling capability to analyze satisfactorily. The data problem alone will severely limit the extent of analysis.

Therefore it seems that we will have to make a choice among the policy issues on which to focus the research. In selecting the policy focus, it will be useful to consider among other things the policy changes contemplated by the Government of the Republic of Zambia (GRZ) and the Ministry of Agriculture and Water Development (MAWD) that can be addressed with the available data.

2. PROJECT DESIGN AND IMPLEMENTATION

2.1 Project objectives

- (i) To develop methods and procedures for estimating the probable effects of food and agricultural policy changes upon production, consumption and nutrition;
- (ii) to develop computer-based techniques for policy analysis and work with analysts in Zambia on the utilization of these methods for continuing analysis of policy options.

2.2 Project outputs

- (i) Commodity models for major food crops designed to estimate effects of food and agricultural policy changes on production, consumption and nutrition;
- (ii) an example application of the models for a specific policy issue;
- (iii) micro-computer software for continuing policy analysis and a users guide for host country analysts;

2.3 Analytical procedure

2.3.1 Modeling approach

A commodity modelling system will be used to evaluate impact of policy reform on agricultural production and consumption. An

analysis of consumption impacts will be used to derive nutritional implications of policy changes. The consumption component of the modelling system will be related to a targeted food distribution program suggested as a safety valve for the population hardest hit by the donor suggested policy changes. Nutritional linkages will be incorporated by converting the consumption of basic commodities into nutrients and aggregating across commodities.

2.32 Data requirement

The data requirements for the proposed modeling activity will be extensive. However, it is clear that available data are quite limited for developing the kinds of commodity and consumption models envisaged in Zambia. The approach used will be to assemble the available data and then to use these data together with prior knowledge on the functioning of commodity markets to synthesize the required model parameters. The resulting models will be recognized as provisional.

Data for the commodity models will be based largely on agricultural price and production information collected by the research team between May 7-25, 1985 in Zambia.

We may have access to data that are currently being processed from a household budget survey (1985) by the Central Statistical Office in Lusaka. The value of the data from this survey for assessing short term consumption impacts has not yet been assessed fully. But it is anticipated these data will provide the necessary information to carry-out the analysis of the consumption and nutrition components of the project.

2.33 Project contacts

The participating government institution in Zambia is the Planning Division of the Ministry of Agriculture and Water Development (MAWD). This is where the project is lodged. Specifically, the project has been attached as an addendum to ZATPID. The research is viewed contributing to the objective of ZATPID--improving and utilizing analytical capabilities for policy analysis with the improved data and information base.

Participating U.S. institutions are:

- Iowa State University
- University of Missouri
- Office of Nutrition, AID/Washington
- Nutrition Economics Group, OICD/USDA

2.4 Implementation time table

2.41 Report: existing data and research

Collection of appropriate data and an extensive review of Zambian and other African nations literature relative to the project. A report on the data situation, reviewing data that were collected during the first visit to Zambia.

Data from the 1985 household budget survey in Zambia is expected soon (October 1985).

2.42 Report: development of the analytical model

This report will be developed based on information gained in the first visit to Zambia that can be utilized to adapting the proposed models to the major policy questions. The report will include documentation of the model specification and an

evaluation of these models relative to those that have appeared in the literature on aggregate commodity market analysis (September 1985).

2.43 Memorandum: evaluation of the data

This memorandum on data availability and the tractability of the policy modelling analysis will be produced in October, 1985.

2.44 Report: preliminary policy analysis

The purpose of this report is to provide a fully-documented provisional version of the policy model. This policy model will include the parameter estimates required by the structure and address specific production and consumption issues. The document will be used in interactions with both AID/W and as a background piece for the Zambia review (December 1985).

2.45 Memorandum: summary of the Zambian Country evaluation of the policy model

This memorandum will summarize the major reactions of the host country officials to report #2.44. It will include, as well, a plan for modifying the model and positioning the policy analysis exercise to better address the intended issues (June 1986).

2.46 Workshop

A workshop will be held in Lusaka at the end of the project. The purpose will be to communicate the results of the policy modeling exercise and to contribute to the institutionalization of the policy modeling capability. If possible the conference will be designed to involve Zambian personnel, the local AID

office and other organizations in the country that have contributed to the research process, the data bases and other aspects of the research activity (July 1986).

2.47 Final report of the project

The final report will be sufficiently comprehensive to provide a complete evaluation of the research process and the results from the policy analysis exercise (December 1985).

ANNEX 1**EXISTING ECONOMIC SITUATION****(A) General Policy Context:****(1) Ownership and Operation of Industries**

Government owned and operated enterprise are a general feature of Zambia's economy, found in industry, commerce, mining, energy, transport, tourism, finance, agriculture, trade and construction. About 3/4 of all industrial activity takes place in enterprises owned wholly by the government. Government enterprises together provide employment for some 30 percent of the national work force in formal employment. The government enterprises are generally capital intensive, rely on imported raw materials and generate losses in their operation. The government frequently has to offset these losses through grants and subsidies or advance guaranteed loans to sustain operation.

(2) Trade and Exchange Rate Regime Interventions

Zambia maintains a system of import quotas and foreign exchange licensing. A specific import license which specifies the air or surface route to be used is needed for each import. The cabinet set priorities among economic sectors and controls the issue of licenses. Presently, priority is given to those imports which are necessary to the excess capacity in the economy and that promote growth of ? productive sectors, such as agriculture, and to imports of essential consumer goods.

In general, customs duties are designed to give protection and preferential pricing to locally manufactured goods. Food stuffs, agricultural plant and equipment and other capital goods attract only low rates of tariffs.

The currency (kwacha) was devalued several times between 1978 and 1983 when it was tied to the SDR of the IMF. Currently, the currency is tied to a Zambian determined basket of foreign currencies. Thus, there is a 'managed' floating system for the currency. The U.S. dollar is the intervention currency, with the exchange rate now at about 1ZK=US\$0.42.

(3) The Gross Domestic Product (GDP)

The economy of Zambia is heavily dependent on mineral production. It is the fifth largest producer of copper and second largest producer of cobalt in the world. From 1977 to 1982, the mining sector accounted for an average of 30 percent of total GDP. In the same period, the agricultural sector's average share in the GDP was 11.3 percent. The manufacturing sector accounted for an average of 10.5 percent of the GDP.

(4) Exports and Imports

Mineral exports account for about 95 percent of the foreign exchange Zambia earns. From 1976 to 1978, agricultural products accounted for an average of about 1.3 percent of export receipts. This shows that as a group, agricultural exports were relatively unimportant. Imports of inputs going to the manufacturing sector alone accounted for an average of about 30 percent of the total value

of imports from 1974 to 1978. This gives an indication of the extent to which the manufacturing sector relies on imported inputs. In the same period inputs into agriculture accounted for about 5.2 percent of imports. Food imports accounted for about 4.8 percent of the total value of imports. While the percentage share of food in the total value of imports remains small, it represents an important component of Zambia's imports in terms of the foreign exchange requirement for food imports relative to the balance of payments. Fertilizer is the single most important agricultural imported input in terms of share in the total agricultural import bill. Table 1 below shows indexes of import and export prices and the terms of trade. The table reveals a dramatic adverse movement of the terms of trade against Zambia over recent years.

(5) Debt Service Ratio

The foreign debt service as a percentage of the value of exports of goods and services is high. In 1980, for example, the debt service ratio was 24.4 percent.

(6) Interest Rate and Credit Control

Interest rates are controlled by the government. In comparison with the consumer price inflation, the quoted nominal interest rates are low. The result is that the real interest rates, nominal rates adjusted for the expected rate of inflation, have been negative for several years now. However, interest rates were raised in 1983 to bring the nominal rate more in line with the rate of price inflation. The minimum loan rate is the commercial bank prime loan

TABLE 1

Index of Import and Export Prices and Terms of Trade*(1970=100)

Year	Import Price Index	Export Price Index	Terms of Trade Index
1970	100	100	100
1971	105	78	74
1972	111	80	72
1973	126	117	93
1974	157	134	85
1975	194	84	43
1976	217	100	40
1977	248	97	34
1978	299	103	35
1979	374	185	50
1980	486	201	41
1981	584	198	34
1982	695	180	24

SOURCE: NCDP; Economic Report 1982.

* Taken from World Bank Report (1984)

rate of 10.5 percent. Only a few private debtors and the government companies or organizations receive bank credit at this interest rate. A sectorally differentiated loan rate structure is maintained for all other commercial bank credit. The loan rate to agriculture is one percentage point above the prime, and the maximum rate for lending to the remaining sectors is three percentage points above prime.

(7) Price Controls and Labor Market Intervention

The government maintains a price control system for several goods and services although some prices have been decontrolled in recent years. Wages are regulated by the government. Currently, no more than 10 percent increase in wages are allowed. There is a minimum wage rate. Agricultural wage rates are fixed between the Zambian Federation of Employers Association and the National Union of Plantation and Agricultural Workers.

(8) Trends in Domestic Prices

There have been substantial increases in the general price levels in recent years. The rate of inflation, measured by the consumer price index, rose from 13.2 percent in 1982 to 17.8 percent in 1983. Similarly, the consumer price index for the low income group rose from 12.5 percent to 19.8 percent during the same period. It is believed that if the prices ruling on the black markets were considered, the rate of inflation would be well into the twenties. Much of the increase in prices is attributed to the recent policy changes--decontrolling of prices, the depreciation of the kwacha, increase in interest rates, increase in the rate of exercise duties

Table 2

Recent Price Changes (annual average percentage changes)*

	<u>Average</u> 1970-74	<u>Average</u> 1974-78	1977	1978	1979	1980	1981
Consumer Prices							
Low Income Group	6.1	16.2	19.8	16.4	11.7	11.7	14.0
High Income Group	7.0	13.6	17.1	12.2	11.5	11.5	10.4
Wholesale Prices							
All Domestically Used Goods	8.6	20.8 _{b/}	24.6	26.1 _{c/} /24.3		9.2	5.3
Manufactured Goods	7.7	24.5 _{t/}	26.5	16.4	18.1	10.7	7.7
Deflator for Domestic Consumption & Investment _{a/}	8.1	14.7	19.3	17.7	15.7	11.1	12.2
Import Prices _{d/}	12.0	15.7	14.5	12.9	46.2	5.3	-9.2
Agricultural Terms of Trade	--	0.79	0.69	0.70	0.65	0.69	0.83

a/ The domestic demand deflator rather than the GDP deflator.
The latter would include the impact of export and import prices.

b/ June 1974 to June 1978.

c/ June 1977 to June 1978.

d/ Unit values in kwacha terms.

* Taken from World Bank report (1984)

and reduction in consumer subsidies for operations of government owned enterprises. Table 2 shows the annual average percentage changes in prices. The table also indicates that the terms of trade have moved against the agricultural sector over the years.

(9) Regional Inequality

A relatively developed narrow 'corridor' along 'the line-of-rail' contrast with a vast hinterland lagging behind in economic development. The line of rail provinces include the Southern, Central, Lusaka and Copperbelt. It is estimated (1978) that about 95 percent of the urban population comprising roughly 30 percent of the total population are concentrated in the line of rail provinces. About 98 percent of the industrial products are manufactured in these provinces and about 84 percent of the country's wage and salary earners work in these provinces drawing 91 percent of the country's wages and salaries. The major part of agricultural production takes place in the Central and Southern regions where about 30 percent of the rural population live, producing about 62 percent of the total agricultural output. Most of the commercial farms are located along the line of rail transport. Away from the line of rail 'corridor', the land is sparsely settled and agriculture is mostly for subsistence.

(10) Recent Changes in Interventions

Since 1980 the Government of Zambia has actively pursued economic policies intended to move the country towards a system of 'economic pricing' of goods and services and to provide improved incentives for the agricultural sector. The main thrust of the policy changes is;

- to re-organize the price control mechanism to enable companies and other business organizations to determine and charge economic prices for the goods and services they produce without the necessity for prior official approval, except for commodities such as maize where prices are fixed by act of parliament.

Some specific objectives of the changes are:

- to increase agricultural production for home consumption and export
- to improve the financial performance of government owned enterprises
- to reduce budget deficits to tolerable levels

(B) The Agricultural Sector

(1) Principal Characteristics:

(a) Organization of Agricultural Production

Domestic production of agricultural commodities comes from several composite groups of farmers. Besides an active but relatively small state farm subsector, four levels of farming are identified in Zambia. The four farming levels are

- (i) traditional subsistence households
- (ii) small scale emergent farmers
- (iii) medium scale commercial farmers
- (iv) large scale commercial farmers

The criteria used for the above groupings include; the degree of commercialization (the share of produce sold), the size of turnover, cash inputs used, the size and ownership of land. Traditional farmers make up about 85 percent of the farm households in Zambia. They cultivate 2 or less hectares each, using mainly family labor. They cultivate by hand and

occasionally produce surplus for sale. There is complete commercialization of production for the large scale commercial farmers. They rely heavily on fertilizer, agricultural machinery and hired labor. They cultivate over 40 hectares each and account for about 40 percent of the volume of marketed maize production. Between the two extreme technology types are the emergent and the medium scale commercial farmers. While the above groupings is more complete, it is practical to group farm producers into only two broad categories

(i) commercial farmers

(ii) non-commercial farmers

The major reason for this aggregate grouping is that nearly all officially published agricultural production data are so classified. The commercial farmers are the large scale commercial farmers from the former classification. The non-commercial farmers correspond to the other three groups of farmers.

(b) Land Tenure

There is a dual system of land administration in Zambia. There is state land with statutory leaseholds with a term of 100 years. There is also reserve land which is governed by customary law and administered by traditional authorities. Land under customary law may or may not be readily transferable. Customary land tenure is commonly judged inadequate in meeting security needs for investment in enhancing the productivity of existing holding or bringing new lands under cultivation.

Land is transferred from one leasehold to another without compensation. In Zambia, land in its natural form is considered free. The value of land arises only from the cost incurred on its clearing, fencing and other permanent improvements. Land in general is not considered a real bottle-neck in agricultural production.

(c) Agricultural Commodities Produced

The major crops grown are maize, groundnuts, millet, sorghum, soyabeans, cotton, wheat, rice, tobacco and cassava. Maize is the most important crop and the universal staple for Zambia. All groups of farmers grow maize. Millet, sorghum and cassava are grown mainly by subsistence farmers. Wheat, soyabeans and Virginia tobacco are grown by commercial farmers. Tobacco is the traditional export crop. The governments agricultural pricing policy, more than any other factor, is relatively favourable to maize and has been the driving force behind the wide-spread production and consumption of maize even in remote and ecologically unfavourable areas.

There is also an important livestock sector. The traditional sector has over 2 million head of cattle (about 85 percent of the total cattle population). Table 3 below shows the contribution of the commercial farm sector and the traditional (non-commercial) farm sector to the Gross Domestic Product classified by the commodities they produce. The contribution of the traditional sector which comprises over 80 percent of all farm households indicates a need to improve the performance of this sector.

Table 3

*

AGRICULTURAL GDP BY TYPE OF FARMING AND COMMODITIES, 1980

	<u>Type of Farming</u>			
	<u>Commercial</u>		<u>Traditional</u>	
	<u>Km</u>	<u>%</u>	<u>Km</u>	<u>%</u>
Crops	55.8	37	95.8	63
Livestock	70.7	40	105.1	60
Fisheries	2.6	6	42.0	94
Others	13.3	21	49.9	79
Total	142.4	33	292.8	67

Source: Table 1.2, FSS Volume I.

* Taken from World Bank Report (1984)

Table 4

Imports, Exports, and Official Intake of Selected Major Agricultural
Commodities - Average for 1976 to 1980 (figures in metric tons)

Crop	Official Crop Intake (Domestic)	Export Volume	Import Volume	Export as Percent of Official Intake	Import as Percent of Official Intake
Maize in the grain	549,292	19,138.6	13,416*	3.5	2.4
Wheat in the grain	6,126	---	68,412.4	---	1116.7
Rice in the grain	2,188	---	6,357.2	---	290.5
Sorghum	376	---	98.8	---	26.3
Soya beans	1,578	---	412.0	---	26.1
Groundnuts	4,800	1,256.8	249.2	26.2	5.2
	(shelled)	(shelled)	(shelled)		
			250.2		
			(unshelled)		
Seed cotton	11,816	---	---	---	---
Sunflower	13,198	---	---	---	---
Virginia tobacco (leaf)	4,854	1,379.0	---	28.4	---
Burley tobacco	342	326.6	---	95.3	---

Source: Computed using data from "Annual Agricultural Statistical Bulletin,"
Planning Division, Ministry of Agriculture and Water Development,
Lusaka, 1982.

(d) Agricultural Commodity Export/Import

Table 4 above shows imports and exports of selected agricultural commodities in relation to the domestic intake by official agricultural marketing organizations. The table indicates that domestic crop production is not geared toward the export market. Exceptions are tobacco and groundnuts production. Grain imports are very substantial in relation to the official grain crop intake. Nearly all Zambia's wheat and rice requirements are imported. The average maize import for 1979 and 1980 was 33,316 metric tons.

(e) Government Expenditure in Agriculture

Table 5 shows government subsidies and capital expenditures in the agricultural sector. The table indicates that expenditures on subsidies outweigh expenditures needed to improve agricultural research activities and extension delivery. Yet, it is well recognized by the government that there is a need to improve the delivery of extension services and research programs to improve the productivity of subsistence farmers.

Table 6 shows that a large part of the total agricultural subsidies goes to the National Agricultural Marketing Board (NAMBOARD) to cater for the handling and distribution of maize and fertilizer.

(f) Principal Agricultural Price and Marketing Policies

In recent years, agricultural policies are formulated in the context of an overall strategy for rural development. The

Table 5

Government Subsidies and Capital Expenditure in Agriculture (k millions)*

Year	Subsidies Current	Capital Expenditure		
		Total Research	Total Extension	Total Capital Expenditure
1970	14.60	0.10	1.44	33.70
1971	33.70	0.37	2.27	34.30
1972	46.40	0.35	2.34	42.90
1973	37.90	0.35	2.06	26.00
1974	32.90	0.35	1.65	18.10
1975	76.30	0.48	1.95	32.60
1976	58.20	0.38	1.61	22.10
1977	65.30	0.44	2.19	27.70
1978	41.50	0.66	6.67	37.10
1979	104.40	1.01	2.65	45.60
1980	208.90	1.41	4.34	41.14

All figures in current kwacha

*Source: World Bank Report (1984)

Table 6

Namboard Subsidies (in million kwacha)

Use of Subsidy	YEAR				
	1974	1975	1976	1977	1978
Maize	11.8	19.8	26.6	26.4	19.0
Fertilizer	12.2	14.6	22.4	17.7	12.2
Other	.5	23.4	3.0	--	--
TOTAL	24.5	57.8	52.0	44.1	30.2

Source: Doris Jensen, Agricultural price and marketing policies
in Zambia, p. 16.

agricultural sector is expected to play a leading role in improving the standard of living of the rural population. As a result, the government has broadened the scope of its agricultural objectives in contrast to the major objective of supplying food at low prices to the country's rapidly growing urban population following independence.

The government's agricultural objectives now include the following:

- to achieve self-sufficiency in the production of staple food at the national and regional levels where feasible
- to provide adequate agricultural raw materials to feed the country's agro-based industries
- to stimulate and increase the production of crops with export potential to broaden the country's export base which is primarily of mineral origin
- to improve infrastructural services to promote increased agricultural productivity
- to create new agricultural employment and income opportunities in the rural sector to counter the rural-urban migration
- to increase the contribution of agriculture to the gross domestic product
- to promote a more equitable distribution of income, i.e., reducing the rural-urban income gap through agricultural programs and pricing policies.
- to improve the nutritional status of the rural sector.

The major policy instrument employed by the Zambian government to influence agricultural markets and prices is a 'system of administered prices'. The 'system of administered prices' has the following features:

- prices at both the producer and consumer levels for major food and non-food agricultural commodities are fixed annually by the government, e.g., maize, fertilizer.
- the fixed prices are uniformly applied and maintained in all locations in the country throughout the entire crop season.
- State enterprises and cooperative unions are normally granted monopoly rights to trade in controlled produce markets and are often not allowed profit margins. They must rely on government subsidies to meet the expenses incurred in their operations, e.g., handling and transportation charges.

The features above combine to provide the government considerable control over the prices and the distribution of agricultural commodities in Zambia. In the last few years, however, the government is gradually decontrolling consumer prices of several agricultural commodities in Zambia.

(2) Agricultural Marketing Channels and Organizations

There is an extensive government involvement in the marketing of agricultural commodities in Zambia. The markets for maize, non-food and plantation crops such as cotton and tobacco are controlled by government enterprises. Private participation in agricultural marketing is concentrated in food commodities, for example, vegetables, fruits, cassava, sorghum. The internal flow of maize-- the most important agricultural commodity--is described in Figure 1 to illustrate the marketing arrangements that exist in the controlled produce markets in Zambia.

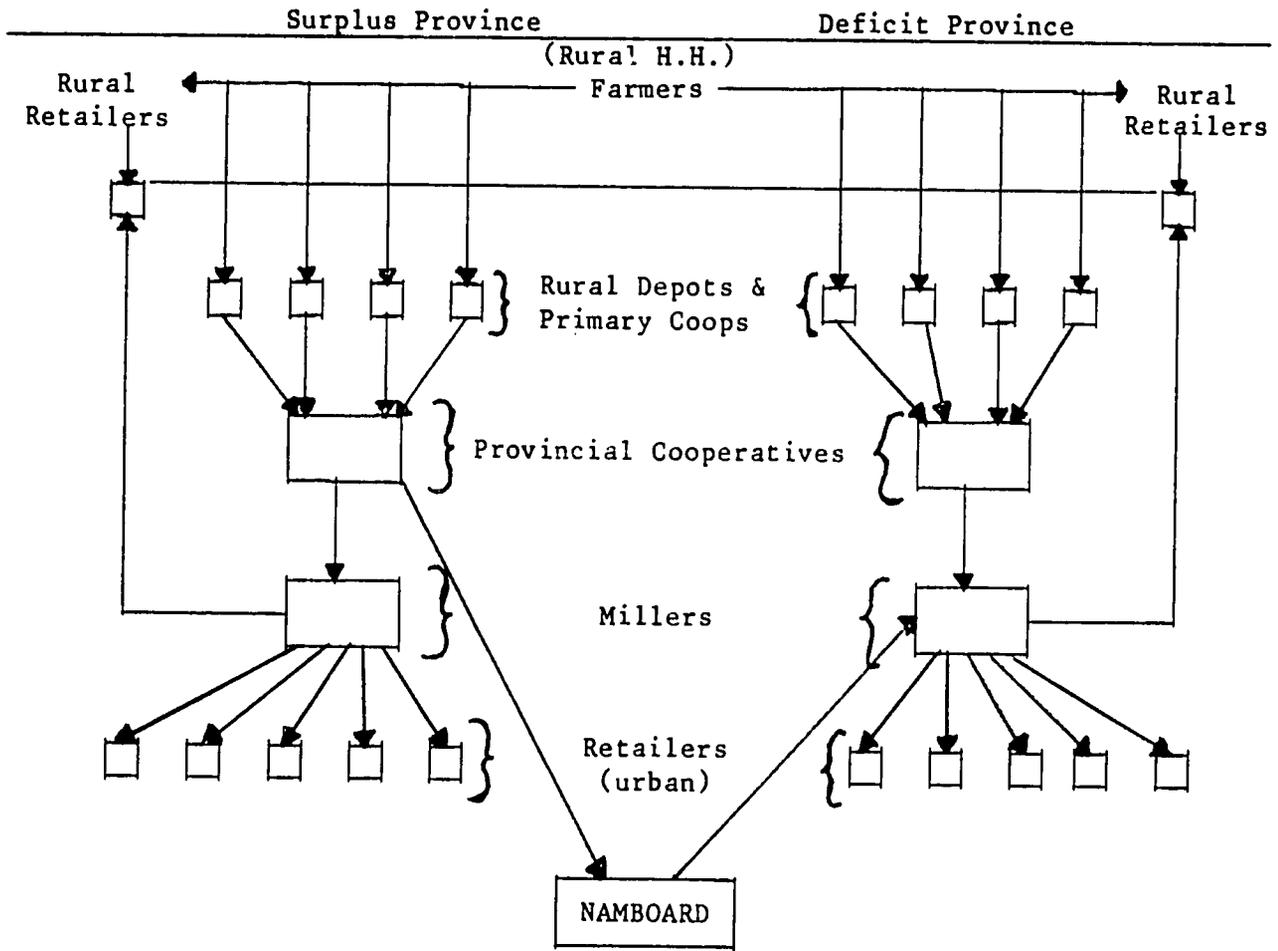
Maize flows from producers in the rural areas to urban centers, from surplus to deficit areas, and back to rural areas. There are maize collection depots in the rural areas which are run by the

primary producer cooperatives. The depots are open to both members and non-members for the sale of their maize. If an area is not serviced by a primary cooperative, the provincial cooperative which covers the area sets up marketing depots (for purchasing grain from farmers only). The provincial cooperatives receive the maize returns from the primary cooperatives and rural depots which are then transferred to the urban centers for storage. From the urban centers, any estimated surplus is transferred to the National Grain Marketing Board (NAMBOARD) which places it for storage and release to millers in the deficit provinces. Milling plants are located in the urban centers, Namboard has general control over all allocation of maize to milling companies in Zambia, including those made by the cooperative unions to milling companies. Processed maize moves from the millers to urban and rural retailers. The provincial cooperative unions are not allowed to trade across provincial borders, and millers are not allowed to buy direct from producers. There is direct price control at the producer, miller/processor and consumer levels which often leave inadequate margin for Namboard and the Cooperative Unions to cover their costs.

At the village level in remote rural areas, some private traders act as assemblers of the produce from small farm households. Because only Namboard and its appointed agents are allowed to deal in maize, private traders resell the maize to the officially appointed agents as the harvest from their own farm holding.

Namboard also has the responsibility of importing or exporting maize whatever the situation may be. Figure 2 is a graphical

Figure 1
Flow of Maize Produced in Zambia



Source: Shubh Kumar K., The design, income distribution and consumption effects of maize pricing policies in Zambia (1984), IFPRI.

Figure 2

INTER-PROVINCIAL TRANSFERS AND IMPORTS OF MAIZE
DURING 1983 (THOUSAND BAGS)

SOURCE: THE DEPARTMENT OF AGRICULTURE
NAMEBOARD

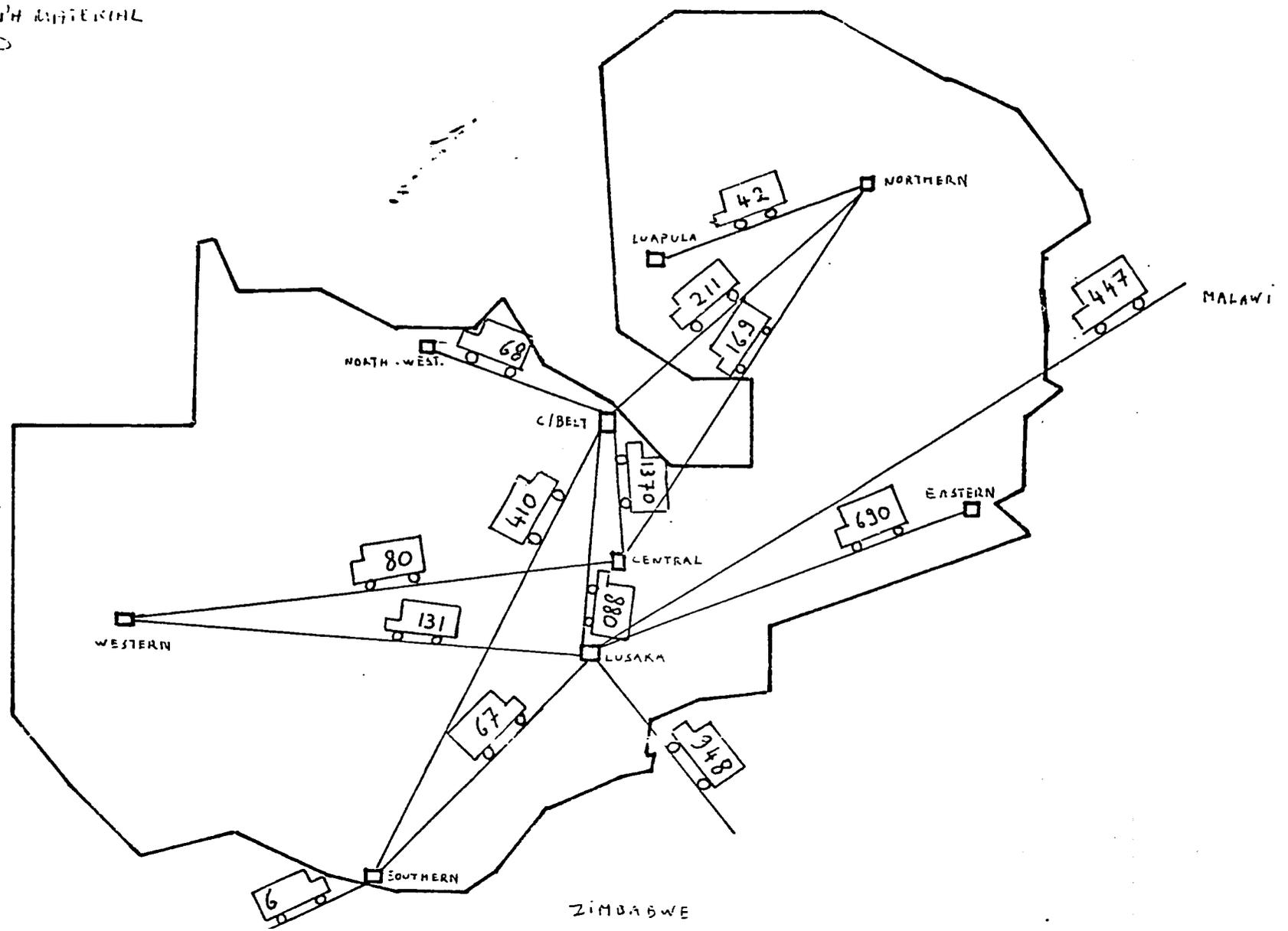


illustration of imports and inter-provincial movements of maize in Zambia in 1983. The figure shows the volume of maize imports as well as the volume of maize involved in inter-provincial transfers.

(C) Food Consumption and Nutrition

(1) Food Consumption Pattern

Maize is the staple of the majority of people in Zambia. In all Zambia, maize and its by-products supply about 58 percent of calories, 42 percent of protein and 27 percent of fat. In rural diet, however, maize contributes about 49 percent of calories and 35 percent of protein. This is due to substantial consumption of cassava and other indigeneous cereals, for example millet, in certain parts of the country.

Cassava is an important staple for the rural population of Western, Northwestern, Northern and Luapula Provinces. Cassava provides about 17 percent of calories in rural diet. Millet and sorghum are grown in areas where maize production is marginal and it is used to supplement the main staple of maize. Some millet and sorghum are used for making beer.

The main type of fat consumed is vegetable oils such as groundnut oil. Fish is by far the primary source of protein for the urban and rural communities, supplying about 57 percent and 65 percent of the animal protein respectively. Legumes--beans, groundnuts, cowpeas--are the main sources of plant protein.

There is some evidence of variation in food availability and consumption in the course of a year. There is a pattern of increasing malnutrition among children through the rainy season, peaking the week before harvest. Table 7 shows the seasonal

variation of energy and protein intake in the Northern Province which illustrate the seasonal variation in food consumption.

(2) Nutrition

The responsibility for national nutrition falls under the Ministry of Health through the National Food and Nutrition Commission (NFNC). The objectives of the NFNC include: conducting research relevant to food and nutrition, collecting data and keeping statistical records on nutrition, increasing public awareness and knowledge on nutritional matters, advocating efforts to improve food and nutrition through appropriate sectors of government and non government organizations and participating in health education and training programs.

The NFNC since its formation in 1967 has not been successful in achieving its objectives. As yet, data at the national level on nutrition in Zambia are scanty and originate mainly from two surveys--the food consumption survey, 1969/72, and the household budget survey, 1974/75. Perhaps more importantly, the NFNC has not been able to influence decision makers to take nutritional considerations directly into account in formulating food production and pricing policies. Food production and pricing policies continue to reflect primarily urban and foreign exchange concerns rather than nutritional improvement by itself. The most important nutrition intervention so far has been health and nutrition education. Special nutrition programmes, with women as target group, are often organized as a minor component within an agricultural programme.

Inadequate energy intake is generally considered the most serious nutritional problem of the low-income urban population, the

Table 7

Average Energy and Protein Intake in the Northern Province by Season, 1970

	<u>Intakes as a Percentage of Annual Average:</u>		
	Jan-April	May-August	Sept-Dec
Energy	94	104	102
Protein	85	109	106

Source: Linda M. Perez, An Assessment of the Nutrition Situation in Zambia for Planning Nutrition Interventions, 1984.

Table 8

Nutritional Value of Roller Meal and Breakfast Food Per 100 Gram

	Calor- ies	Protein gr.	Fat gr.	Carbo- hydrates gr.	Cal- cium mg.	Iron mg.	Thia- min mg.	Ribo- flavin mg.	Nia- cim mg.	Vita- min A
Roller- meal	363	3.5	3.5	75.5	12	2.5		0.30	1.5	30
Breakfast food	354	7.0	0.5	80.5	9	2.0		0.05	0.6	0

Source: UNDP/FAO, The Food Economy of Zambia, DP/AZM/69/512.

* Taken from I.L.O. (1981): Basic Needs in an Economy Under Pressure

subsistence farmers and to some extent the rural wage earners. Protein intake is generally considered adequate in both quality and quantity except for the groups of population which have cassava as their main staple.

The agricultural and economic factors that adversely affect improved nutrition in Zambia include:

- inability of farmers to produce sufficient food for subsistence needs which is caused in part by shortage of male agricultural labor
- distortions of production and storage patterns resulting from the uniform pricing policy
- lack of adequate transportation and marketing system to and from remote areas
- low producer prices in the past which provided little incentive to encourage food production
- the costly agricultural subsidies which adversely affected research and extension delivery services
- low income and urban unemployment.

The interim findings of a recent nutritional impact survey of the Integrated Rural Development Programme and the National Food and Nutrition Commission suggest that the Nutritional status of children in farm households decline as farmers move from subsistence into the market economy and the trend is most evident in predominantly maize growing areas. On the other hand, the study suggests that there are significant improvements in the nutritional status of children in farm households which have successfully moved from the subsistence to the market economy. These indicate that nutritional stress is more likely to be experienced in farm households which are in transition from subsistence to market production.

Table 8 and Table 9 show the nutritional value of the major staple food and the cost of obtaining calories and proteins from frequently consumed food items in Zambia in 1980. Although prices have changed since then, the cost table still reflect the fact that roller meal and breakfast meal are the cheapest source of calories and proteins in Zambia. This is explained by the fact that the government provides large amounts of consumer subsidies on maize.

Table 9

Cost of Calories and Protein for Some Frequently Consumed Food Items,
August 1980

(in Ngwee)

	Cost to provide 100 calories	Cost to provide 5 gms. protein
roller meal	0.52	1.27
breakfast meal	0.66	1.73
bread	2.20	3.47
cooking oil	2.05	--
sugar	2.20	--
groundnuts	2.55	2.70
margarine	2.91	--
dried beans	4.35	3.75
sweet potatoes	4.40	16.50
milk	5.40	5.40
bananas	6.00	35.00
eggs	14.00	10.00
eggs	15.12	9.12
lentils (dried)	17.00	4.20
liver	18.25	6.25
waterpillars (dried)	21.60	7.20
chicken	37.96	18.69

Source: I.L.O.; Basic Needs in an Economy Under Pressure, Addis Ababa, 1981.

ANNEX 2

OVERVIEW OF FOOD CONSUMPTION AND NUTRITION REPORTS AND STUDIES

Reports and studies on food consumption and nutrition in Zambia are based primarily on data from a few food consumption surveys which are presented in Table 10.

Table 10

Sources and Types of Food Consumption Surveys

Type of Survey	Year	Area/population covered
Household Budget Survey (HBS) Central Statistical Office	1966-1968	9 towns, 2,576 households in low-cost housing area townships, by extrapolation from urban data
Rural Food Consumption Surveys, Food and Nutrition Programme (R.F.C.S.)	1969-1970	Northern Province
	1970-1971	Eastern, Central and Copper- belt Provinces
	1971-1972	Southern, Western and North Western Provinces
		total: 12,152 individuals
Household Budget Surveys Central Statistical Office	1974-1975	344 urban households 408 township households

Source: Food Strategy Study: Nutrition Annex 1981

A UNDP/FAO Report on Nutrition in Zambia^{*}, based on the 1969/72 food consumption surveys is a standard reference on the state of nutrition in

^{*}National Food and Nutrition Program: The Food Economy of Zambia, 1974

Zambia. It appears, however, that its information base is fairly outdated.

Recent reports on nutrition in Zambia include the following:

- (i) I.L.O. (1981); Basic Needs in an Economy Under Pressure
- (ii) Food Strategy Study; Nutrition Annex, 1981
- (iii) World Bank Report (1984); Zambia Population, Health and Nutrition Sector Review
- (iv) Linda Perez (1984); An Assessment of the Nutrition Situation in Zambia for Planning Nutrition Interventions
- (v) Shubh K. Kumar (1984); Draft Report - The Design, Income Distribution and Consumption Effects of Maize Pricing Policies in Zambia.

The Food Strategy Study concludes that undernutrition in Zambia results mainly from poverty or inability to produce sufficient food for subsistence needs. It further states that inadequate energy rather than protein intake is the main nutritional problem of the low-income urban population, subsistence farmers and to a lesser extent of the rural wage-earners. Energy deficits in these groups--about 350k cal per capita per day--translate into cereal equivalent of 14,600 tons per year at the national level. The report indicates that improvements in nutrition can be achieved by a higher consumption of cereals and/or cassava and that a higher fat intake is desirable. Table 11 shows the pattern of energy and protein intake in Zambia. Table 12 shows the location and functional classification of nutrient adequacy in Zambia. The data seem to support the conclusion of the Food Strategy Study that energy deficiency is more severe in the rural areas.

Food consumption patterns in Zambia are shown in Table 13. The table indicates that maize is the major food consumed in both urban and rural areas. The rural areas consume large amounts of cassava and sorghum in addition to maize.

Table 11

Energy and Protein Intake Per Capita Per Day

Energy and Protein	Large Urban Centers 1967	URBAN			RURAL	
		1975	1967	1975	Wage Earner 1970	Subsistence Farmers 1970
Energy (Kcal)	1942	2008	1833	2042	1854	1670
Total protein (g)	57	55	55	58	59	50
Animal protein (g)	24	22	21	23	23	18
Staple calories %	70	62	77	70	80	79
Protein calories %	12	11	12	11	13	12
Fat calories %	18	27	17	19	12	12

Source: CSO: Household Budget Survey, 1966-1968, Lusaka
 FAO: National Food and Nutrition Programme, Zambia
 The Food Economy of Zambia, Rome, 1974
 C.S.O. House Budge Survey, 1974-1975, Lusaka

* Taken from H.N. Siulanda, A Functional Classification of Nutrition Adequacy in Zambia, NFNC, 1983

Table 12

Nutrient Adequacy Percent of Urban and RuralZambia Population Groups (1969-1972)*

Population Groups	Energy Adequacy Percent	Protein Adequacy Percent
1. Urban dwellers	99.4	168.0
2. Wage earners in small townships	99.3	160.6
3. Rural agricultural wage earners (North Western, Western, Southern, Central, Northern, Eastern, Copperbelt)	91.3	169.1
a) (Northern, Eastern, Central, Copperbelt)	84.7	150.3
b) (Northwestern, Western, Southern)		
4. Rural subsistence farmers	91.3	202.9
(North Western, Western, Southern, Northern, Eastern, Central, Copperbelt)	93.7	158.3
a) Northern, Eastern, Central Copperbelt	66.9	113.1
b) North Western, Western, Southern	93.9	157.1

Source: Adapted by the author (HNG) from FAO. National Food and Nutrition Programme, Zambia: The National Food Economy of Zambia, Rome, 1974.

* Taken from H.N. Siulanda, A Functional Classification of Nutrition Adequacy in Zambia, N.F.N.C., 1983

Table 13

Diet Composition and its Regional Distribution, Zambia

	Zambia Total	Zambia Rural	Zambia Urban	Copper- Central belt	Southern	Eastern	Luapula	North- Northern	North- western	Western	
	(grams per capita per day)										
Maize meal	228.8	255.4	184.7	250.2	188.5	337.0	371.8	76.4	95.1	180.0	277.6
Breakfast meal (maize)	33.7	0.0	89.9	53.4	84.9	17.5	3.6	4.7	6.6	5.2	4.9
Finger millet	17.8	28.5	0.0	2.2	0.0	0.0	10.7	32.6	107.4	11.0	0.0
Sorghum	19.7	31.5	0.0	9.0	12.1	21.9	9.9	0.0	1.4	114.3	51.2
Wheat flour	41.4	11.0	92.1	78.9	90.1	23.6	4.7	7.1	7.9	2.2	9.6
Rice	3.6	2.74	5.2	4.4	5.2	0.8	2.5	7.7	4.4	1.9	0.6
Cassava	134.8	222.6	4.9	7.1	8.2	1.9	2.5	651.3	412.6	277.0	205.8
Roots misc.	11.5	13.1	9.0	7.7	9.9	6.6	0.3	14.0	30.1	44.7	19.2
Sugars	40.8	17.0	80.6	64.4	73.7	35.9	21.6	14.2	15.6	4.4	19.2
Pulses/groundnuts	15.1	20.3	6.0	6.8	6.3	26.0	23.8	17.3	31.2	13.2	6.6
Leaves	44.9	52.9	32.1	38.6	37.0	69.3	62.2	44.9	41.9	41.5	37.0
Other vegetables	42.5	48.0	33.7	32.1	36.4	61.9	23.3	48.5	58.4	68.5	38.9
Fruits	15.1	18.4	10.4	10.1	12.3	13.4	20.8	21.6	13.4	11.5	28.5
Meat, fish	140.8	131.9	173.7	144.9	154.8	87.8	93.0	235.0	147.7	104.5	157.1
Milk	30.4	9.0	64.7	54.5	61.1	15.3	4.1	3.6	3.0	4.1	25.8
Fats, oils	10.1	3.8	20.6	16.4	18.9	8.2	4.4	4.1	3.3	1.9	3.8
Chibuku-beer	186.0	144.1	255.9	217.0	255.9	165.2	141.6	148.5	144.9	145.2	144.9

Source: FAO Perspective Study of Agricultural Development for Zambia, 1976.

* Taken from Shubh K. Kumar, The Design, Income Distribution and Consumption Effects of Maize Pricing Policies in Zambia, IFPRI.

Table 14

Annual Consumption of Staple Foods Per Capita in kg

staple food	URBAN				RURAL	
	large urban centers		townships		wage earners	subsistence people
	1977	1975	1967	1975	1970	1970
maize flour	120	97	134	130	131	94
wheat flour	24	39	17	19	11	3
sorghum/millet	--	--	--	--	11	27
rice	1.2	1.7	0.5	1.0	1.2	0.7
total cereals	(145)	(138)	(151)	(150)	(154)	(125)
cassava flour	0.7	0.7	0.7	0.7	6	25

Source: Food Strategy Report, Nutrition Annex, 1981

Table 15

Expenditure Patterns With Respect to Food, Per Capita Per Month^{a)}

1966-1968 and 1974/5, of the Urban Population

Foods	1966	1968	1974	1975
	ngwee	%	ngwee	%
Maize flour	70	17	56	9
Bread	38	9	48	7
Sugar	22	5	30	5
Vegetables	40	10	73	11
Fish	63	15	108	17
Meat	109	26	168	26
Milk and dairy	15	4	39	6
Oil, fat	30	7	55	9
Miscellaneous	30	7	66	10
Total	4,17	100	6,43	100

Source (4)

a. in current prices

* Taken from Food Strategy Study: Nutrition Annex (1981)

On the other hand, the urban population consume substantial amounts of wheat, sugar and fresh meat in addition to maize. Rice consumption is relatively small among both the rural and urban population.

Table 14 seems to suggest that consumption of maize, declined somewhat between 1967 and 1975 while the consumption of wheat and rice increased during the same period. It is generally believed that in the rural areas maize and to a lesser extent wheat have replaced the coarse cereals sorghum and millet as well as cassava. Table 15 shows the food expenditure pattern of the urban population in Zambia for years 1966-1968 and 1974-1975.

Table 16 is a summary of a set of income elasticity estimates of selected food items in Zambia. It is difficult to assess whether these estimates are reasonable since no other estimates are available for comparison.

Table 16

Income Elasticities Estimates for Zambia

Item	Urban	Township	Rural
<u>A. Cereals and other food grains</u>			
Rice	1.11	1.11	1.11
Wheat	0.63	0.63	0.63
Maize	0.34	1.09	1.09
Millet	0.20	0.20	0.20
Sorghum	0.20	0.20	0.20
Pulses	0.23	0.25	0.59
Vegetable oil	0.44	0.44	0.44
Groundnuts	0.27	0.30	0.74
Beef (fresh)	0.77	0.77	0.77
Milk -fresh	0.72	0.27	0.27
-recombined	1.25	1.25	1.25
Pork	0.44	0.44	0.44
Poultry (meat)	1.06	1.06	1.06

Source: Maleka Phiri; Demand and Supply of Food Grains in Zambia--Some Projections, Planning Division, MAWD. In Report on the Top Level Seminar on Marketing of Food Grains, Lusaka, 1983.

Table 16 shows that the income elasticity for rice is high for both rural and urban population. The income elasticity for maize is high in the rural areas. The income elasticity for wheat is moderate for all groups of people. Poultry has high income elasticity for both the urban and rural population.

The World Bank Report (1984) states that Zambia receives substantial food aid. It points out, however, that food aid to Zambia is primarily for budget support since it is not programmed in relation to nutrition considerations. Food aid to Zambia fluctuates with market adequacy of domestic food production. Thus, food aid may only help to maintain existing nutrition status rather than improve it. Table 24 shows food aid to Zambia in 1984.

Table 17

Food Aid to Zambia (1984)

Commodity	Source	Quantity (MT)
Maize	USA (Grant)	32,500
	Dutch (Grant)	2,970
	WFP (Grant)	9,966
	Red Cross (Grant)	699
	EEC (Grant)	23,452
Wheat	USA (Concessional)	16,602
	WFP (Grant)	5,000
	France (Grant)	1,500
Rice	Japan (Grant)	3,614
	USA (Concessional)	6,969
Vegetable Oil	USA (Concessional)	8,549

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