The Evolution of Poverty in Zambia 1990–2000

A Discussion on Poverty Concepts and the Evolution of Poverty in Zambia

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EXECUTIVE SUMMARY

This study tries to answer the question "Has Zambia become poorer during the 1990's?". In doing so, the study elaborates on the thinking on poverty and theories on how to define and measure it. To make the analysis as comprehensible as possible three "clusters" of poverty concepts are identified and discussed in three distinctive sections of the study:

- The *income approach to poverty* which includes poverty concepts such as poverty lines (the incidence, intensity and depth of poverty), proportion of income spent on food, GNP/capita and some inequality indicators, most notably the Gini Coefficient.
- The *basic needs approach to poverty* which includes both "traditional" needs such as health, education, access to food & water, shelter etc., *and* basic needs in a wider sense such as needs related to participation, power, vulnerability, political rights, risk etc. The basic needs approach also includes composite poverty measures such as the Human Development Index and the Human Poverty Index defined by UNDP.
- A *subjective approach* to poverty which basically covers Participatory Poverty Assessments.

For each of these clusters of poverty concepts, most major studies on Zambia made during the 1990's are discussed and analysed. Some new findings and calculations are also presented.

The study shows that, using the income approach, poverty levels have *decreased* in Zambia. Even though the most widely used poverty indicator in Zambia, the *incidence of poverty* (the head count ratio), has *increased* according to official statistics, this study argues that due to severe methodological weaknesses in the calculation of a poverty line, this may not be the case. In fact, with a slightly modified way of calculating and updating the poverty line, it can be shown that the incidence of poverty has *decreased*. It is furthermore shown that all indicators measuring *inequality* and *shifts in income* among the poorest groups in Zambia all suggest that income distribution has became more equal during the 1990's, hence a *decrease* in poverty.

Using "traditional" indicators of basic needs (health, education etc.) the study shows that poverty levels have increased. However, if the concept of basic needs is understood in a wider context, the image changes, as indicators on political participation, political rights and civil liberties have improved since 1990. It can even be argued that this improvement is larger than the deterioration of "traditional" basic needs.

The subjective approach to poverty is the only approach that is conclusive – if the people themselves are asked to assess their situation there is no doubt that poverty has increased in Zambia.

Hence, the answer to the initial question "Has Zambia became poorer during the 1990's?" is not conclusive – it depends on which definition of poverty that is used.

It is however clear that poverty is a multidimensional concept and that any attempt to define indicators to measure it is complex. Hence, a thorough understanding of the meaning and measurement of poverty seems vital for anyone attempting to quantify poverty, let alone to design or implement strategies to reduce it.

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LIST OF ACRONYMS AND ABRIEVIATIONS

CPI	Consumer Price Index
CSO	Central Statistical Office
EIU	Economic Intelligence Unit
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GNP	Gross National Product
GRZ	Government of the Republic of Zambia
HDI	Human Development Index
HDR	Human Development Report
HPI	Human Poverty Index
ILO	International Labour Organisation
IMF	International Monetary Fund
LCMS	Living Conditions Monitoring Survey
NGO	Non Governmental Organisation
ODI	Overseas Development Institute
PPA	Participatory Poverty Assessment
PPP	Purchasing Power Parity
PRSP	Poverty Reduction Strategy Paper
SAP	Structural Adjustment Programme
Sida	Swedish International Development Cooperation Agency
UNDP	United Nations Development Programme
UNZA	University of Zambia
WHO	World Health Organisation
ZDHS	Zambia Demographic Health Survey

INTRODUCTION

Scope and Limitations of this Study

The scope of this study is to analyse the evolution of poverty in Zambia during the period 1990 to 2000. This period of time is particularly interesting since Zambia in 1991 introduced multiparty elections and embarked upon an economic liberalisation process. A heavily debated issue, and central to the outcome of next years elections, is whether people in general has become poorer or richer during the 1990's. Not surprisingly, the answer depends on who you ask; many studies have been conducted during the 1990's but the results are not conclusive.

This study analyses all major studies on poverty in Zambia during the 1990's and available statistics during this period. The ambition is *not* to relate changes in poverty levels to political, economical or social events during this period. Neither does the study discuss regional differences within Zambia or variations between rural and urban areas, nor between men and women (or other relevant categories). The study does not attempt to compare the situation in Zambia with other countries.

When assessing the development of poverty in Zambia, the study discusses a number of different perspectives on poverty and how it can be measured. It analyses poverty in Zambia from all these perspectives based on available statistics and studies.

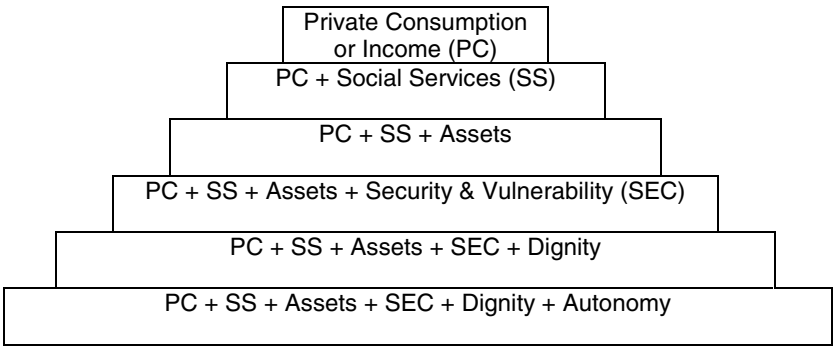
In short the study tries to answer the question "Has Zambia become poorer during the 1990's?"

The Poverty Concept

As a multidimensional phenomenon, poverty is an ambiguous concept. Poverty is often simply related to the level of income obtained by households and individuals. It can also be regarded as lack of access to social services. Sometimes it is understood as the inability to participate in society; economically, socially, culturally or politically. It seems clear that there are many ways of defining poverty. It is also clear that the thinking about poverty has changed tremendously, particularly during the last three decades.

While recognising that poverty is a complex and multidimensional concept, many attempts have been made to categorise, or classify, different definitions of poverty into groups or clusters.

One attempt to describe the different dimensions of poverty is done by visualising it as a pyramid of poverty concepts.[1]



In this model seven different dimensions are recognised. In the first dimension, poverty is associated with income or consumption only. In the second dimension social services (SS) has been added. SS refer to services normally provided by the state, such as health services, schooling, clean water and other services deemed important for a reasonable living standard. *Assets* refer to such items as land, equipment and other productive inputs. SEC refers to risk, security and vulnerability. Dignity and Autonomy relate to the degree

[1] This model is borrowed from White (1999), p.4

of dependency and social exclusion that poor people often refer to when asked to assess their own situation.

Without discussing these dimensions in too much detail, it is important to keep in mind that the poverty concept is ambiguous. It has also been shown that there is an imperfect correlation between the various dimensions of poverty. A person being defined using one dimension may not necessarily be poor according to another.

The United Nations Development Program (UNDP) uses another way of categorising poverty concepts, or rather poverty *perspectives*: [2]

(i) The *income perspective* defines a person as poor if, and only if, her income level is below a predefined *poverty line*. Many countries have adopted income poverty lines to monitor progress in reducing poverty incidence.

(ii) The *basic human needs perspective*, describes poverty as deprivation of material requirements for minimal acceptable fulfilment of human needs, including food.

(iii) In the even wider *capability perspective*, poverty represents the absence of some basic capabilities to function.

Yet a third way to categorise poverty is to view it in absolute or relative terms. *Absolute poverty* is defined against some fixed standard, for example socially acceptable living conditions, a predefined level of income or ownership of some "essential" goods. *Relative poverty* is defined with reference to the rest of the population in a given society, for example the 10% with the lowest income in a society is *defined* as poor.

Whichever way is chosen to categorise or classify different definitions of poverty, there is a risk of missing a certain perspective. Poverty seems too complex to be classified into dimensions, categories or perspectives in a rational and fully inclusive way. Nevertheless, in order to analyse poverty in Zambia in a comprehensive yet structured way, this study is divided into three sections covering three major clusters of poverty concepts:

(i) poverty defined by income or expenditure;

(ii) poverty as lack of basic needs; and,

(iii) subjective indicators of poverty.

The rationale for defining these particular clusters is a combination of the ambition to be as inclusive as possible (to define clusters that are broad enough to cover the major lines of thinking about poverty) and pragmatism (limitations and availability of data).

For each of these three poverty clusters, available statistics and studies on Zambia is analysed. The result is three, possibly different, answers to the question "Has Zambia become poorer during the 1990's?"

But does it matter which definition of poverty and which indicators that are used to measure poverty? Do different indicators identify different households/individuals as poor? Or is poverty of such a nature that it is usually the same group of people that are defined as poor no matter what definition is chosen? Empirical studies suggest that the concepts and indicators used to measure poverty *do* matter a lot in identifying the poor.[3]

It is therefore vital that anyone working with poverty reduction has a clear conception of what is meant by "poverty". Broadening the definition of poverty significantly changes our thinking about strategies to reduce poverty. A broader definition naturally expands the set of policies that are relevant to the reduction of poverty.

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[2] UNDP (1997), p.16

[3] Lok-Dessallion (1999), pp.14-15

THE INCOME APPROACH TO POVERTY

Until recently, poverty measurement has been dominated by the so-called *income approach.* As early as 1901 attempts were made to measure the extent of poverty in London by calculating the minimum income needed to buy a food basket corresponding to a basic nutritional requirement[4].

This approach to poverty measurement assumes that individuals and households are poor if their income falls below a certain threshold (poverty line), usually defined as a minimum, socially acceptable level of well being by a population group. The emphasis is placed on *material* well-being, and income is used as a proxy for poverty.

The name "income approach" however, is somewhat misleading since it is often expenditure or consumption data that is used. Expenditure data is more accurate than income data since income varies much more throughout the year, particularly for the poorest subsection of the population.[5]

In this section a number of definitions and indicators of poverty will be presented that are all related to the income approach. For each of these poverty indicators, statistics and studies on Zambia is analysed.

GNP per Capita

In the 1960s, the main focus of poverty was on the level of income, reflected in macro-economic indicators like the Gross National Product (GNP) per capita. This is a straightforward, but often regarded as a rather simplistic way, of measuring income poverty.

As can be seen from Table 1 below both the *GDP at current prices* and the *GNP per capita* trend for Zambia for the period 1990-1999 is very disappointing. Apart from a marginal increase 1992-1993 as well as 1995-1996 the GNP per capita has decreased or remained stagnant every single year. The estimated GNP per capita for 1999 is only 80% of what it was in 1990. The same trend is reflected in the *Real GDP growth*.

Table 1: GNP per capita 1990-2000

	Actual									Estimated	
	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
GDP (million US$ at current prices)	3742	3388	3306	3312	3349	3498	3298	3865	3240	3150	3443
GNP/capita (US$, Atlas method [6])	420	420	370	380	360	350	370	370	330	340	350
Real GDP growth (%)	-0.5	-0.2	-0.6	5.1	-3.5	-2.3	6.5	2.9	-2.0	-	-

Sources: EIU (1999), World Bank (1999), GRZ (2000)

Even though the broad trends of a performance of a country can be identified using a national average like the GNP per capita, it says nothing about the distribution of income within the country. Thus, this information says little about the evolution of poverty.

Furthermore, empirical evidence shows that poverty-growth elasticity, defined as *percentage reduction in poverty brought about by an increase in mean expenditure of 1% whilst keeping the distribution of expenditure fixed,* is quite small for Zambia. Calculations indicate that 4.9% per capita growth would be required for Zambia to halve poverty by 2015. With a population growth rate of 3.1% (estimate), a growth rate of 8% would be required. Such a high

[4] Rowntree (1910)

[5] Ravallion (1992)

[6] The World Bank Atlas method converts GNP/capita in national currency to US$ by averaging the exchange rate for that year and two preceding years, adjusting for differences in rates of inflation between the two countries (Zambia & USA). This averaging smoothes fluctuations in prices and exchange rates. The resulting GNP in US$ is divided by mid-year population estimates for GNP/capita in current US$.

growth rate is probably not feasible for Zambia, hence, growth cannot be the sole guarantor of poverty reduction.[7]

Poverty Lines[8]

Definition of *Incidence*, *Intensity* and *Depth* of Poverty

The most widely utilised way of measuring income poverty is by using a *poverty line*. A poverty line is often determined by costing a minimum basket of essential goods for basic human survival. Such a basket is usually based on the minimum nutritional content of various foods required for a person to survive. Often a second basket (poverty line) is defined which also includes the cost of shelter, clothing, fuel and other sundries.

When a poverty line has been defined or calculated the most obvious poverty measure is the proportion of the population having an income or expenditure below that level. This poverty measure is usually referred to as the *head count ratio* or the *incidence* of poverty. The incidence of poverty can also be expressed based on the number of households, or number of adults, rather than the total number of persons living below the poverty line.

The incidence of poverty, however, only tells you how *many* people are poor without telling you *how* poor they are. The economic conditions for the people living below the poverty line can improve (or deteriorate) considerably without actually changing the *number* of people below the poverty line.

Therefore, two other closely related poverty measures are usually calculated from the same set of data; the *intensity* and the *inequality* (or the *depth*) of poverty sometimes referred to as the *poverty gap* and the *squared poverty* gap:[9]

The *intensity* of poverty reflects the *extent* to which the incomes of the poor lie below the poverty line. The larger the average distance between the poor person's income and the poverty line, the higher is the *intensity* of poverty. Improvements for people living below the poverty line will be reflected by this indicator even if the income of these people do not "pass" the poverty line.

The *inequality* of poverty is similar to the intensity of poverty with the only difference that it emphasises the poorest more than the "better off" poor. The smaller value, the less intense of poverty inequality.

The exact definition of these poverty indicators can be found in the Technical Annex.

Calculation of Poverty in Zambia using a Poverty Line

The poverty line normally used in Zambia is derived from a study carried out by the Food and Nutrition Commission in 1991. In this study the cost of a basic food basket necessary to maintain the *nutritional* requirements of an average Zambian family of six was calculated. The food basket did not include more expensive items such as meat, sugar, bread, eggs and poultry although they feature prominently in households' expenditure. The amount needed was calculated to 961 Kwacha per adult person per month (1991 prices), which was defined as the *extreme poverty line*. To define a *moderate poverty line*, 30% was added as an estimation of expenditure on necessary items other than food. This was based on the assumption that approximately 70% of a poor household's income is spent on food.[10]

To update the poverty lines for 1993, 1996 and 1998, CSO used the consumer price index, which is produced monthly.

When a poverty line has been defined, the next step is to assess the number of people with a monthly income or expenditure below that level.

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[7] Calculations referred to in UNDP (2000b), p.11.

[8] For an elaboration on *poverty lines,* see Lanjouw (1998)

[9] These poverty measures were first introduced in Foster, Greer and Thorbeck (1984)

[10] See CSO(1997a) – Appendix II, for a detailed description on the Food Basket Composition and related calculations.

Information on income, expenditure and economical activities in Zambia during the 1990's can be found in four major household surveys conducted by the Central Statistical Office (CSO):

- *1991 Social Dimensions of Adjustment - Priority Survey I*, which took place in October-November 1991. This survey covered 9 886 households.
- *1993 Social Dimensions of Adjustment - Priority Survey II* , which was carried out in April to June 1993 and covered 10 121 households
- *1996 Living Conditions Monitoring Survey (LCMS-96)* , which was carried out nation-wide on a sample basis in October-December 1996. The final sample was 11 752 households of which 6 550 urban and 5 220 rural.
- *1998 Living Conditions Monitoring Survey (LCMS-98)* covered a total of 16 710 households in November-December 1998. These samples represent approximately 1% of all Zambian households. For the time being (June 2000) only a preliminary report of this survey is available. The complete report will be ready in September 2000.

These four household surveys are the most comprehensive surveys done in Zambia and they are widely used as a reference for decision-makers, donors and others.

Based on the household expenditure data from these four household surveys, the CSO calculated the incidence of poverty using both the upper and the lower poverty line referred to above. These data is shown in Table 2 below:

Table 2: Incidence of poverty among individuals

Poverty Levels	1991	1993	1996	1998
Total Poor				
Poverty line	K1,380	K8,480	K28,979	K47,188
All Zambia	70%	74%	69%	73%
Rural	88%	92%	83%	83%
Urban	49%	45%	46%	56%
Extremely Poor				
Poverty line used	K961	K5,910	K20,180	K32,861
All Zambia	58%	61%	53%	58%
Rural	81%	84%	68%	71%
Urban	32%	24%	27%	36%

Sources: CSO (1997b) and CSO (1999).

As can be seen from the table above both total and extreme poverty shows a fluctuating trend. A rise in poverty levels from 1991 to 1993 is followed by a decrease between 1993 and 1996 with a rise again in 1998. The total number of poor has increased from 70% in 1991 to 73% in 1998 while the number of people living in extreme poverty has remained the same (58%) during the period.

This poverty measure is by far the most widely used poverty indicator in Zambia and it is frequently referred to in the political debate.

As discussed above, the incidence of poverty only gives a partial picture of the evolution of poverty in Zambia. Using the same set of data, *intensity* and *inequality* of poverty is also calculated in the household surveys. This is shown in Table 3 below:

Table 3: Incidence, intensity and inequality of poverty

	1991	1993	1996	1998
Incidence of Poverty	0.70	0.74	0.69	0.73
Intensity of Poverty	0.62	0.58	0.51	0.48
Inequality of Poverty	0.47	0.40	0.32	0.29

Sources: CSO (1994), CSO (1997a), CSO (1997b), and unpublished, not yet official, information from the Central Statistical Office (for the 1998 data)

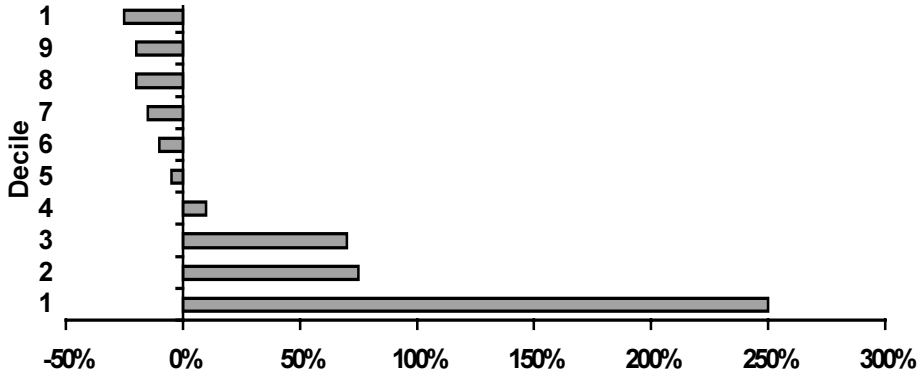
As can be seen from the table above, both intensity and inequality of poverty has decreased considerably during the period 1991 to 1998, despite the incidence of poverty being (basically) the same (an increase from 70% in 1991 to 73% in 1998). *This suggests an improved distribution for the very poor.* Since the improvement in inequality is larger than the improvement in intensity, it indicates that the poorest groups have experienced a higher improvement than poor that are a little bit better off. *The poorer a person was in 1991, the more had his/her conditions improved in 1998.*

Reanalysis of CSO data

The household data from the household surveys from 1991, 1993 and 1996 by the Central Statistical Office has been reanalysed in an independent study from 1999.[11] This study uses the same poverty lines as the ones used by CSO but a different method of translating household data to per capita equivalent data.[12] The different equivalence scale means that the actual figures are somewhat different from those cited above but *the overall pattern is the same.*.

In the study, intensity and inequality of poverty is studied further. To do this the expenditure levels for each decile (i.e. each 10% group) of the population is examined in detail. Figure 1 below shows the *change* in expenditure levels between 1991 and 1996 for each decile of the population:

Figure 1: Percentage Change in Per Adult Equivalent Expenditure 1991-96 by Decile



Source: McCulloch (1999), p.27.

Figure 1 shows that the bottom four deciles of the distribution have experienced positive consumption growth, with the bottom three (i.e. the poorest 30%) growing very strongly. The poorest 10% have increased their per adult equivalent expenditure with 250%. (They are, however, still below the poverty line.) By contrast, the top six deciles have seen a contraction in their consumption expenditure. Hence, this shows confirms that the poverty level has decreased significantly for the large group of people living far below the poverty line.

The "One dollar a day" Poverty Line

One of the problems associated with national poverty lines is that what is regarded as necessary commodities can vary significantly between countries. The defined poverty lines can be quite different in different countries and comparisons between countries not relevant.

For this reason another poverty line, the *one dollar-a-day* poverty line, was introduced by the World Bank 1990.[13] This measure simply translates $1 per day to the local currency using purchasing power parity (PPP) exchange rates. The one-dollar-a-day measure is widely used to compare poverty levels between countries.

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[11] McCulloch (1999)

[12] The equivalence scale used is defined in Latham, M. C. (1965): *Human Nutrition in Tropical Africa*, FAO, Rome. The reason for using this scale rather than the one used by CSO is to ensure compatibility with other country studies.

[13] World Bank (1990)

In 1996 prices the one-dollar-a-day measure corresponds to a poverty line of K91,326 per month. Compared to K28,979 (which is the one used by CSO), this is exceptionally high being in the top decile of 1996 expenditure distribution. In a Zambian context this measure is therefore less relevant as a "poverty" measure.[14] The "one dollar a day" poverty line does not provide any additional value for a income poverty analysis, compared to the more elaborate national poverty line defined by CSO.

Proportion of Income Spent on Food

A measurement of income poverty, not using the poverty line concept, is to calculate the proportion of total household income that is spent on food. The assumption is that the poorer a person/household is, the larger proportion of his/her income is spent on food. A general rule is that households who spend less than 60% on food are non poor, those who spend 60-79% are moderately poor, and those who spend 80% or more are extremely poor.

Table 4 below shows the average proportion of household expenditure that is spent on food for the entire population as well as for the poorest 10% of the population:

Table 4: Household Expenditure on food 1991-1998

	1991	1993	1996	1998
All Zambia	60%	63%	53%	59%
Bottom 10% of Population	74%	75%	80%	76%

Sources: CSO (1994), CSO (1997a), CSO (1997b), and unpublished, not yet official, information from the Central Statistical Office (for the 1998 data)

As shown in the table above the proportion of total household income that was spent on food has remain basically the same over the longer period of time (60% in 1991 and 59% in 1998). The same is true for the poorest 10% of the population.

Poverty and Inequality

Poverty and inequality are closely inter-linked but inequality is a broader concept than poverty. Inequality levels in a society can increase or decrease without actually changing the number of people living below a poverty line. Changes in income levels of the richest groups in a society influence the level of inequality as much as changes among the poor. A lower inequality level in a society may not necessarily mean that the number of people living below the poverty line has decreased.[15]

However, there is strong evidence that if inequality levels are very high, the prospects for growth and poverty reduction are small. *At any positive growth rate, the higher the initial inequality, the lower the rate at which income-poverty falls*.[16]

More unequal societies tend to develop larger groups of people who are excluded from opportunities that others enjoy, such as better education or access to loans.[17] Or, put differently, more unequal societies tend to develop larger groups of poor people. For this reason it is useful to try to measure how inequality has developed in Zambia during the 1990's, bearing in mind, however, that inequality is not the same thing as, but closely related to, poverty.

The Lorenz Curve of Income Distribution

In a completely equal society 50% of the population would have 50% of the total income, 60% of the population would have 60% of the income etc. The same applies for

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[14] McCulloch (1999), p.6

[15] Litchfield (1999) for a more elaborate discussion on the poverty-equality relationship.

[16] Ravallion (1997, pp.1-2

[17] Ferreira (1999), p.13

expenditure levels. In Table 5 below, data from CSO has been used to express the percentage distribution of expenditure per decile of population.

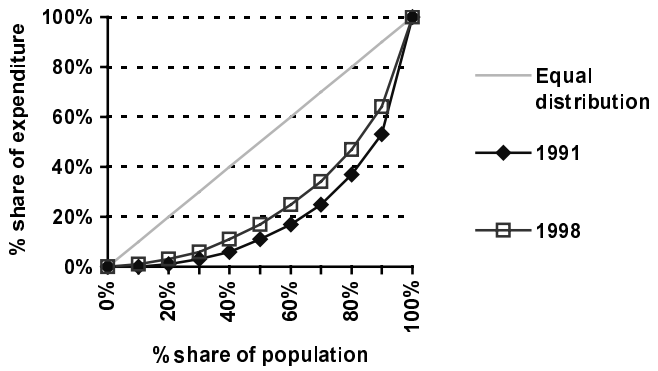
Table 5: Expenditure Levels for Deciles of the Population 1991-1998

Decile	1991		1993		1996		1998	
	Kwacha	%	Kwacha	%	Kwacha	%	Kwacha	%
1	671	0%	2509	1%	4371	1%	4797	1%
2	3124	1%	5298	3%	7642	4%	10356	3%
3	6136	3%	7593	6%	10480	7%	14496	6%
4	9663	6%	10142	10%	13422	12%	18940	11%
5	13939	11%	13130	16%	16774	17%	24466	17%
6	18846	17%	17334	23%	21054	24%	31410	25%
7	25272	25%	22876	32%	26327	33%	39396	34%
8	34914	37%	30325	44%	34056	44%	51120	47%
9	49837	53%	43276	62%	48026	59%	71279	64%
10	143463	100%	95387	100%	124096	100%	190720	100%
Total	**305865**		**247870**		**306248**		**456980**	

Sources: CSO (1994), CSO (1997a), CSO (1997b), and unpublished, not yet official, information from the Central Statistical Office (for the 1998 data)

Table 5 clearly shows that expenditure levels in Zambia are highly unequal. For all years, the "richest" 10% of the population accounts for more than one third of total expenditure, while the "poorest" 10% only accounts for 1%. In Figure 2 below this data is plotted for 1991 and 1998, i.e. the percentage of expenditure is plotted against the percentage share of population.

Figure 2: The Lorenz Curve of Expenditure 1991 & 1998



Sources: CSO (1994), CSO (1997a), CSO (1997b), CSO (1999).

This way of presenting data is often called the *Lorenz curve* (see the Technical Annex for an elaboration). For a completely equal society this curve would be a straight diagonal line. The "closer" the curve is to the straight diagonal line, the more equal is the distribution. Since the graph for 1998 is closer to the diagonal line than the graph for 1991, this means that the *distribution has become more equal*.

The Gini Coefficient and other Inequality Measures

A part from the Lorenz curve, which is a graphical way of visualising inequality, there are many other ways of measuring inequality of a given set of statistical data. The most widely used is called the *Gini coefficient*. The Gini coefficient is a number, which can vary between 0 and 1 where *zero* is interpreted as absolute equality (where all citizens have the same income) and *one* as absolute inequality (where one person has 100% of the total national expenditure and the rest has nothing). The Gini coefficient has an appealing and intuitive geometrical interpretation, which is explained in detail in the Technical Annex.

Based on the data in Table 5, the Gini coefficient for 1991, 1993, 1996 and 1998 is calculated:

Table 6: The Gini Coefficient of Expenditure

1991	1993	1996	1998
0.591	0.507	0.497	0.515

This calculation gives at hand that the Gini coefficient decreased from 0.59 in 1991 to 0.51 in 1993 and to 0.50 in 1996. In 1998 the Gini coefficient rose again to a level higher than both 1993 and 1996 but still lower than in 1991. *This means that inequality has decreased between 1991 and 1998.*

A part from the Gini Coefficient, a number of other inequality measures can be calculated based on the same CSO statistics.[18] These inequality measures are presented in Table 7 below:

Table 7: Inequality Measures using per adult equivalent expenditure 1991, 1993 & 1996

Inequality Measure	1991	1993	1996
Gini coefficient	0.60	0.52	0.51
Thiel's Entropy	0.82	0.51	0.57
Mean log deviation	0.81	0.52	0.47
Coefficient of variation	3.00	1.39	1.83

Source: McCulloch (1999), p.28

Without going into too much detail into these inequality measures[19] it is clear that important changes appear to have taken place between 1991 and 1996 since all of the inequality measures show a substantial fall over the longer period of time. Hence *all inequality measures seem to indicate that there has been a substantive decrease in inequality between 1991 and 1996.*

Other Major Studies on Poverty using the Income Approach

In addition to the studies and sources of data referred to above, some other studies made on (income) poverty in Zambia merit mentioning, even though they contribute little new for the purpose of this study.

Zambia Poverty Assessment 1994

The World Bank 1994 Poverty Assessment[20] is probably the most comprehensive study ever made on poverty in Zambia. This study combines household survey analyses with participatory assessment information. The latter are not substitutes for the household survey data but rather complements to better understand the poor's behaviour, constraints and aspirations. The study is, however, an assessment of the situation in 1994 rather than an analysis of trends and patterns over time. Hence, the study does not add any new information for the purpose of this study. The same methods and the same poverty line as the CSO were used when defining and measuring poverty in Zambia in 1994.

National Poverty Reduction Action Plans

At the UN Summit on Social Development in Copenhagen 1995 all countries were recommended to develop National Poverty Reduction Action Plans. As a result, the Zambian Government embarked on a major exercise to analyse poverty in the country. In February 1998 the Government presented a *National Poverty Reduction Strategic Framework*, which outlined how to reduce poverty levels from today's level of 70% to 50% before

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[18] McCulloch (1999), p.28

[19] The *Thiel's Entropy* places weight evenly along the distribution, the *coefficient of variation* emphasises the tails of the distribution, and the *mean log deviation* place most weight on the bottom or the middle of the distribution.

[20] World Bank (1994)

2004. In May 1999, a National Poverty Reduction Action Plan was presented which translated this strategy into an action plan.

Even though these documents discuss poverty in rather broad terms, the same approach as the one used by the Central Statistical Office is adopted when it comes to measuring progress in poverty reduction. People are defined as "poor" if, and only if, their per adult-equivalent monthly expenditure fall below K28,979. Hence, no new methods or new information are used in these reports.

Poverty Reduction Strategy Paper (PRSP)

Building on the framework above the Zambian government has recently prepared an interim Poverty Reduction Strategy Paper which identifies the dimensions of poverty in Zambia, articulates the governments commitment to tackle the problem, and outlines the strategies and programmes in place to reduce poverty. The poverty strategy and action plan will be further elucidated in a full PRSP that will be developed over the coming year. Indications are that the future process will draw primarily upon data from the four household surveys conducted by the CSO.

Limitations & Weaknesses of the Income Approach

At least two major limitations/weaknesses can be identified regarding the income approach to poverty. The first one is of a general nature and the second is related to the specific case of Zambia.

General Methodological Limitations of the Income Approach

A general limitation of the income approach to poverty is that it excludes non-cash commodities such home grown crops that are cultivated for own consumption only, predominantly in most rural households. It also excludes "free" items such as publicly provided goods and services as well as omits factors such as time required to obtain a commodity.

Another limitation is the possible differences in cost of living among regions for which few studies are able to adjust/correct. For this reason it is probably not relevant to compare between rural and urban areas since this, in general terms, leads to overestimation of poverty in rural relative to urban areas.[21]

Furthermore, income poverty measurements of poverty are often done at a household level that does not allow a disaggregation to the individual level. Hence, differences in poverty level *within* the household are not known, e.g. for women, children, elderly, etc.

Some other methodological issues are how the poverty line should be set, the time frame over which the income flows should be measured, and whether special attention should be paid to household composition.[22]

Zambia Specific Limitations

Many question marks can be raised on the way which the Central Statistical Office updates the poverty lines for each year. As explained above CSO uses the consumer price index to update the cost of the food basket that was calculated in 1991. This is based on the assumption that the consumer price index reflects the increase in price for the goods included in the basket. Two observations on the validity of this assumption can be made:

1. The actual cost of the food basket in a large supermarket, which is available in all large Zambian cities, is 103,800 Kwacha[23]. This corresponds to a poverty line of 23,221 Kwacha which should be compared to the poverty line used by the CSO in 1998, 32,861 Kwacha. This indicates that the actual price increase for food has been significantly lower than the increase in CPI.

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[21] World Bank (1994), p.33f.

[22] Many of these limitations are discussed at length in Ravallion (1994), Lanjouw (1998) and in Booth (1998), p.30

[23] Shoprite in Manda Hill, Lusaka, 14 June 2000.

2. The actual cost at the local market of a similar, but larger, food basket has been calculated by the *Jesuits Centre for Theological Reflection* every month's since January 1996. The increase in price of this food basket between November 1996 and November 1998 (when the CSO Household Surveys took place) is 24%.[24] This should be compared with the update of the poverty line (based on the CPI), which is 63%.

This suggests that the poverty lines used by CSO do not reflect the actual cost of the food basket on which the poverty lines are based. *If the real cost of the food basket were used in 1993, 1996 and 1998, poverty levels in Zambia would have been significantly lower.*

Another Zambia specific weakness is the inadequacy of the statistics available. Even though the intention of the CSO has been to make data comparable over the years, this is not fully the case. Significant changes in the format and content of the surveys have been made. It can, for example, be observed that the surveys from the 1991, 1996 and 1998 were conducted in October-December while the 1993 survey was conducted between April and June, which is around the time of the main harvest. In 1993, there was also an exceptionally good maize crop.[25] Income and expenditure levels from 1993 are therefore not fully comparable with the other years. In fact, the sharp decline between 1991 and 1993 for most indicators is too large to be credible. The real decline is likely to be smaller.

As mentioned above, *one-time* household surveys generally underestimate household expenditures. In a study from 1994, the findings from the CSO Household Survey from 1993 was compared with findings from another survey, which was conducted during the same but a longer period of time. This comparison showed that the latter survey reported household expenditure levels that were much higher (almost double) as the in the former. If corrections were made to adjust to these perhaps more realistic expenditure levels, the prevalence of poverty would fall to 41% in rural areas and 11% in urban areas (as compared to 89% and 56%).[26]

In spite of its limitations, the income approach to poverty continues to be the most widely used method of measuring poverty, partly because of the relative abundance of data and partly because of its simplicity.

Conclusions

The most widely used income poverty indicator, the *incidence of poverty* (using a poverty line), shows that poverty has increased slightly. The same is true for the GNP per capita. However, some methodological objections can be raised against both of them. It can be argued that the GNP per capita can hardly be regarded as a true poverty indicator since it is a national average which says nothing about the distribution of income. Concerning the incidence of poverty, the calculation (or rather the update) of the poverty line, is associated with methodological flaws that to some extent invalidate the results. As shown above, if the accurate cost of the food basket from 1991 would have been used, poverty would have decreased. The conceptual framework around the calculation/update of the poverty line in Zambia, clearly needs to be further developed before it can be used to make conclusions on income poverty.

In contrast to this, there is statistical evidence of a strong "pro-poor" growth and a lower level of inequality (shown by the decrease in the Gini coefficient and other inequality measures). This suggests a *decrease* in poverty in Zambia, at least over the longer period of time 1990-2000.

The last indicator discussed in this section, *the proportion of income used on food*, has remained basically the same. This is true both for the average of the population and the poorest 10% of the population.

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[24] This calculation is based on monthly data by the *Jesuits Centre for Theological Reflection* (www.ictr.org.zm).

[25] White (1997), pp.56-87

[26] World Bank (1994)

Taken together, this suggests that income poverty has decreased in Zambia over the period 1990-2000.

THE BASIC NEEDS APPROACH TO POVERTY

The Concept of Basic Needs

The basic needs approach to poverty is one of the most widely used approaches to poverty used today.[27] It was first introduced by the *International Labour Organisation* (ILO) in the mid 1970's, and later refined and systematised by Sen and others in the 1980's. The basic needs approach has heavily influenced UNDP and its introduction of the human development approach in the early 1990's.

While the income approach to poverty does not capture such dimensions of welfare as health, life expectancy, literacy, access to public goods, employment opportunities etc. the *basic needs approach to poverty* tries to do so. It even touches on needs such as opportunities for community participation, political rights and civil liberties.

In spite of being extensively referred to in the debate, the basic needs approach is complex and ambiguous. There are different views in literature on what needs that are to be regarded as "basic". Should only basic needs such as food, water, health services and schools be included or also needs such as employment, democratic participation, and equality? The question is not whether a particular need is important, but how "basic" it is in the hierarchy of different types of needs.

Is there at all such a hierarchy of needs? One of the most well known attempts to classify human needs was done by the psychologist Abraham Maslow who grouped basic human needs into five categories; physical needs, security needs, social needs, self-worth and self-realisation. In the first group of needs, the most basic needs, he included income, health, shelter, sex, food and sleep. Other authors offer alternative lists of needs. It seems like the concept of basic needs is, by default, subjective and relative. What constitutes a basic need differs both between persons and between countries, even within countries. My conclusion is that there is no perfect list of basic needs, any such list would be an oversimplification.

In this section, no attempt is made to present such a list nor to classify needs as "primary" or "secondary". In order to be as comprehensive as possible, basic needs will be discussed in its widest possible sense, without "rating" different needs. For the sake of clarity, however, this section will be divided into three major subsections. The first subsection will analyse "traditional" basic needs, as the concept was first introduced by the ILO in the mid 1970's.[28] The second subsection will discuss some new layers of complexity that were added to the basic needs concept in the 1980's, particularly as a result of work by Robert Chambers[29]. In these two sections available statistics related to the corresponding group of basic needs will be presented and analysed. In the third subsection some of the most commonly used composite measures of poverty used today, the *Human Development Index* and the *Human Poverty Index*, will be discussed.

"Traditional" Basic Needs

When the concept of basic needs was introduced in the mid 1970's by the ILO, it included the following needs: food, shelter, clothing, access to essential services such as safe drinking water, sanitation, transport, health and education, and an adequately remunerated job for those able and willing to work.[30] Data on some of these social indicators can be found in the household surveys conducted by the Central Statistical Office and in the *Zambia Demographic Health Surveys (ZDHS)*. The ZDHS is a nation-wide survey of women of reproductive age, designed to provide, among other things, information on fertility, family planning, child survival and health of children, and it has

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[27] For an elaboration on the concept of basic needs, see Streeton (1984) and Des Gaspers(1996)

[28] ILO (1976), pp.7-9

[29] Chambers (1983), pp.103-139

[30] ILO (1976), p.7

been conducted by the University of Zambia in 1992 and 1996. The surveys have covered a between 7 000 and 8 000 women in the age 15-49 years.

Even if the concept of a particular basic need is clear, it may be difficult to find (or define) a suitable indicator that appropriately measures this need. Some assumptions on causality have to be made. Data on malnutrition could, for example, be used as an indicator for the basic need "food" or "access to food". Increasing malnutrition levels are then assumed to be an indicator of less access to food.

Food and Water

Access to food and water are, without doubt, fundamental basic needs. The nutritional status of children could be used as an indicator of the difficulty in acquiring food. In Table 8 below the incidence of stunting, underweight and wasting among children is shown for the years that data is available. *Stunting* is defined as failure to grow adequately in height in relation to age. This reflects past or chronic undernutrition and is a result of inadequate intake of food over a long period of time. *Wasting* is an indicator of acute undernutrition. It is the failure to gain weight in relation to height. *Underweight* is defined as low weight in relation to age.

Table 8: Incidence of stunting, underweight and wasting among children in Zambia, 1991 to 1998

Malnutrition Indicator	Source	1991	1992	1993	1996	1998
Percent stunted children	CSO	39%		48%	50%	53%
	ZDHS		40%		42%	
Percent underweight children	CSO	22%		25%	24%	25%
	ZDHS		25%		24%	
Percent wasted children	CSO	6%		6%	6%	5%
	ZDHS		5.1%		4.2%	

Sources: CSO (1994), CSO (1997a), CSO (1997b), CSO (1999)
Zambia Demographics Health Survey: UNZA (1993), UNZA (1997)

As can be seen from the table above, there has been a significant deterioration of the nutritional status of children between 1991-1998, with an exception of wasting where a slight improvement has been noted (although there was some improvement between 1993 and 1996).

Table 9 below shows the proportion of the Zambian population that has access to safe water. Safe (or clean) water is water from protected wells, boreholes and taps. Water from unprotected wells sand rivers/lakes are considered as unclean or unsafe sources.

Table 9: Population with access to safe/clean water 1990-1998

	Source	1990	1991	1992	1993	1994	1995	1996	1997	1998
Access to clean water	CSO			-				47%		55%
Access to safe water	HDR	59%	48%	53%	50%	(27%)	(25%)	54%	38%	

Sources: CSO (1994), CSO (1997a), CSO (1997b), CSO (1999),
Human Development Report 1993-1999 (HDR).

The data from the household surveys (the first row in the table above) indicates that access to safe water has increased between 1996 and 1998. The data in the second row in the table above is from the Human Development Report. These reports rely on the latest national estimates reported by United Nations and its agencies and by internationally recognised organisations. According to these figures, access to safe water has *decreased* over the period 1990 to 1998, i.e. contrary to the CSO data. However, the large variation between the years (particularly the data from 1994 and 1995) seems unlikely which is reason to doubt its correctness. Hence, it seems difficult to draw any conclusive conclusions on access to safe water based on these statistics.

Shelter/housing

Almost all people in Zambia seem to have some kind of house/shelter where they live. Statistics on homeless people is not known. One indicator, that is available for 1993,

1996 and 1998, that to some extent reflect "access to a house/shelter" is *ownership* of a house. According to the household surveys by the CSO in 1993, 71% of the Zambian household owned the house in which they were living. This figure decreased slightly to 68% in 1996 but again increased to 74% in 1998. Hence access to housing has increased seen over the period 1993 to 1998.

Good Health

As health indicators *mortality rates for children* and *life expectancy at birth for adults* is used. Other indictors are available but less reliable over a longer period of time. The statistically most reliable source of data on mortality rates in Zambia is the two ZDHSs conducted in 1992 and 1996[31], hence, only this data is used below.

Table 10 below shows estimates of some common mortality rates. Child mortality is the probability of dying between the first and fifth birthday. Under-five mortality is defined as the probability of dying between birth and the fifth birthday, and infant mortality is the probability of dying before the first birthday.

Table 10: Estimates of Mortality Rates

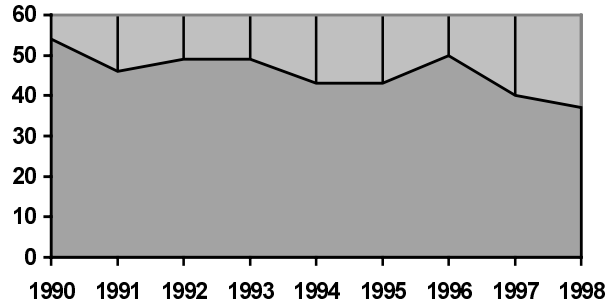
	1987-91	1992-96
Infant mortality rate	106	109
Child mortality rate	90	98
Under five mortality rate	187	197

Source: UNZA (1997), Figure 7.1

From the table above it seems that there has been a substantial rise in all mortality rates in Zambia during the 1990's. It has been shown that this is beyond doubt, despite the inadequacies of the data.[32]

However, the most dramatic deterioration in health indicators is the *life expectancy at birth*. As can be seen from Figure 3 below, life expectancy at birth has decreased from 54 years in 1990 to 40 years in 1998. *This is the third lowest life expectancy of all countries in the world*.[33] Recent (unofficial) calculations from the United States Census Bureau even suggests that life expectancy today is as low as 37 years, mainly due to the rampant hiv/aids epidemic.

Figure 3: Life Expectancy at Birth for Adults 1990-1998



Source: UNDP (1993-2000), WHO (1999) Annex Table 1

The Living Conditions Monitoring Survey 1998 confirms the substantial increase in all mortality rates. The proportion of households that had experienced death (within the household) almost doubled between 1996 and 1998 (from 8% to 15%). The number of orphans[34] has also increased from 13% to 15% during the same period.[35]

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[31] White (1997), pp. 2-10

[32] White (1997), p.10

[33] UNDP(2000a), Table 1, p.157

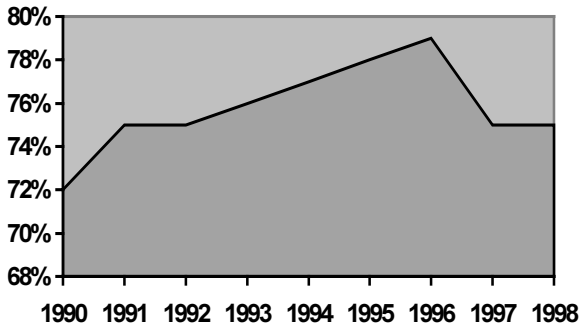
[34] An orphan is defined as a person aged 20 or below whom has lost at least one of the parents.

[35] CSO (1997a) and CSO (1999)

Education

Figure 4 below shows the adult literacy rates for the period 1990 to 1998. As can be seen from Figure 4, *adult literacy rates* have varied between 72% and 79% during the decade. There seems to have been a downward trend since 1996, when the literacy rate peaked at 79%, to 75% in 1998. The literacy rate 1998 is still, however, higher than it was in 1990.

Figure 4: Adult Literacy Rates 1990-1998



Source: UNDP Human Development Report 1993-1999

The Table 11 below shows primary school attendance rates from 1990 to 1998. The gross attendance rate is defined as the attendance at a given education level as a percentage of the population whose ages correspond to that level. In many cases the gross attendance rates primary school levels exceeds 100%. This reflects school attendance by those outside the appropriate age range for this educational level.

Net attendance rate is defined as the percentage of persons who attend grades corresponding to their age.

Table 11: Primary School Attendance Rates 1990-1998

	1993	1996	1998
Primary Level *gross*	104%	87%	83%
Primary Level *net*	73%	69%	66%

Sources: CSO (1994), CSO (1997a), CSO (1997b), CSO (1999).

The table above shows that all primary school attendance levels have decreased during the 1990's. Net primary school attendance rates do not indicate any major differences by sex. The household surveys show that this is not due to access problems. In rural areas about 85% has access to a primary school within 5 km. This has remained almost constant between 1991 and 1998.

Basic Needs in a Wider Perspective

In the mid-eighties some new layers of complexity was added to the previous thinking on poverty, particularly as a result of work by Robert Chambers. In his work he identifies interlinked *clusters of disadvantages,* which includes poverty, powerlessness, isolation, vulnerability, and physical weakness.[36] However, he clearly recognises that there is no particular merit in these specific categories, others are equally valid. His point is to broaden the concept of poverty. Today, these aspects of poverty are often recognised as being equally important as basic needs such as food, water, housing, health and education etc. In spite of this, these dimensions often omitted when analysing poverty. The reason is often that these aspects of poverty are difficult to quantify. In this subsection, an attempt is made to quantify some "broader" aspects of poverty:

Vulnerability and Risk

Chambers describes *vulnerability* as lack of buffers against contingencies such as social conventions (dowry, weddings and funerals), disasters (crop failure, famine), or physical incapacity (sickness, childbearing, accidents). If an unforeseen event occurs, the poor have

[36] Chambers (1983), pp 103-139

few assets to dispose of in addressing the problem. Often they cannot borrow to meet their need. Variations in the seasons, lack of rain and changes in prices etc. are often of higher concern for poor people than a low, but secure and regular, income. The poor suffer from *risk* because they lack means to protect themselves adequately against it – that is what makes them vulnerable.[37]

Measuring risk and vulnerability is difficult, both from a conceptual point of view, and a practical. Even if a "good" indicator would exist, reliable statistics over a longer period of time may not. One attempt to measure this dimension of poverty could be by examining the stock of resources that a household controls. The assumption is that a stock of assets/resources makes poor people less vulnerable. These resources may be measured in terms of physical or monetary assets (land, cattle, cash etc.) or in terms of social capital (social contacts, networks, reciprocal relationships, extended family, community membership etc.). Fixed assets, or social capital, provide an important security against external chocks or unforeseen events. Hence, assets and social capital greatly reduces risks. Defining poverty with reference to human capital has conceptual advantages over more frequently used income definitions (poverty lines).[38] However, very little data is available on this. The LCMS includes some information on ownership of assets such as a house, a radio, a stove and a bicycle. This data is presented in the table below:

Table 12: Ownership of Assets, 1993 – 1998.

	1993	1996	1998
House	71%	68%	74%
Radio	42%	45%	54%
Stove/cooker	-	15%	23%
Bicycle	22%	-	30%
Television		18%	23%
Plough		10%	11%
Refrigerator		8%	12%

Sources: CSO (1994), CSO (1997a), CSO (1997b), CSO (1999).

The figures from the table above are unambiguous, ownership of assets have increased in Zambia between 1993 and 1998.

Powerlessness

With the words of Chambers, *powerlessness* is to be ignorant of the law and without legal advise. It is to be in a weak position to negotiate terms for the use of labour or the sale of produce or crops. It is to be easily exploited by moneylenders, merchants, landlords, petty officials and police. It is to avoid political activity, which may endanger future employment, loans, favours or protection.[39] In their interactions with government officials and institutions the poor often feel that they have no political power and no possibility to change their own situation.[40]

To quantify powerlessness is difficult. If powerlessness is understood in a "political" sense, some quantitative information is available. The organisation "Freedom House" publishes an annual survey, *Freedom in the World*, which tries to evaluate *political rights* and *civil liberties* throughout the world. The survey attempts to judge all countries by a single standard and to emphasise the importance of democracy and freedom.

Political rights is understood as the possibility for people to participate freely in the political process, which is the system by which the people chooses authoritative policy makers and attempts to make binding decisions affecting the national, regional, or local community.

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[37] Chambers (1983), p.110

[38] Hanmer (1998), p.1

[39] Chambers (1983), p.111

[40] Kanbur and Squire (1999), p.21

Civil liberties include the freedoms to develop views, institutions, and personal autonomy apart from the state.[41]

The survey employs two series of checklists, one for questions regarding political rights and one for civil liberties, and assigns each country a numerical rating from 1 to 7 for each category, where 7 is little freedom/rights and 1 total freedom/rights. Table 13 below shows the ranking made for Zambia 1990-2000:

Table 13: Political Liberalisation Indicators for Zambia 1990-1999

	90	91	92	93	94	95	96	97	98	99	00
Political rights	6	6	2	2	3	3	3	5	5	5	5
Civil liberties	5	5	3	3	4	4	4	4	4	4	4

Source: Freedom House website (http://freedomhouse.org)

Table 13 above shows that both political rights and civil liberties follow a similar pattern during the 1990's. Both indicators improved considerably between 1991 and 1992 when multiparty democracy was introduced. Since then both political rights and civil liberties have steadily deteriorated and is now almost at the same level as in 1990.

Participation in the Economical and Political Life

Studies in Zambia have shown that "participation" in the life of the local community is essential to people, particularly in rural areas. In many village communities in rural Zambia, each person may well be below the national poverty line, but may still conceive himself as "coping". The "poor" people are often identified as those who are marginalised, or living beyond the margins of the local community, regardless of their income, health status or educational level.[42]

However, participation, in this sense is difficult to quantify. Unemployment rates could be used as an indicator of *participation in the economical life*. Data on economical activities were collected in the household surveys. An unemployed person refers to a person who, at the time of the surveys, was either looking for work/means to do business or was available for work/business.

Table 14: Indicators of Economical "Participation"

	1991	1993	1996	1998
Unemployment rate	22%	20%	15%	12%
Labour force participation rate	-	56%	68%	63%
Unemployed Labour Force ('000)	615	671	511	413

Sources: CSO (1994), CSO (1997a), CSO (1997b), CSO (1999), CSO (2000) for data on "Unemployed Labour Force".

Table 14 shows that the unemployment rate has steadily decreased in Zambia between 1991 and 1998. Labour force participation, defined as the proportion of the population aged 12 years and above who are in the labour force or are economically active, also seems to have increased over the longer period of time (1993-1998). The conclusion from these data is that *economical participation has increased*. However, these data should be regarded with great caution. As in most developing countries the majority of the population belongs to the informal sector. Therefore, unemployment rates in the range 10-20% is not likely to reflect the reality.

Concerning *participation in the political life*, a good indicator is the proportion of people that voted in the general elections in 1991 and 1996. This shows an increase in turnout rates from 46% in 1991 to 58% in 1996. Furthermore a study from 1998[43] shows that political knowledge has increased significantly over the last years. Two sample surveys were done in 1993 and 1996. In naming political leaders the increase was 25% for one's local councillor, 22% up for one's MP and a remarkable 73% for the Minister of Finance. More importantly, citizens' understanding of the political system has also increased.

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[41] For complete definition see http://freedomhouse.org

[42] Kanbur and Squire (1999), p.21

[43] Hadenius (1998)

Significantly more people were in 1996 able to distinguish between political parties and the government, but also national and local government. In 1993, two-thirds of the population said that the government sometimes seems so complicated that one cannot really understand what's going on. However by 1996, half of the population found government affairs generally understandable.

Political interest is high among Zambian citizens, with around 60% claiming a high interest and two out of three discuss politics with others on a regular basis. 65% felt that they could influence the opinion of others in these discussions. These figures remained largely the same between 1993 and 1996. Problematic however is that while political knowledge have increased and citizens' knowledge and contacts with elected officials is rising, their confidence of their ability to influence theirs political representatives is decreasing (down from 41% in 1993 to 34% in 1996).[44]

Security

The threat of physical violence directed at persons is a source of great insecurity. As an indicator of violence the number of crimes reported to the police could be used. According to Zambia Police Headquarter files, reported crime increased steadily between 1990 and 1995. In 1995 reported crimes were 45.000, more than twice as much as in 1990.[45] However, it is difficult to assess whether this reflects an increasing crime rate or that a higher proportion of crimes is being reported to the police. A comparative example is that reported crime in a neighbouring country (Zimbabwe) is eight times as high as in Zambia.[46] This difference is most certainly not due to higher crime rates, but to a higher proportion of reported crime.

Composite Measures

A number of efforts have been made to combine several "basic needs" indictors into one composite indicator where the comprising indicators are weighted according to a predefined formula. The most widely used are the *Human Development Index* (HDI) and the *Human Poverty Index* (HPI) calculated by the UNDP. Other, not included in this study mainly due to lack of data, are the *Gender Related Development Index* and the *Gender Empowerment Measure,* also UNDP measures.

The Human Development Index

The United Nations Development Programme (UNDP) has played a leading role in defining poverty in terms of *human development.* In 1990 UNDP introduced the *Human Development Index* (HDI) which is the most widely used indicator for human development today.

The HDI is a *composite* index comprising indicators for health, education and income. Health is measured solely by *life expectancy*, education as measured by a combination of *adult literacy* and *mean years of schooling*; and income is measured by the *PPP per capita GDP*. The mathematical definition, including the relative weight of the comprising indicators, is explained in the Technical Annex.

UNDP calculates and presents the HDI for all countries in the world on an annual basis. However, UNDP has modified the formula for calculating HDI several times, hence, values in successive reports are not comparable. However, in Table 15 below, the HDI for Zambia is calculated using the data for the comprising indicators but the most recent definition of the HDI:

Table 15: Human Development Index for Zambia 1991-2000 (using the most recent definition).

Year	Life exp.	Adult	Comb.	PPP	HDI	Rank

[44] Elaborated in Hadenius (1998), pp.16

[45] UNDP (1998b), p.26

[46] UNDP (2000), Table 26, p. 247

	at birth	literacy rate	Gross enrol-ment rate	GDP per capita (US$)		
1991	54	67%	69%	870	0.51	118
1992	54	73%	67%	767	0.51	117
1993	54	72%	49%	744	0.49	130
1994	46	75%	49%	1 010	0.46	138
1995	49	75%	49%	1 230	0.49	136
1996	49	76%	49%	1 110	0.49	136
1997	43	77%	48%	962	0.45	143
1998	43	78%	52%	986	0.46	146
1999	40	75%	49%	960	0.43	151
2000	40	76%	49%	719	0.42	153

Sources: UNDP Human Development Report 1991-2000

It should be noted that the column *year* in the table above is the year of the publication of the Human Development Report. The report always contains the most recent official data available as reported by the UN. For Zambia this means that that the data is 2-3 years old, i.e. data in the 1993 report is from 1990.

The following conclusions can be drawn from Table 15 above:

- There has been a pronounced decline in the HDI value during the 1990's. The decrease is essentially attributed to the decline in life expectancy at birth.
- Zambia has steadily slid in the ranking among countries in the world. Today it has the rank 153 out of 174 countries.

An interesting fact is that Zambia is one of only six countries in the world (excluding Eastern European countries) that has a lower HDI value in 2000 than in 1990.[47]

Human Poverty Index

A part from the Human Development Index, UNDP has, throughout the years introduced a number of other indices. One of them is the *Human Poverty Index* (HPI), which was introduced in the 1997 Human Development Report. The HPI pursues a similar approach as the HDI in the sense that it is a composite index of a number of social indicators. The HPI, however, concentrates on the *deprivation* (in contrast to absolute values) in three essential elements of human poverty: longevity, knowledge and decent standard of living.

The first deprivation relates to survival and is represented by the vulnerability to death at a relatively early age, which is expressed as the percentage of people expected to die before the age of 40. The second dimension relates to knowledge, which is measured by the percentage of adults who are illiterate. The third aspect relates to a decent standard of living. This is represented by three variables: the percentage of people without access to health services and to safe water, and the percentage of malnourished children under five.

In contrast to the HDI, the HPI is defined in such a way that the lower the value, the lower level of poverty. The mathematical definition, and weighting of the comprising variables, is explained in the Technical Annex.

The difference between HDI and HPI is that the former focuses on progress on a community as a whole, while the HPI focuses on the situation of the most *deprived* people in the society. This distinction could, to some extent, be compared with the difference between the GDP of a country and the percentage of people living under a predefined poverty line. In the case of HPI, the "poverty lines" used are not related to income but to social development (people not reaching the age of 40, etc.).

Unfortunately, even though the choice of indicators for defining HPI was partly made based on which statistical data that is available for most countries, this is not the case for

[47] UNDP Human Development Report (1999), Table 6, p.154

Zambia – no data is available in the Global Human Development Report. Nevertheless, an attempt to calculate the HPI by estimating some of the variables needed was done in Zambia (National) Human Development Report 1997[48]. This data is presented in Table 16 below. It should be noted that since data on *People Expected to die before the age of 40* is not available for Zambia, *Under-5-Mortality rates* are used instead.

Table 16: Human Poverty Index for Zambia, 1991-98

	Longe-vity	Know-ledge	Decent Standard of Living			
Year	**Under 5 Mortality Rate [49]**	**% of adults who are illiterate**	**% without access to health services**	**% without access to safe water**	**% of malnou-rished children under five**	**HPI**
1991	16%	27%	53%	13%	22%	25.3
1996	20%	21%	50%	10%	22%	23.3
1998	20%	21%	45%	11%	24%	22.9

Sources: Zambia Human Development Report 1997 (for 1991 and 1996 data), Zambia Human Development Report 1999/2000 (for 1998 data)

The table above shows that, between 1991 and 1996, there has been an improvement in all of the components used for calculating HPI, except the value for longevity. Consequently, the HPI value between 1991 and 1996 has improved. The improvement has continued in 1998, due to the decrease in *percentage of people without access to health services*. The other variables have slightly deteriorated. Hence, if HPI is used as an indicator of poverty, poverty has decreased between 1991 and 1998.

However, the limitations of the data used should be kept in mind while drawing conclusions on these trends. Among other things, the same data for *longevity* and *knowledge* has been used for 1998 as for 1996 due to non-availability of official data. It is, however, hardly plausible that longevity has remained the same. A more realistic estimation would be to assume that the indicator used for longevity has deteriorated to the same extent as *Life Expectancy at Birth*. The decrease from 50 years in 1996 to 37 years in 1998 (see Figure 3) corresponds to a 26% decrease. If the same deterioration is assumed for the Under 5 Mortality Rate, the 1998 value would be 25% (rather than 20%). This would give an 1998 value of the HPI of 24.5, i.e. a *increase* in poverty since 1996 (but still a decrease in poverty compared to 1991).

Limitations with the Basic Needs Approach

One weakness of the basic needs approach to poverty is that it is too wide. In case some basic needs indicators have improved and some have deteriorated, which indicators should have the precedence? As discussed in the introduction to this chapter, there is no such thing as hierarchy of basic needs indicators.

It is also less precise than the income approach which clearly separates the poor from the non-poor. Is, for example, a community in which 15% are illiterate poor? A person who is in good health, has a house, access to water and food and participates in community affairs, but can not read – is such a person poor? When it comes to health indicators, most people are sick more or less frequently during the year. How many times during the year can you be sick without being "poor"? Furthermore, an indicator like "life expectancy at birth" means little to an individuals perception of poverty – if a person dies before the average life expectancy does not necessarily mean that he/she is poor. Even

[48] UNDP (1997), p.51 and Technical Annex, p.61-62

[49] *Under 5 Mortality Rate* is used as an indicator of longevity instead of *percentage of people not expected to survive the age of 40* (which is not available).

though it is easy to quantify whether social indicators have improved or deteriorated, the conceptual link to poverty, at least on an individual basis, is less clear.

The most severe limitation, at least when it comes to Basis Needs in a wider perspective, is to measure (and to find/define indicators of) powerlessness, participation, vulnerability etc. It can be argued that the indicators used in this section to reflect these aspects of poverty are not at all adequate from a conceptual point of view. Unfortunately, "better" quantitative indicators do not seem to be available today.

A final limitation is the availability and quality of data. In the case of Zambia there is a serious lag in the published data for several variables beyond 1996. Some of the data used in this chapter are not official, and has been obtained from relevant government ministries.

Conclusions

In the table below, all poverty indicators presented in this section are summarised. For each indicator, a plus (+) denotes an increase in poverty, and a minus (-) a decrease in poverty, i.e. if people have become better off. A zero (0) indicates that poverty levels have remained the same (or changed very little). A question mark (?) means that the statistical data on which the indicator is based is too weak to draw any conclusions at all.

Table 17: Summary of Changes in Basic Needs Indicators

"Traditional" Basic Needs	
Food and Water	0
Shelter/housing	-
Good Health	+
Education	+
Basic Needs in a Wider Perspective	
Risk and Vulnerability	-
Powerlessness	
Political Rights	-
Civil Liberties	-
Participation…	
…in the economical life	-
…in the political life	-
Security	?
Composite Measures	
The Human Development Index	+
Human Poverty Index	-

The table above shows a mixed picture. Even bearing in mind the poor statistics available, there is no doubt that "traditional" basic needs indicators have deteriorated (the only indicator that suggests a decrease in poverty is *ownership of house*). If basic needs is seen in a wider perspective, the situation changes. All indicators related to risk, vulnerability, powerlessness, participation etc. show a decrease in poverty over the longer period of time (1990-2000). Even bearing in mind the limitations of these indicators outlines above, it still seems reasonable to assume that these conclusions are correct.

The two composite poverty indicators seem mutually contradictory. The Human Development Index shows an increase in poverty and the Human Poverty Index the opposite. This is true even if the HPI is modified slightly in order to use the (little) data that is available in Zambia.

To conclude, "traditional" basic needs indicators show an increase in poverty, the "wider" Basic Need indicators a decrease in poverty and the composite measures being ambiguous. Hence, the basic needs approach is not conclusive.

Subjective poverty Measures

The Objective versus Subjective Perspective of Poverty

Poverty can be approached from an *objective* or *subjective* perspective. The *objective* perspective involves normative judgements on what constitutes poverty, e.g. a low income, illiteracy, access to health services, powerlessness, vulnerability etc. These approaches to poverty draw heavily on the statistical information contained in household surveys. Economists have traditionally based their work on this perspective. Both the *income*, and the *basic needs* approach are objective approaches to poverty.

The *subjective* approach to poverty lets the people themselves define poverty and express how they perceive their own situation. It emphasises people's preferences on how much they value goods, services and other qualities in life. Advocates of this approach use the argument that individuals are always the best judges of what is best for them.

In this section "subjective" data from different sources has been analysed. However, subjective, *and over time comparable*, information on Zambia is rather limited, mainly because the conceptual framework and the methods used are rather new. The main, but not the only, source of information is *Participatory Poverty Assessments* (PPAs) made in Zambia. (The methodology of PPAs is explained below). Some information from the household surveys conducted by the Central Statistical Office is also used[50].

Participatory Poverty Assessments

Characteristics of PPAs

The main method developed to measure subjective poverty is *Participatory Poverty Assessments* (PPAs), which was introduced in the mid 1990's by a few international organisations, including the World Bank and Sida. The number of PPAs has gradually increased since then.

The Participatory Poverty Assessment approach to measuring poverty is very different from the objective approach. While indicators used in the objective approach are said to be *SMART*, as in **S**ingle, **M**easurable, **A**chievable, **R**elevant and **T**imely, *subjective* indicators should be *SPICED*[51]:

- **S**ubjective: should draw on information from people with a special position or experience that gives them unique insights,
- **P**articipatory: should be developed with those best placed to assess them,
- **I**nterpreted and Communicable: locally defined indicators may not mean much to other stakeholders, they often need to be explained,
- **C**ross checked and Compared: the validity of assessment needs to be checked with findings from more than one source,
- **E**mpowering: the process of defining and assessing indicators has a value in itself.
- **D**iverse and Disaggregated: there should be a deliberate effort to seek out different indicators from different groups, especially men and women.

A PPA is characterised by open-ended conversion-like interviews by researchers conversant in the local language. PPAs have challenged both traditional modes of poverty analysis and subsequent poverty development. The poor's analyses have provided a depth and understanding of the very notion of poverty, extending and enhancing narrow consumption- or income based definitions.

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[50] CSO (1997a)

[51] The SMART, SPICED analogy is borrowed from White (1999).

General findings from PPAs

During the first years of using PPAs, two aspects of poverty often emerged which were not captured in conventional methods (such as household surveys) The first concerned poor peoples *vulnerability*, secondly, poor people often expressed a sense of *powerlessness*. [52] Both these aspects of poverty has already been introduced in the previous section.

Recently, a new aspect of subjective poverty has emerged – the *psychological* aspect of poverty.[53] This aspect has became apparent in the preparatory work for *the* major report on poverty - the *World Bank Report on Poverty*, which is a decennial report that has played a significant role in the thinking about poverty in the last decades. The preparatory work for the year 2000 report has gone substantially beyond past practice to the extent that approximately 60,000 men and women from over 60 countries (including Zambia) have been consulted in the process. This is the first large scale comprehensive research effort ever made using participatory methods. The patterns of findings from across countries are similar and broaden the definition of poverty even more than that of risk, volatility and powerlessness. Poor people repeatedly describe the *psychological* experience and impact of poverty. To be poor is to "not have peace of mind". Some voices from poor people around the world in this report are the following:[54]

> *Being well means not to worry about your children, to know that they have settled down; to have a house and livestock and not wake up in the middle of the night when the dog starts barking; to know that you can sell your output; to sit down and chat with friends and neighbours.*
>
> *A better life for me is to be healthy, peaceful and to live in love without hunger. Love is more than anything. Money has no value in the absence of love*

People expressed poverty in terms of *well-being* and *ill-being.* Five different dimensions of well-being could be identified: material well-being, physical well-being, security, freedom of choice and action, and good social relations. Not to be poor, is to *be well* or to *have peace of mind*.

PPAs in Zambia

A number of PPAs have been conducted in Zambia during the 1990's. The largest, and the most comprehensive ever made, is *Consultations with the Poor – National Synthesis Report, Zambia*[55], which is one out twenty-three country studies designed to provide input to the World Bank Report *World Development Report 2000/01 on Poverty and Development*. In Zambia the study was carried out in 12 of the poorest districts with a total of 60 participating groups, both urban and rural areas.

The report focuses on people's own definition of poverty. In that respect the concepts of *well-being* and *ill-being* have been consistently used, rather than "poor" or "non poor". The people themselves were asked to identify different categories of well-being, as well as criteria for placing households in these categories. They were also asked to estimate the relative sizes of these categories as well as trends and changes over time.

The study also explored the various concepts, which are related to well-being and ill-being, such as security, social exclusion, crime, conflict etc.

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[52] Kanbur and Squire (1999), p.20

[53] World Development Report 2000/01 (will be published in September 2000).

[54] World Bank (1999b), p. 33

[55] World Bank (1999d)

Rural Areas

The studies made in rural Zambia resulted in the following definitions of categories and criteria for placing households in these categories:

The rich	The rich a bit	The poor
• have big farms, • eat well, • can afford to educate children, • have fertiliser	• have few cattle, • eat 2 meals a day, • send their children to school	• do not have proper meals, • cannot afford health costs or to educate children, • cannot afford soap

The very poor	Special groups
•do not have proper meals, •poor hygiene, •dirty clothing, •live miserable lives	• blind, widows, orphans, etc. • cannot cultivate fields, • depend on others

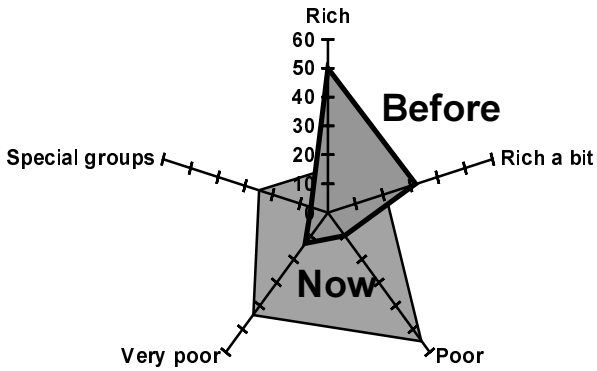
From the table above it can be noted that there is quite a sharp difference between being poor and being rich. Either you can afford proper meal, send your children to school etc., or you cannot. It also seems clear that food is the most important issue for being well.

After having defined these criteria for "assigning" people into different categories of poverty, the groups were asked to estimate the proportions of households that they deemed belong to each category "now" and "before" i.e. today and (about) ten years ago. The results are shown in table and graph below:

Table 18: Development of Poverty in Rural Areas according to the Poor using PPAs

	Now	Before
The Rich	0-30%	10-90%
Rich a bit	2-40%	14-50%
Poor	20-90%	0-20%
Very poor	3-85%	2-25%
Special groups	10-40%	2-10%

Source: World Bank (1999d), p.14



The table to the left above shows the *range*, not the mean, of the estimated number of households in each category. By approximating the mean value to be in the middle of the range, the change in poverty is visualised in the graph to the right above. This graph very clearly shows that the proportion of people belonging to the groups "poor" and "very poor" has dramatically increased. The same is true for special groups. The proportion of "rich" and "rich a bit", to the contrary, has decreased.

Urban Areas

The results from urban areas are slightly different. The criteria for placing people into different categories are shown in the table below:

Table 19: Categories of Poverty in Urban Areas defined by the Poor Themselves

Very rich	The rich	Little bit well off
• eat from morning to bed-time, • own & drive cars • can afford private medical services	• live in big houses, • are in formal employment, • eat three meals a day plus afternoon tea	• are well dressed, • have radios and television sets
suffer a little bit	**The poor**	**The very poor**
• produce too many children, • some depend on piece work, some on prostitution	• work for the rich, • have no shelter, • eat once a day, • can not afford health and education costs	• cannot do piece work, • survive through begging, • one meal in a number of days, • no blankets

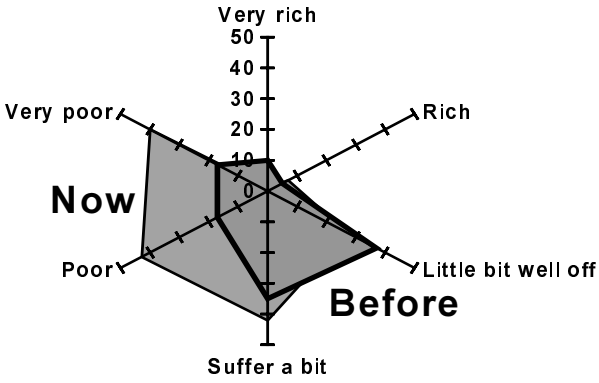
As shown in the table above, an additional category, "the very rich" was identified in urban areas. As in rural areas, availability of food also characterise those in the well-off categories. The least privileged categories have less access to food. Access to water, health and educational services is another issue that cut across all segments of both rural and urban communities.

Table 20 below, and the adjacent graph, shows the proportions of households belonging to each category "now" and "before".

Table 20: Development of Poverty in Urban Areas according to the Poor

	Now	Before
Very rich	0-2%	0-20%
Rich	0-15%	0-10%
Little bit well off	5-50%	5-70%
Suffer a bit	15-70%	10-60%
Poor	15-70%	5-30%
Very poor	10-70%	4-30%

Source: World Bank (1999d)



The table and graph above shows a similar development as the one in rural areas. It is clear that poverty, described as "ill-being", is perceived to have increased substantially between 1990 and 1999.

Self Assessed Information in Household Surveys

Even though the main focus of the household surveys conducted by the CSO is on quantitative information, self-assessed information on poverty was also assessed in LCMS-1996[56]. All households in the survey were asked to assess their own situation. Out of all households only 41% considered themselves to be extremely poor, which is much less than if using the poverty line defined by the CSO. The overall picture is that households considered themselves better off than when being classified by a poverty line.

People were also asked to assess whether their living conditions, in a non-specified sense, had remained the same, deteriorated or improved during the last five years preceding the survey. The results showed that only 27% of the Zambian households felt that their living conditions had improved while 44% felt they had deteriorated since 1991. 27% felt that their living standards had remained the same.

[56] CSO (1997), Table 12.17, p.148

Table 21 below shows people's perceptions of their living standard by income group:

Table 21: Percentage of households by self-assessed development of living standards last 5 years by income-group and household size

Income Group	Improved	Remained the same	Deteriorated	Total no of households
Less than K15,000	17%	26%	55%	225,000
15,000 – 30,000	18%	27%	53%	329,000
30,000 – 75,000	22%	31%	46%	569,000
75,000 – 150,000	31%	29%	37%	333,000
150,000 – 225,000	43%	24%	34%	126,000
225,000 – 300,000	44%	24%	30%	70,000
300,000 +	51%	21%	27%	120,000

Source: Living Conditions Monitoring Survey 1996, Table 12.19

The table shows that the higher the household income, the more often the household felt that their living standards had improved. More than half of the households in the highest income group perceived an increment in living standards. On the other hand, over 50% of the households in the two income-groups with the lowest income were of the opinion that their living conditions had deteriorated. In the four lowest income groups more people felt that their living conditions had deteriorated rather than improved.

Limitations and Conclusions with Subjective Methods of Measuring Poverty

Even though PPAs have provided a deeper understanding of the concept of poverty, it has some drawbacks. There are a number of well-documented limitations of the PPA research methodology, some of which are:

- PPAs usually emphasises depth in a relatively limited number of research sites rather than the breadths of coverage. Thus, the findings are often limited to particular regions or segments of the population. The challenge is to achieve a trade-off between measurability, which requires standardisation, and local complexity.
- PPA methods often seek perception data, based on opinions rather than observable/measurable behaviour.
- The lack of uniformity in the substance and methodology of PPAs is in many ways a strength, but can create problems of validity.
- Values when measured are often relative and therefore cannot be compared with similar values/categories across populations or at different moments in time.

Furthermore, PPAs generally base their description of the poor on a ranking of well-being within a community. In other words, the poor are defined as those, in the view of the people interviewed, that are among the least well off in their community. There is no guarantee that the same criterion is being used in other communities. It is possible that the living conditions of the non-poor in one community are actually lower than those of the poor in another community.

Similarly, it is difficult to establish whether poverty has changed over time. Even if the same methodology is used, and the same people are interviewed at different time periods, the people defined as "poor" may still be the same, i.e. the least well-off in the community in some relative ranking.[57] This may be true regardless of whether all other poverty measures show an improvement for this poorest group in the community.

Rather than being *SPICED* subjective indicators could be *DUMB*[58]:

- **D**ubious: you can not believe the numbers,
- **U**n-measurable,
- **M**isleading and meaningless,
- **B**iased: the methodology systematically under- or over-estimated the indicator.

[57] Booth (1998), p.36-37.

[58] The SMART, SPICED, DUMB analogy is borrowed from White (1999).

These disadvantages have to be borne in mind while drawing conclusions from poverty studies based on subjective information, including PPAs.

On the other hand, these "weaknesses" of PPAs may also be regarded as inherit in the definition itself. What matters to people is how they perceive their own situation, not whether their situation has improved according to an indicator defined by an outsider. Poverty is, by default, subjective. The most radical proponents of a participatory approach would deny the validity of a standardised, so called objective, measurement of poverty whether it is based on income, wealth or social indicators.

To conclude, using a subjective approach to poverty clearly shows that poverty has increased. While the methodology certainly has many limitations, it can be argued that these are only limitations as seen by an outsider, not by the poor themselves.

Final remarks

Percentage Change and Relevance of Indicators

In the previous sections it has been shown that the income approach suggests a decrease in poverty, the subjective approach an increase, and that the basic needs approach, because of its complexity, shows both an increase and a decrease. In this section these conclusions will be elaborated upon and refined by adding two *attributes* to all of the poverty indicators used in the various approaches.

The first attribute is the *percentage change* in each indicator. Some of the indicators give a more clear indication of an increase/decrease than others, but this is not reflected in the previous analysis. It seems reasonable that a large increase in one indicator should have a higher significance than a small decrease in another.

The second attribute is the *relevance* of the indicator. For each of the three poverty approaches, it could be argued that some indicators are more important or central, from a conceptual point of view, than others. Most people would for instance agree that the *incidence of poverty* (using a poverty line) is more relevant for measuring income poverty than the *GNP/capita*. It could also be argued that two (or more) poverty indicators measure the same (or similar) aspects of poverty, hence that particular aspect of poverty is "counted" twice (e.g. *intensity* and *depth* of poverty).

By multiplying the *change* with the *relevance* a total *weight* for each indicator is arrived at. A large number suggests a substantial increase (or decrease) in poverty, a small number the opposite. By summarising all weights it will be indicated whether poverty has increased or decreased for the poverty approach as a whole. If the value is positive, it suggests that poverty has increased, if it is negative, poverty has decreased.

By default, any attempt to assign a *relevance* to the indicators for a poverty approach, will to some extent be subjective. This should be kept in mind while studying the refinement below.

The Income Approach

Within the *income approach* four principally different perspectives on income poverty have been singled out:

- Average income measured by the GNP/capita;
- Proportion of people below certain threshold measured by the incidence of poverty;
- Inequality measured by intensity & depth of poverty and the Gini coefficient (intensity & depth could be seen as an inequality measure within the group defined as poor, contrary to the Gini coefficient which measures inequality in the entire population); and,
- Proportion of income spent on food.

Of these four perspectives, the last three have been given equal weight. *Average income* is given the weight ½ (for the reason explained in the *Income Approach* section).

Table 22: Percentage Change and Relevance/Weight of Poverty Indicators

POVERTY INDICATOR	Change in Poverty			Relevance	Weight
	Value 1990	Value 2000	% change		Change x Relevance
Average income (GNP per Capita)	420	330	21%	½	0.11
Incidence of Poverty	0.70	0.73	4%	1	0.04
Inequality					
Intensity of Poverty	0.62	0.48	-23%	1/3	-0.08
Depth of Poverty	0.47	0.29	-38%	1/3	-0.13
The Gini Coefficient	0.60	0.52	-14%	1/3	-0.05
Proportion of Income Spent on Food	0.60	0.59	-2%	1	-0.02
SUM					**-0.13**

From the table above, it is clear that the refined analysis does not change the conclusions that were previously arrived at, i.e. that poverty levels have decreased during the 1990's, mainly due to a strong "pro-poor" growth.

The Basic Needs Approach

Within the *basic needs approach*, the "traditional" indicators have been given the same relevance as the "expanded" indicators. Within the former group, access to food, water & shelter is given the same relevance as health and education respectively.

The two composite indicators (HDI and HPI) are also given equal relevance. In order to give these indicators the same significance as the "traditional" and "expanded" basic needs, they have been assigned the relevance 1.5 each. Hence, all three subgroups of indicators, within the basic needs approach, is given same total relevance ($3 = 3 \times 0.33 + 2 \times 0.5 + 2 \times 0.5 = 1+1+1 = 1.5 + 1.5$).

Table 23: Percentage Change and Relevance/Weight of Poverty Indicators

POVERTY INDICATOR	Change in Poverty			Relevance	Weight
	Value 1990	Value 2000	% change		Change x Relevance
Basic Social Needs					
Food, Water & Shelter					
Access to food [(a)]	0.22	0.28	24%	1/3	0.08
Access to water	0.59	0.38	-36%	1/3	-0.12
Access to shelter/housing	0.71	0.74	-4%	1/3	-0.01
Health					
Mortality rates [(b)]	128	135	5%	½	0.03
Life expectancy	54	37	31%	½	0.16
Education					
Adult literacy rate	0.72	0.75	-4%	½	-0.02
Primary School Attendance rate [(c)]	0.89	0.75	16%	½	0.08
Sum				**3**	**0.20**
Basic Needs in a Wider Perspective					
Risk & vulnerability					
Ownership of assets [(d)]	0.45	0.53	-17%	1	-0.17
Powerlessness					
Political Rights	5.5	4.5	-18%	½	-0.09
Civil Liberties	5.5	4.5	-18%	½	-0.09
Participation					
Voting in the latest general elections	0.46	0.58	-26%	½	-0.13
Unemployment rate	0.22	0.12	-45%	½	-0.23
Sum				**3**	**-0.71**

(Table continues on the next page)

Composite Measures					
The Human Development Index	0.51	0.42	18%	1.5	0.27
Human Poverty Index	25.3	22.9	-9%	1.5	-0.14
Sum				**3**	**0.13**
SUM					**-0.38**

Explanatory Notes:
(a) Average of stunted, underweight & wasted children.
(b) Average of infant, child and under five mortality rates.
(c) Average of gross and net attendance rates.
(d) Average of ownership of house, radio and bicycle in 1991 and 1998 respectively.

The refined analysis shows that the improvements in "extended" basic needs (risk & vulnerability, powerlessness and participation) have been *much* larger than the deterioration of "traditional" basic needs (food, water, education, health etc.). As a matter of fact, this improvement is even larger than the traditional basic needs and the composite measures taken together. Hence, contrary to the previous conclusion (i.e. that the basic needs approach is ambiguous to poverty changes during the 1990's) this refined analysis suggests that poverty has *decreased*. However, the concerns outlined in the previous section on the representativeness of the indicators for the extended basic needs, as well as the poor quality of data, still have to be kept in mind.

The Subjective Approach to Poverty

The information on subjective poverty is more difficult to quantify. Given the fact that the only two subjective sources of data used (one PPA and the self assessed information from the LCMS) both show an increase in poverty, it is clear that poverty has increased in Zambia according to the subjective approach.

Conclusion

Neither the basic analysis in the three preceding sections, nor the refined analysis in this section, gives a clear answer to whether Zambia has become poorer during the 1990's or not. It depends on how the concept of poverty is defined, and as suggested in the introduction to this study, there is hardly a single "right" definition of poverty. Even *within* a particular poverty approach different indicators may arrive at different conclusions.

It is clear that the concept of poverty is highly complex and that any attempt to measure it is intricate. A thorough understanding of the meaning and measurement of poverty seems vital for anyone attempting to quantify poverty, let alone to design or implement programmes to reduce it.

TECHNICAL ANNEX

Definition of Incidence, Intensity and Inequality of Poverty

When assessing the *incidence* of poverty, two other closely related poverty measures are usually calculated from the same set of data; the *intensity* and the *inequality* (or the *depth*) of poverty sometimes referred to as the *poverty gap* and the *squared poverty* gap:[59]

$$P_0 = \frac{n}{N}$$

Incidence of poverty defined as the proportion of the population living below the poverty line, i.e. the head count ratio.

$$P_1 = \frac{1}{N}\sum_{i=1}^{n}\frac{Z - Y_i}{Z}$$

The *intensity* of poverty reflected in the *extent* to which the incomes of the poor lie below the poverty line. The higher the P_1, the larger the average distance between the poor person's income and the poverty line.

$$P_2 = \frac{1}{N}\sum_{i=1}^{n}\left(\frac{Z - Y_i}{Z}\right)^2$$

The degree of *inequality* among the poor, weighting the poorest more than the "better off" poor. The smaller value, the less intense of poverty inequality.

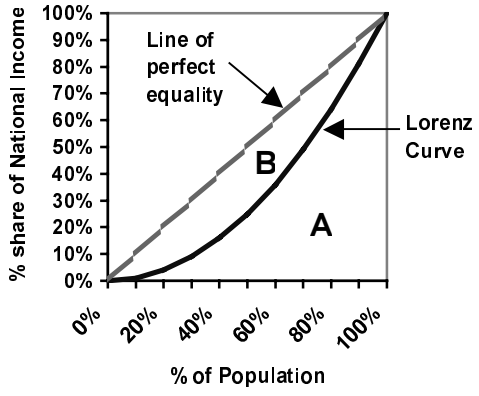
Where:

N	Total population (in the group of interest)
Z	Poverty line
n	Number of individuals below the poverty line
Y_i	Income/expenditure of the ith household

The difference between P_0 and P_1 is that P_0 simply tells you how many people are poor without telling you *how* poor they are. Suppose, for example, that 50% of the population in a given society live far below the poverty line (assuming e.g. that their expenditure is less than half of the poverty line). If the economical conditions for this group improves and every individual will be able to double his/her expenditure, this would not have any impact on the incidence of poverty P_0 , expenditure would still less than the poverty line. In such a situation P_0 is not an adequate poverty measure. P_1 and P_2 , however, would clearly show such improvements.

Definition of the Lorenz Curve and the Gini Coefficient

The Lorenz Curve, shown below, is a way of illustrating the income distribution of a country. The horizontal axis measures the percentages of the population while the vertical axis shows the percentage of the national income that they receive. The further the Lorenz Curve is from the line of perfect equality, the more unequal the distribution of income in that country.



[59] These poverty measures were first introduced by Foster, Greer and Thorbeck (1984)

The *Gini Coefficient* is a precise way of measuring the position of the Lorenz Curve. The geometrical definition of the Gini Coefficient is ratio of the area between the Lorenz Curve and the 45 degree line (B in the figure above) to the whole area below the 45 degree line (A+B in the figure above). Hence, the Gini Coefficient is defined as:

$$GiniCoefficient = \frac{A}{A+B}$$

If the Lorenz Curve were equal to the 45 degree line, i.e. perfect equality, then the Gini Coefficient would be zero. In the most extreme possible scenario the Gini Coefficient would be 1 (that is if one person alone would have the total national income and all other persons would have the income=0). An example of a typical value of the Gini Coefficient in a European country is around 0.35 (UK in the 1980s).

Definition of the Human Development Index (HDI)

In the most recent version the HDI for country j is defined as the average of the three indices, i.e.:

$$HDI_j = \frac{1}{3}\sum_{i=1}^{3} I_{i,j}$$

where $I_{i,j}$ is the value of the deprivation index i for country j.

The three deprivation indices refer to Health (I1), education () and income () respectively and in general are given by the formula:

$$I_{i,j} = \frac{X_{i,j} - X_{i,\min}}{X_{i,\max} - X_{i,\min}}$$

where X_i is the indicator used to measure component i of the index. Thus each variable is scaled over a range from set maximum and minimum values.

For health, life expectancy at birth is used with a minimum of 25 years and a maximum of 85.

The education index is constructed from deprivation of indices based on adult literacy (maximum 100 and minimum 0) and a combined enrolment rate (maximum 100 and minimum 0); the weights are 2/3 and 1/3 respectively.

For income the log of PPP GDP per capita is used. The max and min are 40,000 and 100 respectively.

Definition of the Human Poverty Index (HPI)

The human poverty index for developing countries concentrates on deprivations in three essential dimensions of human life already reflected in the HDI: longevity, knowledge and a decent standard of living.

The first deprivation relates to survival: vulnerability to death at a relatively early age. The second relates to knowledge: being excluded from the world of reading and communication. The third relates to a decent living standard in terms of overall economic provisioning.

In constructing the HPI, the deprivation in longevity is represented by the percentage of people not expected to survive to age 40 (P_1), and the deprivation in knowledge by the percentage of adults who are illiterate (P_2).

The deprivation in living standard is represented by a composite (P_3) of three variables:

- the percentage of people without access to safe water (P_{31}),
- the percentage of people without access to health services (P_{32}) and
- the percentage of moderately and severely underweight children under five (P_{33}).

The composite variable P_3 is constructed by taking a simple average of the three variables P_{31}, P_{32} and P_{33}. *HPI* is then calculated as follows:

$$HPI = \sqrt[3]{\frac{1}{3}\left(P_1^3 + P_2^3 + P_3^3\right)}$$

Calculation of a Poverty Line in Zambia

Step 1: In 1991 the Food and Nutrition Commission calculated the total caloric and protein requirement for a family of six. To measure poverty accurately requires taking into consideration the size of household and the ages of the household members since e.g. a three year old needs less to survive than a typical adult. This involves assigning a weight to each member of the household according to their age, known as an adult equivalent scale. This scale is based on the assumption that a child 1-3 years old consumes about 36% of what a typical adult would consume. This increases to 62% for 4-6 years old and so on in accordance with the table below:

Table 24: Caloric and Protein Requirement for a Family of Six

Household Composition	Caloric Require-ments	% Share	Protein Require-ments
Male Adult	2,750	100%	35
Female Adult	2,100	76%	35
Child: 1 Year	1,000	36%	27
4-6 Years	1,700	62%	35
7-9 Years	2,150	78%	35
10-12 Years	2,600	95%	35
Total	**12,300**	**447%**	**202**

Source: CSO (1997b), Table II.1, p.136

Step 2: Definition of a food basket that corresponds to the necessary nutritional requirements in terms of calories and proteins. This was done by the Food and Nutrition Commission in 1991.

Step 3: The cost of the food basket was assessed in a number of urban and rural sites in Zambia.

Table 25: Simple Food Basket to meet Monthly Nutritional Requirements of a household of six

Food Item	Quantity	Calories	Protein	Actual Cost 1991 (Kwacha)	Actual Cost June-00 (Kwacha)
Roller Meal	90 kg	10,712	221		54,000
Fresh Milk	2 kg	43	2		4,000
Groundnuts	3 kg	570	27		6,000
Cooking Oil	2.5 kg	619	0		9,000
Kapenta	2 kg	203	41		2,000
Dry Fish	1 kg	100	21		1,500
Beans	2 kg	222	16		2,600
Salt	1 kg	0	0		1,200
Tomatoes	5 kg	7	1		8,000
Onions	4 kg	14	0		8,000
Vegetables	7.5 kg	74	6		7,500
Total		**12,564**	**335**	**4,296**	**103,800**

Source: CSO (1997b), Table II.2, p.137 and my own assessment of the cost of the basket at a local market in Lusaka

Step 4: The total cost of the basket for six person is either divided by 6 to define a *per capita* poverty line, or by 4.47 for a *per adult equivalent* poverty line (the nutritional requirement for the family of six is 4.47 times higher than for one adult male person).

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