REPUBLIC OF ZAMBIA

SAMPLING FOR THE LIVING CONDITIONS MONITORING SURVEY (LCMS)

Introduction:

There has been a long-felt need for monitoring the effects of the policies of government and different donor contribution have on the well-being of the Zambian population. Therefore, a new Unit has been set up within the social statistics branch of the CSO, called the Living Conditions Monitoring Unit (LCMU) of which a Living Conditions Monitoring Survey (LCMS) will be the core activity.

This survey will be conducted annually and the main topics are:-

Demography
Migration
Health
Education
Access to facilities and housing conditions
Assets
Income
Income-generating activities
Expenditure
Food production
Coping strategies
Gender issues
Political participation
Child tasks

The first round of the LCMS was carried out in August-September, 1996. The survey used three types of questionnaires as instruments, the Child questionnaires (0-11 yrs), the Individual questionnaires (12 yrs+) and the Household questionnaires (head). Therefore, each member of a selected household had to answer a questionnaire. The result of this survey will be of great benefit in that they will give rapid and reliable information on key indicators, serves as a national baseline to which other surveys can be compared, provide a system of social indicators against which to monitor development and allow for co-ordination of all social statistics both within Central Statistical Office as well as within relevant ministries.

The sample had to be large enough to be broken down at provincial level, district level, by rural/urban, by centrality and by administrative level. The district was chosen as the domain of study to allow for the effective monitoring of living conditions as this would allow for coverage of small areas as well. However, as the sample size was small within several districts, only a few numbers could be given by districts. Therefore, districts below a population of 5,000 individuals were collapsed (SEE APPENDIX I).

Sample design and sampling method:-

Coverage

The LCMS1 covered all the nine (9) provinces of Zambia, both rural and urban areas on a sample basis. The domains of study and data disaggregation for this survey were:-

- Rural
- Urban
- Province
- District

Stratification

The country is made up of 9 provinces comprising 57 districts delineated by the local government administration. CSO has delineated the districts into Census Supervisory Areas (CSAs) and then these into Standard Enumeration Areas (SEAs). Each CSA is made up of about 3 SEAs. The districts are made up of 4,193 Census Supervisory Areas (CSAs) out of which 3,231 are rural and 962 are urban. Further stratification was done using urban/rural and centrality as stratifying variables. (SEE APPENDIX II FOR DEFINITION OF CENTRALITY).

The urban SEAs have been classified into low cost, medium cost or high cost depending on the type of housing in the area. Within the selected rural SEAs households have been classified on the basis of the type of agricultural activity in the area into small scale, large scale, medium scale and non-agricultural households.

Sampling frame

The sampling frame consisted of 4,193 CSAs and 12,999 SEAs. It was obtained from the 1990 Census of Population and Housing. The computer package QUATRO PRO was used to sort the data by rural/urban, by centrality and by low cost, medium cost and high cost to form strata. All in all, the frame gives information on the population size of each SEA throughout the country, the number of households, information about rural/urban, centrality as described in APPENDIX II, stratum number, the number of SEAs to be selected from each stratum.

Sample size

A sample of 610 SEAs was selected. Only one SEA was selected from each CSA (262 SEAs were selected from the urban stratum and 348 from the rural stratum).

Allocation

Allocation of SEAs to provinces was done using the "modified equal allocation" method.
This simply means that allocation is first done equally across all the provinces by dividing the sample size by the number of provinces. In this case it meant that each province was to get 67 SEAs. However, considering other factors such as the population size of the provinces, heterogeneity or homogeneity of the province and also using the probability proportional to size method, additions and subtractions were made accordingly for all stages of allocation.

First, allocation was done on provinces considering the variables mentioned above. Then allocation was done at district level in the same way. Within the districts, allocation was done by rural/urban by the same method. Within the rural and urban strata, allocation was done considering centrality of the SEAs so as to increase the probability of including even the remote areas in the sample. The minimum size for each district sample was 7 SEAs (SEE APPENDIX I).

Selection of households:-

Listing

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

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

Let $N = nk$

were, N = Total number of households listed in a stratum

n = Total sample required from a stratum

k = The sampling interval in a given stratum calculated as $k = N/n$

Therefore, for the urban strata, $k = N/25$, because 25 households were selected frfom each 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 were selected from the stratum of small scale farmers, 5 from the medium scale, 3 from the non-agricultural and all the large scale households if any. Therefore, the number of selected households was more where there were large scale farmers. The N was different for each SEA depending on how many households were identified as large scale in the listing.

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

All in all 6,550 urban households were selected and 5,220 were selected from the rural stratum.

Panel design

The panel design of sampling was chosen to allow for monitoring of change. In this case, half of the households in each SEA were retained for re-interview in the next round of the LCMS. The N this time was the number of selected and canvassed households and the small n half this number. The households were selected using the circular systematic sampling method just as above. For example, if 25 households are canvassed in one urban SEA, then k = 25/13.

Weighting

After enumeration, all the SEAs had to be blow up to represent the whole stratum population. The weight to be attached to the observation variable is computed as the reciprocal of the product of selection probabilities.

The formula is as follows:-

Say we have a frame as follows

Sea	**Stratum population**	**Commulated population**
1	MOS_1	MOS_1
2	MOS_2	$MOS_1 + MOS_2$
3	MOS_3	$MOS_1 + MOS_2 + MOS_3$
.		
H	MOS_H	$\sum MOS_i$ 1

N will be the population from the listing in the stratum within the SEA.

n will be the sample size from this stratum.

(i) The first stage weight is

$\frac{N_i}{n_i} Y_i$ 2,

the sampling fraction. This blows up the SEA totals. There are 4 weights in the rural areas and one in the urban areas. Therefore, the estimation is:-

SEA TOTAL FOR RURAL:-

$$\frac{N_1}{n_1} Y_1 + \frac{N_2}{n_2} Y_2 + \frac{N_3}{n_3} Y_3 + \frac{N_4}{n_4} Y_4$$

SEA TOTAL FOR URBAN:-

$$\frac{N}{n} Y$$

The rural areas have 4 weights because stratification into small scale, medium scale, large scale and non-agricultural households was done within the SEA.

The urban areas have one weight because stratification was done by the SEAs, that is , each SEA was either low cost, high cost or medium cost.

(ii) The second stage weight was

$$\frac{MOS}{MOS_i}$$

this blows up the stratum total

(iii) The final weight was the product of the first and second stage weight.

(iv) When selecting more than one, say t SEAs, the cummulated population of the stratum was divided by t to get the sampling interval and then a random start was picked between 1 and the random start to which the sampling interval was added progressively until t SEAs were selected.

The computer package, LOTUS, 123 will be used to calculate the weights.

Observations

It was noticed that when allocating sample sizes at district level, some districts did not have a population size big enough to be representative, therefore, it was decided that these be collapsed into one. This was done in Southern Province where Gwembe and Siavonga districts were collapsed and in North-Western Province where Mufumbwe and Kasempa districts were collapsed (SEE APPENDIX I).

Appendix I: Allocation of SEAs

PROVINCE	DISTRICT	TOTAL POPULATION		NUMBER OF SAMPLE SEA		TOTAL SAMPLE SIZE
		RURAL	URBAN	RURAL	URBAN	
CENTRAL	KABWE RURAL	198,769	20,570	14	3	17
	KABWE URBAN	-	161,455	-	12	12
	MKUSHI	100,662	7,804	7	1	8
	SERENJE	95,207	8,265	8	1	9
	MUMBWA	112,792	15,103	10	2	12
	TOTAL			39	19	58
COPPERBELT	CHILILALOMBWE	8,879	53,699	2	5	7
	CHINGOLA	1,578	159,484	2	9	11
	KALULUSHI	15,223	53,000	3	4	7
	KITWE	1,428	346,341	4	16	20
	LUANSHYA	14,540	127,387	2	8	10
	MUFULIRA	11,317	134,134	2	8	10
	NDOLA RURAL	153,381	11,623	11	-	11
	NDOLA URBAN	-	334,531	-	20	20
	TOTAL			26	70	96
EASTERN	CHADIZA	60,179	3,031	7	1	8
	CHAMA	48,298	3,474	7	1	8
	CHIPATA	236,480	54,892	10	5	15
	KATETE	131,304	7,165	9	2	11
	LUNDAZI	163,026	8,576	9	2	11
	PETAUKE	238,265	11,277	12	3	15
	TOTAL			54	14	68
LUAPULA	KAWAMBWA	71,518	11,264	7	2	9
	MANSA	103,749	38,748	4	7	11
	MWENSE	76,661	3,695	8	1	9
	NCHELENGE	96,603	15,436	8	2	10
	SAMFYA	94,768	12,718	7	2	9
	TOTAL			34	14	48

Appendix I: Allocation of SEAs Cont'd)

PROVINCE	DISTRICT	TOTAL POPULATION		NUMBER OF SAMPLE SEA		TOTAL SAMPLE SIZE
		RURAL	URBAN	RURAL	URBAN	
LUSAKA	LUANGWA	14,640	1,606	5	2	7
	LUSAKA RURAL	142,228	59,279	10	8	18
	LUSAKA URBAN	-	769,353	-	71	71
	TOTAL			15	81	96
NORTHERN	CHILUBI	38,508	1,366	6	1	7
	CHINSALI	76,150	7,509	5	2	7
	ISOKA	108,390	13,481	7	2	9
	KAPUTA	44,854	5,139	6	1	7
	KASAMA	140,946	48,414	8	4	12
	LUWINGU	61,587	5,112	6	1	7
	MBALA	122,235	13,856	8	1	9
	MPIKA	94,175	20,950	7	2	9
	MPOROKOSO	47,410	5,095	6	1	7
	TOTAL			59	15	75
NORTH/ WESTERN	*MUFUMBWE/ KASEMPA	16,691	6,288	*4	*3	*7
	KABOMPO	47,822	5,373	5	2	7
	MWINILUNGA	75,154	6,342	7	2	9
	SOLWEZI	96,922	27,702	9	5	14
	ZAMBEZI	62,134	6,231	5	2	7
	TOTAL			30	14	44

*In North-Western Province, Mufumbwe and Kasempa districts have been collapsed.

Appendix I: Allocation of SEAs (Con't)

PROVINCE	DISTRICT	TOTAL POPULATION		NUMBER OF SAMPLE SEA		TOTAL SAMPLE SIZE
		RURAL	URBAN	RURAL	URBAN	
SOUTHERN	CHOMA	127,530	35,520	6	4	10
	*GWEMBE/ SIAVONGA	33,449	2,003	6	1	7
	KALOMO	152,937	9,737	9	1	10
	LIVINGSTONE	5,003	77,949	1	7	8
	MAZABUKA	113,521	41,915	7	3	10
	MONZE	105,873	20,166	7	2	9
	NAMWALA	73,942	9,133	6	1	7
	SINAZONGWE	52,763	10,823	6	1	7
	TOTAL			48	20	68
WESTERN	KALABO	88,452	8,868	7	2	9
	KAOMA	102,884	9,165	9	2	11
	LUKULU	48,824	3,129	6	1	7
	MONGU	103,585	39,210	7	5	12
	SENANGA	128,442	9,326	10	2	12
	SESHEKE	56,159	8,769	5	2	7
	TOTAL			44	14	58
	TOTAL ZAMBIA			348	262	610

*In Southern Province, Gwembe and Siavonga districts have been collapsed.

Appendix II: Centrality

Centrality code / Area

1 Lusaka Urban
2 Ndola Urban
3 Kitwe Urban
4 Within 50kms of Lusaka, or Ndola or Kitwe
5 Provincial capitals (urban SEAs/CSAs only)
6 Areas along Southern to Copperbelt line of rail (within 30kms)
7 Areas along Northern line of rail (within 30 kms)
8 Within 30kms of provincial capitals
9 District centress (urban SEAs only)
10 Within 30kms of district centres
11 Remote areas

Appendix III: List of selected SEAs

CENTRAL STATISTICAL OFFICE
LIVING CONDITIONS MONITORING SURVEY (I) 1996
LIST OF URBAN SEAS THAT WILL BE ENUMERATED

SUMMARY

PROVINCE	URBAN SEAS			TOTAL URBAN SEAS
	LOW COST	MEDIUM COST	HIGH COST	
CENTRAL	13	3	3	19
C\BELT	47	9	14	70
EASTERN	8	4	2	14
LUAPULA	8	5	1	14
LUSAKA	56	12	13	81
NORTHERN	11	3	1	15
N\WESTERN	7	3	4	14
SOUTHERN	12	3	5	20
WESTERN	8	4	2	14
ALL PROVINCES	171	47	43	262

DETAILED LIST OF SEAS BY PROVINCE:

CENTRAL PROVINCE

URBAN SEAS:-

LOW COST SEAS

DISTRICT	CSA	SEA	CENTRALITY
Kabwe Urban	059	2	5
Kabwe Urban	027	2	5
Kabwe Urban	011	3	5
Kabwe Urban	054	3	5
Kabwe Urban	017	1	5
Kabwe Urban	053	3	5
Kabwe Urban	043	2	5
Kabwe Urban	010	2	5
Serenje	042	1	9
Mumbwa	022	1	9
Mkushi	009	2	9
Kabwe Rural	070	1	9
Kabwe Rural	015	1	9
TOTAL SEAS		13	

MEDIUM COST SEAS

DISTRICT	CSA	SEA	CENTRALITY
Kabwe Rural	016	1	9
Kabwe Urban	041	4	5
Kabwe Urban	033	1	5
TOTAL SEAS		3	

HIGH COST SEAS

DISTRICT	CSA	SEA	CENTRALITY
Kabwe Urban	026	1	5
Kabwe Urban	012	1	5
Mumbwa	021	1	9
TOTAL SEAS		3	

GRAND TOTAL (CENTRAL PROVINCE):-

13 LOW COST SEAS
3 MEDIUM COST SEAS
3 HIGH COST SEAS

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19 SEAS

COPPERBELT PROVINCE:

URBAN SEAS:-

LOW COST SEAS:

DISTRICT	CSA	SEA	CENTRALITY
Ndola Urban	033	3	2
Ndola Urban	039	3	2
Ndola Urban	110	3	2
Ndola Urban	095	2	2
Ndola Urban	047	4	2
Ndola Urban	028	2	2
Ndola Urban	049	1	2
Ndola Urban	101	3	2
Ndola Urban	105	4	2
Ndola Urban	103	1	2
Ndola Urban	096	2	2
Ndola Urban	019	4	2
Ndola Urban	115	2	2
Ndola Urban	077	2	2
Ndola Urban	041	3	2
		15	
Mufulira	057	1	9
Mufulira	053	4	9
Mufulira	050	3	9
Mufulira	059	4	9
		4	
Kitwe	056	3	3
Kitwe	055	1	3
Kitwe	106	1	3

Kitwe	040	4	3
Kitwe	030	2	3
Kitwe	053	4	3
Kitwe	058	2	3
Kitwe	048	2	3
Kitwe	072	3	3
Kitwe	043	1	3
		10	
Chililabombwe	013	2	9
Chililabombwe	026	4	9
Chililabombwe	023	4	9
Chililabombwe	020	3	9
		4	

COPPERBELT PROVINCE URBAN SEAS (CONTINUED):-

LOW COST:-

DISTRICT	CSA	SEA	
Chingola	021	4	9
Chingola	017	3	9
Chingola	030	4	9
Chingola	057	3	9
Chingola	049	4	9
Chingola	035	1	9
Chingola	054	1	9
		7	
Luanshya	043	2	9
Luanshya	017	1	9
Luanshya	056	1	9
Luanshya	059	3	9
		4	
Kalulushi	025	1	9
Kalulushi	027	5	9
Kalulushi	028	2	9
		3	
TOTAL	SEAS	47	

MEDIUM COST SEAS

DISTRICT	CSA	SEA	
Chingola	045	2	9
Kitwe	061	1	3
Kitwe	087	1	3
Kitwe	084	1	3
Luanshya	036	1	9
Luanshya	030	1	9
Mufulira	035	1	9
Mufulira	016	2	9

COPPERBELT PROVINCE URBAN SEAS (CONTINUED):-

MEDIUM COST SEAS

DISTRICT	CSA	SEA	
Ndola Urban	063	3	2
TOTAL SEAS		9	

HIGH COST SEAS

Chililabombwe	024	4	9
Chingola	042	4	9
Luanshya	039	3	9
Luanshya	040	4	9
Kalulushi	021	2	9
Mufulira	026	2	9
Mufulira	034	1	9
Ndola Urban	052	3	2
Ndola Urban	056	3	2
Ndola Urban	066	1	2
Ndola Urban	055	2	2
Kitwe	068	2	3
Kitwe	067	2	3
Kitwe	079	1	3
TOTAL SEAS		14	

GRAND TOTAL (COPPERBELT):-

47 LOW COST SEAS
9 MEDIUM COST SEAS
14 HIGH COST SEAS

70
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EASTERN PROVINCE:

URBAN SEAS:-

LOW COST SEAS

DISTRICT	CSA	SEA	CENTRALITY
Chipata	162	3	5
Chipata	145	3	5
Chipata	152	1	5
Petauke	079	1	9
Petauke	078	1	9
Chadiza	017	3	9
Chama	016	1	9
Katete	017	1	9
TOTAL SEAS		8	

MEDIUM COST SEAS

Chipata	155	2	5
Katete	018	2	9
Lundazi	038	3	9
Petauke	077	2	9
TOTAL SEAS		4	

HIGH COST SEAS

Chipata	146	2	5
Lundazi	037	1	9

TOTAL	SEAS	2

GRAND TOTAL (EASTERN PROVINCE):

8 LOW COST SEAS
4 MEDIUM COST SEAS
2 HIGH COST SEAS

14 SEAS

LUAPULA PROVINCE :-

URBAN SEAS:-

LOW COST SEAS

DISTRICT	CSA	SEA	CENTRALITY
Mansa	093	3	5
Mansa	092	1	5
Mansa	098	5	5
Mansa	100	3	5
Mansa	099	1	5 *
Samfya	049	1	9
Kawambwa	026	1	9
Nchelenge	047	2	9
TOTAL SEA		8	

MEDIUM COST SEAS

Kawambwa	027	2	9
Mansa	095	5	5
Mwense	044	2	9
Nchelenge	052	1	9
Samfya	046	2	9
TOTAL SEA		5	

HIGH COST SEAS

Mansa	097	1	5
TOTAL SEA		1	

GRAND TOTAL (LUAPULA PROVINCE)

8 LOW COST SEAS
5 MEDIUM COST SEAS
1 HIGH COST SEAS

14 SEAS

LUSAKA PROVINCE

URBAN SEAS:-

LOW COST SEAS

NAME OF RESIDENTIAL AREA	CSA	SEA	CENTRALITY
Luangwa	011	1	9
Luangwa	011	2 *	9
Lusaka Rural	078	2	4 * replacement
Lusaka Rural	106	1	4
Lusaka Rural	110	5	4

Lusaka Rural	109	3	4
Lusaka Rural	101	2	4
Lusaka Urban	214	3	1
Lusaka Urban	220	1	1
Lusaka Urban	105	4	1
Lusaka Urban	232	5	1
Lusaka Urban	028	4	1
Lusaka Urban	135	2	1
Lusaka Urban	207	1	1
Lusaka Urban	044	3	1
Lusaka Urban	039	3	1
Lusaka Urban	095	2	1
Lusaka Urban	132	3	1
Lusaka Urban	066	3	1
Lusaka Urban	213	1	1
Lusaka Urban	133	2	1
Lusaka Urban	171	2	1
Lusaka Urban	065	2	1
Lusaka Urban	079	3	1
Lusaka Urban	215	2	1
Lusaka Urban	168	2	1
Lusaka Urban	178	2	1
Lusaka Urban	004	3	1
Lusaka Urban	007	3	1
Lusaka Urban	011	1	1
Lusaka Urban	055	2	1
Lusaka Urban	223	2	1
Lusaka Urban	031	1	1
Lusaka Urban	086	1	1
Lusaka Urban	035	5	1
Lusaka Urban	058	3	1
Lusaka Urban	071	1	1
Lusaka Urban	032	2	1
Lusaka Urban	059	2	1
Lusaka Urban	177	4	1
Lusaka Urban	040	3	1
Lusaka Urban	224	2	1
Lusaka Urban	008	2	1
Lusaka Urban	158	3	1
Lusaka Urban	104	1	1
Lusaka Urban	226	2	1
Lusaka Urban	033	1	1
Lusaka Urban	157	4	1
Lusaka Urban	219	3	1
Lusaka Urban	081	1	1
Lusaka Urban	117	1	1
Lusaka Urban	109	1	1
Lusaka Urban	107	1	1
Lusaka Urban	084	1	1
Lusaka Urban	069	1	1
Lusaka Urban	085	1	1
TOTAL SEAS		56	

LUSAKA PROVINCE (CONTINUED)

URBAN SEAS:-

MEDIUM COST SEAS

NAME OF RESIDENTIAL AREA	CSA	SEA	CENTRALITY
Lusaka Rural	111	2	4
Lusaka Urban	074	5	1
Lusaka Urban	092	2	1
Lusaka Urban	005	1	1
Lusaka Urban	013	2	1
Lusaka Urban	204	3	1
Lusaka Urban	198	4	1
Lusaka Urban	185	5	1

Lusaka Urban	099	1	1
Lusaka Urban	205	2	1
Lusaka Urban	090	3	1
Lusaka Urban	048	3	1
TOTAL SEAS		12	

HIGH COST SEAS

NAME OF RESIDENTIAL AREA	CSA	SEA	CENTRALITY
Lusaka Urban	114	3	1
Lusaka Urban	116	1	1
Lusaka Urban	098	3	1
Lusaka Urban	111	1	* 1
Lusaka Urban	112	3	1
Lusaka Urban	149	1	1
Lusaka Urban	231	3	1
Lusaka Urban	150	2	1
Lusaka Urban	087	1	1
Lusaka Urban	101	1	1
Lusaka Urban	176	1	1
Lusaka Rural	100	1	1
Lusaka Rural	099	1	1
TOTAL SEAS		13	

GRAND TOTAL (LUSAKA PROVINCE)

56 LOW COST SEAS
12 MEDIUM COST SEAS
13 HIGH COST SEAS

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81 SEAS

NORTHERN PROVINCE

URBAN SEAS:-

LOW COST SEAS

DISTRICT	CSA	SEA	CENTRALITY
Isoka	059	1	9
Chilubi	014	2	9
chinsali	030	4	9
chinsali	031	1	9
Kaputa	002	2	9
Kasama	062	4	9
Kasama	048	2	5
Luwingu	029	3	9
Mbala	037	2	9
Mpika	044	2	9
Mporokoso	013	3	9
TOTAL SEAS		11	

MEDIUM COST SEAS

Isoka	060	3	9
Kasama	046	4	5
Mpika	042	3	5
TOTAL SEAS		3	

HIGH COST SEAS

Kasama	049	1	5
TOTAL	SEAS	1	

GRAND TOTAL (NORTHERN PROVINCE)

11 LOW COST SEAS
3 MEDIUM COST SEAS
1 HIGH COST SEAS

15 SEAS

NORTH-WESTERN PROVINCE

URBAN SEAS:-

LOW COST SEAS

DISTRICT	CSA	SEA	CENTRALITY
Mwinilunga	032	2	9
Solwezi	023	4	5
Solwezi	027	4	5
Solwezi	028	1	5
Kabompo	033	1	9
Mufumbwe	005	2	9
Zambezi	030	1	9
TOTAL	SEAS	7	

MEDIUM COST SEAS

Solwezi	029	2	5
Mwinilunga	033	1	9
Mufumbwe	006	3	9
TOTAL	SEAS	3	

HIGH COST SEAS

Kabompo	032	1	9
Kasempa	021	1	9
Zambezi	031	3	9
Solwezi	020	1	5
TOTAL	SEAS	4	

GRAND TOTAL (NORTH-WESTERN PROVINCE)

7 LOW COST SEAS
3 MEDIUM COST SEAS
4 HIGH COST SEAS

14 SEAS

SOUTHERN PROVINCE

URBAN SEAS:-

LOW COST SEAS

DISTRICT	CSA	SEA	CENTRALITY
Choma	115	3	9
Choma	112	2	9
Kalomo	057	2	9
Namwala	016	2	9
Mazabuka	021	4	9
Monze	035	2	9
Livingstone	016	1	5
Livingstone	013	3	5
Livingstone	024	2	5
Livingstone	025	3	5
Livingstone	010	2	5
Siavonga	018	3	9
TOTAL SEAS		12	

MEDIUM COST SEAS

Choma	108	1	9
Livingstone	023	2	5
Mazabuka	024	2	9
TOTAL SEAS		3	

HIGH COST SEAS

Mazabuka	018	3	9
Monze	030	1	9
Livingstone	007	4	5
Choma	107	1	9
Sinazongwe	014	3	9
TOTAL SEAS		5	

GRAND TOTAL (SOUTHERN PROVINCE)

12 LOW COST SEAS
3 MEDIUM COST SEAS
5 HIGH COST SEAS

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20 SEAS

WESTERN PROVINCE

URBAN SEAS:-

LOW COST SEAS

DISTRICT	CSA	SEA	CENTRALITY
Mongu	086	2	5
Mongu	083	1	5
Mongu	088	3	5
Sesheke	044	2	9
Senanga	055	3	9
Kaoma	052	1	9
Kaoma	050	2	9
kalabo	033	1	9
TOTAL SEAS		8	

MEDIUM COST SEAS

Lukulu	022	3	9
Mongu	085	4	9
Senanga	056	1	9
Kalabo	034	1	9
TOTAL SEAS		4	

HIGH COST SEAS

Sesheke	045	1	9
Mongu	084	3	5
TOTAL SEAS		2	

GRAND TOTAL (WESTERN PROVINCE)

8 LOW COST SEAS
4 MEDIUM COST SEAS
2 HIGH COST SEA

12 SEAS