

REPUBLIC OF ZAMBIA



# Living Conditions Monitoring Survey-I 1996

## *Survey Design/Logistics*

*Discover the power of Statistics*

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## ***Overview of Zambia***

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Zambia is a landlocked sub-saharan country sharing boundaries with Malawi, Mozambique, Zimbabwe, Botswana, Namibia, Angola, Zaire and Tanzania. The country covers a land area of about 752,612 square kilometres.

Since its independence, the country has continued to play a major role in the political liberalisation and stability of most of its neighbouring countries namely Zimbabwe, Namibia, Mozambique and Angola. The prolonged political turbulence in these countries has turned Zambia into a precarious refugee centre. The political events unfolding in Zaire have further worsened the refugee situation in the country.

### ***Politics and Administration***

The people of Zambia emancipated themselves from the British colonial rule by way of political independence in October, 1964. Since then, the country has undergone three major phases of governance. During the post-independence era, the country first experienced multi party politics until the year 1971 when the one party system was put in place. This second system of governance was brought to an end by reverting back to the multi party politics in October, 1991.

Administratively, the country is divided into nine provinces namely Central, Copperbelt, Eastern, Luapula, Lusaka, Northern, North-Western, Southern and Western province. These provinces are further divided into a total of fifty-seven (57) districts. Lusaka is the capital city of Zambia and seat of government. The government comprises of the Central and Local government. Local government administration is conducted by the fifty-seven districts councils.

### ***Land and the people***

Zambia's vegetation is mainly made up of savanna woodlands and grassland. The country has a tropical climate with three distinct seasons; the cool and dry season, which starts in April and ends in mid-August, the hot and dry season which falls between mid-August and about early November, and the hot and wet season for the remaining months up to March the following year.

Generally, Copperbelt, Luapula, Northern and North-Western provinces experience the highest rainfall. Production of some staple food crops in the northern part of Zambia has proved to be very inefficient in terms of high input costs due to leaching which in turn increases the acidity of the soil.

The country has abundant water resources and its habitats. There are five main rivers namely Zambezi, Kafue, Luangwa, Luapula, and Chambeshi river in Zambia. Apart from these resources, the country also has lake Tanganyika, Mweru, Mweru Wa Ntipa, Bangweulu and the man-made lake Kariba and Itezitzi.

Some of these resources harness nature's best wilderness and game reserves affording the country with abundant tourism potential for earning additional foreign exchange. A good number of rural households subsist on these resources by way of fishing and hunting as their main

economic activities. However, most of these water resources have not been fully intergrated into the countrys' development process.

Full exploration and efficient utilisation of various mineral ores and precious stones could help bring this country out from it's current economic maillaise. The demand for some of the mineral ores and precious stones on the international market is very elastic and thus a consistent source of the scarce foreign exchange.

### ***Transport and Communication***

Zambia's transport and communications system mainly consists of road, rail and air transport, post and telecommunication. The contribution of water transport to the transport and communication sector is very insignificant probably due to the bad water courses available. This form of transport is mainly restricted to areas with lakes.

The country's most commonly used form of transport is road followed by rail transport. The current road and rail networks are very small and are therefore not adequate enough to fully service all the households, especially the sparsely populated rural agricultural households.

Zambia is one of the most urbanised country in the sub-saharan Africa with about 40 percent of the population living in urban areas. The rest of the population (60 percent) are scattered throughout the rural parts of Zambia. The 1980 and 1990 censuses estimated the population of zambia to be at 5.7 and 7.8 million respectively. The projected 1996 population stands at about 9.4 million. The 1996 projected population reveals a sparsely populated country with overall population density of 13 persons per square kilometre. The lowest population density of 4 persons per square kilometre was registered in North-western province while Lusaka and Copperbelt provinces recorded the highest population concentration of about 65 and 54 persons per square kilometre respectively.

### **Recent developments in the Zambian economy**

Zambia has a mixed type of liberalised economy where government organisations coexist with privately owned firms. Mineral mining still constitutes the backbone of the country as it accounts for over 70 percent of the total export earnings. Since the 1970s, both the price and volume of copper have shown a general tendency to decline leading to reduced foreign exchange earnings.

This subsequent drop in the amount of foreign exchange available in the country has overtime contributed to the poor performance of the real sectors of the economy which mainly rely on imported raw materials and capital items. In recent years, the mining sector has generally proved to be an increasing cost industry precipitated by diminishing output besides high production costs.

The country's balance of payment status has mainly depended on the performance of the mining industry. Despite the additional foreign exchange earnings from non-traditional exports, the country still continues to pay more to the outside world than it earns from it's exports; hence the poor balance of payment performance. During the recent drought years, food imports have continued to be high mainly due to the drop in domestic agricultural output.

In order to reduce the dependence on the mining sector and food imports, the government has embarked on policies aimed at transforming the agriculture sector into the country's main

foreign exchange earner and base for the overall development of the economy. The agricultural sector in Zambia is still lagging behind in terms of development due to deplorable state of the road infrastructure, untimely distribution of inputs, poor credit system and extinction of the agricultural credit banks, unfavourable marketing and pricing policies.

Since 1991, the country has strictly and vigorously implemented the structural adjustment programme (SAP) with the expectation that there might be some macro-economic stability in the economy. Measures taken have included liberalisation of trade, prices, interest and foreign exchange rates, removal of subsidies, privatisation, reduction in public expenditure, public sector reforms and liberalise the marketing and pricing of agricultural produce.

These measures are intended to put the Zambian economy on a known and critical path towards economic development by way of arresting economic decline and restoring growth in the long term. The rationale is to make the general economy operate at the level that can provide maximum welfare of it's people.

The problem of implementing the adjustment policies was compounded by the 1992 to 1994 drought which drained Government's merger resources meant for implementing measures such as the civil service reforms. The drought has also led to marked declines in the performance and contribution of the agriculture sector to real Gross Domestic Product (GDP).

During the early phase of adjustment period, the government implemented stringent monetary controls with the aim of reducing inflation. These anti-inflationary policies paid off by introducing monetary stability in the economy. However, these policies have led to high interest rates which inturn restrict borrowing for recapitalisation and output expansion. The overall result of the anti-inflationary policies has been low levels of investment and employment, which according to economic doctrine, is expected.

In 1992, the government embarked on the privatisation exercise aimed at forestalling competition and efficiency in various sectors of the economy. This has led to the decisive closure of some enterprises and free entry of new firms (foreign investment) in the economy. A lot of people have been led off as a result of this policy.

The government also started a slow pull-out from sectors serving households such as education and health sectors by reducing funding and introducing cost-sharing methods. This has been achieved by creating education and health boards that work out ways of sharing the running costs of education and health institutions with various users.

Hitherto 155 enterprises have been successfully sold-off either through management buy-outs or open bidding. The setting up of an enabling environment by the Government was meant to attract additional direct foreign investment that would absorb the excess labour resulting from privatisation. The labour market is an important indicator of the social cost of the structural adjustment since changes in this market to a large extent determine the performance of other sectors which service the household sector.

A deliberate programme was put in place to try and assist victims of redundancies and retrenchments. This exercise has not been fully unexecuted due to the financial constraints that the Government is currently facing. Entry in the labour market has become very competitive. Consequently, most of the unemployed people have nurtured their own ways of working and sustaining their livelihood as their only alternative to evading the poverty trap; hence the

development of the informal sector. Entry in this ever expanding sector has however been restrictive in terms of start up capital living a sizable population in suffocating poverty.

With the current Government's financial crisis at hand and the retrenchments made in state budgets and public sector employment, informal sector is viewed as an added ingredient to the overall national development process. The informal sector is no longer just a labour market phenomenon resulting from an excess supply of labour, but as a viable alternative to formal sector employment which is ever contracting. Most of the informal activities are taking place in the trade and agriculture sectors of the economy.

Besides the effort to maintain macroeconomic stability and restore investor confidence, the government has also recognised the fact that, in the short to medium term, measures taken during the period of adjustment have adverse impact on some segment of the population. While some socio-economic problems resulting from the adjustment might have been familiar, solutions are still very elusive. The supply problem, precipitated by massive unemployment and low level of investment, has unbalanced the economy in ways previously not contemplated in the land of abundance.

## ***Background***

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The Living Conditions Monitoring Survey (LCMS1) was a nationwide survey carried out by Central Statistical Office. This survey was funded by the Norwegian Government Grant through the World Bank.

In 1991, Zambia embarked on a revised and vigorous Structural Adjustment Program (SAP). This was expected to create new opportunities as well as hardships, but it was realised that the effects on households and individuals were not known. Therefore, the Social Recovery Programme - Phase 1 (SRP) was launched in 1991. This program had a Survey Component which used the Norwegian grant to conduct National Priority Surveys. Two surveys were carried out by Central Statistical Office in 1991 and 1993 and their overall aim was to provide rapid statistical information monitoring the impact on households in a situation of structural adjustment.

In 1995, the Social Recovery Project - Phase II was launched. This project has 3 components, the Microprojects Unit, the Poverty Monitoring and the Study Fund. The Living Conditions Monitoring Survey is funded by the Poverty Monitoring component. The survey is drawing quite substantially on the experience learnt from the Priority surveys.

The survey was intended to highlight and monitor living conditions of the Zambian society. It included a set of priority indicators on poverty and living conditions to be repeated annually.

The LCMS had a normative point of departure aimed at illustrating living conditions that require policy action.

Data collection for the LCMS-I was carried out from August to end of September, 1996. Immediately after the data collection was completed, manual editing started and this was followed by data processing.

## ***Objectives***

The following are the main objectives of the Living Conditions Monitoring Survey:-

- To give rapid, reliable information on key indicators of living conditions on an annual basis.
- To serve as a national baseline to which surveys covering vulnerable groups, special items or geographical areas could be compared.
- As need arises, modules covering additional dimensions or expanding on those in the core module could be added, based on a request from an organisation responsible for a particular aspect of social sector development either on an adhoc, or at regular intervals. Target groups can be given special attention, both by extending the sample or by giving them an extended questionnaire specifically designed to describe their situation.
- To give different users a system of social indicators against which to monitor development.
- In order to achieve this extensive contact and interaction with potential users of the Living Conditions Monitoring Survey data was built into the preparatory process to identify and suggest the priority indicators.
- To provide a flexible and cost-effective data collection system, which is comparable and standardized.
- To coordinate social statistics collected within the Central Statistical Office as well as by relevant Ministries, such as the Ministries of Health and Education.

### ***Field instruments***

Four basic instruments were used in collecting data during the survey. These are the listing form and 3 sets of questionnaires. That is, the household questionnaire, the individual questionnaire which was administered to all persons in the sample 12 years and above, and the child questionnaire which was administered to all persons in the sample 11 years and below. In addition the Standard Enumeration Area (SEA) maps, enumerators and supervisors instruction manuals, salter scales, kitchen scales, motherbaby weighing scales and length/height boards for measuring under-five (5) children, were also used.

### **Topics covered**

In order to follow the internationally accepted list of living conditions components, as well as taking into account information needs in the Zambian society, the LCMS included the following core components:-

- Health
- Education
- Income
- Expenditures
- Assets
- Nutrition

In addition to the core components, the following components were included:-

- Demography and migration
- Income generating activities
- Housing conditions and household amenities

- Access to facilities
- Household coping strategies
- Food security
- Victimization
- Political participation
- Division of labour within the household
- Child issues

## ***Coverage and scope of the survey***

The LCMS was conducted on a nationwide sample basis and covered both rural and urban areas of all the districts in the country. The eligible household population consisted of all civilian households. Excluded from the sample were, institutional population in hospitals, boarding schools, prisons, hotels, refugee camps and orphanages and diplomats accredited to Zambia in embassies and high commissions. Private households living around these institutions were not excluded such as teachers whose houses are within the premises of the school, doctors and other workers living on or around hospital premises.

## ***Survey Design***

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### **Coverage**

The LCMS1 covers all the nine (9) provinces of Zambia on a sample basis. The domains of study and data disaggregation for this survey are:-

- Rural
- Urban
- Province
- District

### ***Sampling frame***

The sampling frame has been obtained from the 1990 Census of Population and Housing comprising 4,193 CSAs and 12,999 SEAs. With the use of a computer package QUATRO PRO, it has been possible to stratify by rural/urban, centrality and low, medium and high cost housing.

### ***Stratification***

The country is administratively divided into 9 provinces comprising 62 districts delineated by the Local Government administration. However, at a time of execution of this survey, only 57 districts are considered because the other 5 had not yet been gazetted. Central Statistical Office has delineated these districts into Census Supervisory Areas (CSAs) and then these into Standard Enumeration Areas (SEAs). Each CSA is made up of about 3 SEAs. There are 4,193 Census Supervisory Areas (CSAs) out of which 3,231 are rural and 962 are urban. Further stratification is by urban/rural, centrality, the type of housing, and agricultural activity. Centrality for this survey, is a measure of proximity to urban centres.

The urban areas have been stratified according to the type of housing in the area, into low, medium and high cost areas. This is based on the required housing standards as determined by the local government council. Within the selected rural SEAs households have been classified on the basis of the type of agricultural activity in the area into small scale, medium scale, large scale agricultural households and non-agricultural households. (SEE TABLE BELOW).

Table 2: Criteria for stratification of Rural households				
Agricultural activity	Stratum			
	Small scale	Medium scale	Large scale	Non-agricultural
Area under cropping	Less than 5 ha	5 to 20 ha, inclusive	Over 20 ha	None
Livestock	Less than 5 exotic dairy cows	5 to 20 inclusive, exotic dairy cows	Over 20 exotic dairy cows	None
	No beef cattle	Up to 50 beef cattle	Over 50 beef cattle	None
	No exotic pigs	Up to 10 exotic pigs	Over 10 exotic pigs	None
Poultry	No broilers	Up to 6000 broilers	Over 6000 broilers	None
	No layers	Up to 1000 layers	Over 1000 layers Parent stock of poultry	None

## Sample size

Out of a total of 12,999 SEAs, a sample of 610 SEAs have been selected. The urban stratum has been allocated 261 SEAs while the rural stratum has 349 SEAs.

## Allocation

The "modified equal allocation method" has been used to allocate the SEAs to provinces. The method allocates Units equally across all the provinces by dividing the sample size by the number of provinces. In this case each province was to get 67 SEAs. Then, considering the population size, heterogeneity and homogeneity of the province, the probability proportional to size method yielded additions and subtractions to some provinces. The final results are somewhere between equal and proportional to size allocation, (IB Thomsen, 1996). This has been done at provincial, district, rural/urban and centrality levels. It increases the probability of including even the remote areas in the sample. The minimum size for each district sample is 7 SEAs.

Table 2.1: Summary of Selected SEAs				
	Urban strata	Total	Rural	Total

Province				Urban	Strata	(Urban + Rural)
	Low cost	Medium cost	High cost			
Central	13	3	3	19	39	58
C/Belt	47	9	14	70	26	96
Eastern	8	4	2	14	54	68
Luapula	8	5	1	14	34	48
Lusaka	56	12	13	81	15	96
Northern	11	3	1	15	59	74
N/Western	7	3	4	14	30	44
Southern	12	3	5	20	48	68
Western	8	4	2	14	44	58
All Provinces	230	46	45	261	349	610

### **Selection of households**

### **Selection of SEAs**

Households have been selected in two stages. In the first stage, a sample of SEAs is selected within each stratum. Selection has been done systematically with probability proportional to the number of households within each SEA as registered in the 1990 Population Census.

### ***Listing within each selected SEA***

In each selected SEA, households are listed and each household is given a unique sampling serial number. A circular systematic sample of households is then selected. Vacant residential housing units, non-contact households, refusals and partially responding households are not assigned sampling serial numbers.

The circular systematic sampling method assumes that households are arranged in a circle (G. Kalton, 1983) and the following relationship applies.

Let  $N = nk$ ,

Where,  $N$  = Total number of households listed in an SEA

$n$  = total sample size required from the SEA

$k$  = the sampling interval in a given SEA calculated as  $k=N/n$ .

Therefore, for the LCMS-I,  $k = N/25$  since 25 households were selected from each urban SEA in the sample.

And for the rural strata,  $k = N/15$ , as 15 households were selected from each rural SEA.

In the rural areas, 7 households have been selected from the stratum of small scale farmers, 5 from medium scale, 3 from non-agricultural and all the large scale households, if any are found. The number of selected households is more where there are large scale farmers. The N is different for each SEA depending on how many households are identified as large scale in the listing.

At this stage, a random-start number is obtained using a table of random numbers. This number is between 1 and N. The household whose random number lies between 1 and the random start is the first to be selected. Then k, the sampling interval is added to the sampling serial number of each selected household in the respective strata until the required n is achieved.

The final sample is 6,550 urban and 5,220 rural households.

## Estimation Procedure

With the present design of stratification of the rural areas into four strata namely, small scale, medium scale, large scale agricultural households and non-agricultural households, weights have been calculated for these four strata separately. The following procedure is used:-

To find estimated totals for a stratum s in the k-th centrality stratum, in the i-th district, in the j-th province, the following formula was used (G. Kalton, 1983):-

$$Y_{skij} = \frac{\sum N_s \times \sum N_k}{\sum N_{kl} \times \sum n_s}$$

where,

- $Y_{skij}$  = The weight for the s stratum in the k-th centrality stratum of the i-th district in the j-th province.
- $N_k$  = Total number of households in the k-th centrality stratum of the i-th district in the j-th province.
- $N_{kl}$  = Total number of households in the **selected SEAs** of the **k-th centrality stratum** in the i-th district and j-th province.
- $N_s$  = Total number of households in the **selected SEAs** of the **s stratum** in the k-th centrality stratum in the i-th district and j-th province.
- $n_s$  = Sample size of households from the s stratum of the k-th centrality stratum in the i-th district and j-th province.

In the urban areas, the same method has been used to calculate weights for the three strata namely, low cost, medium cost and high cost areas in each district.

## ***Field survey operations***

### *1. Objectives of the field survey operations*

The objectives of the field survey operations of the Living Conditions Monitoring Survey-I were as follows:-

- Ensuring effective planning and timely execution of the survey.
- Developing and finalizing survey questionnaires.
- Writing of enumerators' and supervisors' instruction manuals.
- Conducting and analysing a pretest.
- Training of field staff.
- Designing quality control instruments and procedures.
- Preparing field materials, equipment and other logistical aspects of field work.
- Overseeing the data collection.
- Supervising data entry operators.

### *2. Development of survey questionnaires*

The LCMS-I had three types of questionnaires. These were:-

- Household (green) questionnaire which was administered to the head of each household.
- Individual (pink) questionnaire was administered to all person aged 12 years and above.
- Child (yellow) questionnaire was administered to persons aged between 0 and 11 years inclusively.

These questionnaires were developed by staff of the Living Conditions Monitoring Unit (LCMU) at the Central Statistical Office. The LCMU staff utilized the experience from the Priority surveys (1991/93) and living conditions surveys conducted in other countries to develop the questionnaires.

The LCMU conducted an extensive User-producer workshop at Mulungushi International Conference Centre from 29th April to 14th May, 1996. In addition, the LCMU had consultative meetings with major users such as Poverty Assessment Group (PAG), the Household Budget Survey (HBS) and the Food Security, Health and Nutrition Information System (FHANIS) groups.

### *3. Pretest/pilot survey*

The LCMU conducted a combined pretest and pilot survey in order to reduce costs and expand the pretest. The new dimensions of the survey and type of questionnaire administration required a larger sample than those used in the Priority surveys.

The pretest took place in all the nine (9) provinces. Two (2) districts were selected from each province after which two (2) Standard Enumeration Areas (SEAs) were chosen

from each selected district (one rural and the other urban). This amounted to four (4) SEAs per province and thirty-six (36) SEAs for the whole country.

Five (5) households were enumerated at random within each SEA. Five (5) questionnaires were administered to each of the selected households. The questionnaires were administered as follows:-

- One (1) household questionnaire
- Two (2) individual questionnaires
- Two (2) child questionnaires

Therefore, five (5) questionnaires per household in twenty (20) households amounted to 100 questionnaires per province.

LCMU staff with the help of few statisticians from CSO headquarters conducted the training of enumerators and supervised the pretest. The experiences and results of the pretest were used to finalise the questionnaires.

#### 4. *Training of field staff*

Training of field staff took place in three phases. The first stage was the training of Master trainers, Regional statisticians (RSs) and Provincial Statistical Officers (PSOs) which lasted one week beginning from the second week of July, 1996. A total of 9 Master trainers and 9 RSs and PSOs were trained in Lusaka.

This was immediately followed by another week of supervisors training in Lusaka. The total number of supervisors was 81. The training of enumerators took place in provincial centres from 2nd to 15th August, 1996. A total of 320 enumerators under went training. The data entry operators also attended this training.

#### 5. *Data collection*

The data collection for the LCMS-I started towards the end of August, 1996 and lasted up to October, 1996. It was divided into three major parts which are:-

- (i) Listing: The enumerators were required to list all buildings in their work areas without omissions. They collected some information which was required for sampling and household classification purposes in rural areas. The listing took three (3) days on average. The selection of households was done using the circular systematic random sampling method described in the section on sampling procedures. The sampling at household level was done by the supervisors.
- (ii) Listing was followed by enumeration of households. It took an average of 5 days for one SEA to be completed. Listing and enumeration were slower in the rural areas because of the long distances between households/villages. Each enumerator was required to cover two (2) SEAs. The supervisors edited the work of their enumerators throughout the enumeration period.

- (iii) The final part of data collection was the group editing. The supervisors swapped their work and edited it under the supervision of master trainers. This lasted ten (10) days.

### ***Data processing***

The tabulation plan for the Living Conditions Monitoring Survey I was prepared by the LCMU using the questionnaires and report from the user-producer workshop.

Computer data processing started with the training of the data entry operators. Their training took two (2) weeks. A total of 18 data entry operators were trained in September, 1996.

The data entry was done in the provincial centres using IMPS (Integrated Microcomputer Processing System) software. This software was developed by the U. S. Bureau of Census. It has three components; CENTRY - for data entry and verification, CONCOR - for range, skip and consistency checks in the data and CENTS- for tabulation. CENTS was not used. Data entry lasted one and half months.

The software used for tabulation and analysis is called SAS (Statistical Analysis System). It was also designed in the U.S.A. and is capable of handling huge data sets. In addition, it has the capability to produce frequency tables, cross tabulations, averages and regression tables. The cleaning of data was done using SAS with the help of the Q-Editor. A software called EPI-INFO was used to produce tables on Anthropometry. This report was typed using WordPerfect.