



**REPUBLIC OF
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**THE FIRST WELFARE MONITORING
SURVEY (WMSI)**

DRAFT BASIC REPORT

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FEBRUARY, 199

MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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Abbreviations and Acronyms

NHWME	National Household Monitoring and Evaluation.
M&E	Monitoring and Evaluation.
CBS	Central Bureau of Statistics.
OVP & MPND	Office of the Vice President and Ministry of Planning and National Development.
UNDP	United Nations Development Programme.
ADB	African Development Bank.
UNICEF	United Nations.
DHWMS	District Household Welfare Monitoring and Evaluation Survey.
DFRDS	District Focus for Rural Development Strategy
FAO	Food and Agricultural Organisation.
PPS	Probability Proportionate to Size
WHO	World Health Organization.
WMS	Welfare Monitoring Survey(s).
EA	Enumeration Area
WMS1	First Welfare Monitoring Survey.
WMS2	Second Welfare Monitoring Survey.
PS	Priority Survey.
IS	Integrated Survey.
CS	Community Survey.
SDA	Social Dimensions of Adjustment.
SEG	Socio-Economic Group.
SAP	Structural Adjustment Programme.

EXECUTIVE SUMMARY

The four-year World Bank funded National Household Welfare Monitoring and Evaluation (NHWME) Project was principally aimed at enhancing the Kenya Government's capacity to integrate human dimensions in its Structural Adjustment Program (SAP). The specific objectives of the project were:

- to establish an information system that could provide indicators of living standards for different socio-economic groups (SEGs) as adjustment took place;
- to monitor and inform policy makers of changes in living standard of particularly the most vulnerable segments of the populations; and
- to develop analytical capability to relate changes in living standards to national policies and programmes.

The NHWME project, rationalized on the likely short-term adverse welfare effects of the country SAP, is based on a family of national sample welfare monitoring surveys (WMS), namely Priority Survey (PS), integrated survey (IS) and Community Survey (CS). The first welfare monitoring survey (WMS1), conducted under the project during 1992, was a household base PS. Consistent with the objective of a PS, the WMS1 was carried to enable Kenyan policy makers identify policy target (vulnerable) that would inform policy interventions to cushion them against the likely adverse effects of structural adjustment.

The WMS1 had a sample of 12050 household drawn from 1205 clusters of the NASSEP III frame covering 44 districts, excluding

Turkana, Marsabit and Samburu. Both rural and urban clusters were covered except in the Isiolo, Garissa and Mandela districts where the sampled household were drawn from urban clusters only. Using four sets of questionnaires, the CBS field staff, under the supervision of headquarters staff, solicited welfare data from the sampled household relating to their composition; incomes; expenditure; and agricultural holdings, assets and amenities.

Out of the 1205 (12050) sampled clusters (households), complete or partially complete data was received for 1181(11623) clusters (households), implying 98% (95.5%) cluster (household), response rate. The non-response was attributed to a variety of problems including security (cattle rustling and ethnic clashes), and difficulty in locating respondents who were either absent or had relocated their residence. Data cleaning involved the identification and treatment of illegal codes for categorical variables and missing observations and outliers for the continuous variables. While the identified illegal codes were recoded, the 3,106 households or with either missing (incomplete) or outliers were dropped from further processing and analysis, reduce the effective sample to 8517 households or nominal response rate to 70.7%. The 27.9% reduction in the nominal response could be attributed to both weak training of enumerators and supervision in the field and at the data entry stage.

The further processing of the data for the effective sample of 8517 households involved application of adult equivalence scale (AES) to household members; disaggregation by geographic

(provincial, district and rural/urban) area and by socio-economic group (SEG); While the spatial (geographic) deflation of monetized (finance) variables; weighting; and annualization of the relevant variables (income and expenditure) disaggregation of the data was determined ex ante through appropriate stratification of the sample, identification of the SEGs was done ex post. The following 14 relatively homogeneous and evenly sized SEGs were identified using a set of criteria comprising major source of income of the household head, gender of the household head, and spatial (rural/urban) location of the households:

- export farmer - male headed;
- export farmer - female headed;
- food crop farmer - male headed;
- food crop farmer - female headed;
- subsistence farmer - male headed;
- subsistence farmer - female headed;
- pastoralist;
- public sector urban;
- public sector rural;
- formal sector urban;
- formal sector rural;
- informal sector urban;
- informal sector rural; and
- income from other sources.

Expectedly, the analysis of the WMSI data was non-diagnostic in nature focusing on the comparative distribution of the following

core set of welfare indicators both geographically (spatially) and SEGs:

- proportion of population below the poverty rate;
- proportion of average expenditure on food;
- unemployment rate by sex;
- share of total income by source;
- accessibility to social services (housing, water, health facilities, education facilities and sanitations);
- proportion of household owning and reducing certain assets (land, livestock, etc).

The results on household vulnerability of the analysis did not show any areas or SEG as being uniformly vulnerable. However, at the spatial level, the Coast, Nyanza and Western provinces, rural areas recorded vulnerability in most of the welfare indicators and should therefore, be the target of future ameliorative interventions policies. At SEGs level, female-headed households in the agriculture sector especially pastoralist and subsistence farmers recorded vulnerability in most of the welfare indicators, making target for future ameliorative welfare intervention policies.

Despite its technical, methodological, and logistical limitations, the WMS1 provides solid baseline data for the M&E of household welfare. Recommendations for improving the programmed series of future WMS accruing from experiences in the WMS1 were broadly of the following three types:

Technical

Better conceptualisation in the questionnaires and enumerators manual through increasing adequacy of time for professional perusal of questionnaires to cross-checking the consistency and suitability of the underlying conceptual issues of the key variables that are to be investigated, and incorporation of all technical amendments that have been identified in WMS1. Re-writing of a more elaborate but conceptually simpler enumerators manual and provision of adequate time for training of trainers and enumerators before WMSII is launched to facilitate uniform interpretation of concepts, definitions and objectives of questionnaire for collection of comparable and quality data.

- The NASSEP III sampling Frame and sample size should be expanded to cover rural clusters in North Eastern Province, despite security bottlenecks and nomadism in the Province to enhance the national character of the surveys.
- Improvement of speed and quality of editing, coding and entry to minimize delays in data processing and analysis at Headquarters. Subsequent rounds of the survey should exploit the use of editing, coding and data entry capacities that now exist in some districts so that the survey returns are provided in a more "processed" form preferably in diskettes, reducing headquarters manpower requirements and facilitating prompt analysis of welfare data and documentation of the findings.
- Headquarter based supervisors should ensure that field staff strictly adhere to editorial and data coding guidelines and

that completed questionnaires are checked by the field supervisors and counter-checked by the DSO's before they are submitted to headquarters for onward processing and analysis.

- Improve computer hardware capacity for timely processing and analysis of survey data.

Methodology

- Marginal adjustment of the survey questionnaire to allow for incorporation of more codes; proper itemization of income and consumption expenditure; data on spatial accessibility to education, health and sanitation facilities; proper codes for household main economic status, and individual level data on income expenditure to facilitate intra-household (within-household) assessment of inequality and poverty.

Logistical

- Improve budgeting for the survey of adequate and timely procurement stationery, materials, fuel and transport necessary for administering the survey to minimize interruptions in enumeration work due to inadequacy of questionnaires, lack of fuel and transport. Hence, the subsequent rounds should be preceded by an elaborate review of the financial and other resource implications of the survey based on the lessons drawn from WMS1 including printing of adequate numbers of questionnaires and reference manuals, purchase of adequate stationery and other materials for logistical support, provision of adequate field allowances for headquarter and field staff involved and provision of adequate

funds for fuel and transport.

INTRODUCTION

1.1 Rationale for the WMS1

Following the first oil price shock of the early 1970s, the pace of growth of Kenya's economy slowed down. The economy has never completely recovered because of the exacerbation of this unfavourable process by inter-alia, declines in prices of primary exports, increases in interest rates, the foreign debt repayment obligations and declines in official development aid; and more recently, the partial withholding and pegging of aid to economic and political reforms.

The experience of the 1970s and early 1980s called for action to halt economic stagnation, revitalize growth prospects and restore internal and external macroeconomic equilibria. In response to this need, and especially since 1980, the Government, with donor assistance initiated the implementation of the orthodox Structural Adjustment Programme (SAP) with long term objective of redressing economic imbalances, stimulating growth and restoring sustainable development.

The adoption and implementation of the SAP, however, has not costless. The demand and supply management policies that have since been adopted and implemented have had mixed macroeconomic and negative welfare results. The implemented demand management policies including cuts in public expenditure, cost-sharing arrangements in financing basic

services, and cuts in subsidies that were aimed at restoration of internal and external balances and the stabilization of price level seem to have had negative effects on the country's population. The implemented supply - side policies including devaluation, liberalization of markets and prices that were aimed at renewed growth, seem similarly to have had negative consequences on the well-being of the population. Similar welfare results have been experienced in other LDCs implementing the SAPs.

The observed adverse short-term welfare effects of the SAPs on the population especially the vulnerable groups, has elicited two types of responses, namely enhancement of the orthodox SAP, and development of alternative SAPs. The enhancement of the orthodox SAPs has taken the form of introduction of separate policies and or complementary projects to compensate the poor and other vulnerable groups for the short-term costs of adjustment. One such a complimentary project, is the Social Dimensions of Adjustment (SDA) project launched by the United Nations Development Programme (UNDP), African Development Bank (ADB) and the World Bank in 1987. The SDA project, now being implemented in collaboration with additional multilateral and bilateral agencies is executed by the World Bank under the SDA programme project about thirty two (32) governments of participating countries including Kenya are being assisted in strengthening their capacity to integrating human dimensions (social and

poverty aspects) in their structural adjustment programs through, among other things, development of effective monitoring and evaluation (M&E) systems to provide accurate, timely and relevant data on welfare trends and impact to aid planners and policy makers in the design and adoption of ameliorative welfare intervention policy measures. This is based on an interlinked four-year welfare monitoring survey (WMS) program comprising the priority survey (PS), Integrated Survey (IS) and Community Survey (CS). The former two are multi-subject household level surveys while the latter is a community level survey. The PS is both a large sample and rapid information survey influenced to policy makers identify target (socio-economic) groups and to provide key socio-economic (welfare) indicators on the identified groups. Hence, the PS is based on a relatively short questionnaire. The IS, on the other hand, is a detailed survey intended to provide analytical data of the effects of macroeconomic policies.

The nature of the IS entails use of a lengthy and detailed questionnaire administered to a relatively smaller sample. Finally, the CS is expected to provide baseline information on markets and infrastructure in the economy including availability of social services and amenities, local institutions and source of employment, economic infrastructure and market prices.

The specific objectives of the SDA survey program are:

- to establish an information system that would provide indicators of living standards for different socio-economic groups as adjustment takes place.
- to monitor and inform policy makers of changes in living standards of particularly the most vulnerable segments of the population, and
- to develop analytical capability to relate changes in living standards to national policies and programmes.

Support of the SDA project to the development of Kenya's welfare M&E system is based on the National Household Welfare Monitoring and Evaluation (NHWME) Project. The NHWME project is, in turn, based on a four-year annual WMS program scheduled to run upto 1996. The WMS1, launched behind schedule (by about 3 months) in November 1993, was a PS. The WMS2, also a PS, that scheduled for July/August, 1993 has been rescheduled for March/April, 1994 (about 8 months behind schedule).

1.2 Methodology for the WMS1

1.2.1 Coverage and Sampling Design

The survey was conducted in a total of 44 districts, excluding Turkana, Marsabit and Samburu. Both rural and urban areas were covered except in Isiolo, Garissa, Mandera and Wajir where the survey was carried out in urban areas only. The sampled households in the 44

districts were based on the current National Sample Frame, NASSEP III . Being a priority survey (PS), the WMS1 required a large sample to enable presentation and analysis of its results at disaggregated levels. Consequently, 1205 clusters were sampled from the frame. A fixed number of 10 households were sampled from each of the listed clusters falling within frame, implying a total of 12050 households . The frame, catering for data needs of the District Focus for Rural Development Strategy (DFRDS), covers both the Rural and Urban strata with each district being considered a separate sub-stratum. The number of clusters per district (or sub-stratum) in the frame is proportional to its population with the allocation of clusters the Rural and Urban strata being treated separately. In all, the Frame comprises 1,048 Rural and 329 urban clusters. The sampling design adopted was a household-based 'two-stage stratified cluster design'. The concept of a household used in the survey was an adaptation of that of the U.N. definitions. Hence, the household as a one-person or multi-person unit, was defined as a unit comprising of members who live under the same roof or within the same compound, are answerable to one head, share their meals together, have a common source of major income (and have a common provision for other essentials of living). The first stage of the sampling involved selection of a

sample of Primary Sampling Units (PSU's) based on the 1989 Census Enumeration areas (EAs). Measure Of Size (MOS) of 100 households per cluster was used to segment larger EAs. A sample ranging between 36-120 clusters per district was selected randomly using Probability Proportionate to Size (PPS). A listing of households, averaging about 100, falling within each selected cluster was obtained. The second stage of the sampling involved the selection of sample Secondary Sampling Units (SSUs) or households. The household selection probabilities depended on the sampling fraction for each cluster covered in the survey. The (final) household selection probability was the product of the probabilities of the previous stage of selection. Weights for estimation will be reciprocals of household selection probabilities for each cluster. The weights, however, are subject to adjustment on account of element of non-response.

1.2.2 Implementation of WMS1

The WMS1, co-ordinated from the CBS head office to ensure realization of its objectives, was conducted through personal interview using four sets of pre-coded questionnaires on:

- household composition
- household incomes
- household expenditures
- agricultural holdings and assets and

amenities.

The questionnaires, an adaptation from those of the UNICEF's District Household Welfare Monitoring and Evaluation Survey (DHWME) project and the SDA project, were relatively shorter than either one, facilitating administration to the required large sample. The survey instrument, however, inadequately captures household sources of income; expenditure data; socio-economic classes/groups; social amenities; serviceability and productivity of assets, drop-out rates and morbidity. The questionnaires were administered by the CBS field staff. These were trained for the purpose. The training of the staff for the execution of the survey had two components. First, was the training of trainers in which headquarters professional officers collectively reviewed and discussed the questionnaires and enumerator's reference manual and agreed on standard definitions and concepts and adopted a consistent training strategy for the enumerators. The trainers, subsequently, trained the field staff (enumerators) and supervised the field work. Some of the trainers were involved in the preliminary analysis of the survey data reported in the 1993 edition of the Economic Survey. The reference (enumerators) manual was grossly inadequate, failing to guide enumerators and supervisors on basic concepts and definitions and objectives of the questions

in the questionnaire. Due to time constraints the training of trainers and enumerators was very short and superficial, implying potential large non-sampling errors.

Owing to time and resource constraints and experience gained from the UNICEF'S DHWMES, no pilot survey was carried out. It is also noteworthy that the survey was launched against a backdrop of a comparative poverty assessment study administered by the HRSSD, drawing upon the 1981/82 Household Budget Survey (HBS). The comparative results of the constructed district poverty profiles would serve as benchmark for the NHWMES. The second round of the survey, programmed for July/August, 1993 is significantly behind schedule.

Head of Household

The head of the household is defined as being its key decisions maker with acknowledged activity. He or she need not to have been its member at the time of the survey so long as he or she had not been absent from it for more than six of the last twelve months prior to the survey.

The data solicited through the administration of the above questionnaires to sampled households was expected to yield the following core set of welfare indicators :

- Proportion of the population below the poverty line.

- Proportion of average expenditure on food.
- Unemployment rates by sex.
- Percentage distribution of households by sex, age groups and socio-economic groups (SEGs).
- Distribution of total income by source.
- Mean household wage income.
- Distance to and access to source of water and other essential amenities such as health facilities.
- Mean land holding.
- Mean number of livestock owned by type.
- Proportion of households owing certain assets, etc.

1.3 WMS1 Nominal Response Rate

Out of the 1205 sampled clusters, 1181 clusters with data wholly or partially were received from the field. From the expected 12070 households from the above given sampled clusters only 11623 households were received. This figure was low because during the survey some of the clusters did not respond at all due to security problems such as cattle rustling. Also during the survey or collection of data some households were vacant or the families were away or some of the structures of the respondents were demolished in some of the clusters, hence it was difficult to locate the respondent.

Below find tables showing the responses and response

rates of the clusters shown for urban and rural separately in all the districts. There is another table which shows the incomplete households, which were discovered during the survey analysis.

District	Total Clusters		Total Households		Responding Clusters		Responding Households		Response Rate
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	
Nairobi	119	-	1190	-	1190	-	1190	-	100%
Mombasa	50	-	500	-	50	-	500	-	100%
Kwale	-	24	-	240	-	24	-	240	100%
T.Taveta	3	24	30	240	3	24	30	240	100%
T.River	1	14	10	140	1	9	10	89	66%
Kilifi	6	24	60	240	6	24	60	240	100%
Lamu	1	12	10	120	1	10	9	100	84%
Kiambu	11	36	110	360	11	36	100	360	100%
Kirinyaga	-	24	-	240	-	24	-	240	100%
Murang'a	2	35	20	350	2	34	20	330	95%
Nyandarua	-	24	-	240	-	24	-	240	100%
Nyeri	3	33	30	330	3	33	30	320	97%
Embu	4	24	40	240	4	24	40	234	98%
Isiolo	2	-	20	-	2	-	20	-	100%
Kitui	-	32	-	320	-	32	-	320	100%
Machakos	4	23	40	230	4	23	40	230	96%
Makueni	-	18	-	180	-	18	-	180	100%
Meru	4	27	40	270	4	27	40	270	100%
Nithi/	-	9	-	90	-	9	-	90	100%
Tharaka									
Garissa	2	-	20	-	2	-	19	-	95%
Mandera	1	-	10	-	1	-	9	6	60%
Wajir	1	-	10	-	1	-	7	-	70%
Nyamira	-	24	-	240	-	24	-	240	100%

Kisii	-	36	-	360	-	33	-	330	92%				
Kisumu	19	36	190	360	19	360	84	338	95%				
Siaya	-	36	-	36	-	36	-	360	100%				
Homa-Bay	2	16	20	160	2	16	18	156	97%				
Migori	1	17	10	170	1	17	10	169	99%				
Kajiado	3	23	30	230	3	23	30	230	100%				
Kericho	-	19	-	190	-	19	-	190	100%				
Bomet		17	-	170	-	16	-	160	94%				
Laikipia	3	24	30	240	3	24	30	240	100%				
Nakuru	15	26	150	260	15	26	150	260	100%				
Nandi	1	33	10	330	1	32	10	320	97%				
Narok	2	14	20	140	2	13	20	130	94%				
Baringo	1	23	10	230	11	23	8	215	93%				
E/Marakwet	1	24	10	240	1	20	10	200	84%				
Trans-													
Nzoia	4	24	40	280	4	22	38	219	92%				
Uasin-													
Gishu	10	24	10	240	10	20	100	200	88%				
W/Pokot	2	21	20	210	2	20	20	200	96%				
Bungoma	6	36	60	360	6	36	58	356	99%				
Busia	2	24	20	240	2	24	20	240	100%				
Kakamega	5	24	50	240	5	24	50	240	100%				
Vihiga	-	12	-	120	-	12	-	120	100%				
<hr/>													
219		919		2910		9160		291		883	2887	8736	96%
<hr/>													

Table 2:

Total	Complete	Incomplete	Vacant/ refusals/ demolished structures/ family away	Outliers
Question- naires (House- holds)	Question- naires House- holds)	Question- naires House- holds)		
11,623	8,517	1,840	1,109	157

1.4 Processing of WMS1 Data

The data was available in a semi-processed form. The Data collected from the field had been coded, entered into the client's (CBS) micro-computer (PC 386 series) validated using the Dbase package stored in diskette form. The data in the diskettes was organised into four different files varying in size and corresponding to the record types. These comprised record type 1 (rt 193.dbf) for household characteristics with 46748 cases, record type 2 (rt 293.dbf) for household expenditure with 9800 cases record type 3 (rt 393.dbf) for household income with 9915 cases, record type 4 (rt 493 dbf) for assets, amenities and land with 9883 cases.

1.4.1 Data Cleaning

The first task in the further processing of the data entailed its cleaning. The cleaning of the data involved

identification and treatment of missing cases and variables, illegal codes, outliers and inconsistent data. In order to identify missing cases and or variables, we created a single file with all the matching record types using the Statistical Package for the Social Sciences (SPSS). Some cases in the resulting file had cases with one or several incomplete forms identification numbers and with identification numbers only. The sources of the problems could have happened in the field and or at the data entry stage. We printed and sent a list of clusters and households with one or more missing one or more forms to the client (CBS) for physical checking from the actual returns. While awaiting results of the checking; it was resolved to exclude these cases from further processing. Consequently, we created a second file containing all the four complete record types. The resulting file had 8727 complete cases.

Additional cleaning of the data entailed identifications of and treatment (recoding) of illegal codes for such categorical variables as sex, marital status, district, etc and outliers for such continuous variables as expenditure and income. There were few categorical variables with illegal codes and these we recoded as they appeared in the questionnaire form, implying no loss of cases. Any case with total or below standard deviation from the mean was considered an outlier and was excluded from further processing as it could bias computation of representative measures. This

reduced the number of cases to 8517. Unrealistic figures were also detected with regard to household income. There were 394 cases reporting zero income yet the household heads had indicated being gainfully employed during the past 12 months and reporting large expenditures. The inconsistent data could be attributed to non-sampling errors at the data collection or data entry stages. In the absence of an appropriate basis for adjusting the income data, we excluded the cases from the active file. This leaves 8123 valid cases for further processing and analysis.

1.4.2 Application of Adult Equivalence Scale (AES)

The second task in the processing of the data involved adjustment of household sizes by application of an AES to reflect differences in expenditure needs of households with different demographic (age-sex) structures. This would facilitate inter-household welfare (per capita income and expenditure) comparisons. Candidate AES in the literature for the included those designed by the OECD(OEED,1982), cited in Zaidi and de Vos,1993,World Bank (World Bank,1990b) and Anzagi and Bernard (1977a). The OECD's AES assigns a scale of 0.7 for each additional adult (implying economies of scale in consumption) and 0.5 for all children younger than 14 years. The World Bank AES recommends 0.2(below 7 years), 0.3(7-12 years) 0.5(13-17 years),and 1.0(above 18 years). The Anzagi and Bernard AES assigns 0.24 (0-4 years), 0.65 (5-14 years) and 1.0(above 15 years). Having been previously applied to

Kenyan data by Greer and Thorbecke, 1986a, 1986b, and 1986c), the last AES was adopted in that adjustment of the household size data.

1.3.3 Spatial Disaggregation of Data

The third task in the processing of the data involved disaggregation of the data geographically and by socio-economic groups (SEGs). Spatial disaggregation of the data at the provincial, district levels was straight-forward as the sample design had been conveniently stratified. Except for Nairobi and Mombasa effective sample sizes for the remainder of the urban areas were too small to allow for meaningful interpretation of results based thereon. Consequently, the latter were aggregated into two broad categories of urban areas namely other large urban areas and other small urban areas.

1.3.4 Disaggregation of Data by Social-economic Groups (SEGS)

A SEG was defined as a relatively homogeneous group of households defined by a combination of criteria including occupation and sex of the household head, main sources of household income, and rural\urban classification of the household. Disaggregation of the survey data by SEGs was not as straightforward as these could not be specified ex ante. In the ex post disaggregation of the data by the SEGs care was taken to both avoid misclassification and minimize sampling errors for meaningful interpretation of the results. The

disaggregation of the Survey data based on the occupation of the head of household gave erratic and uneven sized groups primarily due to the inadequacy of the concept of person's main economic activity (status) used in the survey. The concept defined in relation to time spent per day on the activity rather than the main source of income, led to misclassification of the households. Consequently, we adopted an alternative empirical classification criterion based on a household's main source of income as reflected by the collected income data.

Based on the latter criterion the households were divided into agricultural and non-agricultural households. The agricultural households were then split into pastoralist and agriculturalist households. The latter type of households were further split into export crop-oriented (farmers recording sales of export or commercial crops) and food crop-oriented (farmers with no export or commercial crop sales) households. Within the food crop group a further group comprising subsistence households was identified. These were defined as households whose consumption of own production was greater than 50%. Each of these agriculturalist groups were then split by sex of the household head.

The non-agricultural households were first classified according to their spatial (rural/urban) location. The households were further classified according to whether the

main source of income of the household head/any other member was wages or self-employment.

The last (residence) group identified among the non-agricultural households comprised those whose main source of income was either from wages or from self employment. The group, derived as households with income from other sources, derive their income from such sources as rent, gifts and transfers. The households in group could not be further divided according to their rural/urban residence status due to the smallness of its sub-urban sample.

Altogether the following fourteen(14) SEGs were identified:

- export farmer-male headed
- export farmer-female headed
- food crop farmer-male headed
- food crop farmer-female headed
- subsistence farmer-male headed
- subsistence farmer-female headed
- pastoralist
- public sector urban
- public sector rural
- formal sector urban
- formal sector rural
- informal sector urban
- informal sector rural
- income from other sources

1.3.5 Annualization of Income and Expenditure

While some income and expenditure data were reported on an annual basis others were on weekly/monthly basis. The latter were annualized to convert them to a common denomination, a year.

1.3.6 Deflation of Monetized Variables

The fifth task in the processing of the data involved deflation of household expenditure and income data to bring them to a common denominator and, hence, facilitate their spatial comparability several factors including the adequacy and reliability of price data generated by CBS and lack of a robust theoretical methodology for deriving spatial cost of living indices. The spatial comparability of fascial variables was achieved through their deflation using the following provincial consumer price deflators for 1992 with Nairobi as the base region:

	<u>Province</u>	<u>Price Delators</u>
-	Central	0.918
-	Coat	0.914
-	Eastern	0.833
-	Nyanza	0.783
-	Rift Valley	0.811
-	Western	0.818
-	Kisumu	0.876
-	Nakuru	0.870
-	Mombasa	0.916
-	Nairobi	1.000

1.3.7 Data Weighting

The sixth task in the processing of the data entitled its weighting using the method specified in Kenya's NASSEP III. Under the method, the adjustment weights are computed as a

product of the basic weight (before adjusting for non interview) and non-response adjustment. The basic cluster weight is computed as the product of the cluster weight. The former is computed as a reciprocal of the probability of cluster selections while the latter is computed as the number of households divided by ten. The non-response adjustment factor is estimated at the district level as a ratio of the total number of selected households in a district to its actual number of responding households.

1.4 Analysis of the WMS1 Data

Expectedly, the analysis of the WMS1 data as a PS was non-diagnostic in nature focusing on the comparative evaluation of the distribution of the identified set of core welfare indicators both spatially and by the SEGs. The non-diagnostic methods of analysis used comprised disruptive statistics (means) and relative frequencies. The basis data for the comparative welfare analysis is presented in the Statistical Annex while the presentation of the results of the analysis forms core of the remainder of the Report. The capacity of the computer hardware (PC 386 series) provided by the client for the processing and analysis of the magnitude of the data was too inadequate for the purpose, mitigating against timely analysis and presentation of the results.

1.5 Organization of the Report

The organization of the remainder of the Report, focusing on the Presentation of the comparative welfare analysis

results, is organized into five chapters. In Chapter II we present the comparative analysis results of the households demographic (size, age-sex structures, headship, marital status, educational status and health status) and socio-economic (main status) characteristics. In Chapter III, we present the comparative analysis results of households employment income, consumption expenditure and poverty. In Chapter IV, we present the comparative analysis of households ownership/accessibility to social amenities and of consumption of energy. In Chapter V, we present the comparative analysis results on household assets while in the final (Chapter VI) we present a summary of findings and recommendations for improving the next rounds of the WMS.

CHAPTER II: HOUSEHOLD CHARACTERISTICS

2.0 Introduction

The WMS1 solicited data on a wide range of household socio-economic characteristics essential in the spatial, temporal and inter-temporal assessment of the welfare of target sub-sections (groups) of the population as a basis for cushioning them against the adverse effects of structural adjustment. The household socio-economic characteristics covered in the survey were demographic (household, headship size, age, sex, marital status, education status and health status) and economic (economic status). A head of the household was defined as the senior most member of the household (to whom are other members of the household answerable to) and resident in the household compound or returns it frequently. A comparative analysis of the distribution of household heads by sex across regions and SEGs would aid in identification of vulnerable regions and SEGs (this is because female-headed measured in terms of concentration of female-head households) household generally tend to be more vulnerable to social, cultural and economic forces than male-headed ones as women are disproportionately constrained by limited access to and ownership of productive resources (such as land, credit etc), access to quality education; labour market discrimination and cultural norms and practices. The results of the comparative analysis of vulnerability should not only (with other indicators). These

can then be re-evaluated on to facilitate targeted policy intervention but also facilitate monitoring over time, changes in their welfare during structural adjustment and their coping strategies.

The household socio-economic characteristics especially of the household head, is an important variable as it does not only determine the income, expenditure and consumption patterns of the household but also influences its ability (capacity) and extent to which they can respond and adjust to the adverse effects of structural adjustment. The results of the temporal comparative analysis of the household demographic and economic characteristics are presented under the following sections:

2.1 Age and Sex Distribution

The distribution of the age and sex of household members across the SEGs is presented in Table 1a. The data shows that the sex ratio¹ of the effective sample in each of the five age categories (under 5, 5-9, 10-19, 20-39, 40-59, 60 years and above) is approximately one to one, suggesting a numerical balance in the distribution of males and females in the sample. The results is consistent with not only the national sex ratio of roughly 100 Kenyan men to every 100 Kenyan woman in the total population but also internationally (Kpedekpo;

¹. The general sex ratio is the ratio of males to females in a given population and can be computed from census data or sample surveys. The general sex ratio equals to $\frac{\text{(all males)}}{\text{(all females)}} \times 100$, the numerical value of which is interpreted as the number of males per 100 females in a given population.

1982:15).

However, with the exception of a few cases, the sex distribution across the 14 indicate a general deviation from the recorded overall numerical balance between men and women in the effective sample and population. The age specific sex ratios² for all socio-economic groups in the age categories under 5 years to 20-39 years vary in the range 1:1 to approximately 2:1 (with a concentration of males), and to 1:2 (with a concentration of females). For example, in the pastoralist socio-economic group, the age specific sex ratio is 1.5:1 in the age category 10-19 yrs, that is about 150 males to every 100 females among pastoralists. On the other hand, in the female headed households, subsistence SEG, the age specific sex ratio is 1:1.8 representing a numerical imbalance with a distribution of fewer males, that is about 56 males to every 100 females among the female headed subsistence population.

Age specific sex ratios in the age categories 40-59 years and 60 years and above however vary erratically across SEGs from approximately 1:1 to 1:10 in the female headed export population (age category 40-59 years) or 3.5:1 in the urban

². The age specific sex ratio is a measure of the number of males per 100 females in delineated age groups or categories of the population and computed by:

$$\text{Age Specific Sex Ratio} = ({}_5P_{mx} / {}_5P_{fx}) \times 100$$

where ${}_5P_{mx}$ stands for males aged x to x+5, and

${}_5P_{fx}$ stands for females in the same age group.

formal sector population (age category 40-59 years). The erratic variation in the sex ratios may be attributed to factors related to socio-economic status of the population. It is also likely to be partly explained by the age variable. Infact, the general pattern of the age-specific sex ratios is that they fall gradually with advancing age (Kpedekpo; 1982:43).

From a policy standpoint, perhaps a more important aspect of the data shown in Statistical Appendix Table 1a is the distribution of the dependent population across the various socio-economic groups. Dependency ratios ³ indicate the relative predominance of persons in the 'dependent' ages in relation to those in the productive ages as broadly defined in most social and economic systems. Therefore, "Crude" dependency ratios computed from the data should roughly delineate patterns of relative dependency across socio-

³. The dependency ratio is the ratio of youths under 15 years of age plus persons aged 65 years and over to adults aged 15-64 years and is computed by:

$$\text{DependencyRatio} = \left[\frac{({}_{15}P_0 + {}_{65}P)}{({}_{64}P_{15})} \right] \times 100$$

where, ${}_{15}P_0$ is the under 15 years of age,

$({}_{65}P)$ is the 65 years plus population,

$({}_{64}P_{15})$ is the intermediate productive population.

economic groups, that is, help in identifying which have high or low dependency burdens.

Conventionally, the dependency ratio is computed from data drawn from three population age sub-groups, that is, youths under 15 years and persons aged 65 years and over constitute the segment of the total population which is dependent on the productive population in the intermediate age group.

Because the data in Statistical Appendix Table 1a is given in the age categories; under 5, 5-9, 10-19, 20-39, 40-59 and 60 years and over, we will compute "Crude" dependency ratios based on the ratio of persons under and including 19 years and persons aged 60 years and above to all persons aged 20-59 years. This "Crude" measure of dependency should roughly give an indication of the dependency burden in each socio-economic group. If it is hypothesised that incomes and therefore consumption patterns of households depend on the "status" or socio-economic group to which the household belongs, then clearly households from the more impoverished socio-economic groups are likely to be worse off if the socio-economic groups from which they are drawn have higher dependency ratios. Similarly, even household from high income socio-economic groups are likely to be worse off if the groups have generally higher dependency ratios. The variation of dependency between high income and low income socio-economic groups is also an important policy problem. A high dependency

among high income socio-economic population is an essential issue because of its income distributional implications. On the other hand, high dependency among the low income socio-economic groups would be a matter for concern and may call for redistributive policy intervention.

From the data, the "Crude" dependency ratio for the entire population is about 156 dependents per 100 productive persons which indicates a high dependence burden for the population considering that the burden of dependency in a typical African country is from 80 to over 100 dependents per 100 productive persons ⁴ (Kpedekpo: 16).

When the dependence burden of the population is considered according to the four broad sectors into which the various socio-economic groups are classified, socio-economic population groups within the agricultural sector turn out to have the highest dependency burden with an average dependency ratio of 2.09 i.e. 209 dependents per 100 productive persons. It is followed by the public sector (1.32); informal sector (1.27) and Formal Sector (1.12). Therefore, households drawn from socio-economic groups within the agricultural sector which includes farmers (export, food or subsistence farmers) and pastoralists are the most distressed by dependency because they have the highest dependence burden. They are thus likely to be disproportionately affected by the adverse effects of

⁴. In developed countries, the burden of dependency is much lower; in a typical developed country the ratio is between 50 and 70 per 100 productive persons.

structural change and economic reform. In terms of ranking based on dependency burden, households from the agricultural sector are therefore likely to be more vulnerable compared with counter-part households from the public sector, informal sector and the formal sector ranked in that order of decreasing vulnerability. From policy standpoint, priority of intervention should be targeted on the agricultural sector which also coincidentally happens to be a generally low income sector particularly regard among the crop farming and subsistence population.

Another important dimension of the dependency problem emerges when we consider the within-group variations in the dependency burden with regard to whether first, the socio-economic groups are male or female headed and second, on whether the groups are urban or rural based.

In the first case it is evident from the data that in the agricultural sector, socio-economic groups with female headed households have generally high dependency burdens. For example, the dependency burden in the male headed export farm households is 2.03 compared to 2.23 for female headed households; For food crops farmers, the ratios are 1.86 for males and 2.33 for females; and for subsistence farmers the ratios are 1.94 for males and 2.23; for pastoralists the dependency burden was not classified according to gender of household headship and was 2.03. In other words, female headed households from the export, food crop and subsistence

groups are 10 per cent, 25 per cent and 15 per cent more burdened by dependency than male headed households from the same socio-economic groups. Female headed households within the agricultural sector are therefore more vulnerable and should be prioritized for intervention.

Ranking socio-economic groups in the agricultural sector by dependency burden puts export farm households with the highest dependency (2.13) followed by food crop households (2.10), subsistence households (2.09) and finally the pastoralists (2.03).

With regard to variation of dependency between urban and rural sectors the rural areas generally seem to be more burdened by dependency. Rural based socio-economic groups in the public, formal and informal sectors are 104 per cent, 82 per cent and 137 per cent more burdened by dependency than urban based households within the same socio-economic groups. In the public sector, the ratios for urban and rural households are 0.85 and 1.78 respectively, for the formal and informal sectors the corresponding ratios are 0.79 and 1.44; and 0.75 and 1.78 respectively.

If export, food crops and subsistence socio-economic groups are considered independent of sex and all public, formal and informal sector are considered independent of urban and rural areas then the ranking of the socio-economic groups starting with a rank of 1 for the most burdened socio-economic group is shown in Fig. 1(a) below.

Fig 1(a)

<u>Socio-economic group</u>	<u>Dependency Ratio</u> ⁵	<u>Rank</u>
Export farmers	2.13	1
Food Crop farmers	2.10	2
Subsistence farmers	2.09	3
Pastoralists	2.03	4
Public sector	1.32	5
Informal sector	1.27	6
Formal sector	1.12	7
All households	1.56	-

Data on the regional (spatial) distribution of the age and sex of household members is presented in the Statistical Appendix Table 1b. As was evident from Statistical Appendix sex ratio in the five age categories show a numerical balance in the sex distribution of the sample. The crude dependency ratio results based on the previous age limits to define young (19 years) and old (60 years) population.⁶ Based on these age cut-offs the data from Statistical Appendix Table 1b indicate that overall, 57 per cent of the people were aged 19 and below with only 4 per cent in the age bracket 60 years and above. The proportion of the young population in the rural areas was much higher (62 per cent) than those for urban areas (57 per cent) as was the proportion of the elderly persons in the rural areas (6 per cent) compared with only 1 per cent in the urban areas.

⁵. Dependency ratios for export, food crop and subsistence farmers is the simple average of male and female headed households, while the dependency ratio for public, formal and informal sectors is the simple average for urban and rural households.

⁶. At 19 years Kenyans would typically be in school and therefore dependent on their parents and retirement age in Kenya is at 55 years.

Fig 1(b)

	<u>Province/ Region</u>	<u>Dependency Ratio</u>	<u>Rank</u>	<u>% population < 19 years 60+ years</u>	
a) <u>RURAL:</u>	Eastern	2.23	1	63	6
	Western	2.23	1	64	5
	Rift Valley	1.94	2	62	4
	Nyanza	1.78	3	58	6
	Central	1.70	4	56	7
	Coast	1.63	5	53	4
b) <u>URBAN:</u>	Mombasa	0.85	1	44	2
	Nairobi	0.69	2	41	-
	Other urban*	1.08	-	51	1
c) <u>RURAL VS URBAN</u>	All rural	2.13	1	62	6
	All urban	0.85	2	45	1
d) <u>ALL POPULATION</u>		1.56	-	57	4

* North Eastern Province is included under other urban because only urban clusters were covered.

2.2 Sex of Household Head

The distribution of household heads by sex across the SEGs is presented in Statistical Appendix Table 2a. The data shows that if all households are taken together, 30 per cent of all households are female-headed of which 4 per cent were in the export sector, 5 per cent in the food crop sector and 6 per cent in the subsistence sector or 50 per cent were in the agriculture sector and the rest 50 per cent were distributed among the remaining non-agriculture (public, formal and informal) sectors in both the rural and urban areas. If it is hypothesised that female headed households are generally worse off than the male headed ones and bearing

in mind the generally low income nature of the agricultural sector particularly with regard to the subsistence and food crop subsector, and further recognise the heavy dependency burden in the sector averaging 2.17, (see Fig 1(a)) ⁷ then female headed households no doubt require priority in policy intervention. This is because the circumstances make them so vulnerable to adverse effects of structural adjustment.

We can therefore rank socio-economic groups by proportion of female headed households as a measure of vulnerability within the SEGs starting with rank of 1 for the most vulnerable SEG:

Fig 2(a)

<u>Socio-economic group</u>	<u>% of female headed Households</u>	<u>Rank</u>
Subsistence farmer	6	1
Foodcrop farmer	5	2
Export farmer	4	3
Other SEGs	15	-
<hr/>		
All households	30	-

Statistical Appendix Table 2(b) provides data on the regional distribution of the household heads by sex. Fig 2(b) below, similarly, shows the regional rankings among provinces, and between rural and urban areas. Nyanza province has the highest prevalence of female headed households (40 per cent) and Rift Valley the least (22 per cent). In the urban areas

⁷. Even if the export food crop and subsistence sectors were combined they would still rank as the most distressed by dependency followed by pastoralists socio-economic.

Nairobi has close to 43 per cent more female headed households than Mombasa. Comparison based on rural versus urban areas indicate that rural areas have 45 per cent more female headed households.

Fig 2 (b)

<u>Province/Region</u>	<u>‡ female headed Households</u>	<u>Rank</u>
a) <u>RURAL:</u>		
Nyanza	40	1
Western	39	2
Central	35	3
Eastern	28	4
Coast	27	5
Rift Valley	22	6
b) <u>URBAN:</u>		
Nairobi	20	1
Mombasa	14	2
Other urban*	27	-
c) <u>RURAL VERSUS URBAN:</u>		
All rural	32	1
All urban	22	2
d) ALL POPULATION	30	-

* Includes North Eastern Province.

2.3 Household Size

Household size, defined as the number of people living under one roof with a common household head, is an important welfare variable as it represents both the size of claim on household consumption and expenditure resources dependency burden, implying large outlays of limited public resources for the provision of basic social services such as health,

education and shelter.

The distribution of the household size data in seven size ranges (1-2, 3-4, 5-6, 7-8, 9-10, 11-12 and 13 and above) across the SEGs is presented in the household size of over three quarter (89 per cent) of the households ranged from 1 and 8 household members with 86 per cent of SEGs agricultural sector, (export, food crop, subsistence farmers or pastoralists) SEGs and 90 per cent of the non-agricultural SEGs having similar range of size of household members. For ranking purposes, households with 5 members and above were considered as being as economically distressed. The results of the ranking are presented in Figure 3 (a) (i) below showing broader sectoral distribution of the distress proportion of large households.

Fig 3 (a) (i)

<u>Sector</u>	<u>% households with 5 persons and over</u>	<u>Rank</u>
Agricultural*	58	1
Public	45	2
Formal	42	3
Informal	36	4
Other	43	-
All household	50	-

* Includes pastoralists

Overall, the results show that the agricultural sector SEGs had the highest (58 per cent) prevalence of large households and the informal sector SEGs having the least (36 per cent). The disaggregated results in Fig 3 (a) (ii) below shows that within the agricultural sector the pastoralist SEGs

had the largest proportion (73 per cent) of large households while the subsistence SEGs had the least (50 per cent) prevalence of large households.

Fig 3 (a) (ii)

<u>Agricultural SEG</u>	<u>% households with 5 persons and over</u>	<u>Rank</u>
Pastoralist	73	1
Export farmer	62	2
Food crop farmer	56	3
Subsistence farmer	50	4
All households	50	-

The results of the household size ranking within the non-agricultural sector are presented in Fig 3 (a) (iii)

Fig 3 (a) (iii)

<u>Non Agricultural</u>	<u>% household with 5 persons and over</u>			<u>Rank*</u>
	<u>Urban</u>	<u>Rural</u>	<u>Average</u>	
Public sector	24	66	45	1
Formal sector	28	56	42	2
Informal sector	19	53	36	3

* Ranking is on the basis of the arithmetic average of rural and urban percentages but also applies on the basis of rural percentages.

The results show that within the non-agricultural sector, rural areas generally, have higher prevalence of large households than urban areas. For example, large households accounted for about 66% of the rural SEG while they accounted for 56 per cent of the formal sector SEG and 53 per cent informal sector SEG. In general, there were, on average, about 142 per cent more large households in the rural non-agricultural sector than in the urban non-agricultural urban sector.

The regional (spatial) distribution of households by size and household members is provided by Statistical Appendix Table 3(b). The table shows that about 86 per cent of all rural households had sizes ranging between 1 person and 8 persons while the urban households with similar range of members was 97 per cent. The results of the spatial ranking of household size is summarized in Fig 3(b) (i), below. The results show that the most and least distressed provinces were Eastern and Central Provinces respectively.

Fig 3 (b) (i)

<u>Province/Region</u>	<u>% household with 1-8 persons</u>	<u>% households 5 persons and over</u>	<u>Rank</u>
a) <u>RURAL:</u>			
Eastern	84	66	1
Western	83	64	2
R. Valley	83	60	3
Coast	86	57	4
Nyanza	90	52	5
Central	92	48	6
b) <u>URBAN:</u>			
Mombasa	90	29	1
Nairobi	98	21	2
Other Urban*	98	25	-
c) <u>RURAL VERSUS URBAN:</u>			
All rural	86	58	1
All urban	97	24	2
d) ALL HOUSEHOLDS	89	50	-

* Includes North Eastern Province.

2.4 Literacy Rate

The literacy of a population, measured by ability to both read and write, is one of the most important human development indicators. Hence, literacy rate measures the proportion of the population who are able to both read and write. The significance of the welfare indicator and its derivative is explained in terms of enabling the population to handle and interpret problems and challenges affecting it and to make rational and efficient choices in given circumstances. However, there was no objective basis in the WMS1 for confirming the literacy status of the respondents, partially explaining the exaggerated literacy rate data.

The distribution of household literacy rates across the SEGs is presented in Statistical Appendix Table 3(a). The results of the analysis of the distribution data is presented in Figures 3a (i), 3a (ii) and 3a (iii), below. The results of the analysis of the distribution of literacy rates for the SEGs within agricultural and non-agricultural sectors, respectively. From the ranking in Fig. 3a (i), the agricultural sector has the lowest (50 per cent) literacy rate, while the public sector had the highest (72 per cent) literacy rate. Across the broad sectors, women had the lowest literacy rates, on average, being 13 per cent lower than their male counterparts.

Within the agricultural sector, (Fig. 3a (ii), the pastoralist group had the lowest (25 per cent) literacy rate while the export farmers had the highest (60 per cent)

literacy rate. The low literacy rate of the pastoralist SEG is not surprising given their nomadic lifestyle associated with interrupted schooling particularly for young age cohorts.

From the literacy ranking in Figure 3a (iii) the informal sector SEG had expectedly the lowest (62 per cent) literacy rate followed by the formal (70 per cent) and public sector (72 per cent) respectively.

From a policy standpoint, therefore, agricultural sector is the most deserving when broad sectors are considered on the basis of incidence of illiteracy. Within the agricultural sector, the pastoralists and subsistence farmers are the most vulnerable on the basis of illiteracy. Finally, in the non-agricultural sector, the informal sector would be the most deserving from a national literacy programme.

Fig. 3a(i)

<u>Sector</u>	<u>Literacy Rate</u>		<u>Literacy Rate (Male plus Female)</u>	<u>Rank</u>
	<u>Male</u>	<u>Female</u>		
Agriculture*	56	45	50	1
Public	74	70	72	4
Formal	73	67	70	3
Informal	66	57	62	2
Other	57	53	55	-
All households	62	53	58	-

* Includes pastoralists

Fig. 3a(ii)

<u>Agriculture SEG</u>	<u>Literacy Rate</u>		<u>Literacy Rate (Male plus Female)</u>	<u>Rank</u>
	<u>Male</u>	<u>Female</u>		
Export farmer	67	57	60	4
Food Crop Farmer	60	50	54	3
Subsistence Farmer	56	44	49	2
Pastoralist	33	18	25	1
All households	62	53	58	-

Fig. 3a(iii)

<u>Non-Agriculture SEG</u>	<u>Literacy Rate</u>		<u>Literacy Rate (Male plus Female)</u>	<u>Rank</u>
	<u>Male</u>	<u>Female</u>		
Public sector	74	70	72	3
Formal sector	73	67	70	2
Informal sector	66	57	62	1

The spatial distribution of households by literacy rate is presented in Statistical Appendix Table 3(b). The results of the analysis of regional distribution of the population by literacy are presented in Fig 3(b) below. Expectedly, the rural areas had a lower (55 per cent) literacy rate compared with the urban areas with a 73 per cent literacy rate. The differential spatial literacy rate performance could be attributed to the higher concentration of schools and educational institutions in the urban areas. From a policy

standpoint, therefore, compensatory intervention should focus on programmes which provide the rural population with more access to educational opportunities.

At the provincial level, Coast province had the lowest (44 per cent) literacy rate followed by Rift Valley (51 per cent) Western (52 per cent) and Nyanza (54 per cent) provinces. Thus a national literacy programme should target them in that order. Central province on the other hand, had the highest (69 per cent) literacy rate.

Fig. 3(b)

<u>Province/Region</u>	<u>Literacy Rate</u>		<u>Literacy Rate Male plus Female</u>	<u>Rank</u>
	<u>Male</u>	<u>Female</u>		
a) <u>RURAL:</u>				
Eastern	59	53	56	5
Western	56	49	52	3
R. Valley	55	47	51	2
Coast	52	36	44	1
Nyamira	60	47	54	4
Central	73	65	69	6
b) <u>URBAN:</u>				
Mombasa	76	65	71	1
Nairobi	81	75	78	2
Other urban area*	72	67	70	-
c) <u>RURAL VERSUS URBAN:</u>				
All rural	59	51	55	1
All urban	76	70	73	2
d) <u>ALL HOUSEHOLD</u>	62	53	58	-

Includes North Eastern Province

2.5 School Enrolment Rate

Closely related to literacy rate is the notion of enrolment rate focusing on the population in schools and institutions of learning. Crudely defined, enrolment rate

measures the proportion of the population in schools or education institutions.

The distribution of household by enrolment ratio across the SEGs is presented in Statistical Appendix Table 4(a). Enrolment rates were, generally the primary school level. At the primary level, enrolment ratios for females and males were almost at par while female enrolment rates were, generally, lower, than those of males at the secondary level of education. At the sectoral level, the enrolment rates for males were, on average, 23.4 per cent higher than for females in agriculture, public, formal and informal sectors taken together with the highest differential in enrolment rates occurring in the public sector (37.3 per cent) and formal sector (26.9 per cent). Within the agricultural sector, male enrolment rates were, on average, 19.8 per cent higher than female enrolment rates, with pastoralists and subsistence population having 48.6 per cent and 19.2 per cent more males enrolled than females, respectively. Within the non-agricultural sector (public, formal and informal sectors), male enrolment rates are 26.9 per cent higher than female rates. The results of the ranking of sectors in terms of enrolment ratio are presented in Figures 4a(ii) through 4a(iii), below.

Fig. 4a(i)

Sector	<u>Enrolment (% of population)</u>							
	Primary Education				Secondary Education			
	Male	Female	Total	Rank	Male	Female	Total	Rank
Agriculture*	79.9	79.6	79.7	1	74.5	66.1	70.9	4
Public	85.5	89.5	88.0	4	75.5	55.0	63.5	2
Formal	82.5	88.5	85.5	3	75.5	59.5	66.0	3
Informal	80.5	81.5	81.0	2	63.5	54.5	58.0	1
Other	78.0	84.0	81.0		77.0	69.0	73.0	
All households	82.0	84.0	83.0		76.0	67.0	72.0	

* Includes pastoralists

Fig. 4a(ii)

Agriculture SEG	<u>Enrolment (% of population)</u>							
	Primary Education				Secondary Education			
	Male	Female	Total	Rank	Male	Female	Total	Rank
Export farmers	84.5	86.0	85.0	3	78.0	72.5	75.5	3
Food crop farmers	85.0	85.5	85.5	4	79.5	76.5	78.0	4
Subsistence farmers	83.0	84.0	83.5	2	77.5	65.0	72.0	2
Pastoralists	54.0	46.0	50.0	1	52.0	35.0	45.0	1
All households	82.0	84.0	83.0		76.0	67.0	72.0	

Fig. 6a(iii)

Non-Agri. SEG	<u>Enrolment (% of population)</u>							
	Primary Education				Secondary Education			
	Male	Female	Total	Rank	Male	Female	Total	Rank
Public sector	86.5	89.5	88.0	3	75.5	55.0	65.5	2
Formal sector	82.5	88.5	85.5	2	75.5	59.5	66.0	3
Informal sector	80.5	81.5	81.0	1	63.5	54.5	58.0	1

The spatial distribution of household enrolment ratio is presented in Statistical Appendix Table 4b. The data in the table show that Coast province had the lowest (27.7 per cent) enrolment rate at the primary level with Eastern province reporting the second lowest enrolment rate.

At the secondary level, Coast province, again, had the lowest (50 per cent) enrolment rate compared with (73.0 per cent) for Eastern province. At the provincial level, enrolment ratios for males and females were almost at par in both primary and secondary levels.

The results of the regional (spatial) ranking of household by enrolment ratio are presented in Figure 4b below shows the regional ranking on the basis of enrolment rates in primary and secondary levels of education.

Fig. 4b

Province/Region	<u>Enrolment (% of population)</u>							
	<u>Primary Education</u>				<u>Secondary Education</u>			
	Male	Female	Total	Rank	Male	Female	Total	Rank
a) <u>RURAL:</u>								
Eastern	82.0	83.0	83.0	2	70.0	77.0	73.0	2
Western	83.0	84.0	84.0	3	79.0	72.0	76.0	4
R. Valley	82.0	87.0	84.0	3	78.0	72.0	75.0	3
Coast	67.0	62.0	65.0	1	57.0	42.0	50.0	1
Nyanza	87.0	82.0	84.0	3	87.0	68.0	78.0	5
Central	84.0	89.0	86.0	4	78.0	72.0	75.0	3
b) <u>URBAN:</u>								
Mombasa	78.0	88.0	83.0	3	76.0	52.0	62.0	4
Nairobi	92.0	86.0	89.0	4	67.0	40.0	51.0	3
Other main urban*	71.0	86.0	78.0	1	49.0	43.0	46.0	2
Other small urban	74.0	84.0	79.0	2	51.0	32.0	41.0	1
c) <u>RURAL VERSUS URBAN:</u>								
All rural	82.0	84.0	83.0		77.0	71.0	74.0	2
All urban	81.0	86.0	83.0		61.0	43.0	50.0	1
d) ALL HOUSEHOLD	82.0	84.0	83.0		76.0	67.0	72.0	

* Includes North Eastern Province

2.6 Drop-Out Rate

Drop-out rate, defined as the proportion of those enrolled unable to complete the education cycle, is an important aspect of the education status of household members. In the WMS1 data, however, this could not be computed as the survey only sought information reasons for drop-outs.

2.7 Health Status

The health status of a population is important welfare data as it influences and productive participation the

development process, and reduces its vulnerability to disease, hunger, drought and other social and natural maladies. Hence, comparative analysis of its distribution spatially and among SEGs should yield useful policy intervention data. In the WMS1, the health status of the households was limited to its morbidity (incidence) of illness, types of sicknesses and type of treatment sought.

The distribution of the incidence of household illness by age and sex, across the SEGs is presented in Statistical Appendix Table 5a. The data shows that there is generally a marked variability in the incidence by disease within age categories of the population. Fig. 5a(i) shows the ranking within the broad sectors by incidence of illness. The informal sector has the highest (17 per cent) incidence followed by the formal, agricultural and public sectors with 16 per cent, 15.4 per cent and 14.5 per cent incidence of illness, respectively.

Fig. 5a(i)

Sector	Incidence of illness		(% of population)		Rank
	Males	Females	Total	(Male plus Female)	
Agriculture*	12.3	17.4	15.4		3
Public sector	14.0	15.0	14.5		4
Formal sector	15.5	16.5	16.0		2
Informal	14.5	19.0	17.0		1
Other	15.0	20.0	16.0		-
All households	14.0	17.0	15.0		-

* Includes pastoralists

Fig 5a(ii) shows that within the agricultural sector, illness is most prevalent amongst subsistence households (19

per cent) and food crop farmers (16 per cent). It is less prevalent among the pastoralists, (13 per cent) and least amongst the export farmers, (12.5 per cent).

Fig. 5a(ii)

Agriculture SEG	Incidence of illness		(% of population)	
	Males	Females	Total (Male plus Female)	Rank
Export farmer	10.5	14.0	12.5	4
Food crop farmer	12.5	18.5	16.0	2
Subsistence farmer	15.5	20.5	19.0	1
Pastoralists	9.0	16.0	13.0	3
All households	14.0	17.0	15.0	-

Within the non-agricultural sector, the informal sector had the highest (17 per cent) incidence of illness while the public sector had the lowest 14.5 per cent. Fig. 5a(iii) shows the results of the ranking of this broad sector on the basis of incidence of illness among its SEGs.

Fig. 5a(iii)

Non Agricultural Sector SEG	Incidence of illness		(% of population)	
	Males	Females	Total (Male plus Female)	Rank
Public sector	14.0	15.0	14.5	3
Formal sector	15.5	16.5	16.0	2
Informal sector	14.5	19.0	17.0	1

The ranking clearly shows that informal and formal sector SEGs groups be prioritized any policy intervention against illnesses.

The distribution of household illness types across the SEGs is presented in Statistical Appendix Table 5b. The table shows significant variation in prevalence of illnesses within and among groups. The results of the comparative analysis of

the prevalence of individual ailments within and across the various socio-economic sectors are summarized in Fig. 5b(i), 5b(ii) and 5b(iii), below.

Fig.5b(1) Type of Sickness(Xand rankings R₁ & R₂)

SECTOR	Vomit			Fever			Cough			Wound			Measles			Skin			Eye			Other		
	Diar	R ₁	R ₂	Mal	R ₁	R ₂	Cold	R ₁	R ₂	Injury	R ₁	R ₂	R ₁	R ₂	Rush	R ₁	R ₂							
Agricultural	7.7	4	4	43.0	3	1	21.9	1	2	4.4	3	5	1.1	2	8	2.6	2	7	2.9	1	6	15.9	1	3
Public	8.5	3	4	52.5	1	1	20.5	2	2	3.5	4	5	1.5	1	7	2.0	3	6	1.5	4	7	9.5	3	3
Formal	15.5	1	2	42.0	4	1	14.5	4	3	9.0	1	5	1.0	3	7	2.0	3	6	2.0	3	6	14.0	2	4
Informal	10.0	2	4	45.5	2	1	18.5	3	2	5.0	2	5	1.0	3	8	4.0	1	6	2.5	2	7	14.0	2	3
Other	12.0			46.0			14.0			5.0			0.0			3.0						17.0		
All households	9.0			44.0			20.0			5.0			1.0			3.0						14.0		

*R₁ ranks the various sectors on the basis of each ailment. For example, with regard to vomit/diarrhoea (column 1), vomiting/diarrhoea is most prevalent in the formal sector (15.5 per cent) and least prevalent in the agricultural sector (7.7 per cent).

R₂ ranks the various ailments in order of importance across individual sectors or socio-economic groups. For example, within the agricultural sector, fever/malaria is the most prevalent almost (43 per cent), followed by cough/cold (21.9 per cent).

In general, measles is the least prevalent sickness within and across the sectors while fever/malaria was the most prevalent ailment (sickness), followed by cough and cold.

Fig.5b(ii) Type of Sickness(Xand rankings R₁ & R₂)

Agricultural SEG	Vomit			Fever			Cough			Wound			Measles			Skin			Eye			Other		
	Diar	R ₁	R ₂	Mal	R ₁	R ₂	Cold	R ₁	R ₂	Injury	R ₁	R ₂	R ₁	R ₂	Rush	R ₁	R ₂							
Export Farmers	8.5	1	4	40.0	3	1	23.5	2	2	4.0	3	5	2.0	1	7	2.0	2	6	2.5	2	6	16.5	1	3
Food Crop Farmers	8.5	1	4	41.0	2	1	23.0	3	2	5.0	2	5	1.0	2	8	3.0	2	7	2.5	2	7	15.5	3	3
Subsistence Farmers	7.5	2	4	46.0	1	1	17.0	4	3	6.0	1	5	1.0	2	8	3.5	2	7	2.5	2	7	16.0	2	3
Pastoralists	5.0	3	4	46.0	1	1	26.0	1	2	1.0	4	5	0.0	3	6	1.0	1	4	5.0	1	4	15.0	4	3
All households	9.0			44.0			20.0			5.0			1.0			2.0						14.0		

Fig.5b(iii) Type of Sickness(Xand rankings R₁ & R₂)

Non Agricultural	Vomit		Fever			Cough		Wound		Measles		Skin		Eye		Other								
	Diar	R ₁	R ₂	Mal	R ₁	R ₂	Cold	R ₁	R ₂	Injury	R ₁	R ₂	Rush	R ₁	R ₂	R ₁	R ₂							
Public	8.5	3	4	52.5	1	1	20.5	1	2	3.5	3	5	1.5	1	7	2.0	6	1.5	3	7	9.5	2	3	
Formal	15.5	2	2	42.0	3	1	14.5	3	3	9.0	1	5	1.0	2	7	2.0	2	6	2.0	2	6	14.0	1	4
Informal	10.0	1	4	45.5	2	1	18.5	2	2	5.0	2	5	1.0	2	8	4.0	1	6	2.5	1	7	14.0	1	3

Regional (spatial) data on incidence of illness by age and sex of the households is provided in Statistical Appendix Table 6b. The data shows a marked variability across the various regions and within the age categories. Fig 6b summarizes the results of the regional ranking of the households on the basis of incidence of illness. The results indicate that at the provincial level, Western Province had the highest (20 per cent) incidence (20 per cent). The data further indicates that incidence of illness is roughly equal in Eastern, Rift Valley, Coast and Nyanza provinces (10 per cent in each case) and lowest in Central province (9 per cent).

Fig. 6b

Province/Region	Incidence of illness (% illness of population)			Rank
	Males	Females	Total (male plus female)	
a) <u>RURAL:</u>				
Eastern	14.0	17.0	10.0	2
Western	18.0	24.0	20.0	1
R. Valley	11.0	14.0	10.0	2
Coast	16.0	19.0	10.0	2
Nyanza	17.0	21.0	10.0	2
Central	7.0	11.0	9.0	3
b) <u>URBAN:</u>				
Mombasa	16.0	16.0	10.0	2
Nairobi	9.0	14.0	10.0	2
Other main urban*	22.0	21.0	20.0	1
Other smaller urban	14.0	17.0	10.0	2
c) <u>RURAL VERSES</u>				
<u>URBAN</u>				
All rural	13.0	17.0	10.0	-
All urban	15.0	17.0	10.0	-
d) <u>ALL</u>				
HOUSEHOLDS	14.0	17.0	10.0	-

* Includes North Eastern Province

Regional (spatial) distribution data on type of illness afflicting the population is presented in Statistical Appendix Table 6b. The data shows significant variability in the distribution of types of illnesses within and across individual regions (provinces and districts). The results of the ranking of regions on the basis of type of ailment of disease are summarized in Fig 6b below. The prevalence of diarrhoea is highest (14 per cent) in Eastern Province while Malaria was most prevalent in Coast and Nyanza Provinces (with 54 per cent and 49 per cent prevalence rate, respectively).

Cough/cold was most (29 per cent) prevalent in Rift Valley while measles was the least widespread overall, with most provinces recording zero prevalence rates; only Western and Nyanza provinces with 3 per cent and 2 per cent prevalence rates, respectively.

Fig.6b Type of Sickness(Xand rankings R₁ & R₂)

SECTOR	Vomit			Fever			Cough			Wound			Measles		Skin			Eye		Other				
	Diar	R ₁	R ₂	Mal	R ₁	R ₂	Cold	R ₁	R ₂	Injury	R ₁	R ₂	R ₁	R ₂	Rush	R ₁	R ₂	R ₁	R ₂	R ₁	R ₂			
(a) <u>RURAL:</u>																								
Eastern	14.0	1	3	42.5	4	1	20.0	3	2	4.0	3	6	0.0	3	8	6.0	1	5	2.0	2	7	12.0	5	4
Western	10.0	3	4	45.0	3	1	18.0	4	2	5.0	2	5	3.0	1	6	2.0	3	7	2.0	2	7	15.0	3	3
Rift Valley	5.0	5	4	41.5	5	1	29.0	1	2	5.0	2	4	0.0	3	7	3.0	2	6	4.0	1	5	13.0	4	3
Coast	8.0	4	4	54.0	1	1	15.0	5	3	4.0	3	5	0.0	3	8	2.0	3	6	1.0	3	7	16.0	2	2
Nyanza	11.0	2	4	49.0	2	1	15.0	5	2	5.0	2	5	2.0	2	7	3.0	2	6	2.0	2	7	13.0	4	3
Central	5.0	5	5	34.0	6	1	26.9	2	2	8.0	1	4	0.0	3	8	3.0	2	6	1.0	3	7	22.0	1	3
(b) <u>URBAN</u>																								
Mombasa	7.0	4	3	60.0	1	1	11.0	4	2	7.0	1	3	0.0	2	5	2.0	2	4	2.0	3	4	11.0	3	2
Nairobi	15.0	1	3	37.0	4	1	23.0	1	2	6.0	2	5	3.0	1	6	3.0	1	6	3.0	2	6	11.0	3	4
Other Main Urban	8.0	3	4	50.0	2	1	14.0	3	3	4.0	3	5	0.0	2	8	3.0	1	6	1.0	4	7	20.0	1	2
Other Small Urban	11.0	2	4	45.0	3	1	17.0	2	2	6.0	2	5	0.0	2	7	0.0	3	7	6.0	1	6	16.0	2	3
(c) <u>RURAL</u>																								
<u>VERSUS URBAN</u>																								
All Rural	9.0	2	4	44.5	2	1	20.0	1	2	5.0	1	5	1.0	1	8	3.0	1	6	2.0	1	7	14.0	2	3
All Urban	11.0	1	4	47.0	1	1	17.0	2	2	5.0	1	5	1.0	1	7	2.0	2	6	2.0	1	6	15.0	1	3
(d) <u>ALL HOUSEHOLDS</u>	9.0			44.0			20.0			5.0			1.0			3.0			2.0			14.0		

CHAPTER III. HOUSEHOLD EMPLOYMENT, INCOME, CONSUMPTION EXPENDITURE EXPENDITURE AND POVERTY

Household employment, income, consumption expenditure and poverty are closely related welfare. This is because household and employment household income which in turn, determines the level of household consumption expenditure and consumption expenditure which in turn, also affects the incidence and depth of poverty. Per capita income and consumption expenditure are widely accepted proxy welfare (economic well being) welfare indicators. Owing to the observed inter-household variability in incomes and consumption expenditure and necessity to address distributional aspects of welfare, the WMS1 solicited data on both the size and structure of incomes and consumption expenditure. These are analysed with the view to identifying households that are vulnerable to adverse effects of structural change and reform. The results of the analysis are presented under the following sub-headings.

3.1 Size of Household Income

The concept of household income adopted in the WMS1 was very broad covering both money and in-kind income and consisting of receipts which, as a rule, are of recovering nature and accrue to the household or the individual members of the household regularly at annual or more frequent materials (KO). The distribution of the mean monthly incomes of household heads and spouses across SEGs are presented in

the Statistical Appendix Tables 7a ((i) and 7a (ii), respectively. Similar spatial data are presented in Statistical Appendix Tables 7b (i) and 7b (ii).

Fig. 7a provides a summary of the results of the comparative analysis the mean monthly wage incomes for the household head and spouse by broad economic groups or sectors. It is evident from the table that mean monthly wage incomes for household heads are generally higher than those of spouses; the exceptions were the public sector and the residual SEGs. At the broad sector level, it is evident that agricultural sector households are the most depressed in terms of the mean monthly incomes of both head and spouse. They would be the most likely to be adversely affected by structural adjustment policies which affect prices of basic goods and services including food.

Within the agricultural sector, food crop farmers had the lowest mean monthly incomes or most vulnerable followed by export and subsistence farmers with, and the mean monthly incomes in each case being much lower than the national mean monthly income (Kshs. 4078.20).

Within the non-agricultural sector, the public sector households had the lowest mean monthly income or were the most. Infact, the data vulnerable indicate that households within the informal sector, overall, had the highest mean monthly income of Kshs.6572.80, earning 28 per cent higher mean monthly incomes than those in the public sector. In

recent years, the informal sector has been accorded priority in the country's development strategy especially with regard to labour absorption and raising household incomes. The high mean monthly incomes accruing to households in the sector has positive implications for household welfare and should point the way for the encouragement of informal sector business.

Fig. 7a(i)

SECTOR	Mean Monthly Wage** Income of Household Head (KShs/Month)	Rank	Mean Monthly** Wage Income of Spouse (Ksh/Month)	Rank
a) <u>BROAD SECTORS:</u>				
Agriculture*	2658.40	1	1533.70	1
Public sector	5123.60	3	5697.70	5
Formal sector	6203.30	4	4956.50	1
Informal sector	6572.80	5	4905.20	3
Other	2810.30	2	2843.60	2
All households	4078.20	-	2648.70	-
b) <u>AGRICULTURAL SEGS:</u>				
Export farmer	2490.10	2	1828.60	3
Food crop farmer	2256.10	1	2149.80	4
Subsistence farmer	2511.90	3	750.50	1
Pastoralists	4092.43	4	1278.40	2
All households	4078.20	-	2648.70	-
c) <u>NON AGRIC. SEGS:</u>				
Public sector	5123.60	1	5697.70	3
Formal sector	6203.30	2	4956.50	2
Informal sector	6572.80	3	4905.20	1

* Includes pastoralists

** All categories of wage income

Fig 7b provides regional (spatial) ranking of the distribution of the household the mean monthly incomes of household heads and spouses. Western Provinces had the lowest mean wage incomes of Kshs.2327.30 followed by Nyanza Province with mean monthly of Kshs.2371.90.

household income, then a poor harvest or lower prices of agricultural crops would reduce sales returns and income, implying possible reduction in household consumption and welfare. In general, households with incomes from sources highly sensitive to structural adjustment policies would tend to be highly to be vulnerable. Hence, the structure of household incomes would be in understanding the vulnerability of households and formulation of appropriate intervention strategies to stabilising household incomes.

The distribution of mean, shares of household incomes by source across the SEGs and spatially is presented in Statistical Appendix Tables 8a and 8b respectively. Fig 8a summarizes the results of the analysis of the distribution of mean shares of household income by source across the broad SEGs.

Households within the agricultural sector derived the bulk (37.1 per cent) of their income from crop sales and livestock. Expectedly the public and formal sectors derive most (81.2 per cent and 77.9 per cent respectively) of their incomes from wage employment. The informal sector households derived their incomes from both employment (45.2 per cent) and from self employment (43.3 per cent).

Fig. 8a

MEAN SHARE (% OF HOUSEHOLD INCOME FROM)

SECTOR	Export	Crop Sales	Livestock Sales	Wage Empl-oyed	Self Empl-oyed	Cash Tran-sfers	Rents	Other Income
a) <u>BROAD SECTORS</u>								
Agriculture*	8.0	12.5	24.6	4.4	8.10	5.10	0.7	3.5
Public Sector	0.0	1.4	2.4	81.2	8.8	0.9	1.1	1.4
Formal Sector	0.0	1.0	1.9	77.9	13.8	1.2	0.8	0.9
Informal Sector	0.0	1.4	2.3	45.2	43.3	1.7	0.8	1.4
Other	0.0	4.2	7.8	3.2	4.6	31.1	9.3	22.2
All H/Holds	4.4	8.0	12.3	28.6	16.3	5.7	1.5	4.2
b) <u>AGRICULTURAL SEGs:</u>								
Export Farmer	27.8	6.9	14.4	10.2	12.0	4.4	1.0	4.1
Food crop Farmer	0.0	25.3	40.7	2.3	4.0	4.7	0.2	3.0
Subsistence Farmer	0.0	10.4	6.2	1.5	2.8	7.5	0.2	3.3
Pastoralists	0.0	2.3	49.8	2.8	18.9	2.7	1.6	3.8
All households	4.4	8.0	12.3	28.6	16.3	5.7	1.5	4.2

* Includes pastoralists

Within the agricultural sector, export farmers derived the largest share (27.8 per cent) of income from exports with livestock sales accounting for 14.4 per cent and wage employment for 10.2 per cent. The food crop farmers derived 25.3 per cent of their income from part sales of their crops and 40.7 per cent from livestock (40.7 per cent), while subsistence farmers derived barely 10.4 per cent of their income from crop sales. Pastoralists, expectedly, derived

most 49.8 per cent of their incomes from livestock sales while 18.9 per cent of it was from self employment.

Fig 8b shows the results of the analysis of the spatial distribution of the mean shares of income by source. At the provincial level, wage employment was the main source of income, averaging about 20 per cent of it, followed by self employment (accounting 15.4 per cent) and livestock sales (accounting for 14 per cent).

With regard to rural versus urban, the main sources of income for the rural households were wage employment (19 per cent), self employment (4.5 per cent), livestock (15.3 per cent) and crop sales (10.0 per cent).

Fig. 8b

MEAN SHARE (% OF HOUSEHOLD INCOME FROM)

Province/ Region	Export	Crop Sales	Livestock Sales	Wage Empl- oyed	Self Empl- oyed	Cash Tran- sfers	Rents	Other Income
a) <u>RURAL:</u>								
Eastern	9.2	8.6	14.5	18.0	15.9	5.6	0.7	3.4
Western	6.6	10.4	12.9	16.6	9.9	11.3	0.8	5.6
R. Valley	3.2	13.8	21.1	23.4	10.9	4.0	0.8	4.2
Coast	3.1	4.9	8.6	28.5	22.8	10.1	1.0	4.8
Nyanza	3.6	8.8	11.5	8.3	18.0	6.8	1.7	5.9
Central	6.5	9.0	16.5	25.3	14.7	6.1	1.1	4.1
b) <u>URBAN:</u>								
Mombasa	0.0	0.0	0.4	65.4	28.8	1.1	2.8	1.0
Nairobi	0.0	0.0	0.1	74.6	21.0	0.9	1.4	1.9
Other main urban*	0.1	0.5	0.8	58.0	24.2	4.2	7.0	3.4
Other small urban	0.0	0.8	1.6	63.4	26.7	2.1	1.1	3.7
c) <u>RURAL VERSUS URBAN:</u>								
All rural	5.4	10.0	15.3	19.0	14.5	6.6	1.0	4.6
All urban	0.1	0.3	0.5	67.2	23.5	2.1	3.3	2.5
d) <u>ALL HOUSEHOLDS</u>								
	4.4	8.0	12.3	28.6	16.3	5.7	1.5	4.2

* Includes North Eastern Province

3.3 Size of Household Consumption Expenditure

Household consumption was defined as all goods and services (or items') that are used acquired or purchased by the household for business purposes and not for accumulations of wealth (ILO). Hence, consumption expenditure is defined as all money expenditure by the household and individual members on goods intended for consumption and expenditure on services, plus the value of goods and services received as income in-kind and consumed by the household or individual members of the household, implying that the value of items produced by the household and utilized in its own consumption, the rental value of owner-occupied housing and the gross value of free housing occupied by the household represented part of household expenditure (ILO). Clearly, household consumption expenditure is influenced by both direct income and indirect income (own production and fringe benefits) all of which may be adversely affected by structural adjustment or other economic measures that reduce real incomes.

Statistical Appendix Tables 9a (i) and Statistical Appendix 9a (ii) provide the distribution of the mean monthly household expenditures by type of expenditure across the SEGs and regions, respectively.

Fig 9a (i) summarizes the results of the analysis of the data on the distribution of mean monthly households expenditures by broad sectors on food and non food items.

At the broad sectoral level, the results indicate that

agricultural households spent the lowest amount (Kshs.555.00) on food and (Kshs.467.50) non food items. The result could be partly explained by the generally low agricultural incomes and the difficulty in valuations of consumption of own output of food and shelter.

Within the agricultural sector the variance from the mean is not wide but the subsistence farmers are seemingly the most impoverished with mean monthly food expenditure of Kshs.457.80 followed by food crop farmers with mean monthly expenditure of Kshs.499.60.

Fig 9a(i) SIZE OF CONSUMPTION EXPENDITURE (FOOD & NON-FOOD)

MEAN MONTHLY EXPENDITURES (KSHS) PER MONTH ON:

SECTOR	FOOD	NON-FOOD
a) <u>BROAD SECTORS:</u>		
Agriculture	555.00	467.50
Public Sector	100.10	1406.75
Formal Sector	965.80	1264.00
Informal Sector	853.50	908.40
Other	653.50	562.70
All households	711.20	754.30
b) <u>AGRICULTURAL SEGS:</u>		
Export farmer	669.90	632.70
Food crop farmer	499.60	454.40
Subsistence farmer	457.80	321.70
Pastoralist	630.25	455.00
All households	711.20	754.30
c) <u>NON AGRICULTURAL SEGS:</u>		
Public sector	1004.10	1406.50
Formal Sector	965.80	1264.00
Informal Sector	853.50	908.40

Fig 9a(ii) summarizes the results of the analysis of the spatial distribution of the mean monthly food and non food expenditure. At the provincial level, the Rift Valley Province had the lowest mean monthly food expenditures (Kshs.556.50), followed by Western provinces (Kshs.512.50 per month) while Central provinces had the highest (Kshs.790.20) mean month closely followed by the Coast province (with Kshs.789.40) per month.

Rural areas spend 92.4 per cent less on food items and 183 per cent less on non food items compared to urban areas the results can largely be attributed to subsistence

production and low incomes in the former areas.

Fig 9a(ii) SIZE OF CONSUMPTION EXPENDITURE (FOOD & NON-FOOD)

MEAN MONTHLY EXPENDITURES (KSHS) PER MONTH ON:

Province/Region	FOOD	NON-FOOD
a) <u>RURAL:</u>		
Eastern	628.20	483.40
Western	556.50	418.70
Rift Valley	512.50	620.50
Coast	789.40	654.90
Nyanza	465.70	437.90
Central	790.20	703.89
b) <u>URBAN:</u>		
Mombasa	1045.10	1131.30
Nairobi	1288.90	1796.40
Other main urban*	1012.80	1234.80
Other small urban	1004.80	1803.50
c) <u>RURAL VERSUS URBAN:</u>		
All rural	597.10	547.30
All urban	1148.65	1547.60

* Includes North Eastern Province

3.4 Structure of Household Consumption Expenditure

Data on the structure of consumption and consumption expenditure are essential in understanding the vulnerability of households, to structural adjustment. The distribution of the percentage of annual household consumption expenditure by type of consumption item across the SEGs and regions is presented in Statistical Appendix Tables 9a (i) and 9a (ii) respectively.

Fig 9b(i) summarizes the results of the analysis of the distribution of consumption expenditure shares of the selected consumption items including foods (maize, vegetable, meat

dairy, sugar, oils and fats) across the SEGs while Fig 9b (ii) summarizes similar results across regions. From Fig 9b (i), it is evident that maize claims are the largest share of consumption expenditure averaging 19.5 per cent for the SEGs in agriculture, public, formal informal, and other sectors and 17.5 per cent for the agricultural (export, food crop, subsistence, and pastoralist) SEGs.

Fig 9b(i)

STRUCTURE OF FOOD CONSUMPTION EXPENDITURE (% SHARE BY TYPE)% SHARE IN TOTAL EXPENDITURE OF:

SECTOR	Maize	Vege- tables	Meat	Dairy	Sugar	Oil Fats	Other**
a) BROAD SECTORS:							
Agriculture*	17.7	6.0	10.2	4.70	14.7	7.3	39.4
Public sector	17.8	10.7	16.9	10.7	12.7	8.0	23.2
Formal sector	19.7	11.50	15.7	11.5	12.0	8.8	20.8
Informal "	20.0	11.30	14.7	10.8	12.8	7.9	22.5
Other	22.1	9.4	13.4	8.2	15.9	8.9	22.1
AllH/Holds	17.7	8.5	13.0	7.7	13.8	7.7	31.6
b) AGRI. SEGS:							
Export farmer	16.7	6.3	11.1	5.4	13.8	7.9	38.8
Food crop farmer	14.0	6.3	11.1	4.6	16.4	7.8	39.8
Subsistence farmer	14.2	4.7	9.5	5.1	11.0	5.5	50.0
Pastoralist	24.9	7.6	7.8	3.2	20.6	8.4	27.5
All H/Holds	17.7	8.5	13.0	7.7	13.8	7.7	31.6
c) NON AGRI. SEGS:							
Public sector	17.8	10.7	16.9	10.7	12.7	8.0	23.2
Formal sector	19.7	11.5	15.7	11.5	12.0	8.8	20.8
Informal "	20.0	11.3	14.7	10.8	12.8	7.9	22.5

* Includes pastoralists

** Includes other cereals, roots and other foods.

Other items of consumption such as vegetables, meat and dairy products had sizeable share in total household consumption expenditure. The results could be attributed to the fact that maize is relatively much cheaper than closer substitutes such as wheat, rice and other 'exotic' cereals. Hence structural reform policies can have far reaching consequences on the welfare of the population if they affect

the prices marketing and distribution of maize. Consequently, wide changes in the price of maize should be a matter for food policy concern.

At the regional level, maize still ranks as the lead food crop at both the provincial and rural/urban levels. At provincial level maize consumption expenditure as a share of total expenditure averaged 16.9 per cent while in the rural and urban areas it accounts for 17.3 per cent 19.3 per cent of total consumption expenditure, respectively.

Fig 9b(ii)

STRUCTURE OF FOOD CONSUMPTION EXPENDITURE (% SHARE BY TYPE)% SHARE IN TOTAL EXPENDITURE OF:

Province/ Region	Maize	Vege- tables	Meat	Dairy	Sugar	Oil & Other** Fats	
a) <u>RURAL:</u>							
Eastern	21.7	8.9	12.9	5.2	14.9	4.9	31.5
Western	17.1	5.9	15.1	7.5	15.9	6.0	32.5
R/Valley	11.4	6.9	13.0	6.2	19.0	8.8	34.7
Coast	15.7	8.9	12.9	5.2	14.9	4.9	37.5
Nyanza	16.1	5.2	13.3	4.4	12.7	7.3	41.0
Central	19.3	7.8	10.0	7.8	14.3	14.4	30.4
b) <u>URBAN:</u>							
Mombasa	19.6	14.3	17.6	11.6	9.3	7.6	20.0
Nairobi	19.1	13.1	17.3	13.6	10.8	8.2	17.9
Other main urban*	19.9	13.4	17.7	13.1	10.1	7.4	18.4
Other small urban	18.4	12.7	18.9	13.3	11.2	7.6	17.9
d) <u>RURAL VERSUS URBAN:</u>							
All rural	17.3	7.2	18.8	6.2	14.6	7.7	35.2
All urban	19.3	13.3	17.6	13.2	10.5	7.8	18.3
d) ALL H/HOLDS	17.7	8.5	13.0	7.7	13.8	7.7	31.6

* Includes North Eastern Province

** Includes other cereals, roots and other foods

3.5 Household Poverty

Empirical literature focusing on the measurement of (absolute and relative) poverty lines degree of poverty which depends on incidence of poverty (numbers in the total population below the poverty line), the intensity of poverty (the extent to which incomes of the poor lie below the poverty

line, and degree of inequality among the poor now abound (Ravallion, 1992 b; Zaidi and de Vos, 1993; Boateng et al, 1990; Greer and Thorbecke, 1986, 1986b, 1986c; Foster, Greer and Thorbecke, 1984; Atkinson, 1970 and 1987). A flexible index of poverty by Greer and Thorbecke (1984) incorporating all the three dimensions of poverty, namely, incidence and intensity of poverty and degree of inequality among the poor, symbolically, is expressed by;

$$PV = \left(\frac{1}{n}\right) \sum^q [(z-y_i)/z]^m$$

where

- Z = monetary poverty line based on income
- y_i = income of the ith household
- q = number of income earners below the poverty line (incorporates intensity factor)
- n = total population
- Z-y_i = income gap: distance measure from poverty line of ith household (incorporates intensity factor)
- PV = the weighted sum of income gaps, where the weights are the income gaps themselves
- m = policy parameter which measures the degree of inequality among the poor and indicates the sensitivity of the index to transfer among the poor.

In the literature, absolute poverty line, generally fixed over time and space, is defined by the cost of food expenditure necessary to attain a recommended food intake, and a modest allowance for non-food items. A relative poverty line, set at some constant proportions of the national mean income or the median, has the desirable property of being community specific. It however, suffers from two shortcomings. At the conceptual level, it is not invariant to changes to living standards accruing from growth. At the policy level, anti-poverty groups will be biased against growth as relative poverty can be eradicated through redistributive welfare programs. Despite its appropriateness for developing countries like Kenya, the former type of poverty line could not be used here due to conceptual and data problems in its computations. Hence, analysis of household poverty was based on the relativist approach. Specifically, we used two relative poverty lines: (a) a relative poverty line set at 66% of mean consumption expenditure to define the "poor" and (b) a relative poverty line set at 33% of mean consumption expenditure to define the "hard-core poor" or "ultra-poor". Data on the distribution of the poor and hard-core poor by SEGs and spatially based on the above poverty lines are presented in Statistical Appendix Table 16a and Statistical Appendix Table 16b.

Data on the distribution of household poverty across the SEGs and regions is presented in Statistical Appendix Tables 16(a) and 16(b) respectively.

Fig. 16(a) summarizes the results of the analysis of the distribution of the incidence (P_0), the incidence and intensity (P_1) and the severity (P_2) of household poverty for two relative poverty lines (66 per cent and 33 per cent of mean consumption expenditure). Based on the relative poverty line pegged at 66 per cent of mean consumption expenditure, the incidence of poverty was highest amongst the agricultural sector households with 71 per cent of them being poor and lowest amongst public sector households with only 25 per cent of them being poor. The poverty gap (incidence and intensity of poverty) was similarly highest in the agricultural sector (33 per cent) and lowest in public sector (9 per cent). Similar pattern of results was observed with regard to severity of poverty, highest (20 per cent) and lowest (5 per cent) in the agricultural and public sectors, respectively.

Within the agricultural sector, the lowest incidence of poverty recorded in the export sector with 62 per cent its households being poor. Pastoralists had the highest incidence of poverty with 77 per cent of them being poor followed by subsistence with 74 per cent and food crop farmers (73 per cent) respectively.

From a policy standpoint, therefore, the agricultural sector is of priority concern because of the high prevalence of poverty in the sector which makes, it the most vulnerable to adverse effects of structural adjustment and economic reform. Within the sector, the various socio-economic groups are almost at par with regard to vulnerability measured by the prevalence of poverty indicators.

Ranking of households based on the relative poverty line pegged at 33 per cent of mean consumption yielded similar patterns of poverty across major groups or sectors and within the sectors. However, it gives unrealistic results that suppress or hide the actual degree of poverty in the population. For policy purposes, therefore, although this poverty line may still be useful in identifying and prioritising the socio-economic groups for intervention, it may however, under-state the size of intervention required because people who are actually poor may be listed as not, using this poverty line.

Fig. 16(a)

PREVALENCE OF POVERTY

Prevalence of Poverty with poverty line set at

SECTOR	66%			33%		
	P ₀	P ₁	P ₂	P ₀	P ₁	P ₂
a) <u>BROAD SECTORS:</u>						
Agricultural Sector*	0.71	0.33	0.20	0.32	0.12	0.06
Public Sector	0.25	0.09	0.05	0.07	0.02	0.01
Formal Sector	0.30	0.12	0.07	0.09	0.03	0.02
Informal Sector	0.39	0.18	0.10	0.18	0.06	0.03
Other Sectors	0.62	0.31	0.20	0.32	0.13	0.18
b) <u>AGRI. SEGS:</u>						
Export farmer	0.62	0.27	0.15	0.23	0.08	0.04
Food crop farmer	0.73	0.36	0.23	0.35	0.14	0.08
Subsistence farmer	0.74	0.36	0.23	0.38	0.14	0.07
Pastoralist	0.77	0.37	0.22	0.37	0.14	0.08
c) <u>NON AGRI. SEGS:</u>						
Public Sector	0.25	0.09	0.05	0.07	0.02	0.01
Formal Sector	0.30	0.12	0.07	0.09	0.03	0.02
Informal Sector	0.39	0.18	0.10	0.18	0.06	0.03
d) ALL HOUSEHOLDS	0.56	0.26	0.15	0.25	0.09	0.05

* Includes pastoralists.

Fig. 16(b) provides corresponding regional measures of poverty by incidence (P₀), incidence and intensity (P₁) and by severity (P₂) for the two poverty lines (66 per cent and 33 per cent of mean consumption expenditure).

At the provincial level Western Province had the highest incidence of poverty (80 per cent) followed by Nyanza (74 per cent), Eastern (71 per cent), and Rift Valley Province (69 per

cent). Central and Coast Provinces had relatively low but still high incidences of poverty, estimated at about 50 per cent and 61 per cent, respectively.

The incidence of poverty in the urban areas was much lower (averaging 8 per cent) than that of rural areas (68 per cent). Nairobi had 5 per cent incidence while Mombasa had 17 per cent incidence.

Fig. 16(b)

PREVALENCE OF POVERTY

Prevalence of Poverty with poverty line set at

Province/Region	66%			33%		
	P ₀	P ₁	P ₂	P ₀	P ₁	P ₂
a) <u>RURAL:</u>						
Coast Province	0.61	0.27	0.15	0.24	0.09	0.04
Eastern Province	0.71	0.33	0.19	0.31	0.11	0.06
Central	0.50	0.19	0.09	0.14	0.04	0.02
Rift Valley	0.69	0.35	0.21	0.36	0.14	0.08
Nyanza	0.74	0.36	0.22	0.38	0.14	0.07
Western	0.80	0.39	0.24	0.42	0.16	0.08
b) <u>URBAN:</u>						
Mombasa	0.17	0.04	0.02	0.01	0.00	0.00
Nairobi	0.05	0.01	0.00	0.01	0.00	0.00
Other main urban*	0.11	0.03	0.01	0.02	0.01	0.00
Other small urban	0.10	0.03	0.02	0.02	0.01	0.01
c) <u>RURAL VERSUS URBAN:</u>						
All rural	0.68	0.32	0.19	0.32	0.12	0.06
All urban	0.08	0.02	0.01	0.01	0.00	0.00
d) ALL HOUSEHOLDS	0.56	0.26	0.15	0.25	0.09	0.05

* Includes North Eastern Province.

CHAPTER IV: SOCIAL AMENITIES

The welfare of the households is influenced by their accessibility to social amenities defined to include, among other things, safe drinking water, sanitation, shelter education and health. In the WMS1 information on household accessibility to social amenities was solicited only with respect to shelter, water, and sanitation. Results of the WMS1 data on these is presented under the following sub-headings.

4.1 Shelter

Shelter as an important basic need, is an intergral element of the Basic Needs Approach to development which emphasises the pertinence of providing decent housing to the population in addition to food, water, health and education. The baseline (temporal) situation of household shelter across the SEGs and regions is presented in Statistical Appendix Tables 10(a) and 10(b) respectively. Results of the analysis of the distribution of households without decent (poor quality) shelter (mud walls, floor and roofs and grass thatched or makuti roofs by the SEGs regions is summarised in Figs. 10 (a) and 10 (b), respectively¹⁰ from Fig. 10(a), it is evident that the majority of the agricultural households had poor quality(indicent) with shelter 78.6 per cent of them having shelter with mud walls; 86.9 per cent of them having shelter with mud floors; and 47.7 per cent of them having shelter with grass or makuti thatched or mud roofs. Within the

¹⁰ Makuti refer to leaves of coconut trees

agricultural sector, the largest incidence of poor quality housing was in the subsistence sector with 90 per cent of the households in this sector having shelter with mud walls; 91.5 per cent of them with mud floors; 56.5 per cent of them with grass/makuti roofs, followed by pastoralists of whom 79 per cent had shelter mud walls; 96 per cent with mud floors; and 74 per cent with grass/makuti/mud roofs; and food crop farmers of whom 78.5 per cent had shelter with mud walls; 86 per cent with mud floors; and 47.5 per cent with grass/makuti/mud walls. The proportion of households within the non-agricultural sector with poor shelter is relatively smaller compared to households within the agricultural sector.

Fig. 10(b) shows that the quality of shelter by regard to type of walls and floor at the regional level is poor with 75.2 per cent and 80.3 per cent of averages of households in the provinces having shelter constructed with mud walls and floors, respectively. Rural-based households performed worse than Urban-based ones in this regard with 75 per cent and 80 per cent of the former having shelter mud walls and floors, respectively compared with the latter's households 33 per cent and 30 per cent mud walls and floors, respectively).

Fig. 10(a)

HOUSING QUALITY

% of Households by type of Construction

Sector	Mud Walls	Mud Floor	Grass Makuti Roof	Mud Roof
a) <u>BROAD SECTORS:</u>				
Agricultural Sector*	78.6	86.9	45.6	2.1
Public Sector	38.0	37.5	12.5	0.0
Formal Sector	38.0	36.0	16.5	0.0
Informal Sector	57.0	60.0	28.5	0.0
Other Sectors	75.0	75.0	37.0	0.0
b) <u>AGRICULTURAL SECTOR:</u>				
Export farmer	67.0	78.5	26.0	0.0
Food crop farmer	78.5	86.0	47.0	0.5
Subsistence farmer	90.0	91.5	56.5	0.0
Pastoralist	79.0	96.0	60.0	14.0
c) <u>NON AGRI. SEG.</u>				
Public sector	38.0	37.5	12.5	0.0
Formal sector	38.0	36.0	16.5	0.0
Informal sector	57.0	60.0	28.5	0.0
d) ALL HOUSEHOLDS				
	66.0	70.0	35.0	0.0

* Includes pastoralists

Fig. 10(b)

HOUSING QUALITY

% of Households by type of Construction

Province/Region	Mud Walls	Mud Floor	Grass Makuti Roof	Mud Roof
a) RURAL:				
Coast province	77.0	76.0	70.0	0.0
Eastern	66.0	77.0	34.0	0.0
Central	52.0	69.0	6.0	0.0
Rift Valley	77.0	82.0	43.0	1.0
Nyanza	89.0	88.0	57.0	0.0
Western	90.0	90.0	57.0	0.0
b) URBAN:				
Mombasa	50.0	27.0	34.0	0.0
Nairobi	33.0	32.0	0.0	0.0
Other main urban*	32.0	30.0	17.0	0.0
Other small urban	16.0	16.0	5.0	0.0
c) URBAN VERSUS RURAL:				
All rural	75.0	80.0	41.0	0.0
All urban	33.0	30.0	10.0	0.0
d) ALL HOUSEHOLDS				
	66.0	70.0	35.0	0.0

* Includes North Eastern Province

4.2 Safe Water

The availability and household's accessibility to safe drinking water during the wet and dry seasons are important Welfare Indicators as it indicates its exposure to such water borne diseases as bilharzia, typhoid and dysentery. The distribution of these welfare indicators across the SEGs and regions is presented in Statistical Appendix Tables 11(a) and 11(b) respectively.

Fig. 11(a) and 11(b) below summarizes the results of the

analysis of the distribution of households using safe drinking water, defined as protected water points during the wet and dry season across the SEGs and regions, respectively. The results shows that at both levels households had difficulty in accessing safe drinking water during the dry season with fewer (43 per cent) households, accessing safe drinking water in the dry season compared to the 50 per cent of them doing so during wet season.

At the broad sectoral levels agricultural households were the most disadvantaged in accessing safe drinking water with 42.3 per cent and 28.6 per cent of them doing so during wet and dry seasons, respectively.

The households within the non Agricultural sector performed comparatively better in accessing safe drinking water with 73.3 per cent and 67.2 per cent of them doing so during wet and dry season, respectively.

Fig. 11(a)

AVAILABILITY OF SAFE DRINKING WATER

‡ of Households with access to safe drinking water**

SECTOR	WET SEASON	DRY SEASON
a) <u>BROAD SECTORS:</u>		
Agriculture*	42.3	28.6
Public	75.5	67.0
Formal	78.5	73.0
Informal	66.0	61.5
Other	45.0	35.0
b) <u>AGRICULTURAL SEG:</u>		
Export farmer	51.0	37.5
Food crop farmer	36.5	29.5
Subsistence farmer	28.5	18.5
Pastoralists	14.0	19.0
c) <u>NON AGRICULTURAL SEG:</u>		
Public sector	75.5	67.0
Formal sector	78.5	73.0
Informal sector	66.0	61.5
d) ALL HOUSEHOLDS	50.0	43.0

* Includes pastoralists

** Includes all protected sources of water (roof catchment, protected springs, wells and piped water source).

Fig 11(b) shows that, at the regional levels, the households in the Nyanza (26 per cent) Western (35 per cent) and Rift Valley (37 per cent) were disadvantaged in accessing safe drinking water during both the wet and dry seasons. The performance of the households in Nyanza Province in accessing safe drinking water is of particular concern as it is endowed with a large fresh water lake (Lake Victoria) and many permanent and seasonal fresh water rivers such as River Yala and River Nyando.



Fig. 11(b)

ACCESS TO SAFE DRINKING WATER

‡ of Households with access to safe drinking water**

Province/Region	WET SEASON	DRY SEASON
a) <u>RURAL:</u>		
Coast province	40.0	45.0
Eastern	43.0	36.0
Central	59.0	37.0
Rift Valley	37.0	27.0
Nyanza	26.0	20.0
Western	35.0	33.0
b) <u>URBAN:</u>		
Mombasa	98.0	98.0
Nairobi	98.0	98.0
Other main urban*	89.0	89.0
Other small urban	80.0	72.0
c) <u>URBAN VERSUS RURAL:</u>		
All rural	40.0	30.0
All urban	93.0	94.0
d) ALL HOUSEHOLDS	50.0	43.0

* Includes North Eastern Province.

The distance (spatial accessibility) to safe drinking water is an important welfare variable as it affects probability of households resorting to use of unsafe water sources located nearby, exposing them to risks of water borne diseases and reduces the productivity of the population especially women as a large proportion of their total productive time spent on household chores including fetching water from distant water points. In the WMS1, however, the spatial accessibility indicator is aggregate relating to households distance to

water points (and not safe water point). The data on distribution of households by spatial accessibility to water points during the wet and dry seasons across the SEGs and regions is provided in Statistical Appendix Tables 12(a) and 12(b), respectively.

Fig. 12(a), summarizing the results of the analysis of the data on the households spatial accessibility to water points, shows that the proportion of the household that trek 1 km or more to a water point were higher within agricultural sector (20.7 per cent and 32.4 per cent during the wet and dry seasons, respectively) compared to those within the non-agriculture sector (only 7.7 per cent and 12.3 per cent during the wet and dry seasons respectively).

Fig. 12(a)

DISTANCE OF WATER POINTS

% of Households located more than 1 km from a water point

SECTOR	WET SEASON		DRY SEASON	
	< 1km	≥ 1km	< 1 km	≥ 1 km
a) <u>BROAD SECTORS:</u>				
Agricultural Sector*	79.3	20.7	67.6	32.4
Public Sector	92.5	7.5	88.5	11.5
Formal Sector	93.5	6.5	88.5	11.5
Informal Sector	91.0	9.0	86.0	14.0
Other Sectors	84.0	16.0	77.0	23.0
b) <u>AGRICULTURAL SEGS:</u>				
Export farmer	85.5	14.5	78.0	22.0
Food crop farmer	79.5	20.5	68.5	31.5
Subsistence farmer	81.5	18.5	70.5	29.5
Pastoralists	62.0	38.0	39.0	61.0
c) <u>NON AGRICULTURAL SEGS:</u>				
Public Sector	92.5	7.5	88.5	11.5
Formal Sector	93.5	6.5	88.5	11.5
Informal Sector	91.0	9.0	86.0	14.0
d) ALL HOUSEHOLDS	85.0	15.0	78.0	22.0

* Includes pastoralists.

Within the agricultural sector, pastoralist households had the biggest problem in reaching water points with 38 per cent and 61 per cent of them travelling over 1 km to water points during the wet and dry seasons, respectively. Farmer households (export, food crop and subsistence) were not very distressed in accessing water points. Only about 17.8 per cent and 22.7 per cent of the farmer households had to trek over 1 km to a water point during wet and dry seasons, respectively. Fig.

12(b), summarizes results of the analysis of the data on the distribution of the households spatial accessibility to water points across regions, shows that the largest proportion of households trekking 1 km or more were in the Coast Province, 28 per cent and 46 per cent of them doing so during the wet and dry seasons, respectively, followed by Eastern Province (23 per cent and 37 per cent during the wet and dry season respectively) and Rift Valley and Nyanza (both 19 per cent during the wet season) and Rift Valley (31 per cent during the dry season) and Nyanza (29 per cent, during the dry season.

Fig. 12(b)

DISTANCE OF WATER POINTS

% of Households located more than 1 km from a water point

Province/Region	WET SEASON		DRY SEASON	
	< 1km	≥ 1km	< 1 km	≥ 1 km
a) RURAL:				
Coast province	72.0	28.0	54.0	46.0
Easter province	77.0	23.0	63.0	37.0
Central Province	92.0	8.0	85.0	15.0
Rift Valley Province	81.0	19.0	69.0	31.0
Nyanza Province	81.0	19.0	71.0	29.0
Western Province	84.0	16.0	83.0	17.0
b) URBAN:				
Mombasa	99.0	1.0	99.0	1.0
Nairobi	100.0	NIL	100.0	NIL
Other main urban*	95.0	5.0	96.0	4.0
Other small urban	100.0	NIL	100.0	NIL
c) URBAN VERSUS RURAL:				
All rural	82.0	18.0	72.0	28.0
All urban	98.0	12.0	98.0	2.0
d) ALL HOUSEHOLDS				
	85.0	15.0	78.0	22.0

* Includes North Eastern Province

4.3 Sanitation

The household sanitary condition, is important for public health reasons as treatment or disposal of human waste substances has implications for outbreaks of such diseases as cholera. In the WMS1, the sanitary household sanitary condition was captured through ownership rather than accessibility to some toilet facility (pit latrine, VIP latrine, bucket, W/C, etc).

The data on the distribution of household by type of

toilet facility owned across the SEGs and the regions is presented in Statistical Appendix Tables 13(a) and 13(b) respectively. Figs. 13(a) and 13(b) summarize the results of the analysis of the data. Fig 13(a) shows that the agricultural sector had the highest proportion (26 per cent) of households without any toilet facility. Within the agricultural sector, subsistence farmers, had the highest proportion (44 per cent) of its households without any toilet facilities followed by export farmers (26 per cent) and pastoralists (23.5 per cent).

At the regional level, the results in Fig. 13(b) show that Coast Province had the highest (42 per cent), incidence of households without any toilet households followed by Nyanza (30 per cent), Rift Valley (26 per cent) Eastern (21 per cent). The Central and Western Provinces had near universal ownership of some of toilet facility with only 1 per cent and 6 per cent, respectively of their households being without any toilet facility.

Fig. 13(a)

AVAILABILITY OF PIT LATRINES

‡ of Households with Pit latrines**

SECTOR	WITH LATRINES	WITH NO FORM OF TOILET
a) <u>BROAD SECTORS:</u>		
Agricultural*	72.1	26.0
Public	65.5	4.0
Formal	66.0	5.5
Informal	71.5	13.0
Other	80.0	14.0
b) <u>Agricultural SEG:</u>		
Export farmer	91.5	26.0
Food crop farmer	76.0	6.0
Subsistence farmer	74.5	44.0
Pastoralists farmer	21.0	23.5
c) <u>NON AGRICULTURAL SEG:</u>		
Public Sector	65.5	4.0
Formal Sector	66.0	5.5
Informal Sector	71.5	13.0
d) ALL HOUSEHOLDS	74.0	15.0

* Includes pastoralists

** ‡ does not add to 100 because other types of toilet are not included (such as VIP, bucket, W.C., flash etc).

Fig. 13(b)

AVAILABILITY OF PIT LATRINES

% of Households with Pit latrines

Province/Region	WITH LATRINES	WITH NO FORM OF TOILET
a) <u>RURAL:</u>		
Coast Province	56.0	42.0
Eastern Province	77.0	21.0
Central Province	96.0	1.0
Rift Valley Province	70.0	26.0
Nyanza Province	68.0	30.0
Western Province	92.0	6.0
b) <u>URBAN:</u>		
Mombasa	75.0	3.0
Nairobi	50.0	0.0
Other main urban*	64.0	
Other small urban	66.0	0.0
c) <u>URBAN VERSUS RURAL:</u>		
All rural	78.0	19.0
All urban	59.0	1.0
d) ALL HOUSEHOLDS	74.0	15.0

* Includes North Eastern Province.

4.4 Energy use

Energy, essential for both cooking and lighting, is an important source of livelihood. Data on the distribution of household by main source of fuel and lighting energy across the SEGs and regions is presented in Statistical Appendix Tables 14(a) and 14(b), respectively. Statistical Appendix Tables 15(a) and 15(b) present data on the patterns of change in household fuel sources, that is, the proportion of the population using fuel by various sources in 1992 compared with household using the same sources in 1990.

Fig. 14(a) and Fig. 14(b) summarizes the results of the analysis of the data presented in the Statistical Appendix Tables 14(a) and 14(b) respectively.

From Fig. 14(a), it is evident that firewood was the largest source of fuel energy, with 75 per cent of all households using firewood as a source of fuel while paraffin was the most prevalent source of lighting energy with 87 per cent of them using it for lighting. Across the broad SEGs agricultural sector households were the highest consumers of fuel wood with 95.9 per cent of them using it. They, were also, the highest consumers of lighting paraffin with 90.1 per cent of them using it. the use of the other source of energy (charcoal, gas or electricity) for fuel or lighting purposes vary across the SEGs and were not significant sources of energy. Firewood was still a common and significant source of fuel energy for the households in the non-agricultural sector

with 42 per cent of them using it. Charcoal and paraffin are also prevalently used sources of fuel energy averaging 11.3 per cent and 39.5 per cent, of the household using them respectively. Only a few households in this sector used gas and or electricity as a source of fuel energy. Paraffin was, again, the largest source of lighting energy for the non-agricultural sector households, with 75.7 per cent of them using it for consumption.

At the regional level, the results Fig. 14(b) shows that the majority of rural households used firewood (92 per cent) and paraffin (93 per cent) as their main source of fuel and lighting energy, respectively. In the urban areas however, although the majority of households (62 per cent) used paraffin as their main source of lighting, only a few (5.0 per cent) used firewood for fuel energy while the majority prefer paraffin (68 per cent) as a source of fuel energy.

At the provincial levels, firewood was the most prevalently used source of fuel energy, while paraffin was the corresponding main source of lighting energy.

In the urban areas, paraffin and charcoal replaced firewood as the main source of fuel energy, but paraffin still remained the main source of lighting energy. A large number of urban households also used electricity as a source of lighting with 36.5 per cent of them using it in Nairobi and Mombasa.

Fig. 14(a)

ENERGY USE BY SOURCE AND SOCIO-ECONOMIC GROUPS

% of population using

SECTOR	FUEL ENERGY					LIGHTING ENERGY				
	Fire-wood	Char-coal	Para-ffin	Gas	Elec-tricity	Fire-wood	Char-coal	Para-ffin	Gas	Elec-tricity
<u>a) BROAD SECTOR'S</u>										
Agriculture*	95.9	1.1	2.3	0.1	0.1	8.3	0.0	90.1	0.0	0.6
Public sector	40.0	14.0	38.5	5.5	2.0	1.0	0.5	72.5	0.0	25.0
Formal sector	38.5	9.5	41.0	7.0	2.5	2.0	0.5	71.5	0.0	25.0
Informal sector	47.5	10.5	39.0	1.5	1.0	3.0	0.5	83.0	0.0	13.5
Other	81.0	7.0	11.0	1.0	0.0	3.0	0.0	92.0	0.0	5.0
All Households	75.0	6.0	17.0	2.0	1.0	4.0	0.0	87.0	0.0	8.0
<u>b) AGRI SEGS:</u>										
Export farmer	95.5	1.5	2.0	0.0	0.5	3.5	0.0	94.5	0.0	1.5
Food crop farmer	96.0	1.5	2.0	0.0	0.0	5.5	0.0	93.5	0.0	0.5
Subsistence farmer	97.5	0.5	1.5	0.0	0.0	6.0	0.0	93.0	0.0	0.0
Pastoralists	93.0	1.0	5.0	1.0	0.0	28.0	0.0	69.0	0.0	0.0
<u>c) NON-AGRI SEGS:</u>										
Public sector	40.0	14.0	38.5	5.5	2.0	1.0	0.5	72.5	0.0	25.5
Formal sector	38.5	9.5	41.0	7.0	2.5	2.0	0.5	71.5	0.0	25.0
Informal sector	47.5	10.5	39.0	1.5	1.0	3.0	0.5	83.0	0.0	13.5

* Includes Pastoralists.

Fig. 14(b)

ENERGY USE BY SOURCE AND SOCIO-ECONOMIC GROUPS

% of population using

Province/ Region	FUEL ENERGY					LIGHTING ENERGY				
	Fire- wood	Char- coal	Para- ffin	Gas	Elec- tric- ity	Fire- wood	Char- coal	Para- ffin	Gas	Elec- tric ity
a) <u>RURAL:</u>										
Eastern	94.0	2.0	3.0	0.0	1.0	7.0	0.0	90.0	0.0	1.0
Western	94.0	2.0	4.0	0.0	0.0	2.0	0.0	96.0	0.0	1.0
R. Valley	92.0	3.0	4.0	0.0	0.0	9.0	0.0	88.0	0.0	2.0
Coast	89.0	6.0	4.0	0.0	0.0	3.0	1.0	92.0	0.0	3.0
Nyanza	96.0	2.0	2.0	0.0	0.0	2.0	0.0	97.0	0.0	1.0
Central	87.0	4.0	6.0	0.0	0.0	0.0	3.0	94.0	0.0	4.0
b) <u>URBAN:</u>										
Mombasa	8.0	16.0	70.0	4.0	1.0	2.0	0.0	68.0	0.0	30.0
Nairobi	1.0	3.0	79.0	12.0	5.0	2.0	0.0	56.0	0.0	43.0
Other main urban*	9.0	33.0	53.0	3.0	2.0	0.0	1.0	72.0	0.0	24.0
Other small urban	6.0	27.0	55.0	6.0	5.0	1.0	0.0	57.0	1.0	41.0
c) <u>RURAL</u> <u>VERSUS</u> <u>URBAN</u>										
All rural	92.0	3.0	4.0	0.0	0.0	4.0	0.0	93.0	0.0	2.0
All urban	5.0	16.0	68.0	8.0	3.0	1.0	1.0	62.0	0.0	36.0
d) <u>ALL</u> <u>HOUSEHOLDS</u>										
HOUSEHOLDS	75.0	6.0	17.0	2.0	1.0	4.0	0.0	87.0	0.0	8.0

* Includes North Eastern Province

CHAPTER V: HOUSEHOLD ASSETS

Household Assets are important sources of household wealth, and therefore, affect their degree of vulnerability during structural adjustment as distressed households with large tracks of land or with large herds of cattle, sheep or goats for example can dispose off these finance consumption and other expenditure. Assets data in the WMS1 was limited to size ownership and changes in the size ownership over the previous one year, data on the quality (serviceability or productivity) was not solicited. Analysis of the assets ownership data solicited in the WMS1 is presented under the following sub-headings:

5.1 Ownership of Land

Data on household ownership of land was important as over 80 per cent of Kenya's population derive their livelihood directly from land.

The data on the distribution of household by size of land holding across the SEGs and regions is presented in Statistical Appendix Tables 14(a) and 14(b), respectively.

Fig. 14(a) summarizes the results of the analysis of the data in the Statistical Appendix Table 14(a). It shows that only 8.7 per cent of agricultural households were landless. From agricultural policy standpoint, the landless agricultural population would be of more concern because landlessness loosely reflects the redundancy of agriculture labour force. Also existence of landlessness in the agricultural sector has

potential implications in the agricultural labourforce and by extension, the opportunity cost incurred in foregone agricultural production.

Fig. 14(a)

OWNERSHIP OF LANDHOLDING BY SIZE

% of Households who own

SECTOR	Landless	< 0.5 Hectares	0.5-1.9 Hectares	≥ 2.0 Hectares
a) BROAD SECTORS:				
Agricultural Sector*	8.7	15.7	48.6	27.0
Public sector	58.0	10.0	18.5	13.5
Formal Sector	61.5	13.0	15.0	10.5
Informal Sector	56.5	12.0	21.0	10.5
Other Sectors	22.0	24.0	33.0	21.0
b) AGRICULTURAL SEG:				
Export farmer	2.0	12.5	59.0	26.5
Food crop farmer	3.0	15.5	46.5	35.0
Subsistence farmer	2.0	22.5	54.4	21.0
Pastoralist	47.0	9.0	20.0	24.0
c) NON AGRICULTURAL SEG:				
Public Sector	58.0	10.0	18.5	13.5
Formal Sector	61.5	13.0	15.0	10.5
Informal Sector	56.5	12.0	21.0	10.5
d) ALL HOUSEHOLDS				
	27.0	15.0	36.0	22.0

* Includes Pastoralists.

Fig. 14(b), summarizes the distribution of household landholding across regions shows that Coast Province had the highest prevalence of landlessness (25 per cent), followed by Rift Valley (18 per cent) and Central Provinces (18 per cent). Landlessness was not less prevalent in Eastern Province with

only 2.0 per cent landless and Nyanza Province with 3 per cent
landless and Western Province with 3 per cent landless.

Fig. 14(b)

OWNERSHIP OF LANDHOLDING BY SIZE

% of Households who own

Province/Region	Landless	< 0.5 Hectares	0.5-1.9 Hectares	≥ 2.0 Hectares
a) RURAL:				
Coast Province	25.0	6.0	37.0	32.0
Eastern Province	2.0	14.0	50.0	34.0
Central	18.0	32.0	38.0	12.0
Rift Valley	18.0	15.0	36.0	31.0
Nyanza	3.0	13.0	63.0	21.0
Western	3.0	24.0	45.0	28.0
b) URBAN:				
Mombasa	97.0	1.0	2.0	0.0
Nairobi	95.0	3.0	2.0	0.0
Other main urban*	85.0	5.0	4.0	6.0
Other small urban	83.0	7.0	6.0	4.0
c) URBAN VERSUS RURAL:				
All rural	10.0	18.0	46.0	26.0
All urban	91.0	4.0	3.0	2.0
d) ALL HOUSEHOLDS				
	27.0	15.0	36.0	22.0

* Includes North Eastern Province

5.2 Ownership of Other Assets

Data on the distribution of household by ownership of other assets across the SEGs and regions is presented in Statistical Appendix Tables 15(a) and 15(b) respectively.

Expectedly, Fig 15(a) shows that the agricultural sector households were the best endowed with livestock with 70.2 per cent of them owning cattle and 48.1 per cent of them owning sheep and goats. Within the agricultural sector, the households in pastoralist sub-sector were the most endowed with cattle with 86.8 per cent of them owning cattle and 84.9

per cent of them owning sheep and goats.

Ownership of durable consumer goods (assets) such as the car, TV and radios was more widespread among the non-agricultural sector households with about 5 per cent of them owning cars; 13.1 per cent owning TVs; 66 per cent owning radios; and 21 per cent owning bicycles.

At the regional level, the results in Fig. 15(b) shows that livestock were the most widely owned assets in the provinces. Overall, 59.8 per cent of households in the rural areas owned cattle and while 40.6 per cent of them owned sheep and goats. Only 4.9 per cent of the urban households owned cattle while only 3.9 per cent of them owned sheep/goats.

Fig. 15(a)

OWNERSHIP OF OTHER ASSETS

% of Households who own

SECTOR	Cattle	Sheep/ & Goats	Car	T.V.	Radio	Bicycle
a) BROAD SECTORS:						
Agriculture Sector*	70.2	48.1	1.0	1.6	42.3	16.3
Public Sector	27.5	18.9	4.9	16.8	77.0	24.5
Formal Sector	25.7	18.3	7.1	16.0	70.3	20.5
Informal Sector	22.7	20.0	2.9	6.4	50.8	18.0
Other Sectors	42.6	28.2	1.7	4.2	52.0	15.0
b) AGRI. SEG:						
Export farmer	74.7	43.4	1.3	2.0	56.3	15.5
Food crop farmer	79.2	5.11	0.8	2.1	48.0	21.5
Subsistence farmer	48.4	31.5	0.7	0.9	32.2	16.0
Pastoralist	86.8	84.9	1.3	1.6	23.1	8.0
c) NON AGRI. SEG:						
Public Sector	27.5	18.9	4.9	16.8	77.0	24.5
Formal Sector	25.7	18.3	7.1	16.0	70.3	20.5
Informal Sector	22.7	20.0	2.9	6.4	50.8	18.0
d) ALL HOUSEHOLDS						
	48.4	33.0	2.6	5.8	53.4	20.0

* Includes pastoralist.

Fig. 15(b)

OWNERSHIP OF OTHER ASSETS

‡ of Households who own

Province/Region	Cattle	Sheep/ & Goats	Car	T.V.	Radio	Bicycle
a) <u>RURAL:</u>						
Coast Province	23.7	39.5	1.5	2.3	38.2	18.0
Eastern Province	62.3	58.1	1.4	2.1	45.1	19.0
Central Province	61.5	36.6	2.4	3.0	59.3	14.0
Rift Valley	64.9	42.3	1.9	2.4	50.4	18.0
Nyanza	58.9	35.3	0.6	1.3	40.9	22.0
Western	61.5	29.0	1.2	2.6	53.9	34.0
b) <u>URBAN:</u>						
Mombasa	2.0	2.4	2.9	13.4	68.0	10.0
Nairobi	2.1	1.2	9.8	25.1	74.0	16.0
Other main urban*	8.9	8.6	4.2	12.9	63.6	20.0
Other small urban	9.2	4.5	3.2	18.3	75.1	21.0
c) <u>URBAN VERSUS RURAL:</u>						
All rural	59.8	40.6	1.5	2.3	49.0	21.0
All urban	4.9	3.9	6.7	19.3	70.4	17.0
d) ALL HOUSEHOLDS						
	48.4	33.0	2.6	5.8	53.4	20.0

* Includes North Eastern Province.

CHAPTER VI: SUMMARY OF RECOMMENDATIONS AND CONCLUSIONS

The 70.1 per cent effective response rate of the WMS1 provide adequate baseline data for household welfare M&E. The WMS1 has provided practical lessons on survey planning and execution, methodology logistics and institutional organization. These lessons which provide a framework for the improvement of subsequent rounds of the welfare surveys. The recommendations that are suggested below highlight some of the main problems that were encountered in the NHWMES I and the options for tackling or minimising them with a view to improving the execution and management of subsequent rounds of the survey.

6.1 Sample Coverage

The North Eastern province (NEP) was under represented in the WMS1 at the design stages reducing its national character. Not only were the NEP districts of Turkana, Marsabit and Samburu wholly excluded from the survey but also the rural clusters of the covered districts of Isiolo, Garissa, Mandera and Wajir were excluded. The Province's under-representation in the survey was further worsened at the survey administration by non-sampling errors reflected in too low effective response rate for meaningful interpretation of results based on it and therefore merging it with that of other small urban areas. To enhance the national character of the series of programmed surveys, the CBS should strive for adequate representation of the NEP, implementation constraints such as security, nomadism

and staff costs notwithstanding.

6.2 Survey Reference Manual and Training of Enumerators

The survey reference manual was too inadequate to provide a helpful guide to the enumerators. The brief sketchy reference manual for the survey failed to clarify conceptual issues, definitions and objectives of questions in the questionnaires. The inadequacy of this survey instrument could have been compensated by long and intensive training of trainers and enumerators. However, due to time and budgetary constraints the training of these was both short and superficial, with possible mis-intervention of the concepts and definitions by especially by the enumerators, resulting in large number of cases with missing observations, illegal codes and others. To minimize these kinds of non-sampling data problems, the CBS should prepare an elaborate reference manual giving details on concepts, definitions and objectives of questions to guide both enumerators and survey supervisors. In addition, the training of both trainers (supervisors) and enumerators based on the elaborate reference manual should be long and intensive.

6.3 Supervision

In addition to weak training of enumerators, the large incidence (27.9%) of case with missing observations and outliers excluded from the effective sample, could be attributed to weak supervision both at the survey implementation and data entry and validation stages. With

effective supervision the observed data problems could have been timely detected and treated through field manual editing of questionnaires. The CBS should, therefore, intensify its supervision in the future surveys.

6.4 Survey Questionnaires

The WMSI set of questionnaires were the shortest yet used under the SDA project, facilitating its implementation to the largest possible necessary in a PS. However, certain marginal adjustments to the questionnaires appear necessary to enhance their adequacy as survey instruments. First, on household characteristics, the questionnaire should distinguish between visiting children and those that are offsprings of the household head.

Second while the information on the main economic status should have been useful in generating meaningful socio-economic characteristics, the codes used in the questionnaire might have been confusing to the enumerators. This is because the concept of main economic status was defined in terms of "time spent per day on the activity" (a concept for main occupation) rather than in terms of the conventional main source of income. The questionnaire should be revised to distinguish between the codes for main economic status and main occupation to avoid possible confusion between say "export oriented", and cash crop", and "food/subsistence farmers" and "pastoralists". Furthermore, the "main economic status" variable did not distinguish between employees and

self employed.

Codes (legend) for farmers/women group activities should be given to guide solicitation of the relevant data.

Fourth, in the absence of community-based price surveys information on food purchases should include quantities purchased to facilitate the determination of the calorific content of the food expenditure data in a WMS. Furthermore, the questionnaire should be adjusted to all for itemized food expenditure. The current grouping of food gifts with other in-kind and cash gifts understates food consumption expenditure and does not facilitate analysis of the (expenditure) consumption patterns of the poor in meaningful detail.

Fifth, the questionnaire should be adjusted to capture information on the household spatial accessibility to education health and sanitation (toilet) facilities as was the case with water points.

Sixth, the questionnaire allowed for only four options for information on crops sold, consumed and in stock, implying that for cases with more than four crops, the enumerator had to total these up and add these to those for the last crop entered, taking care to maintain the same units of measure. Furthermore, the questionnaire does not guide the enumerator or units of quantity and price measurement differential concepts of measurement by enumerators and, hence, incomparability of the data generated. Hence, the

self employed.

Codes (legend) for farmers/women group activities should be given to guide solicitation of the relevant data.

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questionnaires should be adjusted to allow for more than four crops and specify units of measurement.

Seventh, the questionnaire did not itemize the costs of inputs to livestock production, being possibly lumped "other agricultural expenses", increasing the margin of error in estimating individual components of agricultural income (food crops, cash crops, livestock income). Furthermore, the questionnaire does not provide for the costs of hired labour, implying possible exaggeration of agricultural incomes, especially for cash crops and difficulty in allocation by source (cash/export crops, food crops, livestock income) and differentiation of farmers by SEGs. The questionnaires should, therefore be adjusted to allow for the itemization of cost of agricultural inputs including cost of hire labour.

Finally, with regard to assets, the questionnaire should be adjusted to reflect quality (productivity and serviceability) of the assets owned.

The above suggested adjustment to the questionnaire should minimize the current analytical burden of the survey data it puts the respondents and enumerators, especially with regard to determination of values and codes.

6.5 Data Processing and Analysis Hardware and Software

The WMS1 data was processed and analysed using the clients micro-computers (386 series) using Dbase software. The capacity of the computer hardware (40 bytes) was the too

small for the size of data, implying very slow processing and analysis of the data. For timely processing and analysis of the survey data, the CBS should acquire higher capacity computer hardware (say 486 series). While the Dbase software used in data processing is flexible and understood most CBS staff, it is not as convenient as IMPS in the detection of data entry errors. To minimize survey data entry and validation errors, the CBS should adopt IMPS and train its staff in its use for data processing.

REFERENCES

1. Anzagi, S.K. and F.K. Bernard, 1977a. Population Pressure in Kenya: A Preliminary Report, CBS, Nairobi.
2. Atkinson, A.B., 1987. On Measure of Pverty, Econometrica, 55
3. Boateng, E.O. et al, 1990. A Poverty Profile for Ghana, 1987-88, Social Dimension of Adjustment in Sub-Saharan Africa, Working Paper No.5, World Bank, Washington, D.C.
4. Cllier, P., Lal, D. 1980. Poverty and Growth in Kenya, World Bank Staff Working paper No.389, Washington, D.C.
5. Collier, P., Lal, D., 1984. Why the Poor Get Rich: Kenya 1960-79, World Development, 12(10).
6. Crawford, E and Thorbecke, E. 1980. The Analysis of Food Poverty: and Illustrations from Kenya, Pakistan Development - Review, 19(4)
7. Greer, J., Thorbecke, E. 1986a. Food poverty and Consumption Patterns in Kenya, ILO, Geneva.
8. Greer, J., Thorbecke, E. 1986b. Food Poverty Profile Applied to Kenyan Smallholders, Economic Development and Cultural Change, 35(4)
9. Greer, J., Thorbecke, E. 1986c. A Methodology of Measuring Food Poverty Applied to Kenya, Journal of Development Economics, 24
10. Grootaert, C. 1983. The Conceptual Basis of Measures of Household Welfare and Their Implied Survey Data Requirements, The Review of Income and Wealth, 29(1)
11. Grootaert, C. 1993. The Evolution of Welfare and Poverty Under Structural Change and Economic Recessions in Cote d'Ivoire.

- 1985-88, World Bank Working Paper No.1078, Africa Technical Department, January.
12. Kenya, Central Bureau of Statistics, 1993. Economic Survey 1993 (Chapter 3: National Household Welfare Monitoring and Evaluation Survey), Government Printers, Nairobi.
 13. United Nations National Household Capability Programme, 1989. Household Income and Expenditure Surveys: A Technical Study, U.N., New York.
 14. OECD, 1982. The OECD List of Social Indicators, Paris
 15. World Bank, 1990b. Structural Adjustment and Poverty: A Conceptual, Empirical and Policy Framework, World Bank, SDA Unit, Africa Region.
 16. World Bank, 1991. The Social Dimensions of Adjustment Priority Survey: An Instrument for the Rapid Identification and Monitoring of Policy Target Groups, Social Dimensions of Adjustment in Sub-Saharan Africa, Working Paper No. 12: Surveys and Statistics, Washington, D.C
 17. Zaidi, M.A. and K. de Vos, 1993, Poverty Statistics in Pakistan: Some Sensitivity, Pakistan Institute of Development Economics (PIDE), Islamabad.

ANNEX

BASIC STATISTICAL TABLES

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Distribution of household heads by highest grade and socio-economic group

	None	Primary	Secondary	University	Other	Total
Export oriented crop	15%	53%	14%	0%	19%	100%
Cash crop	10%	64%	14%	0%	13%	100%
Subsistence farmer	20%	46%	10%	0%	23%	100%
Pastoralist	35%	14%	4%	0%	47%	100%
Casual worker	9%	58%	17%	0%	16%	100%
Skilled public worker	0%	22%	71%	6%	1%	100%
Unskilled public worker	5%	47%	39%	0%	8%	100%
Formal private sector	3%	38%	52%	2%	5%	100%
Informal sector	6%	51%	33%	1%	9%	100%
Inactive/unemployed	25%	29%	13%	0%	33%	100%
Student	0%	23%	62%	8%	8%	100%
Rural clusters	13%	36%	13%	0%	16%	77%
urban clusters	1%	8%	12%	1%	1%	23%
All households	14%	44%	25%	1%	17%	100%

Welfare Monitoring Survey, CBS, KENYA-1993

Distribution of households by household size and region

	Number of persons							Total	Mean
	0	1-2	3-4	5-6	7-8	9-10	and over		
Nairobi province	0%	50%	28%	16%	4%	2%	0%	100%	2.98
Nairobi	0%	50%	28%	16%	4%	2%	0%	100%	2.98
Central province	1%	30%	24%	22%	15%	6%	2%	100%	4.42
Kiambu	1%	32%	24%	24%	12%	6%	1%	100%	4.35
Kirinyaga	0%	32%	34%	12%	13%	7%	2%	100%	4.13
Murang'a	1%	30%	24%	18%	20%	6%	1%	100%	4.53
Nyandarua	0%	27%	24%	22%	15%	9%	3%	100%	4.7
Nyeri	0%	28%	24%	29%	15%	3%	1%	100%	4.41
Coast province	2%	34%	23%	20%	11%	7%	3%	100%	4.49
Kilifi	3%	36%	19%	23%	10%	5%	4%	100%	4.51
Kwale	1%	28%	21%	26%	13%	10%	1%	100%	4.85
Lamu	0%	25%	30%	18%	20%	6%	1%	100%	4.67
Mombasa	1%	46%	26%	11%	7%	7%	2%	100%	3.62
T/taveta	2%	17%	30%	24%	19%	6%	2%	100%	5
Tana river	7%	8%	16%	29%	21%	13%	6%	100%	7.06
Eastern province	1%	18%	21%	26%	21%	11%	2%	100%	5.46
Embu	0%	29%	23%	24%	15%	8%	1%	100%	4.42
Isiolo	5%	16%	58%	21%	0%	0%	0%	100%	3.83
Kitui	0%	17%	20%	26%	18%	15%	4%	100%	5.64
Machakos	0%	16%	15%	28%	24%	13%	4%	100%	5.86
Meru	2%	16%	25%	24%	22%	10%	1%	100%	5.33
N. eastern province	0%	46%	21%	9%	20%	4%	0%	100%	4.17
Garissa	0%	56%	19%	13%	6%	6%	0%	100%	3.56
Manddera	0%	25%	25%	0%	50%	0%	0%	100%	5.5
Wajir	0%	43%	43%	0%	14%	0%	0%	100%	3.29
Nyanza province	1%	24%	25%	25%	15%	9%	1%	100%	4.79
Kisii	0%	11%	23%	27%	22%	16%	1%	100%	5.74
KKisumu	0%	28%	32%	23%	11%	5%	1%	100%	4.31
Siaya	1%	32%	28%	23%	10%	6%	0%	100%	4.2
Homa Bay	1%	28%	22%	27%	14%	6%	2%	100%	4.75
Rift valley province	1%	25%	22%	23%	17%	10%	2%	100%	4.96
Kajiado	1%	39%	21%	20%	11%	7%	1%	100%	4.09
Kericho	2%	13%	19%	25%	24%	15%	2%	100%	5.87
laikipia	1%	20%	24%	37%	13%	5%	0%	100%	4.65
Nakuru	1%	37%	24%	18%	12%	7%	1%	100%	4.06
Nandi	1%	21%	26%	23%	14%	11%	4%	100%	5.09
Narok	2%	24%	13%	28%	21%	10%	2%	100%	5.38
Baringo	0%	31%	23%	25%	16%	4%	1%	100%	4.4
Elgeyo M.	0%	23%	22%	27%	14%	13%	1%	100%	4.99
Trans nzoia	3%	16%	21%	25%	24%	6%	5%	100%	5.95
Uasin gishu	2%	36%	23%	14%	15%	10%	0%	100%	4.47
west pokot	0%	20%	33%	22%	14%	10%	1%	100%	4.72
Western province	2%	17%	23%	26%	19%	12%	1%	100%	5.48
Bungoma	5%	19%	21%	22%	16%	15%	2%	100%	5.86
Busia	0%	15%	24%	32%	18%	10%	1%	100%	5.27
Kakamega	2%	15%	30%	24%	18%	10%	1%	100%	5.24
Vihiga	0%	18%	15%	30%	24%	12%	1%	100%	5.53
Rural clusters	1%	21%	23%	25%	18%	10%	2%	100%	5.18
urban clusters	0%	48%	29%	15%	6%	2%	0%	100%	3.14
All households	1%	27%	24%	23%	15%	8%	2%	100%	4.74

Distribution of households by household size and socio-economic group

	Number of persons							Total	Mean size
	0	1-2	3-4	5-6	7-8	9-10	11 and over		
Export oriented crop	1%	21%	33%	20%	13%	12%	0%	100%	4.74
Cash crop	3%	20%	15%	23%	26%	12%	1%	100%	5.65
Subsistence farmer	1%	20%	24%	26%	17%	10%	2%	100%	5.17
Pastoralist	4%	17%	22%	20%	21%	11%	5%	100%	5.96
Casual worker	0%	44%	24%	16%	9%	5%	2%	100%	3.66
Skilled public worker	1%	29%	22%	21%	17%	8%	2%	100%	4.78
Unskilled public worker	0%	37%	25%	21%	12%	4%	1%	100%	3.94
Formal private sector	0%	36%	24%	22%	11%	6%	1%	100%	3.96
Informal sector	1%	32%	27%	20%	12%	6%	2%	100%	4.25
Inactive/unemployed	1%	50%	22%	15%	7%	4%	1%	100%	3.30
Student	0%	68%	17%	15%	0%	0%	0%	100%	2.15
All households	1%	27%	24%	23%	15%	8%	2%	100%	4.74

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Distribution of households by sex of household head and region

	Male	Female	Total
Export oriented crop	60%	40%	100%
Cash crop	78%	22%	100%
Subsistence farmer	60%	40%	100%
Pastoralist	82%	18%	100%
Casual worker	73%	27%	100%
Skilled public worker	89%	11%	100%
Unskilled public worker	86%	14%	100%
Formal private sector	87%	13%	100%
Informal sector	79%	21%	100%
Inactive/unemployed	46%	54%	100%
Student	81%	19%	100%
All households	70%	30%	100%

Welfare Monitoring Survey, CBS, KENYA-1993

Distribution of households by sex of household head and region

district	Male	Female	Total
Nairobi	77%	23%	100%
Kiambu	69%	31%	100%
Kirinyaga	74%	26%	100%
Murang'a	55%	45%	100%
Nyandarua	70%	30%	100%
Nyeri	64%	36%	100%
Kilifi	71%	29%	100%
Kwale	80%	20%	100%
Lamu	76%	24%	100%
Mombasa	84%	16%	100%
T/taveta	57%	43%	100%
Tana river	75%	25%	100%
Embu	61%	39%	100%
Isiolo	57%	43%	100%
Kitui	68%	32%	100%
Machakos	74%	26%	100%
Meru	74%	26%	100%
Garissa	87%	13%	100%
Manddera	75%	25%	100%
Wajir	43%	57%	100%
Kisii	70%	30%	100%
KKisumu	63%	37%	100%
Siaya	55%	45%	100%
Homa Bay	60%	40%	100%
Kajiado	78%	22%	100%
Kericho	83%	17%	100%
laikipia	71%	29%	100%
Nakuru	75%	25%	100%
Nandi	78%	22%	100%
Narok	74%	26%	100%
Baringo	86%	14%	100%
Elgeyo M.	81%	19%	100%
Trans nzoia	74%	26%	100%
Uasin gishu	82%	18%	100%
west pokot	81%	19%	100%
Bungoma	78%	22%	100%
Busia	59%	41%	100%
Kakamega	57%	43%	100%
Vihiga	47%	53%	100%
Rural clusters	68%	32%	100%
Urban clusters	76%	24%	100%
All households	70%	30%	100%

Distribution of weighted households and mean sample weight by socio-economic group

	house- holds	propor- tion	mean weight
Export oriented crop	58790	1.00%	744
Cash crop	203412	4.00%	730
Subsistence farmer	2388890	49.00%	837
Pastoralist	76437	2.00%	539
Casual worker	194315	4.00%	895
Skilled public worker	459336	9.00%	836
Unskilled public worker	202115	4.00%	820
Formal private sector	483622	10.00%	945
Informal sector	657346	13.00%	814
Inactive/unemployed	160909	3.00%	852
Student	8565	0.00%	840
All households	4891736	100.00%	838

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Distribution of weighted households and mean sample weight by region

district	house- holds	propor- tion	mean weight
Nairobi	137284	10.0%	782
Kiambu	249193	5.1%	868
Kirinyaga	91246	1.9%	739
Murang'a	202873	4.1%	823
Nyandarua	73608	1.5%	441
Nyeri	146036	3.0%	681
Kilifi	125969	2.6%	1366
Kwale	67526	1.4%	433
Lamu	14741	0.3%	271
Mombasa	119762	2.4%	672
T/taveta	34187	0.7%	229
Tana river	22396	0.5%	365
Embu	75664	1.5%	521
Isiolo	3538	0.1%	198
Kitui	116890	2.4%	637
Machakos	245203	5.0%	1009
Meru	273490	5.6%	1149
Garissa	14297	0.3%	3911
Manddera	6783	0.1%	1696
Wajir	507	0.0%	72
Kisii	221413	4.5%	630
KKisumu	177699	3.6%	580
Siaya	195465	4.0%	853
Homa Bay	261580	5.3%	1276
Kajiado	58945	1.2%	470
Kericho	214477	4.4%	852
laikipia	48695	1.0%	293
Nakuru	197901	4.0%	1081
Nandi	102927	2.1%	520
Narok	89164	1.8%	937
Baringo	58059	1.2%	432
Elgeyo M.	43014	0.9%	265
Trans nzoia	102048	2.1%	1064
Uasin gishu	117378	2.4%	915
west pokot	53513	1.1%	405
Bungoma	168096	3.4%	653
Busia	114525	2.3%	587
Kakamega	188276	3.8%	1034
Vihiga	107388	2.2%	1214
Rural clusters	3843854	79.0%	821
Urban clusters	1047882	21.0%	894
All households	4891736	100.0%	836

Distribution of sampled households and mean sample weight by region

district	house- holds	propor- tion	mean weight
Nairobi	920	10.8%	530
Kilambu	357	4.2%	698
Kirinyaga	153	1.8%	596
Murang'a	269	3.2%	754
Nyandarua	197	2.3%	374
Nyeri	243	2.9%	601
Kilifi	219	2.6%	575
Kwale	178	2.1%	384
Lamu	80	0.9%	184
Mombasa	265	3.1%	452
T/taveta	172	2.0%	199
Tana river	78	0.9%	287
Embu	164	1.9%	461
Isiolo	18	0.2%	197
Kitui	246	2.9%	475
Machakos	318	3.7%	771
Meru	332	3.9%	824
Garissa	9	0.1%	1589
Manddera	4	0.0%	1696
Wajir	7	0.1%	72
Kisii	398	4.7%	556
KKisumu	375	4.4%	474
Siaya	263	3.1%	743
Homa Bay	273	3.2%	958
Kajiado	167	2.0%	353
Kericho	287	3.4%	747
laikipia	197	2.3%	247
Nakuru	257	3.0%	770
Nandi	268	3.1%	384
Narok	135	1.6%	660
Baringo	190	2.2%	306
Eigeyo M.	185	2.2%	233
Trans nzoia	105	1.2%	972
Uasin gishu	190	2.2%	618
west pokot	163	1.9%	328
Bungoma	305	3.6%	551
Busia	221	2.6%	518
Kakamega	215	2.5%	876
Vihiga	96	1.1%	1119
Rural clusters	6590	77%	583
Urban clusters	1927	23%	544
All households	8517	100%	574

Distribution of children not attending school by reason for not completing education cycle and socio-economic group

	Not applicable	Pregnancy	Illness	Fees	Marriage	Failed exam	No interest	No reason	total
Export oriented	1%	0%	0%	0%	0%	0%	0%	0%	1%
Cash crop	4%	0%	0%	1%	0%	0%	0%	0%	5%
Subsistence farmer	41%	1%	1%	5%	1%	1%	3%	2%	53%
Pastoralist	2%	0%	0%	0%	0%	0%	0%	0%	2%
Casual worker	2%	0%	0%	0%	0%	0%	0%	0%	3%
Skilled public worker	8%	0%	0%	1%	0%	0%	0%	0%	9%
Unskilled public worker	2%	0%	0%	1%	0%	0%	0%	0%	3%
Formal private sector	8%	0%	0%	1%	0%	0%	0%	0%	8%
Informal sector	9%	0%	0%	2%	0%	0%	0%	0%	12%
Inactive/unemployed	2%	0%	0%	0%	0%	0%	0%	0%	2%
Student	0%	0%	0%	0%	0%	0%	0%	0%	0%
All households	77%	2%	1%	10%	2%	1%	5%	3%	100%

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School Attendance by Sex and Socio-economic group

	Not applicable		Attending		Not attending		Total
Export oriented	0%	0%	0%	0%	0%	0%	1%
Cash crop	1%	0%	1%	0%	2%	0%	5%
Subsistence farmer	6%	3%	12%	7%	18%	8%	53%
Pastoralist	1%	0%	0%	0%	1%	0%	2%
Casual worker	0%	0%	1%	0%	1%	0%	3%
Skilled public worker	1%	0%	3%	0%	4%	0%	9%
Unskilled public worker	1%	0%	1%	0%	2%	0%	3%
Formal private sector	1%	0%	2%	0%	4%	0%	8%
Informal sector	2%	0%	3%	1%	5%	1%	12%
Inactive/unemployed	0%	0%	0%	0%	1%	1%	2%
Student	0%	0%	0%	0%	0%	0%	0%
All households	13%	4%	24%	9%	39%	12%	100%

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Secondary school enrollment by sex and socio-economic group

	At school		Not at school		Total
	male	female	male	female	
Export oriented	1%	0%	0%	0%	1%
Cash crop	4%	1%	0%	0%	5%
Subsistence farmer	33%	16%	3%	1%	53%
Pastoralist	2%	0%	0%	0%	2%
Casual worker	2%	1%	0%	0%	3%
Skilled public worker	8%	1%	1%	0%	9%
Unskilled public worker	3%	0%	0%	0%	3%
Formal private sector	7%	1%	0%	0%	8%
Informal sector	9%	2%	0%	0%	12%
Inactive/unemployed	1%	1%	0%	0%	2%
Student	0%	0%	0%	0%	0%
All households	70%	23%	5%	2%	100%

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Distribution of unemployed population by sex and socio-economic group

	Employed		Unemp- loyed		Not app- licable		Total
	male	female	male	female	male	female	
Export-oriented crop	44%	23%	9%	3%	17%	5%	100%
Cash crop	49%	12%	13%	3%	19%	4%	100%
Subsistence	39%	18%	13%	7%	15%	8%	100%
Pastoralist	52%	8%	8%	3%	26%	3%	100%
Casual worker	41%	10%	19%	7%	15%	7%	100%
Skilled public worker	49%	5%	22%	2%	21%	1%	100%
Unskilled public worker	47%	6%	21%	3%	19%	4%	100%
Formal private sector	48%	5%	24%	3%	17%	2%	100%
Informal sector	46%	9%	18%	6%	17%	4%	100%
Inactive/Unemployed	18%	10%	26%	28%	7%	11%	100%
Student	29%	16%	46%	8%	0%	0%	100%
All households	42%	13%	16%	6%	16%	6%	100%

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Distribution of illness by type and socio-economic group.

	None	Vomit/	Fever/	Cough/	Sounds	eases	Skin	Eye	Other	Total
	Diarrhoea	Malaria	Cold				rash	fection		
Export-oriented crop	83%	1%	6%	4%	0%	0%	1%	0%	3%	100%
Cash crop	82%	1%	10%	4%	1%	1%	0%	0%	2%	100%
Subsistence	82%	2%	9%	3%	1%	0%	1%	0%	2%	100%
Pastoralist	85%	1%	8%	4%	0%	0%	0%	1%	2%	100%
Casual worker	82%	1%	9%	3%	1%	0%	1%	0%	3%	100%
Skilled public worker	85%	1%	9%	3%	0%	0%	0%	0%	1%	100%
Unskilled public worker	80%	2%	11%	3%	1%	1%	0%	0%	2%	100%
Formal private sector	82%	2%	9%	2%	1%	0%	0%	0%	2%	100%
Informal sector	81%	2%	10%	3%	1%	0%	0%	0%	2%	100%
Inactive/Unemployed	77%	2%	9%	3%	1%	0%	1%	1%	6%	100%
Student	89%	0%	6%	0%	6%	0%	0%	0%	0%	100%
All households	82%	2%	9%	3%	1%	0%	1%	0%	2%	100%

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Incidence of illness by Socio-economic group.

	sick in the past seven days		
	sick	not sick	total
Export-oriented crop	15%	85%	100%
Cash crop	14%	86%	100%
Subsistence	16%	84%	100%
Pastoralist	13%	87%	100%
Casual worker	16%	84%	100%
Skilled public worker	12%	88%	100%
Unskilled public worker	18%	82%	100%
Formal private sector	15%	85%	100%
Informal sector	16%	84%	100%
Inactive/Unemployed	20%	80%	100%
Student	6%	94%	100%
All households	16%	84%	100%

Welfare Monitoring Survey, CBS, KENYA-1993

Literacy rate of Household Head by Sex and Region

	Literate		Not literate		Total
	male	female	male	female	
Nairobi province	74%	21%	3%	3%	100%
Nairobi	74%	21%	3%	3%	100%
Central province	56%	19%	9%	16%	100%
Kiambu	61%	18%	8%	14%	100%
Kirinyaga	64%	8%	10%	18%	100%
Murang'a	42%	27%	13%	18%	100%
Nyandarua	61%	19%	9%	12%	100%
Nyeri	59%	18%	5%	17%	100%
Coast province	55%	13%	21%	11%	100%
Kilifi	47%	17%	24%	12%	100%
Kwale	40%	4%	40%	16%	100%
Lamu	67%	7%	9%	16%	100%
Mombasa	77%	12%	7%	4%	100%
T.taveta	50%	25%	7%	18%	100%
Tana river	21%	3%	54%	22%	100%
Eastern province	49%	10%	22%	19%	100%
Embu	44%	18%	17%	21%	100%
Isiolo	57%	32%	0%	10%	100%
Kitui	41%	6%	27%	26%	100%
Machakos	55%	11%	19%	15%	100%
Meru	49%	8%	24%	18%	100%
North eastern province	82%	5%	0%	13%	100%
Garissa	87%	6%	0%	6%	100%
Mandera	75%	0%	0%	25%	100%
Wajir	29%	29%	14%	29%	100%
Nyanza province	45%	11%	17%	27%	100%
Kisii	55%	11%	15%	19%	100%
Kisumu	46%	11%	17%	26%	100%
Siaya	39%	12%	16%	33%	100%
Homa bay	40%	11%	20%	29%	100%
Rift valley province	54%	9%	24%	12%	100%
Kajiado	50%	12%	28%	10%	100%
Kericho	53%	2%	30%	15%	100%
Laikipia	55%	17%	16%	13%	100%
Nakuru	60%	15%	15%	10%	100%
Nandi	53%	7%	25%	15%	100%
Narok	50%	12%	24%	14%	100%
Baringo	60%	6%	26%	8%	100%
Elgeyo M.	50%	6%	31%	14%	100%
Trans nzoia	54%	13%	21%	13%	100%
Uasin Gishu	66%	11%	16%	8%	100%
West Pokot	29%	2%	52%	17%	100%
Western province	47%	17%	15%	21%	100%
Bungoma	65%	9%	13%	13%	100%
Busia	38%	12%	22%	29%	100%
Kakamega	44%	21%	12%	23%	100%
Vihiga	33%	28%	15%	24%	100%
Rural	48%	12%	20%	20%	100%
Urban	73%	20%	4%	4%	100%
All households	53%	14%	17%	16%	100%

Literacy rate of Household Head by Sex and Region

	Literate		Not literate		Total
	male	female	male	female	
Nairobi province	74%	21%	3%	3%	100%
Nairobi	74%	21%	3%	3%	100%
Central province	56%	19%	9%	16%	100%
Kiambu	61%	18%	8%	14%	100%
Kirinyaga	64%	8%	10%	18%	100%
Murang'a	42%	27%	13%	18%	100%
Nyandarua	61%	19%	9%	12%	100%
Nyeri	59%	18%	5%	17%	100%
Coast province	55%	13%	21%	11%	100%
Kilifi	47%	17%	24%	12%	100%
Kwale	40%	4%	40%	16%	100%
Lamu	67%	7%	9%	16%	100%
Mombasa	77%	12%	7%	4%	100%
T.taveta	50%	25%	7%	18%	100%
Tana river	21%	3%	54%	22%	100%
Eastern province	49%	10%	22%	19%	100%
Embu	44%	18%	17%	21%	100%
Isiolo	57%	32%	0%	10%	100%
Kitui	41%	6%	27%	26%	100%
Machakos	55%	11%	19%	15%	100%
Meru	49%	8%	24%	18%	100%
North eastern province	82%	5%	0%	13%	100%
Garissa	87%	6%	0%	6%	100%
Mandera	75%	0%	0%	25%	100%
Wajir	29%	29%	14%	29%	100%
Nyanza province	45%	11%	17%	27%	100%
Kisii	55%	11%	15%	19%	100%
Kisumu	46%	11%	17%	26%	100%
Siaya	39%	12%	16%	33%	100%
Homa bay	40%	11%	20%	29%	100%
Rift valley province	54%	9%	24%	12%	100%
Kajiado	50%	12%	28%	10%	100%
Kericho	53%	2%	30%	15%	100%
Laikipia	55%	17%	16%	13%	100%
Nakuru	60%	15%	15%	10%	100%
Nandi	53%	7%	25%	15%	100%
Narok	50%	12%	24%	14%	100%
Baringo	60%	6%	26%	8%	100%
Elgeyo M.	50%	6%	31%	14%	100%
Trans nzoia	54%	13%	21%	13%	100%
Uasin Gishu	66%	11%	16%	8%	100%
West Pokot	29%	2%	52%	17%	100%
Western province	47%	17%	15%	21%	100%
Bungoma	65%	9%	13%	13%	100%
Busia	38%	12%	22%	29%	100%
Kakamega	44%	21%	12%	23%	100%
Vihiga	33%	28%	15%	24%	100%
Rural	48%	12%	20%	20%	100%
Urban	73%	20%	4%	4%	100%
All households	53%	14%	17%	16%	100%

Literacy rate of Household Head by Sex and Socio-economic group

	Literate		Not literate		Total
	male	female	male	female	
Export-oriented farmer	46%	18%	14%	22%	100%
Cash crop	63%	10%	15%	12%	100%
Subsistence farmer	38%	14%	22%	26%	100%
Pastoralist	17%	1%	66%	17%	100%
Casual worker	55%	17%	18%	10%	100%
Skilled public worker	88%	11%	1%	0%	100%
Unskilled public worker	73%	11%	13%	3%	100%
Formal private sector	82%	11%	5%	2%	100%
Informal sector	69%	16%	10%	5%	100%
Inactive/unemployed	21%	18%	25%	37%	100%
Student	81%	19%	0%	0%	100%
All households	53%	14%	17%	16%	100%

Welfare Monitoring Survey, CBS, KENYA-1993.