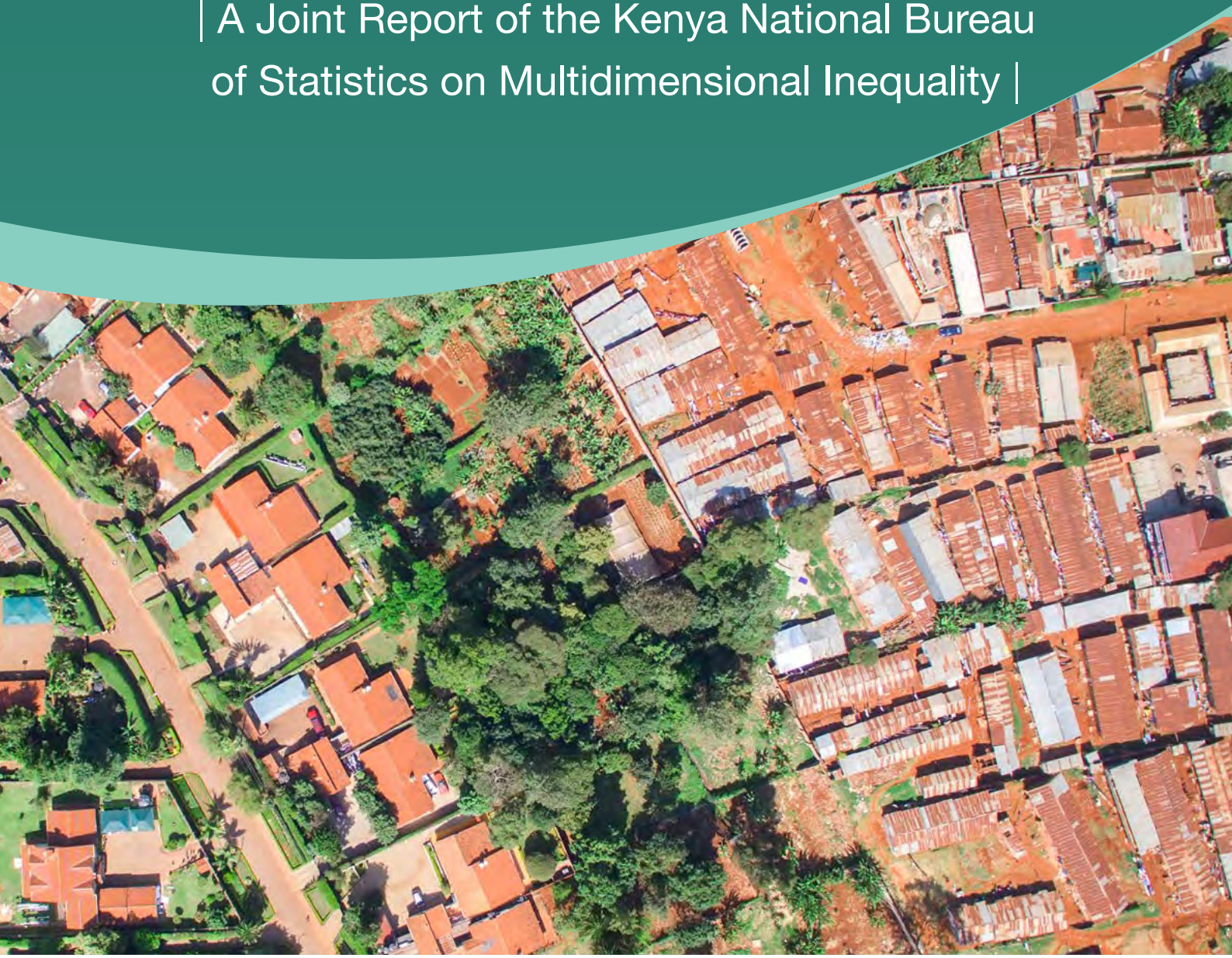
INEQUALITY TRENDS AND DIAGNOSTICS IN KENYA 2020

| A Joint Report of the Kenya National Bureau of Statistics on Multidimensional Inequality |



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UNIVERSITY OF NAIROBI

ARUA African Research Universities Alliance

ACEIR AFRICAN CENTRE OF EXCELLENCE FOR INEQUALITY RESEARCH

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

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INEQUALITY TRENDS AND DIAGNOSTICS IN KENYA 2020

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PREFACE

This report is a joint publication produced by the Kenya National Bureau of Statistics (KNBS) in partnership with the Eastern Africa research node of the African Centre of Excellence for Inequality Research (ACEIR) based at the School of Economics, University of Nairobi, with support from Agence Française de Developpement (AFD) and the European Union (EU). The report presents a comprehensive analysis of multidimensional inequality in Kenya over the period 1994 to 2016 using nationally representative survey data collected and released by the KNBS. The household datasets used in the analysis were derived from the 1994 Welfare Monitoring Survey (WMS II), the Kenya Integrated Household Budget Surveys for 2005/06 and 2015/16, the Labour Force Survey for 1998/99 and the 2009 Kenya Population and Housing Census. In addition, the report uses secondary data from local and international reports to enrich the information derived from sample surveys.

The report presents and interprets results from inequality analyses and measurements based on per capita household expenditure, assets, labour market earnings and access to labour market, to education and health, and to other basic services. The multidimensional approach to profiling inequality adopted in the report can facilitate the design of policy levers for addressing horizontal and vertical inequities that have been entrenched in the country for a long time. The inequality estimates discussed in the report are disaggregated by population sub-groups, gender, and geographical regions. The inequality levels, approximated by the Gini and Theil indices have further been decomposed to highlight the main drivers of disparities in well-being among Kenyans.

The report takes advantage of data from the Kenya population censuses and the housing surveys to draw maps of multidimensional inequalities at national and county levels that show in a snapshot, the geographic concentrations of disparities in social welfare countrywide. It is my hope that this landmark study will be a catalyst for policies to overcome the twin problems of inequality and poverty in Kenya and beyond.

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November 2020, Nairobi.

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This report could not have been possible without the partnership between the University of Nairobi, Agence Française de Developpement (AFD), the Kenya National Bureau of Statistics (KNBS) and African Centre of Excellence for Inequality Research (ACEIR), which has an administrative hub at the University of Cape Town, and regional research nodes at the University of Ghana and the University of Nairobi. The report benefited from a similar report produced by the University of Cape Town in partnership with Statistics South Africa.

Special recognition goes to the Kenyan research team – comprising Germano Mwabu, Damiano Kulundu Manda, Anthony Wambugu, Moses Muriithi, Reuben Mutegi, Samuel Kipruto, Paul Samoei, and Martine Oleche. Also acknowledged and appreciated is the support received from Faith Mutuku of the School of Economics at the University of Nairobi for her diligent role in liaison and communication throughout the project.

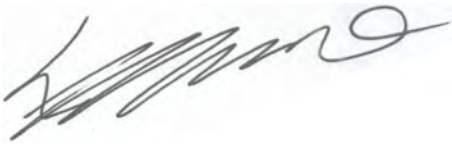
The AFD steered this initiative by ensuring that its focus stayed on trends and diagnostics of inequality in Kenya as stipulated in project documents. The AFD facilitated formation of the project steering committee, which ensured that the report provided the needed policy evidence. Special mention goes to the steering committee members who found time to go through the report and give feedback that greatly improved its quality.

The members of the steering committee comprised Zachary Mwangi, former Director General, the Kenya National Bureau of Statistics; Geoffrey Mwau, Senior Advisor to the Cabinet Secretary, the National Treasury; Madara Ogot, former Deputy Vice Chancellor, Research Innovation and Enterprise, University of Nairobi; Anda David, AFD Headquarters, Paris; Kwame Owino, Executive Director, Institute of Economic Affairs (IEA), Nairobi; Tabitha Kiriti, the WTO Chair, University of Nairobi; the representatives from the European Union, Kenya Office; and Nyokabi Gitahi, Project officer, AFD, Nairobi. Anda David and Hellen Ehrhart were the link pins between Kenyan researchers and the AFD Headquarters in Paris.

The Kenya's custodian of official data, the KNBS, recognises the critical role that this report has played in providing credible evidence on how the problem of multidimensional inequality in Kenya can be addressed. The Bureau spearheaded data processing for the report and provided further information on living standards in the whole country.

The African Centre of Excellence for Inequality Research (ACEIR) at the University of Cape Town (UCT), South Africa, is acknowledged in a special way in this work. The ACEIR hub at UCT prepared a handbook on social inequalities that was used to construct the multidimensional inequality metrics contained in this report. The hub has been instrumental in providing analytical and policy insights into inequality diagnostics by organising learning workshops to which it sponsored the Kenyan team for a course in R-programming and spatial analysis. I wish to take this opportunity to applaud the African Research Universities Alliance (ARUA) for establishing ACEIR and similar research institutions in Africa.

Last but not least, the report and the Kenyan team benefited from valuable ideas gathered during lively and interactive sessions with researchers from the University of Ghana, University of Cape Town, AFD-Kenya, Commitment to Equity (CEQ) Institute at Tulane University, USA, and the AFD-Paris. The University of Nairobi is most grateful for the generous research grant received from the AFD and the European Union to fund this work.



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November 2020, Nairobi.

ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ASALs	Arid and Semi-Arid Lands
CD	Compact Disk
CDF	Constituency Development Fund
ECDE	Early Childhood Development Education
FDSE	Free Day Secondary Education
FPE	Free Primary Education
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
ICT	Information and Communication Technology
IEA	Institute of Economic Affairs
ILO	International Labour Organisation
IMF	International Monetary Fund
KIHBS	Kenya Integrated Household Budget Survey
KNBS	Kenya National Bureau of Statistics
KPHC	Kenya Population and Housing Census
NASSEP	National Sample Surveys and Evaluation Programme
SDGs	Sustainable Development Goals
SID	Society for International Development
UN	United Nations
VAT	Value Added Tax
WMS	Welfare Monitoring Survey

EXECUTIVE SUMMARY

Introduction and Context

There are several reasons that motivate the analysis of inequality which has been a dominant feature of the Kenyan economy since the early 1900s. A key motivation is that Kenya has no previous studies that have comprehensively analysed multidimensional inequality. The study is also motivated by cross country empirical studies that find that inequality is negatively associated with economic growth. Furthermore, inequality may be associated with multiple social problems and this can lead to a systematic breakdown in the social structure and social cohesion, with serious consequences on the capacity of a government to govern. Finally, the adoption of Sustainable Development Goals (SDGs) by Kenya and other countries bolsters the need to reduce inequality in response to SDG 10.

The government of Kenya has over time put in place policies and reforms to reduce inequality. Some of the main policies implemented by the Kenyan government include: pursuit of economic growth – that was supposedly to trickle down in order to reduce poverty and inequality; cash transfers to vulnerable groups; and devolution of government functions and services to local levels. Besides the policy interventions, the government has put in place numerous reform measures. One conspicuous set of measures was the package of structural adjustment programmes (SAPs) implemented in the 1990s. The country implemented many pro-poor and pro-equity reforms in sectors such as education and health that are likely to have had favorable impacts on inequality

and poverty reduction countrywide. Although promotion of overall rapid economic growth and the trickle down policies have been widely pursued as means of alleviating poverty and inequality, income inequality and poverty remained high even when the economy achieved relatively high rates of economic growth. There are several possible explanations for the lackluster performance of the inequality-reducing reforms and policies implemented in previous decades. One is that inequality reducing measures were not explicitly stated and it was assumed that employment creation would automatically reduce inequality. Also, the growth rates achieved may not have been high enough to create the required economic momentum to both reduce inequality and fight poverty.

A Profile of Inequalities in Kenya

The report presents diverse measures of inequality based on per capita expenditure as a proxy for welfare indicator. The inequality measures profiled include the Palma ratio, the Lorenz curve, the Gini coefficient, and the Theil's and Atkinson's indices for the period 1994 to 2016. The indices and the ratio are provided for sub-groups based on poverty status, education of the household head, residence type (urban and rural), region (i.e. the counties) and by gender.

Inequality Ratios and Indices

Inequality has generally declined at the national level, in rural and urban areas, and across social strata in the decade from 2005/06 to 2015/16. The specific interventions that resulted in the decline in inequality require further analysis. The apparent recent decline in inequality is supported by reductions in inequality indices in 2015/16 relative to 2005/06. At the national level, the Gini coefficient increased slightly from 0.460 in 1994 to 0.470 in 2005/06 before declining to 0.404 in 2015/2016. The other measures, that is, the Theil's indices show a similar declining trend in inequality while the Atkinson's indices declined throughout the three periods. The Palma ratio remained the same at 2.8 in 1994 and 2005/06 but declined to 2.0 in 2015/2016, suggesting a decline in income inequality.

Based on all inequality measures, inequality is higher among the non-poor than the poor. It is also higher among households whose heads have higher education. For the non-poor, all the indices indicate that inequality increased between 1994 and 2005/06 but thereafter declined in 2015/16. For the poor, the measures show that inequality declined throughout the period. Similarly, the Palma ratio declined over time for both the poor and non-poor, with the decline for the non-poor being higher than for the poor. Household inequality declined between 2005/06 and 2015/16 regardless of the education level of the household head. The decline in inequality was much higher in households where the head had higher education.

Currently inequality is higher in urban areas than in the countryside. Even so, the decline in inequality between 2005/6 and 2015/6 was much higher in urban areas than in rural lands. The Gini coefficient for urban dwellers decreased from 0.473 in 1994 to 0.447 in 2005/06, declining further to 0.363 by 2015/16. However, over the same period, rural inequality declined marginally from 0.386 in 1994 to 0.347 in 2015/16.

Generally, there is a large variation in inequality and its rate of change over time across counties. The estimates show that most (35 out 47) counties experienced a reduction in inequality between 1994 and 2015/16 while the remaining 12 counties experienced an increase in inequality over this period. Notably, the highest reduction in inequality was recorded in Nairobi. The county that experienced the highest increase in inequality in 2015/16 relative to 1994 was Turkana County, with a Gini coefficient of 0.559, followed by Samburu, Kajiado, Kisumu, Tana River and Kilifi counties. The Wajir County had the lowest Gini coefficient of 0.272.

Asset Inequality

With respect to asset inequality, a majority of households owned 6 to 7 assets out of 17 selected assets while 2% did not own any of the 17 assets. Overall, between 2005/06 and 2015/16, household ownership of assets improved slightly, suggesting an overall increase in household wealth in Kenya. The average asset index is higher for urban areas than for rural regions in the two periods. It was also higher for male headed households. This is a clear indication that economic well-being for individuals in urban areas (and male headed households) is better compared to that for rural individuals and female-headed households, respectively.

There is an indication that asset inequality was larger than inequality based on per capita consumption expenditure. The estimated asset Gini coefficient was 0.54 in 2005/06 and 0.55 in 2015/16 and was higher than the monetary inequality measured using the Gini coefficient for per capita consumption expenditure. Also, the asset inequality did not change much between the surveys. Asset inequality for households headed by males and females is about the same and the rural and urban areas had more or less equal asset inequality indices. Land inequality seems to have worsened between 1997 and 2005/06. At the national level, inequality in land ownership (among those who own land) moved from 0.61 in 1997 to 0.71 in 2005/06. The indices are higher when the landless individuals are included. There is no evidence to suggest that land inequality improved between 2005/06 and 2015/16. The inequality in land may be contributing more to overall inequality and there is need to put more effort to reducing land inequality.

Labour Market Inequality

The distribution of unemployment remains uneven among males versus females and between youth versus adults. The official unemployment rates declined from 14.6% in 1998 to 12.7% in 2005/6 and from 12.7% to 7.4% between 2005/06 and 2015/16. While the gap in male and female unemployment rates was narrower in 2005/06, the female unemployment rates were nearly double that of males in 1998/99 and in 2015/16. Youth unemployment rates were nearly double the overall rates. Among the employed population, a larger proportion of females (relative to males) and youth are in informal sector employment. Females were more likely to be working in family agriculture, and as unpaid family workers or to be in self-employment relative to males. Furthermore, women are less likely to be in certain occupations, especially manual occupations in transportation and manufacturing sectors.

Inequalities in the Social Domain

The inequality in the social domain includes disparity in access to education, health and other basic services, such as water, sanitation, waste removal services, electricity, internet and mobile phones. Kenya has endeavoured to improve access to these services and the country has achieved varying degrees of success in this regard. The key findings on each of the above dimensions of social equity are presented in the ensuing sections.

Education Inequality

Despite an overall expansion in access to education, the proportion of individuals aged 6 to 18 years attending school is higher for non-poor compared to the poor in 1994 through 2015/16. There are wide disparities in access in pre-primary, primary and secondary education across areas of residence and work. Urban areas perform well in terms of both access to primary and secondary school enrolments as opposed to the rural and Marginalis ed counties. Across the regions, net enrolment in primary education in some counties (such as Mandera and Wajir) is below 30% while other counties such as Kericho and Kisii, register net enrolment rates in excess of 98%. With respect to gender, there has been a noticeable convergence of male and female enrolment and attendance in pre-primary, primary and secondary education levels – but large disparities remain at the tertiary level.

Health Inequality

Health seeking behaviour in terms of where the poor and the non-poor populations seek healthcare seems to have been reversed in 2015/16 relative to 1994. In 2015/16 the larger proportion of the study sample sought healthcare in public facilities, with visitation rates standing at 70% for the poor and around 69% for non-poor. Back in 1994 a larger proportion of the population sought care in other facilities (rather than in public or private clinics) - with respective utilisation rates for the two groups being 77% for the non-poor and 81% for the poor. This reversal could be a signal of quality improvements in public facilities, an issue revisited shortly. With respect to distributional aspects, the new utilisation pattern l suggests that in 2015/6 all individuals were equally likely to access subsidised services in public facilities irrespective of their poverty status, contrary to the situation in the 1990s, when policy actively encouraged greater access to public health facilities for the poor. There is need to stress a transition in healthcare seeking behaviour, more so in 2015/16, when a larger proportion of both rural and urban residents visited public facilities for medical care, diluting the patronage for private or other facilities observed in the previous period. Among other factors, this new demand pattern may be attributable to devolution of government health functions to local levels and to zero rating of user fees in public facilities, among other reforms undertaken by the policymakers during the intervening period.

Inequality in Access to Safe Drinking Water

The non-poor households have greater access to safe drinking water. In 2015/16, the proportion of poor households accessing safe drinking water stood at 63% and was lower than that for the non-poor at 76%. In 1994 the proportion of the poor and non-poor households accessing safe

drinking water was 42% and 56%, respectively. Although there was a substantial increase in access to safe water across the three survey periods (1994, 2005, and 2015), there is still a large group of households without access to safe drinking water. Access to safe drinking water in 2015 was higher in urban areas than in rural villages - and exhibited large regional and county disparities. For instance, in urban areas, 86.7% of households had access to safe drinking water compared to 61.8% in the countryside. Regionally, most counties achieved significant improvements in the proportion of households with access to safe drinking water. In a few counties, access rate declined in 2015/16 relative to 2005/06 - particularly in Bomet, Busia, Kwale, Homa Bay and Marsabit.

Sanitation Inequality

The proportion of the non-poor accessing waste disposal services is higher than that of the poor over the study period. For the poor, the proportion was 48% in 2015/16 having increased from 5% in 1994. For the non-poor the proportion was 72% in 2015/16, up from 15% in 1994. Relatedly, there was an increase in access to improved sanitation by all households regardless of the education level of the household head. Even so, access to improved sanitation is higher for households headed by persons with tertiary education.. For instance, in 2015/16, only about 36% of households whose heads had little or no schooling had access to improved waste disposal facilities compared to 92% for households where the head had higher education.

The rural-urban divide with respect to access to good sanitation, is quite substantial, as is the divide associated with differences in schooling, just noted. In rural areas, only half of households (49.2%) had access to improved sanitation services in 2015/6, compared with 86.8% in urban areas. With respect to regions, the share of access to improved sanitation in counties like Embu, Kisumu and Nairobi (exceeding 90 percent) was 15 times greater than in Wajir (6.7%), an indication of wide variations in access to waste disposal amenities across counties. Although many counties (29) experienced large improvements in access to improved waste disposal conveniences between 2009 and 2015/16 there are still many (18) for which access to improved sanitation decreased.

Electricity Inequality

Overall, there was increased access to electricity over the period analysed. Despite the increase in access, a higher proportion of non-poor households has greater access to electricity relative to poor households and the gap widened over time. In 1994, the access rates were 14.6% and 3.2% for the non-poor and the poor, respectively. The gap widened from 11.4 in 1994 to 31.2 percentage points in 2015/16. In 2015/16 the access rates were 52% and 20.8% for the non-poor and poor households, respectively. In 1994, households headed by people with tertiary education had greater access to electricity (48.1%) compared to those headed by individuals with little or no schooling (2.8%). The gap widened in 2015/16, standing at 83.2% for the educated household heads, and around 13.2% for the comparison group. As in other dimensions of inequality, the rural-urban divide with respect to access to electricity is large. In 1994, only 2.2% of rural households had access to electricity relative to 43.2% of urban households. The gap continued to widen between 2005/06 and 2009. In 2015/16 only 20.0% of rural households had access to electricity compared to 73.9% of urban households. Based on the 2009 Kenya Population and Housing Census, electrification access rates were highest in Nairobi (91%)

and lowest in West Pokot (7.5%), indicating an unacceptably large disparity in this welfare metric. Nevertheless, the access rates have generally improved countrywide since 2009.

Internet and Mobile Phones Inequalities

The period 1994 to 2015/16 experienced a substantial increase in access to internet and mobile phones. Of the many forms of barriers to internet access experienced by the population, the study focused on the proportion of the population without access to internet due to lack of a computer and network connection. In 2015/6, the non-poor households had higher access to internet (36.2%) compared to the poor (13.3%). Households headed by individuals with higher education had considerably greater access to internet. The access rate for households headed by illiterate persons was 4.5% in 2009 and 6.2% in 2015/16 compared with rates of 59.7% and 70.2% for household heads with tertiary education. The gender gap in internet access is substantial as the access proportions for men are much greater than for females. With respect to area of residence, urban households have greater access rates and the gap widened between 2009 and 2015/16. In 2009, urban and rural access rates were 27.6% and 6.4%, respectively. In 2015/16 the rural-urban differential in internet access was considerable as only 16.7% of rural households had internet relative to 47.1% for urban residents.

Between 2009 and 2015/16, the proportion of households with at least one member owning a mobile phone increased from 73% to 89%. Even so, there is some gap in ownership rates between the poor and the non-poor. The proportion of households with one member owning a mobile phone was 92.1% for the non-poor and a noticeable 80.6% for the poor, which suggests that access to a mobile phone in Kenya is nearly universal. In 2015, access rates were in excess of 99% for individuals with higher education. For those with no education access rates increased from 43.6% in 2009 to 65.3% in 2015. The respective rural and urban ownership rates were 65.9% and 89.1% in 2009. In 2015/16 the rural ownership rate was 89.1% relative to a 95.2% rate in urban areas. Regional variation in ownership rate was substantial however. The urban counties, such as Nairobi and Mombasa, had access rates (exceeding 96%) while the ASAL and far-flung counties, such as Turkana, Samburu and West Pokot had rates below 21%.

Gender Inequality

Inequality between men and women is widespread in the country and remains one of the major obstacles to sustained human development in Kenya. Males have higher labour force participation rates, higher earnings, and own more assets than women. Representation of women in various legislative bodies is still very low, with a parity ratio below 10%. In terms of health, life expectancy for women is generally higher than that for men, but this is not necessarily an indicator of better health for women. Moreover, although the proportion of women seeking healthcare is higher than that for men, this proportion might still be lower than desired due to greater health needs in the female sub-sample.

Recommendations and Diagnostic Points for Policy Makers

Recommendations

- While inequality in Kenya has risen in some counties it has declined in others - with Nairobi and Isiolo registering the largest declines in the Gini index between 1994 and 2015/16; and Turkana and Nyeri experiencing the largest increases. There is need to understand what has been done in counties where inequality has fallen substantially and use the lessons learned from those regions to replicate effective policies in rural villages and counties that are lagging behind in this regard..
- Although a lot has been achieved in the education sector in terms of improving access to basic education and in closing the gender gaps in learning, more needs to be done at the tertiary level. The key policy issue here is the need to increase access to secondary and tertiary schooling for girls and women. In addition, immediate efforts should be directed towards achieving gender parity in both tertiary enrolment and technical skills, especially in science, technology, engineering and mathematics.
- Access to social services, such as safe drinking water, sanitation and electricity are low across the Kenyan population and marked by large inequities across ethnic groups and regions. There is need for immediate efforts to be directed towards increasing access to safe drinking water, to better sanitation, and to electricity and internet, especially in the rural areas, where the uptake of these services is unsatisfactory, despite being enhanced in cities and towns.
- In spite of the strides made by the government to reduce gender disparities, gender inequality remains one of the major obstacles to sustained human development in Kenya. Concerted programs aimed at eliminating all forms of gender-based inequalities should be put in place.
- Remarkably Kenya is close to eliminating the gap between access to a mobile phone between the rich and the poor but since the disparity in the quality of these devices within the population might be widening, a policy response to this issue is needed. Moreover, considering that smart phones are linked to internet access, there is need for a policy to increase ownership of such phones among the poor.
- To facilitate a more frequent analysis of inequality at the household level, the national and international agencies responsible for designing sample surveys in Kenya should collect household budget data at least every 5 to 7 years, and in addition launch panel data surveys that can be used for dynamic inequality measurements and for reporting on SDG achievements.
- Moreover, there is need to collect more comprehensive data on assets, including vital information on land and housing units that would enable more complete measurements of household wealth.

- The frequently available sample surveys should contain information on the nature and quality of basic services accessed by households and individuals in sectors such as education, health and other social arenas, to allow for a more comprehensive analysis of constraints to accessing basic necessities.
- Other related recommendations concern the need to capture labour market information in household budget surveys, by for example, integrating employer and firm surveys into one module; adding time use questionnaires to the menu of the data collection instruments in order to enhance the kinds of analyses that data from household surveys can support, such as investigations of the factors driving household allocation of time to unpaid work, and the nexus between such allocation and social inequalities.
- Finally, there is need to benchmark the range of asset data included in regular sample surveys with comparable information from other countries, particularly in Africa, to facilitate international comparisons of inequalities in household assets and in other forms of household wealth.

Diagnostic Points for Policy Makers

The synonym for diagnostic is analytic; so in this report, the term diagnostics means inequality-related symptoms or social disorders that have been identified using rigorous analysis. Rigorous analysis is not a preserve of researchers. It is a thinking tool that policy makers can use to formulate the best responses to social problems.

Naturally, some of the most daunting problems facing policy makers are everyday issues, such as conflict resolution, water shortages, and whether or not to close or open schools in the face of a pandemic. Such problems cannot wait for external research evidence (e.g.,this report) before a solution is found or a decision is made. Unavoidably, policy makers must apply rigorous analysis as a routine problem-solving tool.

The key steps in rigorous analysis are: (i) understanding the nature of the issue at hand; (ii) identifying the critical tasks that need to be accomplished to address the issue; (iii) obtaining any available information about the extent of the problem as well as the factors suspected to be behind its occurrence; (iv) using the information gathered to carefully consider alternative solutions to the problem; (v) discussing with colleagues and experts, the merits and demerits of the preferred solution. Taken together, the above five steps constitute a thinking aid in search of a solution to a problem. The tool itself is not a solution to any problem. The tentative solution that ends up being tried is what the policy maker decides to do, depending on the kind of thinking stimulated by the tool. Remarkably, this diagnostic tool is equally available to both researchers and policy makers; indeed, to everyone. The difference is in the degree of its formality among users.

This report is not a prescription of what policy makers in Kenya should do to tackle multidimensional inequalities in the country. The recommendations offered by the report should be viewed as inputs into policy makers' determination of specific policy measures that can be implemented to reduce or avert unacceptably large inequalities, particularly across gender, regions, and ethnic groups; and

in access to healthcare, education, sanitation, cropland, and safe water.

A consistent finding of the report is that many kinds of inequalities in Kenya are strongly correlated with area of residence and with education. For example, access to water or a mobile phone is good in urban areas but poor in the countryside; and a similar situation prevails in population groups with and without higher education. Obviously, this evidence is not a prescription for urbanisation or tertiary education as anti-inequality measures. However, the finding should stir the thinking and imagination of policy makers as to why such kinds of inequalities exist.

1. INTRODUCTION

1.1 Overview

Kenya is one of the countries in Africa that has high levels of inequality. However, the income Gini coefficient for Kenya is relatively low compared to other African economies that are characterised by high levels of income inequality, such as South Africa and Botswana, but it is still high relative to many countries in the region (Table 1.1). As shown in Table 1.1, between 2010 and 2016, some of the African countries that had higher inequalities than Kenya are South Africa, Namibia, Zambia, Rwanda and Nigeria. These countries are also among the continent's top ten most unequal countries. In East Africa, Kenya has the highest inequality indicators compared to her neighbours, Uganda, Tanzania and Ethiopia.

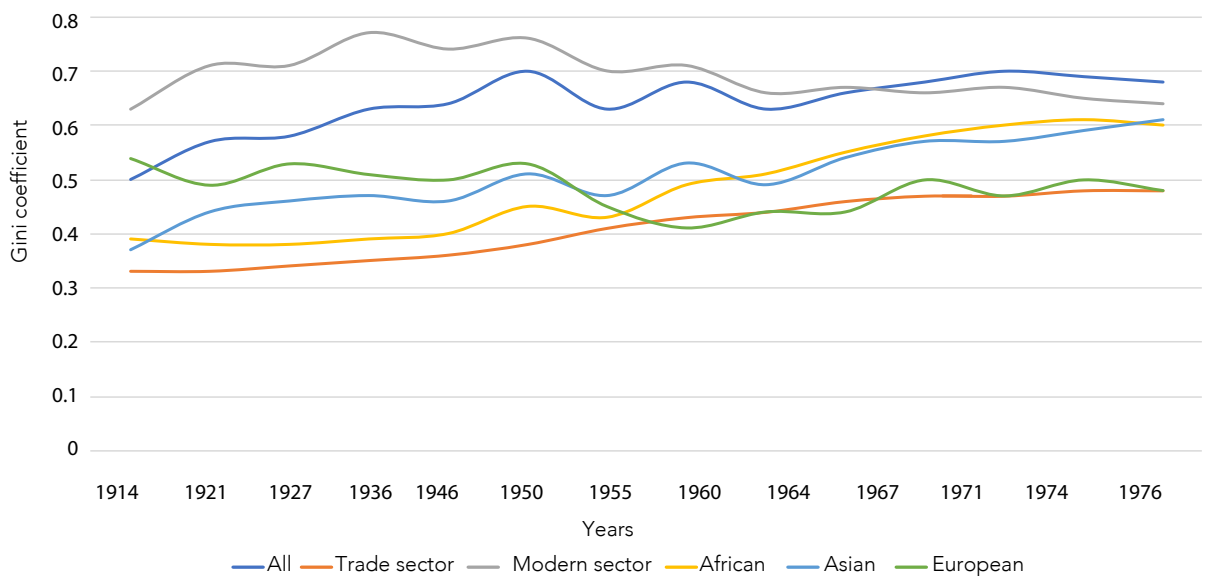
TABLE 1.1: Income Gini coefficient of selected African countries

Country	Gini Index	Year
South Africa	0.625	2013
Namibia	0.597	2010
Zambia	0.575	2013
Rwanda	0.504	2013
Nigeria	0.488	2013
Kenya	0.485	2016
Uganda	0.399	2013
Tanzania	0.370	2009
Ethiopia	0.330	2011

Source: *Compiled from the Central Intelligence Agency (2016), World Factbook 2016/2017, Washington DC*

To a large extent, inequality has been a dominant feature of the Kenyan economy since the early 1900s, and the drivers of inequality have been changing over time. The overall per capita income Gini coefficient was over 0.500 throughout the period 1914-1976 (Bigsten et al., 2016). Inequality has continued to fluctuate over time. As shown in Figure 1.1, per capita income inequality increased until 1950, then fluctuated and finally declined slightly during the 1970s. In the period between 1950 and 1955, the Gini coefficient declined from 0.70 to 0.63. Bigsten et al. (2016) attributed this decline to a relative increase in smallholder incomes. During the period 1955-1960, inequality increased further, peaking in 1970 before declining again between 1971 and 1976. Inequality continued to fluctuate over time. Between the period 1992 and 1994, per capita Gini coefficient declined from 0.58 to 0.43. Thereafter, it increased to 0.47 in 2005/06 before declining to 0.40 in 2015/16.

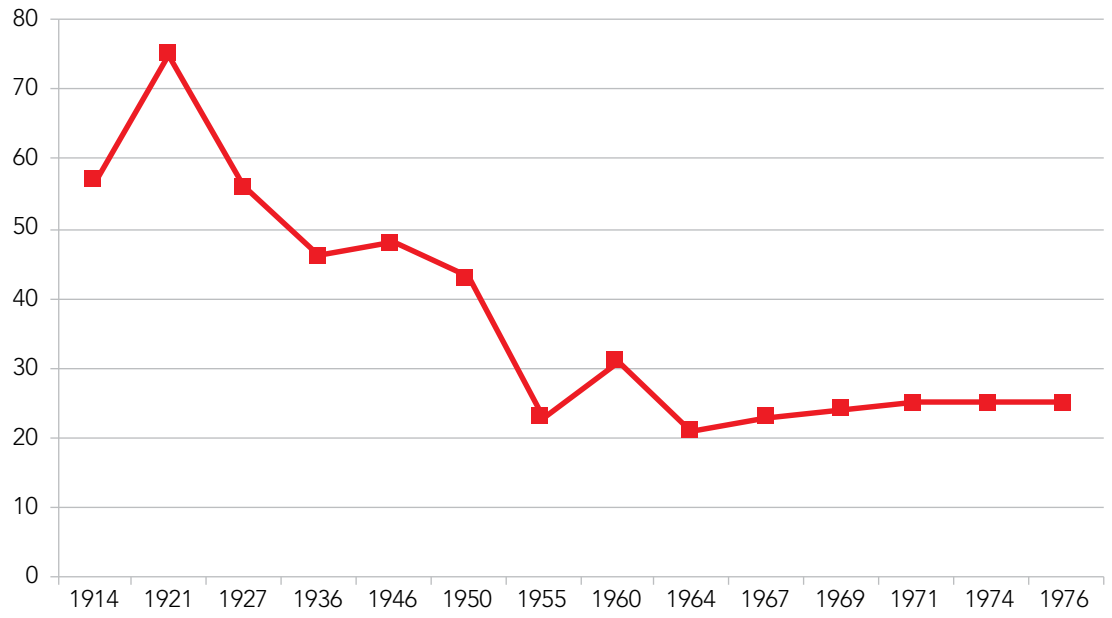
FIGURE 1.1: Per Capita income inequality trends by sector and racial groups, 1914-1976



Source: *Based on data from Bigsten (1986)*

A similar trend is also observed for poverty profiles. Poverty levels were high over the period 1914-1976, as shown by Sen's index (Figure 1.2). Sen's poverty index is the headcount ratio weighted by Gini for the poor and the normalised poverty gap (Bigsten et al., 2016). As can be seen from Figure 1.2, income poverty was highest during the colonial period. However, decades after the 1920s, the poverty level declined continuously, perhaps due to modernisation of the economy even as the overall inequality rose. Taken together, Figures 1.1 and 1.2 show a unique phase of the Kenyan economy during which period inequality rose as poverty declined. Poverty was uneven over the period 1992 to 2015, despite its overall declining trend. Poverty headcount ratio declined between 1992 and 1994 before increasing to 52.6 in 1997. Thereafter, it declined to 36.1 in 2015/16.

FIGURE 1.2: Income poverty in Kenya (Sen's Index), 1914-1976



Source: *Based on Bigsten (1986)*

Kenya's inequality and poverty are thus not a recent phenomenon. High levels of inequality and poverty can be traced to the pre-independence period. At the time of independence in 1963, the government of Kenya identified elimination of poverty, disease and illiteracy as the major development challenges facing the new State. Since then, the government has made concerted efforts to fight poverty, disease, and illteracy (Bigsten, 1986; Bigsten et al., 2016). The country still continues to face the same development challenges. Thus, Kenya's inequality and poverty are rooted in the country's history, politics, and socio-economic Organisation.

Income inequality in Kenya has a regional dimension. Regional or geographic differences in well-being may mean ethnic differences in well-being, as ethnic divisions often align with geographic divisions in the country. There are stark differences in development opportunities and outcomes across Kenya's rural-urban divide, and other regions. The inequality varies both across and within regions. For instance, Nairobi and Rift Valley regions seem to have the widest income inequalities. According to the Kenya National Bureau of Statistics (KNBS) and Society for International Development (SID) (2013), the Northern part of Kenya has the lowest income inequality, with

the income Gini coefficient of less than 0.340, while the Coastal region has the highest income inequality, with income Gini coefficients ranging between 0.565 and 0.617. The income inequality in the Coastal region is linked to historical injustices, where large tracts of land were allocated to settler population, leaving the natives to live as squatters in their ancestral lands. The high inequality has led to severe poverty in the region, leading squatters to live impoverished lifestyles with minimal access to basic amenities such as schools, health facilities, and other social amenities (KNBS and SID, 2013). Extreme inequality seems to be the reason for insecurity in the Coastal region.

The World Bank (2008) points out that the income Gini coefficient tends to hide the extreme differences between the richest and the poorest groups in society. The gap between the richest and the poorest individuals in Kenya is one of the highest in Africa and was widened between 1997 and 2005/06 (World Bank, 2008). This is shown by the fact that the national consumption ratio of the richest 10 percent to the poorest 10 percent rose from 16 to 20 between 1997 and 2005/06, indicating persistence of large and growing social inequalities. Despite the ratio declining in 2015/16 to 13, it remains unacceptably high. Inequalities in Kenya are also manifested in different forms, with income inequality being one dimension. Differences in income and social status are observed across regions, gender, and for specific segments of the population.

Social ills such as poverty, disease, illiteracy and insecurity are manifestations of intolerable levels of inequalities in resources, incomes, employment opportunities, and in access to basic services such as education, health, water and sanitation, among others. Sustained poverty reduction cannot be achieved without tackling these inequalities. The objective of this report is to provide a comprehensive analysis of inequality trends and diagnostics and to suggest policies to overcome extreme inequality, a problem that has been intractable on the Kenyan landscape for a long time.

1.2 Motivation for the Report

Inequality has been a dominant feature of the Kenyan economy since the early 1900s. Also, Kenya has the highest inequality indicators compared to her neighbours in East Africa, including Uganda, Tanzania and Ethiopia and yet no previous studies have comprehensively analysed inequality in Kenya to the extent that it is done in this report. Secondly, empirical studies using cross-country data analysis find that inequality is negatively associated with economic growth, which is an indication that high inequality may result in low economic growth (Alesina & Rodrik, 1994; Persson & Tabellini, 1994). Thirdly, high levels of inequality may mean that large segments of a society may be excluded from economic opportunities, thus limiting those individual's outcomes and aggregate performance of the economy. To a large extent, people who access the best opportunities are the ones who end up being the richest. Yet, such people may not necessarily be the ones who are most talented or who would make the best use of such opportunities. Such inequality of opportunity is not in line with the government's effort towards attaining inclusivity/universality in access to opportunities. Finally, inequality may be associated with multiple social problems including health problems, mortality, crime and substance abuse. This can lead to a systematic breakdown in social structure and social

cohesion with serious consequences for the capacity of a government to effectively govern (Ezcurra et al., 2016). Thus, from a policy perspective, it is clear why reducing inequality is critical. Adoption of the Sustainable Development Goals (SDGs) by Kenya and other countries should bolster the need to reduce inequality in response to SDG 10 on reducing inequality.

Apart from the ILO (1972) report where income inequality was analysed, among other issues of employment and incomes, there is no other report in Kenya that comprehensively analyses inequality. While extensive work has been done on poverty measurement in Kenya since the early 1990s, inequality has not received equal attention. Instead, inequality is often looked at as a subset of poverty. Also, whereas the correlation between poverty and inequality may be strong, reduction in poverty may not necessarily lead to reduction in inequality. This means that each requires special treatment. Thus, another key motivation is to provide a comprehensive analysis of inequality in Kenya, bringing out the complexity inherent in inequality measurement and analysis. In addition to using measures such as the Gini coefficient that are traditionally used to measure income inequality in previous reports, this report uses other measurements such as the Palma ratio to give more insight in the analysis of inequality. Furthermore, this report goes beyond the income measure of inequality to look at inequality in asset ownership and access to services provided by the government, such as education and healthcare.

Unlike previous reports on poverty and inequality in Kenya, which have tended to focus on providing a snapshot analysis based on one cross-sectional dataset and on a single inequality measure (the Gini coefficient), this report uses several datasets over a period of 20 years to analyse inequality trends in Kenya using a range of measures of inequality. Given the various forms of inequality that exist in Kenya, this report analyses various dimensions of inequality, e.g. distribution of expenditure; ownership of assets; access to employment and other dynamics in the labour market; inequality in the social domain touching on education, healthcare, water and sanitation, electricity, and finally on gender inequality. This report will thus serve as an input towards improved reporting and dialogue on inequality and will support evidence-based policy making on inequality to bring about noticeable gains towards reduction in inequality.

1.3 Structure of the Report

This report has five chapters. Chapter 1 provides an introduction, motivation for the report and the structure of the report. A brief overview of the policy environment to understand the policies put in place by the government of Kenya to address inequality and poverty is outlined in Chapter 2. Chapter 3 discusses the data sources and information used in the analysis of inequality in this report.

Chapter 4 is the analytical chapter of the report and is subdivided into five sections. Section 4.1 provides analysis of per capita consumption inequality using a range of measures including the Gini coefficient, Theil's measures, Atkinson indices, and the Palma ratio. It also decomposes inequality by region and socio-economic status. Section 4.2 analyses inequality in access to assets using asset index. Section 4.3 reviews the role of the labour market – assessing labour market participation, employment and inequality in labour market earnings. Section 4.4 focuses on the social domain

and examines how access to basic services such as education and healthcare, varies between various groups of people and by region. Lastly, Section 4.5 analyses a range of issues relating to inequality in terms of gender. This section analyses gender inequality referred to in earlier sections, thus consolidating and bringing the issue of gender inequality to the fore.

Chapter 5 of the report provides a brief conclusion emanating from the findings reported in Chapter 4 and offers a brief discussion on the way forward in terms of expanding and refining analysis on inequality. Finally, the report ends with a series of annexures, which include an additional collection of statistical tables, graphs and maps.

2. INEQUALITY AND POVERTY: A BRIEF OVERVIEW OF THE POLICY ENVIRONMENT FROM A MACROECONOMIC PERSPECTIVE

This section provides an overview of performance of the Kenyan economy and policy environment in terms of addressing inequality and poverty. The section starts by looking at the performance of the Kenyan economy since 1963, and at sectoral growth rates. This is followed by a discussion of the main policies designed to reduce inequality.

2.1 Performance of the Kenyan Economy Since Independence in 1963

In the first decade of independence, 1963-1973, the Kenyan economy performed relatively well with an average GDP growth rate of around 8.2 percent (Kenya Economic Surveys for the period). However, the period 1974-1979 experienced a decline in growth, with economic growth averaging 5.2 percent per annum. Over this period, the economy was hit by a series of oil price shocks in 1973 and in 1979 compounded by mismanagement of the 1976/77 coffee boom, resulting in a balance

of payment problems. The first half of the 1980s was characterised by slow economic growth, with annual economic growth averaging 2.8 percent. This was associated with effects of the second world oil price shock in 1979, an attempted military coup in 1982, and the harsh drought in Kenya in 1983/84. The economic performance rebounded in the second half of the 1980s, with economic growth averaging 5.7 percent per annum and mainly associated with a mini coffee boom of 1986, depressed oil prices coupled with good weather. Overall, economic growth averaged 4.1 percent in the 1980s.

Economic growth in the 1990s was as unstable as in the 1980s. The first half of the 1990s experienced a decline in economic growth, with an average growth rate of 1.9 percent, the lowest since independence by that time. The slow economic growth then was linked to the 1991/92 drought, oil price increases due to the Gulf War, foreign aid embargo of 1991-1993, and the 1992 ethnic clashes, alongside macroeconomic volatility in the build-up to the 1992 elections. Economic growth increased slightly to an average of 2.9 percent in the second half of the 1990s. The growth remained low over this period due to the aid embargo of 1997-2000, ethnic clashes of 1997 in the run-up to and after the 1997 general elections, and bad weather (El Nino rains in 1997/98; severe drought in 1999-2000). Economic growth worsened during the first three years of the 2000s (2000-2002) with economic growth decreasing to an average of 1.6 percent before it accelerated to an average of 4.0 percent in 2003-2004.

Economic growth expanded further to an average of 6.4 percent between 2005 and 2007. The good economic performance was bolstered by the bold economic and structural reforms under the Economic Recovery Strategy (ERS) for Wealth and Employment Creation, and the favourable external environment. It however declined to 0.2 percent in 2008 resulting from a combination of post-election violence – that started in December 2007, and drought and global financial crisis, both of which occurred around the same period. Following counter-cyclical demand management policies and favourable weather conditions, and good agricultural performance, economic growth picked up to 3.3 percent in 2009 and 8.4 percent in 2010. However, as a result of a surge in global food and oil prices and another drought, growth declined to 6.1 percent in 2011 and again to 4.5 percent in 2012. It later increased slightly to 5.9 percent in 2013, after which it declined to 5.5 percent in 2014; increasing again to 5.7 percent in 2015 and to 5.9 percent in 2016, before dipping to 4.9 percent during the 2017 general elections.

Turning to GDP per capita, there was more or less stagnant growth in the country's per capita income throughout the 1980s and the early 1990s, which registered a mere 0.3 percent real growth. During the same period, the purchasing power of the population fell sharply as real wages went down by about a third. As discussed later, although the policy of growth with redistribution was adopted in the mid-1970s, the income distribution pattern continued to deteriorate into the 1990s (World Bank, 1994). The period after the 1990s experienced an increase in per capita income to an average of 1.2 percent per annum but with large variations ranging from -2.4 percent in 2000 to a high of 4.0 percent in 2007, before falling to -1.0 percent in 2008 and then increasing steadily again.

2.2 Sectoral and Overall Growth Rates

The agricultural sector in Kenya has remained the single most important sector and its performance and that of the national economy are closely linked with the economic growth, declining whenever there is a negative shock in the agricultural sector and vice versa. The sector directly contributes to Gross Domestic Product (GDP) and further through manufacturing, distribution and services sectors. The sector also contributes heavily to total export earnings. The agriculture sector has evolved since independence, contributing directly about 33.6 percent of GDP to the economy during the first decade after independence (1963-1973). However, its contribution to GDP has declined over time to 24.0 percent of GDP between 2001 and 2010 before rising to 28.1 percent between 2011 and 2016. Growth performance of the sector depends largely on several factors such as drought, floods, and crop and livestock pests and disease outbreaks. The average growth rate of the sector between 1966 and 1970 stood at 3.4 percent; 5.5 percent between 1971 and 1980; 3.7 percent between 1981 and 1990; and 1.6 percent between 1991 and 2000. After 2000, agricultural average growth rate rose to 2.9 percent between 2001 and 2010, and to 4.2 percent between 2011 and 2016. Kenya's agriculture is predominantly rain-fed, with irrigated agricultural land as a share of total agricultural land estimated at being about 3.7 percent in 2009. In terms of employment, the agricultural sector accounted for about 46.9 percent of the total labour force in Kenya between 1990 and 2000. The share of direct employment in the agricultural sector increased rapidly after year 2001 from an average of 51.5 percent to around 58.4 percent in 2017.

The manufacturing sector in Kenya is the third largest in terms of sectoral contribution to GDP at 10.0 percent. The sector's share of GDP averaged 10.2 percent between 1963 and 1970 and increased marginally to 10.6 percent between 1971 and 1980 before declining slightly to 10.1 percent between 1981 and 2000. After 2000, the share improved moderately to 11.1 percent between 2001 and 2010 and then declined to an average of 10.0 percent between 2011 and 2017. The sector has evolved over time, with Kenya initially pursuing import substitution industrialization strategy. Under this strategy, the government provided direct assistance and tariff protection for the industrial sector. During the 1980s and 1990s, the government adopted the Structural Adjustment Programmes (SAPs) to improve competitiveness and reduce distortions arising from import substitution strategy by adopting export promotion industrialization strategy that saw the enactment of the African Growth Opportunity Act (AGOA) by the United States of America, revival of the East African Community (EAC) and deeper participation in the Common Market for Eastern and Southern Africa (COMESA), to open up new opportunities for Kenyan capital and exports. In 2017, for instance, manufactured exports accounted for 28.3 percent of the entire merchandise exports in Kenya.

The services sector is currently the most important sector in Kenya's economy in terms of sectoral contribution to GDP. However, its contribution to GDP has been declining over the years. For instance, the sector contributed 50.4 percent of GDP in 2006, 48.1 percent in 2010, 46.2 percent in 2015 and 43.6 percent in 2017. The annual growth rate of the services sector has generally been positive but has stagnated at below 8.0 percent, with the sector growing by 6.9 percent in 2007, 7.7 percent in 2010, 6.4 percent in 2015 and 6.2 percent in 2017. The sector has contributed greatly to employment, with its share in total wage employment rising from 55.4 percent in 1980 to about 62.0 percent in 2004.

2.3 Main Policies Designed to Reduce Inequality

Inequality and poverty have remained high but have declined slightly over time, especially in the last decade. While the challenges of poverty and inequality were inherited at independence (Republic of Kenya, 1965), they remain to date with little indication that they are about to go away despite government's efforts to eliminate the challenges. The main aim of the current economic policy is to reduce poverty. Success in this endeavor will depend on growth and changes in income distribution. The quality of economic and political governance is probably the main determinant of the extent to which Kenya will create an inclusive growth process that would increase the incomes of the poor. This section reviews the policies and reforms that have been put in place to reduce or eliminate inequality and poverty.

2.3.1 Trickle down growth, poverty and inequality

The government of Kenya has always pursued a high growth rate strategy intended to reduce poverty through sharing the benefits accruing from it. In virtually all the development plans, sessional papers and other economic policy documents issued in the post-independence period, poverty alleviation has featured prominently as an area of concern. Promotion of overall rapid economic growth has been widely pursued as a means of alleviating poverty and creating employment opportunities. Rapid overall economic growth is regarded as a key solution not only to poverty, but also to unemployment, poor health, economic exploitation and inequality, as it has always been assumed that its benefits would trickle down to households and to individuals. Promotion of this policy has been maintained throughout the post-independence decades. The first two development plans placed emphasis on rapid economic growth to alleviate poverty and reduce unemployment. However, in the earlier years of independence, the two problems of poverty and unemployment persisted, and income inequality widened despite the economy achieving high rates of economic growth. In some of the past decades, Kenya's economic performance was remarkable, particularly in relation to its historical record and the global economy. Between 2005/06 and 2015/16, the country recorded an average GDP growth rate of about 5.4 percent, surviving economic shocks such as the 2007 post-election violence, 2008/09 global financial crisis and high oil prices following the prolonged drought in 2011 that struck the Horn of Africa. Over the same period, Sub-Saharan Africa and the world grew at an average of 4.5 percent and 2.8 percent, respectively.

Despite the government adopting a high economic growth strategy, poverty has increased over time since 1963 (Republic of Kenya, 1965). Poor growth is one of the reasons that has led to rising poverty in Kenya, and high inequality shows that the trickle down from growth was not sufficient to reduce inequality. As shown above, throughout the 1980s, 1990s and the early 2000s, there was more or less stagnant growth in per capita income in Kenya, which registered a mere average of 0.3 percent real growth rate. Also, even during the relatively better periods of high economic growth, the growth rates achieved were not sufficient to create the required economic momentum to fight poverty and reduce inequality. For most of the last three decades, the highest growth rates achieved were about 5.0 percent per annum. It was estimated that the economy needs to grow by more than 7.0 percent per annum for a long period to create the required number of jobs to

reduce unemployment and alleviate poverty. (Republic of Kenya, 2003). The low annual per capita GDP growth rate achieved in the last three decades shows how difficult it is to achieve the rates of economic growth required to have a significant impact on unemployment and poverty reduction. Due to high inequality, the benefits of economic growth tend to accrue to a few individuals. In Kenya, as in other developing countries, inequality is high. This means that the small gains from economic growth are reaped by only a few individuals. Promotion of growth remains a major pillar in the Kenya Vision 2030. Unfortunately, inequality seems to be on the increase in the country with no concrete measures being taken to curb it.

Following the ILO (1972) study carried out in Kenya in 1972, which revealed high inequality in Kenya, the policy of `growth with redistribution' was adopted in the mid-1970s. However, the income distribution pattern continued to deteriorate into the 1990s (World Bank, 1994). The persistence of these problems led to greater focus on equity and employment generation in the National Development Plan 1974-1978. The Sessional Paper No.1 of 1986 highlighted the problem of poverty and unemployment and recommended measures such as rapid economic growth led by the private sector with support from a more efficient public sector. The Republic of Kenya (1994), for instance, states that it is only through sustainable economic growth that national wealth can support measures to alleviate poverty, protect vulnerable groups, reduce inequality and raise people's standards of living.

The National Development Plan 1997-2001 deviated from previous ones by shifting emphasis to private sector investment in industrial production with an aim of transforming Kenya from a largely agricultural sector to a newly industrialized country by the year 2020.The 1997-2001 Plan argued that industrialization had the potential to create more jobs, rapidly reduce inequality and help reduce poverty (Republic of Kenya, 1999), but did not articulate the mechanisms for doing this. What is clear from the various policies, notably the Vision 2030 blueprint, is that the measures to redistribute income were not explicitly stated, but it was assumed that employment creation would automatically reduce inequality. Even though Kenya became a lower middle income country after rebasing its national income accounts in 2014, thereby raising its per capita income to figures within the range of the newly industrialized countries, the country's economic structure is still the same.

2.3.2 Inclusive growth

Inclusive growth is challenging to measure, although there is some consensus on its proxies, such as poverty and inequality levels, growth and employment rates; access to education and healthcare; access to basic social infrastructure and services; gender equality; social safety nets; incidence of fiscal policy; and good governance indicators. For instance, laws and policies that mandate inclusion of Marginalis ed populations in the labour force are a signal of inclusivity of growth. However, jobs in the informal economy are often insecure, with no employment contracts, and pay is often irregular trapping workers in low productivity. Moreover, employers usually have little incentive to enhance productivity through training and the learning of new skills. When a large section of the labour force is stuck in a low productivity informal sector, then growth prospects for the economy will continue to be below potential. It is important to note that inclusive growth cannot be achieved without appropriate governance and institutional structures. Good governance

reforms that strengthen property rights, respect for rule of law, political goodwill in anti-corruption efforts and political accountability, are vital in supporting employment-generating growth.

Thus, economic growth is a necessary condition for meeting basic human wants, but it is not in itself sufficient for eradicating poverty and inequality. Growth often helps reduce poverty, but some growth processes are more effective than others in reducing poverty and inequality. Growth that translates into rising consumption of the population at the bottom of the income distribution is essential for poverty reduction. The role of the government should be to foster a pro-poor pattern of growth. In this regard, equitable sectoral and regional patterns of investment are important policy instruments, especially reforms that shift investments towards rural and labour-intensive production activities, and that upgrade social infrastructure in the informal sector.

2.3.3 Decentralised funds

The government policy to alleviate poverty and reduce inequality has been through the Decentralisation of fiscal funds as mandated by the 2010 Constitution. The Decentralised funds are aimed at reducing existing regional income disparities created by partisan and ethnic-based politics. The funds also address the problem of health inequalities occasioned by the HIV/AIDS pandemic. Other social motivations for Decentralised regional funds include increasing Kenyans' access to basic services and increasing people's participation in the development process. There are seven (7) Decentralised funds in Kenya: the Constituency Development Fund (CDF), Local Authority Transfer Fund (LATF), Rural Electrification Programme Levy Fund (REPLF), Secondary Education Bursary Fund (SEBF), Road Maintenance Levy Fund (RMLF), Free Primary Education (FPE), and HIV/AIDS Fund. The funds are targeted towards vulnerable members of society such as orphans, people in rural areas, and the impoverished, as well as for the maintenance of public roads, and the enhancement of access to educational opportunities.

There has been an increase in the uptake of these seven (7) development funds but it is not clear whether this has resulted in improvement of the status of the targeted populations. The results of the baseline survey carried out by KIPPRA (Aligula et al., 2005) showed that citizen participation in the operationalization and management of Equalisation funds was minimal at the time. However, initial indications of the impact of the Free Primary Education Fund, for example, show that there was a considerable increase in the number of children enrolled in primary schools. Other funds have experienced challenges despite increase in their uptake. The HIV/AIDS Fund may have had considerable impact given the significant decrease in the prevalence of HIV/AIDS. However, the increase in HIV-related deaths may be an indication of problems with access to antiretroviral therapy for those infected, perhaps signifying a need for greater focus on improved treatment measures. There is no doubt that some of the funds are not reaching their targets despite the increase in allocations. It may be necessary to re-evaluate how best to improve community awareness of the funds, their targeting to potential beneficiaries, the choice of projects to be funded, and the penalties for non-compliance.

2.3.4 Cash transfers

Poverty and vulnerability are major challenges in Kenya, with about one in every two Kenyans trapped in long-term, chronic and inter-generational poverty (Kenya National Social Protection Policy, 2011). In June 2011, the government of Kenya passed a National Social Protection Policy to address the challenges that come with poverty and vulnerability, which was followed by the enactment of the Social Assistance Act, 2013. The policy Recognises and builds on social protection initiatives such as education, school feeding programmes, fee waivers in public health facilities, and cash transfers. Kenya's National Social Security Policy endorses social protection programmes and actions, including legislative measures, that enhance the capacity of and opportunities for the poor and vulnerable to improve and sustain their livelihoods, and which enable income-earners and their dependents to maintain a reasonable level of income through decent work, and access to affordable social services.

The government of Kenya has five main cash transfer programmes that have nationwide coverage. These include the Older Persons Cash Transfer (OPCT); the Cash Transfers to Orphans and Vulnerable Children (CT-OVC); the Hunger Safety Net Programme (HSNP); the Urban Food Subsidy Cash Transfer (UFS-CT); and the Persons with Severe Disability Cash Transfers (PWSD-CT). International development actors, for example Oxfam and the Concern Worldwide, together with the Kenyan government and civil society play a key role in the country's social protection agenda, specifically through cash transfer programmes for the poor and vulnerable (Oxfam, 2012). One of the targets of the Sustainable Development Goals (SDGs) is to implement nationally appropriate social protection systems and measures so that the poor receive substantial social service coverage by 2030. Cash transfers offer opportunities to the poor and the vulnerable to empower themselves economically.

2.3.5 Taxation and social expenditure

Inequalities in the fiscal space occurs at different levels. The nature of public spending, operation of the credit markets, regional distribution of recurrent expenditure and public employment are all ways in which distortions in public spending can perpetuate inequalities. Another way in which budget outlays can lead to unequal outcomes is through manipulation of budget institutions and processes. For instance, when budget deficits are financed in a manner that favours those with high disposable incomes and capital, this can lead to a redistributive transfer from the budget (in terms of future interest payments) to the wealthy who can plug the budget deficit by lending at high rates. In addition, the thin distribution of public resources tends to reduce the impact of novel budget initiatives aimed at Equalising expenditures. For instance, Kiringai (2006) assessed whether budgets are allocated based on district poverty levels and finds that areas that seem to have high per capita expenditure allocations are those with low populations. Many of the poor districts still suffer from low expenditure outlays. However, reforms undertaken in Kenya aimed at direct targeting, Decentralisation and Prioritisation have the potential of making national budgets and public spending more equitable.

Another important issue is how equity is reflected in different types of taxations. Previous studies such as Wanjala (2006) investigated how equity is reflected in different types of taxation. She assessed income,

excise, corporate and value added taxes and found that while equity is an important principle in tax design, tax reforms and design in Kenya are motivated by a number of other goals, such as revenue collection and macroeconomic Stabilisation. Various instruments have been used in an attempt to make the income tax system more equitable, including the use of the high minimum taxable income levels that exclude low-income earners from the brackets, use of reliefs, and exemptions that are in-built in the tax system. The study finds that Value Added Tax (VAT) can be a regressive tax because the taxable expenditure is highest for poorer households who spend a large share of income on basic consumption. However, when exemptions and zero-rated expenditures are netted off, VAT appears to be progressive as many commodities that are consumed by the poor are not subject to tax. Thus, income and consumption-based taxes have been progressive because of various instruments that have exempted lower income households, making their burden less punitive.

2.3.6 Devolution of government functions and services

The push for a devolved system of governance in Kenya was partially informed by concerns about poor public service delivery, and regional socio-economic inequality. Both concerns had been largely attributed to a Centralised system of governance, which vested power in the Executive. Socio-economic inequality in Kenya has persisted since independence despite attempts by successive governments to address the inconsistency through policies and programmes such as the Decentralised funds, the most notable being the Constituency Development Fund (CDF) and the Local Authority Transfer Fund (LATF). Inequality ranges from differences in the share of income and access to public services across regions, gender, and even specific sections of the population.

Kenyans are optimistic about devolved governance as it has so far provided opportunities to enhance equitable development of the country through devolved funds. Devolution still holds promise as it deals with past challenges of inequitable distribution of resources, and inequitable regional development patterns. Devolved governance also provides the national government and the forty-seven (47) County governments with opportunities to formulate policies that are responsive to local needs. County leadership can best distinguish the needs of the citizens and provide services that are more cost effective. Further, Decentralisation to the sub-county, ward and village level provides citizens with opportunities to engage in the governance processes, including the identification of projects and programmes, budgeting and monitoring.

However, devolution comes with challenges that may hinder growth and even exacerbate inequality. The constitution of Kenya 2010 provides county governments with resources in the form of county revenue funds. Counties are also empowered to raise and spend revenue towards improving public service delivery within their jurisdictions. Part of the criteria considered in determining the equitable shares to counties is the economic disparity within and among counties, the need to remedy them, and the need for affirmative action in respect of disadvantaged areas and groups. Inequality, however, remains a major challenge even as the country implements the devolved framework of governance, which underscores equity and equality of rights to basic needs and services across the country. Addressing both inter-county and intra-county inequality requires both social and economic policies geared towards inequality reduction. This includes policies aimed at asset redistribution, economic diversification, and appropriate fiscal strategies.

Counties with strong revenue bases are likely to raise additional resources that will enable them to improve socio-economic conditions and public service delivery within their jurisdictions. This is likely to widen the gap between them and counties that have weaker revenue bases. Counties with large populations of poor people may also be unable to raise much from service fees. Horizontal inequality under devolved governance may also increase because of differential levels of administrative capacity of the counties. Some counties may not have the capacity and infrastructure to enable the administration of programmes in ways that make it possible for them to achieve the efficiency gains from Decentralisation (IEA, 2014). Devolution will improve equality within and across counties only if resources are utilised more efficiently than under a Centralised system of governance. It is only by reducing inefficiency and wastage that counties may manage to divert resources into more productive areas that will enhance economic growth (IEA, 2014).

2.4 Economic Reforms and Policies

This section discusses some of the major reforms undertaken in Kenya and how they have impacted on poverty and inequality. These include reforms associated with the Structural Adjustment Programmes (SAPs) and related sectoral reforms, particularly in the social sector.

2.4.1 Structural adjustment programmes

The period since 1980 to the 1990s can be regarded as the economic reform period, albeit with delays and backtracking in the implementation of some of the reforms. The reforms were necessary then as many of the control measures taken by the government in the 1960s and 1970s had considerable negative effects on overall economic dynamism and expansion. The policies, which included wage and price controls and excessive participation of the government in the economy increased inefficiency and acted as a disincentive to both domestic and foreign investors and failed to improve the general welfare of the people. The World Bank and the International Monetary Fund (IMF) Structural Adjustment Programmes (SAPs) were adopted from the early 1980s as a strategy to create a new pace in economic growth. The measures were taken to enhance economic efficiency by strengthening the role of the private sector, dismantling price controls, reducing or removing import controls, implementing financial reforms, and Privatising parastatal enterprises. The economic reforms also aimed at containing growth in government expenditure and to reduce budget deficit.

Following the implementation of economic reforms in the 1980s in Kenya, there was a raging debate on the impact of the reforms on poverty and inequality. The argument was that SAPs would worsen inequality and aggravate the poverty situation through reduction in government expenditure and subsidies on essential services such as education and health services. A related argument is that SAPs reduce or remove wage and other price controls and regulation in the economy in favour of market forces, thereby reducing the protection of the poor and other vulnerable groups from the negative effects of laissez-faire economic policies. Removal of wage controls may translate to lower real wages and, therefore, increased inequality. It was further argued that a careful mix of public spending cuts during adjustment can help mitigate the short-term consequences for the poor

from declining (Thorbecke, 1991). Another common criticism of SAPs and their impact on the poor regards loss of employment in the short-term due to massive retrenchment by the public sector, and reduction of employment due to closure of uncompetitive firms. Following retrenchment in Kenya, a large number of previously well-paid workers joined the ranks of the unemployed or went for the low productivity jobs in the informal sector.

The alternative argument was that implementation of economic reforms would help to reduce poverty, inequality and the related problems of unemployment in the long-term. The argument was that the poor economic performance that characterised most developing countries then was due to inappropriate economic structures, including excessive government participation, controls and interference, which had adverse effects on economic incentives, efficiency and growth. Economic reforms if effectively implemented would help create an enabling environment, which would stimulate economic growth, generate employment and reduce the concentration of economic activities as a result of greater competition in the system, and this would help fight poverty and reduce existing levels of inequality.

In Kenya, the poor were adversely affected during the reform period not necessarily due to the reform measures carried out but as a result of distortion of the market. by politically powerful groups. Following trade liberalization, the local markets for maize and sugar were flooded by heavy importation of the items. by a group of politically influential people who often did not pay import duty. This aggravated the disadvantaged position of the poor farmers who could not sell their maize or sugar in the market (Khasiani & Ndung'u, 1996). Also, there was heavy importation of second-hand clothes, leading to the collapse of local textile industry and thereby leading to unemployment. In an extensive review of adjustment experiences in Africa during the period 1986-93, Hadjimichael and Ghura (1995) found that sustained adjusters and countries with low macroeconomic imbalances were doing better than the others, thus achieving positive per capita income growth during the period, and a reduction in inflation.

In addition, as stated in the Kenya Vision 2030, Kenya like any other nation has put in place some mechanisms to address poverty and inequality. The government through the Vision 2030 aspires to transform from a lower middle-income country to an upper middle-income country by the year 2030. To achieve this, some economic fundamentals have been put in place to enable the country take off. According to the Kenya Economic Report 2017 (KIPPRA, 2017), the country's economy has remained resilient over time, with economic growth rate increasing from 5.7 percent in 2015 to 5.8 percent in 2016 and finally increased to 6.3 percent in 2018.

2.4.2 Sectoral policies and initiatives

Policies and certain initiatives in sectors such as education, health and agriculture, are also likely to have had impact on inequality and poverty during the adjustment era. Some of these policies are considered in this section.

In the education sector, Kenya has made remarkable progress since independence. Kenya has almost attained parity in boys' and girls' enrolment in primary schools. Since the 1970s, secondary

education expanded rapidly, although only a small fraction of primary school leavers enrolled in secondary schools. Rapid expansion in university education took place in the late 1980s and early 1990s due to the establishment of more universities and due to the double intake of undergraduates and the establishment of several private universities. With the introduction of Free Primary Education in 2003 by the National Rainbow Coalition (NARC), government improved both enrolment and access to primary school education. Despite the tremendous progress in education, substantial problems still exist, including high dropout rates, regionally skewed access to education, low enrolment rates in higher education, and congestion in primary schools, raising concern about the quality of education offered.

The pro-poor and pro-equity initiatives in the education sector include initiatives such as provision of free primary education (already discussed); enhanced government funding for early childhood education; a school feeding programme; the development and implementation of education sector HIV/AIDS policy; school health and de-worming programmes; special support in arid and semi-arid lands (ASALs) primary and secondary school education; government support to the urban poor and non-government primary schools; support to special needs education; secondary school bursary fund for poor children; and loans to poor students attending university. The school feeding programme promotes basic education among the disadvantaged and nutritionally disadvantaged vulnerable children in pre-primary and primary schools and covers 10 arid and 19 semi-arid districts and six slum areas across the country.

In the health sector, one of Kenya's goals since independence has been access to adequate and quality healthcare services for all. Over the years, the country has made impressive progress towards improving health services for its population. Compared with other low-income countries, Health indicators in Kenya have performed considerably better compared to other low-income countries. The country has also recorded good progress in reduction of infant mortality and experienced higher life expectancy since 1948, However, the situation has deteriorated over time, with life expectancy declining mainly due to HIV/AIDS. Major problems are evident in the health sector despite the progress made. These include the widening gap between demand and supply of health services, inefficiency in the delivery of health services, large differences in regional access to healthcare, declining life expectancy at birth due to AIDS epidemic, and the distressing poverty situation in the country. Also, inadequate staff and over-reliance on donor funds remain major challenges.

Pro-equity and anti-poverty programmes in the heath sector include increased spending and implementation of programmes related to preventative healthcare and improved facilities (rural health centres and clinics). The Constituency Development Fund (CDF) is complementing the sector efforts to improve the facilities, with preliminary reports showing that more than 1,000 facilities are being developed through the CDF countrywide. Also, access to anti-retrovirals (ARVs) has increased tremendously, but it is far below the desired target of reaching everyone in need. Another area of achievement has been the improving Immunis ation coverage.

3. DATA SOURCES

This report uses data and statistics collected by government agencies and mainly includes nationally representative household surveys and census data. The analysis makes use of the 1994 Welfare Monitoring Survey II (WMS II), two Kenya Integrated Household Budget Surveys (KIHBS) for 2005/06 and 2015/16, 10 years apart. The three are the main datasets for the analysis undertaken in the report and they are supplemented by other nationally representative datasets, including the Labour Force Survey for 1998/99 and the 2009 Kenya Population and Housing Census (KPHC) data. Data for the 2019 Population and Housing Census KPHC has not been released for public use and is therefore not used in this report. This chapter provides a brief background on each of the primary data sources mentioned.

3.1 Welfare Monitoring Survey II of 1994

The Welfare Monitoring Survey II (WMS II) of 1994 is the second survey to have been conducted in Kenya in a series of three surveys from 1992 to 1997 (visit KNBS website for more details on WMS II of 1994). The objectives of the surveys were to:

- Develop and maintain a statistical database on social dimensions of adjustment through the establishment of routine and self-sustaining information system to provide indicators of living standards for different socio-economic groups;

- Carry out policy studies on social dimensions of adjustment, monitor macroeconomic policies, and inform policy makers on their impacts on the social and economic well-being particularly for the most vulnerable segments of the population;
- Design and follow up social policies and poverty alleviation programmes in conjunction with future structural adjustments operations; and
- Develop and strengthen analytical capacity within the participating government institutions.

A total of 1 258 clusters from the National Sample Surveys and Evaluation Programme (NASSEP) III sample frame, were selected for the survey. However, due to operational and logistical constraints arising from either desertion, insecurity, or inaccessibility of clusters, a few were not covered. At the end of the survey, a total of 10 860 households were interviewed. The survey was designed to be representative at the district level and at both rural and urban areas.

The Welfare Monitoring Survey II data collection was launched in June/July 1994 and covered all the 47 districts of Kenya (then) at both rural and urban areas. The scope of WMS II was broader than for the WMS I and included greater details in education, income and expenditure modules in addition to the fertility module. A set of eleven (11) different types of questionnaires were administered in two phases to minimize respondents' fatigue and to allow the enumerators to re-check their work. The administered questionnaires are: Basic household characteristics; Education; Health; Fertility; Non-wage household income; Household consumption expenditure Holding Amenities and Housing characteristics; child survival; and Anthropometry. The WMS II contains household expenditure information that is crucial and suitable for money-metric poverty and inequality measures. It also has information that can be used to determine access to social amenities such as education and health by various population groups.

3.2 Kenya Integrated Household Budget Surveys 2005/06 and 2015/16

The 2005/06 and 2015/16 Kenya Integrated Household Budget Surveys (KIHBS) were population-based surveys designed to provide estimates for various indicators representative at the national level, urban and rural areas and at the county level (e.g., see KNBS, 2018, 2017). The specific objectives of the surveys were to:

- Compute poverty and inequality indicators;
- Construct monetary, non-monetary and multi-dimensional indicators and the socio-economic profiles of living standards;
- Compute labour force indicators;
- Compute consumption baskets for construction of produce new consumer price index (CPI) series; and

- Provide data on the household sector and information that can be used to construct the agriculture and livestock input-output structure of the Kenyan System of National Accounts (SNA).

The 2005/06 KIHBS Sample Survey was drawn from the fourth National Sample Survey and Evaluation Programme (NASSEP IV) household sampling frame, while the 2015/16 KIHBS sample was drawn from NASSEP V frame, both of which were used by the Kenya National Bureau of Statistics (KNBS) to conduct the surveys. The sample size for KIHBS 2005/06 is 13 430 households in 1 343 clusters. The KIHBS 2015/16 survey covered 24 000 households in 2 400 clusters.

The 2005/06 and 2015/16 KIHBS collected information on household members, demographics, education, labour, health, fertility and mortality, child health and nutrition, information and communication technology (ICT) services, and domestic tourism at individual level. At the household level, information was collected relating to housing, water, sanitation and energy use, agricultural holdings, activities and outputs, livestock, household economic enterprises, transfers, income, credit, and recent shocks to household welfare, food security, justice, credit and ICT at the household level. Further information was collected on household consumption expenditure, including information relating to purchases and consumption of food, non-food and services in the household. Such information included expenses incurred by households on foods, house rent, healthcare, education, household goods, and insurance. Table 3.1 shows the comparison of various survey parameters between the two surveys.

The two KIHBS data include information on modules that were not included in the 1994 WMS II survey data. These include child health and nutrition, information and communication technology (ICT) services, and domestic tourism at individual level while at the household level new information was collected relating to energy use, agricultural holdings, activities and outputs, transfers, credit, and recent shocks to household welfare, food security, justice, credit and ICT services at the household level. However, the 1994 WMS II dataset and the two KIHBS datasets have similar information on household expenditure information that can be used for money-metric poverty and inequality measures, and assessment of access to social amenities.

3.3 Comparison of 1994 WMS II, 2005/06 KIHBS and 2015/16 KIHBS

The three main datasets used in the analysis for inequality are the WMS II of 1994 and the KIHBS 2005/06 and 2015/16. This section compares the three datasets and their suitability for use in analysing inequality. The 1994 WMS II, 2005/06 KIHBS and 2015/16 KIHBS both collected nationally representative household survey data. The 1994 WMS II was collected over a period of two (2) months, while the KIHBS dataset was collected over a period of about 12 months. Table 3.1 shows that the survey domain are national, and covers all the regions in the country, in both rural and urban areas. The 47 districts in 1994 are the ones that were turned into the 47 counties in 2010. Some of the 69 districts in 2005/06 were as a result of dividing the 47 districts that existed in 1994,

and it is a straight forward exercise to merge them into the 47 counties to ensure comparisons at the county level.

TABLE 3.1: Comparison of 1994 WMS II, 2005/06 KIHBS and 2015/16 KIHBS

Parameters	1994 WMS II	2005/06 KIHBS	2015/16 KIHBS
Sample design			
Survey domains	National, 47 districts	National, 69 districts	National, 47 counties,
Sampling frame	rural/urban NASSEP III (1 377 clusters)	rural/urban NASSEP IV (1 800 clusters)	rural/urban NASSEP V (2 400 clusters)
Data collection logistics			
Cycles	Snapshot survey	17	24
Days	60	21	14
Sample size and allocation			
National	10 860 households (1 258 clusters)	13 430 households (1 343 clusters)	24 000 households (2 400 clusters)
Rural	10 480 households (1 048 clusters)	8,610 households (861 clusters)	14 120 households (1 412 clusters)
Urban	2 100 households (210 clusters)	4 820 households (482 clusters)	9 880 households (988 clusters)
Data collection			
Field data collection teams	Not given	44 (100 survey personnel)	44 (100 survey personnel)
Data collection dates	June/July 1994	May 2005 - April 2006	May 2005 - April 2006
Consumption module recall periods (days)			
Food consumption-recall	7	7	7
Non-food Expenditures -Regular	30	30	30
Non-food Expenditures - Non-Durables	90	90	90
Durables	365	365	365

Source: *Based on 1994 WMSII, KNBS (2007, 2018) Reports*

The datasets have similar recall periods for food consumption, non-food expenditures and durable goods that are useful in constructing consumption expenditure data for analysing inequality in this report. However, survey design for KIHBS 2005/06 and 2015/16 involves consecutive visits to the same household. It is said to be bounded if the recall is based on the period "since my last visit".

Under this definition, the reference periods used in the KIHBS (last week, last month, last year) were not bounded, which can lead to serious telescoping (misdating) errors. The data on food consumption used a 7-day recall period; regular non-food expenditures used a one-month recall period, while data on household durables used a one-year recall period.

The weighting of the three datasets was based on the selection probabilities in each domain. The design weights were adjusted using the survey responses to give the final weights. This was necessitated by the survey data being not self-weighting, since the sample allocation was not proportional to the size of the strata (e.g. see KNBS (2018, 2007) on calculation of weights). The weights are available in each of the datasets. Additionally, some of the sampled households did not respond to the interviews, but this was negligible.

However, the results might be affected by the seasonal effect on household expenditure, since seasonality was not controlled for while collecting the data. Secondly, some districts/counties especially those from North Eastern of Kenya may be under-represented in the sample. Other than telescoping errors, which are common to both the three datasets, household data collected in different cycles where the reference period was long (e.g. "last one year") might have different midpoints of the reference period compared with other data with shorter reference periods. For example, household data on durables collected in the first cycle essentially covered transactions during the year preceding the official survey period, while data for households in the last cycle covered the entire survey period. The time midpoint for the data on household durables is therefore the beginning of the survey, while the time midpoint for shorter reference periods is roughly halfway between commencement and completion of the survey.

While the 1994 WMS II has information on earnings, it does not have adequate information on the labour market supply side such as labour market participation and unemployment, which is incorporated in the two KIHBS datasets. Thus, for analysis of inequality in the labour market, the Labour Force Survey 1998/99 is used together with the KIHBS data instead of the 1994 WMS II.

3.4 Labour Force Survey 1998/99

The 1998-99 Labour Force Survey (LFS) was the first of its kind to integrate three related surveys (labour force, informal sector and child labour modular surveys) into a single cost-effective survey. It was conducted over the whole country on the household-based NASSEP III sample frame, and covered 11 049 households giving a response rate of 86.2 percent. As such, the survey collected a wide range of representative information that can be used in the design, implementation, monitoring and evaluation of various policies and programmes. In particular it provides indicators such as school enrolment rates, housing conditions, access to amenities and facilities, income and expenditure, unemployment rates, and income and expenditure levels, which should provide invaluable inputs into the monitoring and evaluation of the economic reforms, inequality and poverty reduction programmes.

The key objectives of the survey were to update data on the labour force, determine the size and output of the informal sector, and estimate the extent of child labour. In designing and

implementing the survey, the (then) Central Bureau of Statistics (CBS) worked closely with other stakeholders through the Inter-Ministerial Steering Committee (IMSC) that comprised several ministries and departments. The data provides information on the following: age-gender structure; Marital status and migration patterns; Education and literacy; Housing and amenities; Migration patterns; Household expenditure; Labour force participation; Employment; Occupations and industry; Wage levels; Working children; and Informal sector.

3.5 Kenya Population and Housing Census 2009

The 2009 Kenya Population and Housing Census (2009 KPHC) was the seventh census to be conducted since 1948 and the fifth since independence in 1963 (see KNBS 2010). Kenya has been conducting its censuses every 10 years since 1969 in compliance with the United Nations (UN) recommendation. The KPHC generates a wealth of data, including number of people, their spatial distribution, age and gender structure, and their living conditions and other key socio-economic characteristics. The census provides the much-needed comprehensive data at lower levels to inform development planning and programming to facilitate delivery of quality services to citizens. In addition, KPHC is used to monitor progress in achieving internationally agreed milestones of programmes such as the Sustainable Development Goals (SDGs).

The 2009 Kenya Population and Housing Census was a de facto census and collected data through face-to-face interviews. The KPHC were collected from 24th to 31st August 2009. The specific objectives were to ascertain the following:

- Size, composition and spatial distribution of the population;
- Levels of fertility, mortality and migration rates;
- Rate and pattern of urbanisation;
- Levels of education attained by the population;
- Size and deployment of the labour force;
- Size, types and distribution of persons with disabilities; and
- Housing conditions and availability of household amenities.

The development of the census questionnaires was guided by the UN recommendations for 2010. There were two types of questionnaires: the main one, which covered households and those who spent the census night in institutions, such as boarding schools and colleges, and four (4) short questionnaires on:

- Hotel/lodge residents; patients in hospitals;
- Travelers and persons in transit;

- Vagrants and outdoor sleepers; and
- Emigrants.

The main census questionnaire was divided into 11 sections:

- Section A: Information Regarding All Persons;
- Section B: Information Regarding Females, Aged 12 Years and Above;
- Section C: Information Regarding Disability;
- Section D: Information Regarding Education Status for Persons Aged 3 Years and Above;
- Section F: Information Regarding ICT (Information, Communication and Technology);
- Section G: Annual Live Births;
- Section H: Recent Deaths in the Household;
- Section I: Information Regarding Livestock;
- Section J: Housing Conditions and Amenities;
- Section K: Ownership of Household Assets; and
- Section L: Emigrants.

In summary, several datasets are used in the analysis. The three main datasets used in the analysis are the 1994 WMS II data and KIHBS 2005/06 and KIHBS 2015/16 datasets. The three have similar information in terms of the information required in measuring inequality but differ in the ways discussed earlier in this section. As is common in many developing countries, expenditure data is used as a proxy for reporting on income, as this data is often more robust and better reported by households. Weights are available in each of the datasets and were used whenever appropriate. In discussing inequality in the labour market, we replace the 1994 WMS II data, which does not have adequate information on the labour market with the Labour Force Survey 1998/99. In analysing inequality in asset ownership, we use the KIHBS data 2005/06 and 2015/16. Furthermore, we used Census 2009 dataset and KIHBS 2015/16 data to analyse access to services in the social domain. We could not carry out the analysis using the 2019 Population Census KPHC as the data had not been released for public use.

4. PROFILING ECONOMIC INEQUALITY IN KENYA

Goal 10 of the Sustainable Development Goals (SDGs) aims at reducing inequalities within and between countries. As shown earlier in this report, Kenya is one of the countries in Africa that has moderately high levels of inequality. In East Africa, Kenya has the highest inequality compared to her neighbours, Uganda, Tanzania and Ethiopia. However, Kenya has a relatively lower inequality compared to that of other African countries such as South Africa, Namibia, Rwanda and Nigeria, which are among the continent's top most unequal countries.

This section presents measures of economic inequality using per capita expenditure as the welfare indicator. The inequality measures presented include the Gini coefficient, the Lorenz curve, Theil's indices, Atkinson indices and the Palma ratio for three periods, 1994, 2005/06 and 2015/16, using three household surveys (WMS II- 1994 and KIHBS 2005/06 and KIHBS 2015/16). The section tracks whether inequality in Kenya has been increasing or reducing over time and outlines what would be the main sources of the disparities observed. For purposes of comparison over time, the data is transformed to real per capita expenditure using the 2010 price as base year to allow for comparison in real terms. Some of the tables and figures are presented in the Annex.

4.1 Mean and Median Real Annual Expenditure by Sub-Groups

Table 4.1 provides mean and median real annual expenditure estimates by population sub-groups, location and poverty status. Generally, at the national level, mean and median real annual expenditure declined and then increased over time, with mean being higher than median annual expenditure. The mean real expenditure per annum for 1994 was Ksh 62 374, which declined to Ksh 50 141 in 2005/06 and then increased to Ksh 54 819 in 2015/16. The median real expenditure decreased between 1994 and 2005/06 but increased 2015/16. However, this is not the same picture across sub-groups.

Individuals in male-headed households had mean and median annual expenditures higher than those of individuals in female-headed households. For example, the mean annual expenditure for male-headed households was Ksh 64 772 in 1994 compared to Ksh 55 006 for female-headed households in the same year. In 2015/16, the annual mean expenditure estimate was Ksh 56 745 for individuals in male-headed households and Ksh 50 800 for individuals in female-headed households. A t-test for the difference in annual means for individuals in male-headed and female-headed households is not significant for 1994 but is statistically significant for 2005/06 and 2015/16 at the 1 percent level of significance.

Regarding the education level of head of household, individuals living in households whose head had higher education had the highest annual mean and median expenditure, followed by those living in households whose head had secondary and primary school education. In 1994, individuals in households for which the head had higher education had a mean annual expenditure of Ksh 191 353, which declined to Ksh 143 862 in 2005/06 before further declining to Ksh 106 254 in 2015/16. The annual median for this group is lower than the annual mean expenditure but has a different pattern over time in the sense that it declined between 1994 and 2005/06 and then increased in 2015/16. Individuals in households whose head had secondary education had an annual mean expenditure of Ksh 80 148 in 1994, which declined to Ksh 66 391 in 2005/06 and further to Ksh 61 285 in 2015/16. Meanwhile, those in households whose head had primary education had an annual mean expenditure of Ksh 53 873 in 1994, which declined to Ksh 38 429 in 2005/06 but increased to Ksh 42 001 in 2015/16. Those individuals in households whose head had no schooling had the lowest annual mean and median expenditures. Thus, the mean annual and median expenditure of individuals in households whose head had higher education was at least three times higher than those in households whose head had no education, while those in households whose head had secondary education spent at least two times higher than those in households whose head had no education. A mean comparison test indicated that the difference in mean of real per capita expenditure across households with different education level of household head was statistically significant at 1 percent level of significance.

TABLE 4.1: Mean and median annual real per capita expenditure (2010=100%) by sub-group, 1994-2016

		Mean			Median		
Variable	**Sub-Group**	**1994**	**2005/06**	**2015/16**	**1994**	**2005/06**	**2015/16**
Gender of household head	Male	64 772	52 230	56 745	40 195	32 174	40 304
	Female	55 006	45 002	50 800	38 264	28 385	34 275
Education of household head	No schooling	43 987	27 373	28 862	32 124	20 642	22 034
	Primary	53 873	38 429	42 001	35 938	27 370	31 454
	Secondary	80 148	66 391	61 285	55 928	46 306	47 435
	Higher	191 353	143 862	106 254	99 037	77 408	81 096
Residential location	Rural	45 176	33 591	35 962	34 487	25 142	27 571
	Urban	128 955	98 516	79 249	80 704	64 251	61 471
Poverty status	Poor	19 588	16 868	18 775	19 553	15 577	17 004
	Non-poor	86 458	70 783	68 418	58 336	47 182	51 677
Total	National level	62 374	50 141	54 819	39 793	30 669	38 235

Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16-Weighted*

Urban dwellers had a mean annual real expenditure of Ksh 128 955 in 1994, which declined to Ksh 98 516 in 2005/06 and further to Ksh 79 249 in 2015/16. Rural dwellers had a mean annual real expenditure of Ksh 45 176 in 1994, which declined to Ksh 33 591 before increasing slightly to Ksh 35 962 in 2015/16.The median annual expenditure for both urban and rural dwellers was lower than the mean but follows a similar pattern to that of the annual mean real expenditure over time. In general, those living in urban areas had at least two times higher real expenditure than those living in rural areas. The difference in mean real expenditure per capita between rural and urban households is statistically significant.

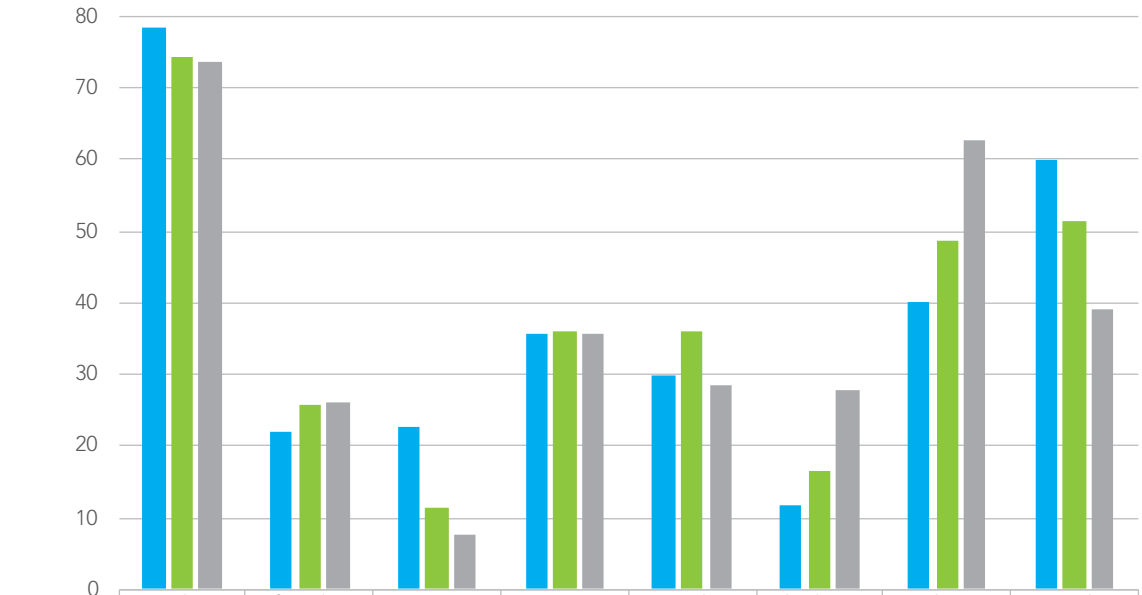
Table A2 in the Annex shows the mean and median annual real expenditure per capita by county. In most counties, the median annual expenditure is lower than the mean annual expenditure, an indication of skewed expenditure distribution among households in the counties. Nairobi County, which is Kenya's largest city, has the highest mean and median annual expenditure followed by Mombasa County, which is Kenya's second largest city. Counties with annual expenditure below Ksh 28 000 in 1994 were Marsabit, Turkana and Samburu; in 2005/06 were Tana River, Wajir, Mandera, Isiolo, Marsabit, Turkana, West Pokot and Samburu; while in 2015, the worst off counties were marsabit, Wajir, and Mandera. Nairobi County spent at least five times more than the counties with the lowest annual expenditure. It is important to note that most of these counties recorded improvement in mean real per capita consumption in 2015/16 compared to 2005/06.

Table 4.1 further shows that the average expenditure of the poor individuals was Ksh 19 588 in 1994 and declined to Ksh 16 868 in 2005/06 before it increased slightly to Ksh 18 775 in 2015/16. As expected, the differences in mean real per capita expenditure is statically significant over the period. The annual mean expenditure of non-poor individuals was at least three times more than that for the poor except for 2015/16 when it was about twice. Also, there seems to be more skewness in the distribution of expenditure for non-poor compared to the poor, as shown by the large difference between the annual mean and median for the non-poor.

4.2 Expenditure Share by Sub-groups

Figure 4.1 shows the distribution of expenditure shares by gender and education of the household head and location of residence. Figure 4.1 shows the share of total expenditure by gender, education of the household head and residence. Individuals living in male-headed households accounted for about 78 percent of the total expenditure in 1994, which declined to 74 percent in 2015/16. This is mainly due to the high number of male-headed households relative to female-headed households. Comparing the expenditure shares and population shares (Table A1), the expenditure shares between groups are disproportionate relative to their population shares. For instance, about 66 percent of the individuals living in male-headed households accounted for almost three quarters of the total expenditure share in the country in 2015/16. About 34 percent of individuals living in female-headed households accounted for 26 percent of the total expenditure share in the same year.

FIGURE 4.1: Expenditure shares by gender and education of the household head and residence



	male	female	none	primary	secondary	higher	urban	rural
1994	78.3	21.9	22.7	35.6	29.8	11.9	40	60
2005/06	74.3	25.7	11.6	35.9	35.9	16.6	48.6	51.4
2015/16	73.7	26.3	7.8	35.8	28.7	27.7	62.8	39.2

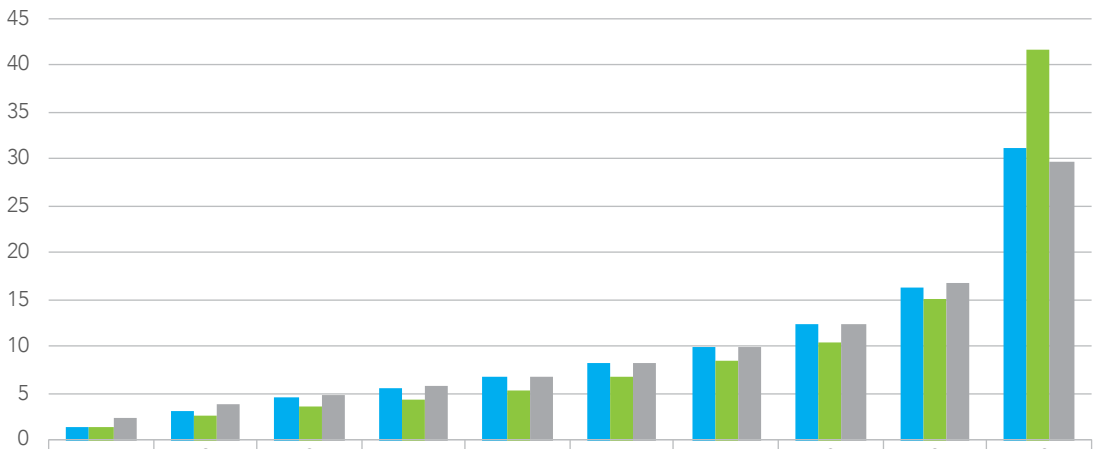
Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

The figure also shows that expenditure share of individuals living in households where household heads have no schooling declined from 23 percent in 1994 to 8 percent in 2015/16 while it increased from 12 percent in 1994 to 28 percent in 2015/16 for those with higher education. It remained relatively the same over the period at about 36 percent for those living in households headed by persons with primary education. The expenditure share for individuals living in households where the head has secondary education fluctuated over time, increasing from 30 percent in 1994 to 36 percent in 2005/06 and then declined to 29 percent in 2015/16. In terms of education level, the expenditure share of individuals in households where the head has no formal education and primary education was significantly smaller than their large population share while the expenditure share of individuals in households where the head has secondary and higher education is disproportionately higher than their population share.

On urban and rural expenditure shares, the expenditure share for individuals living in urban areas increased over time from 40 percent in 1994 to 63 percent in 2015/16, while that for rural dwellers declined from 60 percent in 1994 to 39 percent in 2015/16, probably due to the ever-increasing urban migration. Similarly, urban dwellers who constitute 40 percent of the population controlled 61 percent of the total expenditure shares in 2015/16 while 60 percent who are rural dwellers accounted for 39 percent of the total expenditures

Turning to the share of expenditure going to each decile of the population, Figure 4.2 shows the share of expenditure for each decile from the poorest 10 percent to the richest 10 percent. The richest 10.0 percent had 31.7 percent of the expenditure share in 1994 and this increased to 41.6 percent in 2005/06 before falling to 29.8 percent in 2015/16. The share of the poorest 10 percent of the population was 1.4 percent in 1994, and 1.5 percent and 2.4 percent in 2005/06 and 2015/16, respectively. In 2015/16, there seems to be redistribution of expenditure share from the top 10 percent richest to lowest percentiles, indicating a decline in inequality.

FIGURE 4.2: Expenditure shares by deciles of the population

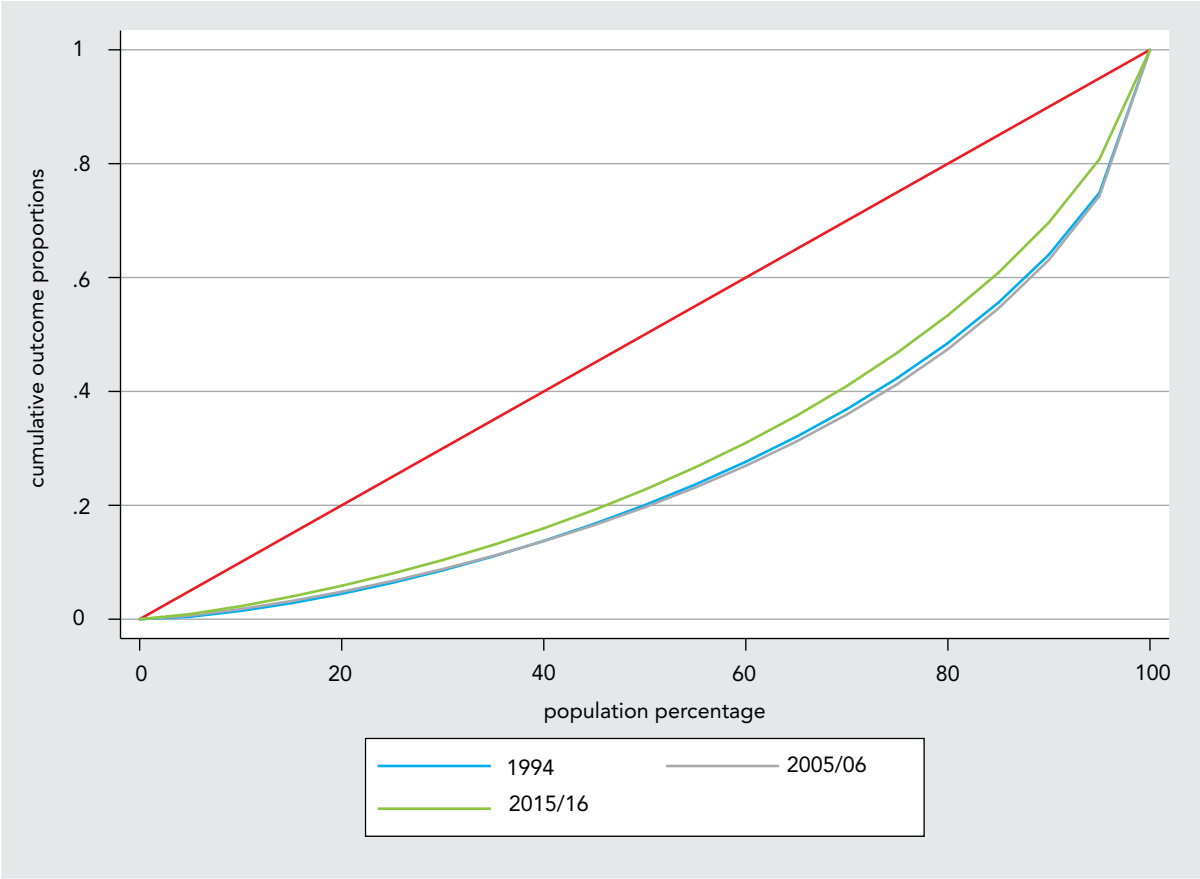


	1	2	3	4	5	6	7	8	9	10
1994	1.4	3.2	4.5	5.6	6.8	8.2	9.9	12.4	16.3	31.2
2005/06	1.5	2.7	3.5	4.4	5.4	6.7	8.4	10.4	15.1	41.6
2015/16	2.4	3.8	4.7	5.7	6.8	8.2	10	12.3	16.7	29.8

Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

The Lorenz curve is constructed using cumulative percentage shares of per capita expenditure against cumulative population shares. The closer the curve is to the line of equality (450 line), the more equal the expenditure distribution is in a society. The Lorenz curve shows that inequality worsened slightly in 2005/06 but improved between 2005/06 and 2015/16. The 2015/16 Lorenz curve is closer to the 450 line, followed by the 1994 Lorenz curve and the 2005/06 distribution. This shows that there was general improvement in income distribution in 2015/16 compared to 2005/06. A comprehensive analysis of the degree of equality through other measures such as the Gini coefficient, Theil's Indices, Atkinson indices and the Palma ratio is presented in the next section.

FIGURE 4.3: Lorenz curve based on per capita expenditure (1994, 2005/06 and 2015/16)



Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

4.3 Inequality Ratios and Indices by Sub-Groups

This section examines trends in commonly used measures of inequality over the period 1994 to 2016.These includes the Gini Coefficient, the Theil's indices, the Atkinson's indices and Palma ratio. The indices and the ratio are provided for sub-groups based on gender and education of the household head, residence (urban and rural), county level and by poverty status. For the 47 counties, estimates for inequality are based on the Gini coefficient, more likely to be understood by both county and national level policy makers. The inequality indices and ratios are based on per capita expenditure. A brief description of each measure is provided.

Gini coefficients

The Gini coefficient is by far the most popularly used measure of inequality and ranges from 0 to 1 with 0 indicating perfect equality and 1 showing complete inequality (where one person has all the income/expenditure and the rest have none). Therefore, as the Gini coefficient gets closer to 1, the more unequal the population is while as it approaches zero the more equal the population becomes.

Theil's index and general entropy (GE)

Theil's index belongs to a family of generalised entropy inequality measures, GE(α), where α represents the weight given to the distance between income/expenditure at different parts of the income/expenditure distribution. The parameter α can take on any real value and the most commonly used values of $\alpha\alpha$ in various studies are 0, 1 and 2. When values of α are lower, GE is more sensitive to changes in the lower tail of the distribution, and when the values are higher, GE is more sensitive to changes that affect the upper tail. Therefore, a value of $\alpha = 0$ gives more weight to distances between income/expenditure in the lower tail of income/expenditure distribution, and $\alpha = 2$ gives proportionately more weight to gaps in the upper tail of income/expenditure distribution. When $\alpha = 0$, the GE(0) index is known as Theil's L index and when $\alpha = 1$, GE(1) index is known as Theil's T index, and when $\alpha = 2$, GE(2) index is referred to as the coefficient of variation (Tregenna & Tsela, 2012).

The Atkinson index

The Atkinson index (Atkinson, 1970) is based on a social welfare evaluation of the expenditure/income distribution. Given a social welfare function, the Atkinson index is constructed by computing the equally distributed equivalent income of distribution, which is defined as the level of income which, if equally distributed, would give the same level of welfare as the existing distribution. It is expressed in the form of an additive social welfare function, with an inequality aversion parameter epsilon. In the Atkinson class of inequality measure (A_ε), epsilon represents "aversion to inequality" and can take values between zero and infinity. The larger the parameter epsilon, the stronger the inequality aversion in the society. Thus, higher values of Atkinson indices pay more attention to the bottom of the income/expenditure distribution (Wittenberg, 2017). Having a greater aversion means that social welfare is more sensitive to a shift in the income of a poorer individual than to the shift affecting a richer individual. The Atkinson class of measures range from 0 to ∞ with zero representing no inequality. A_0 means no distinction in terms of welfare gained (lost) for a unit change in income at the top or the bottom of the distribution. This is a straight line, utilitarian welfare function. A_∞ is a Rawlsian, Leontief welfare function. Only the changes in income of the poorest of the poor change social welfare

Palma ratio

The Palma ratio is defined as the ratio of income/expenditure shares of the top 10 percent of the population relative to the bottom 40 percent. The higher the ratio, the higher the inequality. A decline in the ratio signals declining inequality.

The sub-sections below discuss the three indices and the Palma ratio trends over the period 1994 to 2016. The indices and the ratio are provided for sub-groups based on gender and education of the household head, residence type (urban and rural), poverty status and for 47 Kenyan administrative counties. The inequality indices and ratios are based on per capita expenditure. For the 47 counties, estimates for inequality are based on the Gini coefficient, more likely to be understood by both county and national level policy makers. The presentation and discussions are divided into two parts: the within country and group inequality estimates, and the between and within group decomposition.

Inequality at the National level and by Gender of head of household

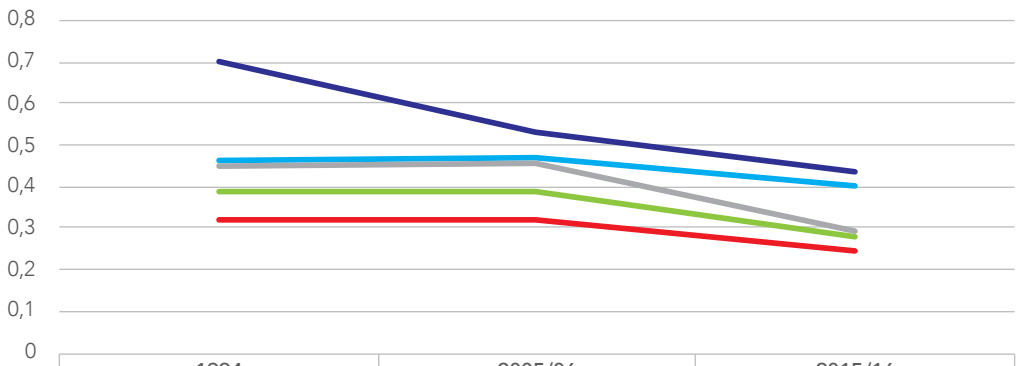
Table 4.2 shows inequality measures based on per capita expenditure at the national level and by gender. Generally, there was a reduction in inequality indices in the period 2005/06 and 2015/16, indicating a general decline in inequality. At the national level, the Gini coefficient increased slightly from 0.460 in 1994 to 0.470 in 2005/06 and declined to 0.404 in 2015/2016 (see Figure 4.4). The other measures, that is, the Theil's indices, show a similar declining trend in inequality while the Atkinson indices declined from the 1994 estimates to 2015/16.The Palma ratio remained the same at 2.9 in 1994 and 2005/06 but declined to 2.0 in 2015/2016. The decline of Palma ratio was as a result of increase in the share of expenditure going to the middle 50 percent and the lower 40 percent of the population, resulting in a decline in the share of expenditure going to the top 10 percent. The share of expenditure going to the middle 50 percent increased from 35.2 percent in 1994 to 53.7 percent in 2015/16 while that of the lower 40 percent increased slightly from 13.5 percent in 1994 to 16.0 percent in 2015/16.

TABLE 4.2: Inequality based on expenditure per capita by gender of head of household, 1994-2016

Gender of Household Head	Year	Gini	Theil's Indices		Atkinson Indices		Palma Ratio			
			GE(0)	GE(1)	A(1)	A(2)	Bottom 40%	Middle 50%	Top 10%	ratio
Male	1994	0.469	0.401	0.475	0.331	0.659	13.1	34.6	38.2	2.9
	2005/06	0.471	0.387	0.458	0.321	0.516	13.6	49.5	36.9	2.9
	2015/16	0.399	0.271	0.287	0.238	0.415	16.2	53.9	30.0	2.0
Female	1994	0.427	0.332	0.340	0.282	0.764	14.8	37.7	32.9	2.2
	2005/06	0.463	0.379	0.435	0.316	0.547	14.2	49.2	36.6	2.8
	2015/16	0.414	0.293	0.298	0.254	0.461	15.7	53.2	31.1	2.0
Total Population	1994	0.460	0.386	0.446	0.321	0.698	13.5	35.2	37.0	2.8
	2005/06	0.470	0.387	0.454	0.321	0.529	13.7	49.4	36.9	2.8
	2015/16	0.404	0.279	0.291	0.244	0.432	16.0	53.7	30.3	2.0

Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

FIGURE 4.4: National level inequality measures based on expenditure per capita



	1994	2005/06	2015/16
Gini	0.46	0.47	0.404
GE(0)	0.386	0.387	0.279
GE(1)	0.446	0.454	0.291
A(1)	0.321	0.321	0.244
A(2)	0.698	0.529	0.432

Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

Estimates in Table 4.2 show that except for 2015/16 when inequality for female-headed households was higher than that for male-headed households, inequality for individuals in male-headed households was higher than that for female-headed households. All the measures of inequality presented in the table show that inequality in male-headed households declined over the period 1994 to 2016. The inequality in female-headed households generally increased between 1994 and 2005/06 before declining in 2015/16. The decline in inequality in the male-headed households was much higher than that for female-headed households over the period 2005/06 and 2015/16, leading to lower inequality in male-headed households in 2015/2016. For instance, the Gini coefficient of male-headed households increased from 0.469 in 1994 to 0.471 in 2005/06 and then declined to 0.399 in 2015/16. The Gini coefficient for female-headed households increased slightly from 0.427 in 1994 to 0.463 in 2005/06 before declining to 0.414 in 2015/16.

Individuals living in male-headed households had the share of expenditure going to the middle 50 percent and lower 40 percent increasing over time, while that going to the top 10 percent declined over the period. The share of expenditure going to the middle 50 percent in male-headed households increased from 34.6 percent in 1994 to 53.9 percent in 2015/16 while that of the lower 40 percent increased slightly from 13.1 percent in 1994 to 16.2 percent in 2015/16. The Palma ratio for male-headed households remained the same at 2.9 in 1994 and 2005/06 before declining to 2.0 in 2015/16, while that for female-headed households increased from 2.2 in 1994 to 2.8 in 2005/06 before declining to 2.0 in 2015/16. The drop in the Palma ratio for individuals in male- and female-headed households over the period 2005/06 and 2015/16 is due to the increase in the share of expenditure going to the middle 50 percent and lower 40 percent, and the fall in the share of expenditure going to the top 10 percent.

Inequality and Education of Household Head

Table 4.3 shows inequality by level of education of the household head. Except for those with no schooling and higher education, the inequality for individuals in households where the head of household has primary and secondary education declined over time as shown by all the indices measures. The Gini coefficient for individuals in households where the head of household has no schooling and primary education declined over time while that for households where the head had secondary and higher education increased between 1994 and 2005/06 before declining between 2005/06 and 2015/16. For example, in 1994, the Gini coefficient for household heads with higher education increased from 0.523 in 1994 to 0.534 in 2005/06 before declining to 0.350 in 2015/2016. The Gini coefficient for individuals in households where the head has higher education was higher than the ones for household with no schooling, primary and secondary education in 1994, 2005/06 and 2015/16. The second highest Gini is that for individuals in households where the head has primary education. All the measures of inequality presented in the table show that inequality in all households regardless of the education level of the head declined between 2005/06 and 2015/16. The decline in inequality was much higher for individuals in households where the head had higher education during the period 2005/06 and 2015/16.

TABLE 4.3: Inequality based on expenditure per capita by education level of head of household, 1994-2016

Education Level of Household Head	Year	Gini	Theil's Indices		Atkinson Indices		Palma Ratio			
			GE(0)	GE(1)	A(1)	A(2)	Bottom 40%	Middle 50%	Top 10%	Ratio
No schooling	1994	0.410	0.322	0.291	0.275	0.751	16.8	40.1	29.0	1.7
	2005/06	0.387	0.274	0.263	0.240	0.483	16.8	54.3	28.9	1.7
	2015/16	0.361	0.229	0.223	0.205	0.414	18.3	54.6	27.1	1.5
Primary	1994	0.425	0.327	0.439	0.279	0.561	16.3	38.4	30.9	1.8
	2005/06	0.386	0.250	0.261	0.221	0.386	17.1	52.8	29.1	1.7
	2015/16	0.346	0.198	0.212	0.180	0.322	18.9	54.6	26.4	1.4
Secondary	1994	0.395	0.268	0.270	0.235	0.432	11.0	28.4	41.5	3.8
	2005/06	0.417	0.303	0.355	0.261	0.439	15.9	51.7	32.4	2.0
	2015/16	0.346	0.199	0.204	0.181	0.323	18.8	54.8	26.4	1.4
Higher	1994	0.523	0.480	0.517	0.381	0.581	15.0	40.0	30.0	2.0
	2005/06	0.534	0.521	0.535	0.406	0.637	10.4	48.4	41.2	4.0
	2015/16	0.350	0.207	0.218	0.167	0.338	18.9	54.9	26.2	1.4
Total Population	1994	0.460	0.386	0.446	0.321	0.698	13.5	35.2	37.0	2.8
	2005/06	0.470	0.387	0.454	0.321	0.529	13.7	49.4	36.9	2.8
	2015/16	0.404	0.279	0.291	0.244	0.432	16.0	53.7	30.3	2.0

Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

Irrespective of the level of education of the household head, the share of expenditure going to the middle 50 percent and the lower 40 percent increased over time except for individuals in households with higher education where the share declined. Similarly, the share of expenditure to the top 10 percent declined for all households irrespective of the education level of the household head except for individuals in households where the head had higher education, which declined over time. The Palma ratio for individuals in households where the head had no schooling, primary and secondary education declined over the period while that for individuals in households where the head had higher education increased from 2.0 in 1994 to 4.0 in 2005/06 before falling to 1.4 in 2015/16. The drop in the Palma ratio over the period 2005/06 and 2015/16 is due to an increase in the share of expenditure going to the middle 50 percent and lower 40 percent and the fall in the share of expenditure going to the top 10 percent. This indicates that there was a decline in inequality over the period.

Inequality by Regions

Table 4.4 shows that inequality declined over time and is higher among people living in urban areas compared to those living in rural areas. For instance, the Gini coefficient for urban dwellers decreased from 0.473 in 1994 to 0.447 in 2005/06 and then to 0.363 in 2015/16 while inequality for rural dwellers declined from 0.386 in 1994 to 0.347 in 2015/16.Inequality declined faster in urban areas than in rural areas with inequality in urban areas trending towards the level in rural areas in 2015/16. Furthermore, the share of expenditure going to the top 10 percent of the population declined over the same period for both the urban and rural dwellers and that going to the middle 50 percent and the lower 40 percent increased over time. The Palma ratio declined from 3.0 in 1994 to 1.5 in 2015/16 for urban dwellers and from 1.7 in 1994 and 2005/06 to 1.4 for rural dwellers.

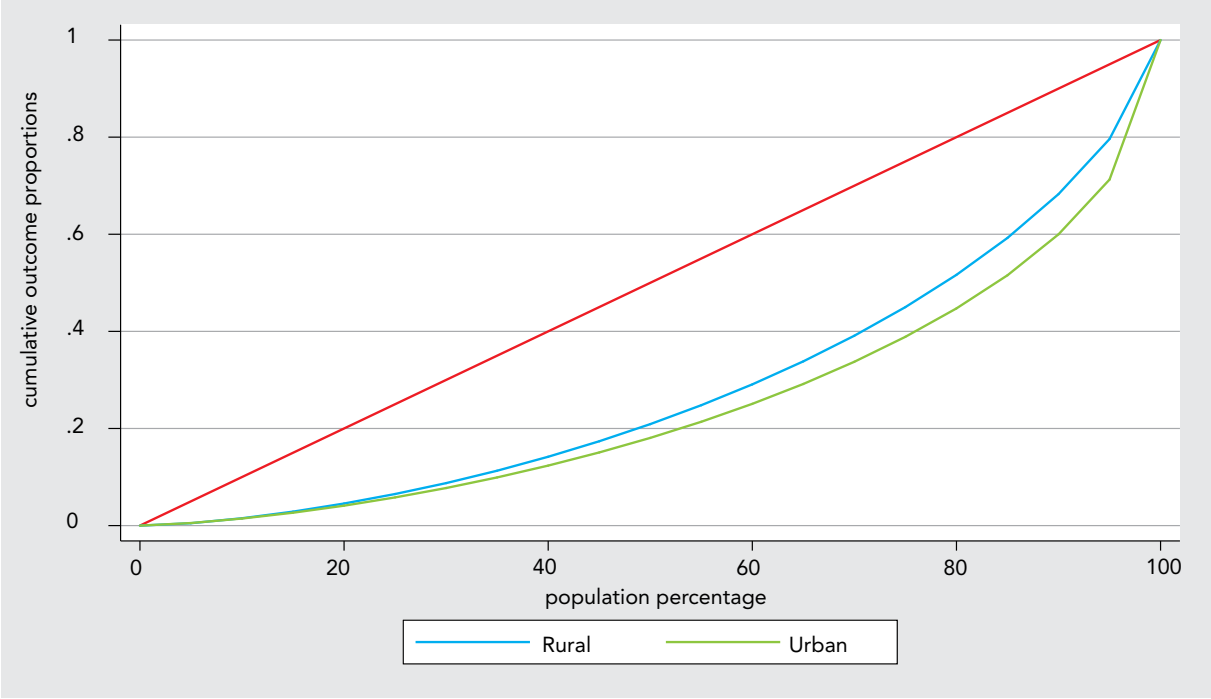
TABLE 4.4: National and regional trends in inequality based on expenditure per capita, 1994-2016

Residence Location	Year	Gini	Theil's Indices		Atkinson Indices		Palma Ratio			
			GE(0)	GE(1)	A(1)	A(2)	Bottom 40%	Middle 50%	Top 10%	ratio
Urban	1994	0.473	0.395	0.483	0.326	0.554	13.4	47.0	39.6	3.0
	2005/06	0.447	0.346	0.415	0.293	0.478	15.0	48.7	36.3	2.4
	2015/16	0.363	0.225	0.232	0.201	0.364	18.0	54.2	27.5	1.5
Rural	1994	0.386	0.276	0.259	0.241	0.658	16.4	41.1	28.3	1.7
	2005/06	0.380	0.252	0.255	0.222	0.422	17.2	53.9	28.8	1.7
	2015/16	0.347	0.205	0.217	0.185	0.352	19.1	54.2	26.7	1.4
Total Population	1994	0.460	0.386	0.446	0.321	0.698	13.5	35.2	37.0	2.8
	2005/06	0.470	0.387	0.454	0.321	0.529	13.7	49.4	36.9	2.8
	2015/16	0.404	0.279	0.291	0.244	0.432	16.0	53.7	30.3	2.0

Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

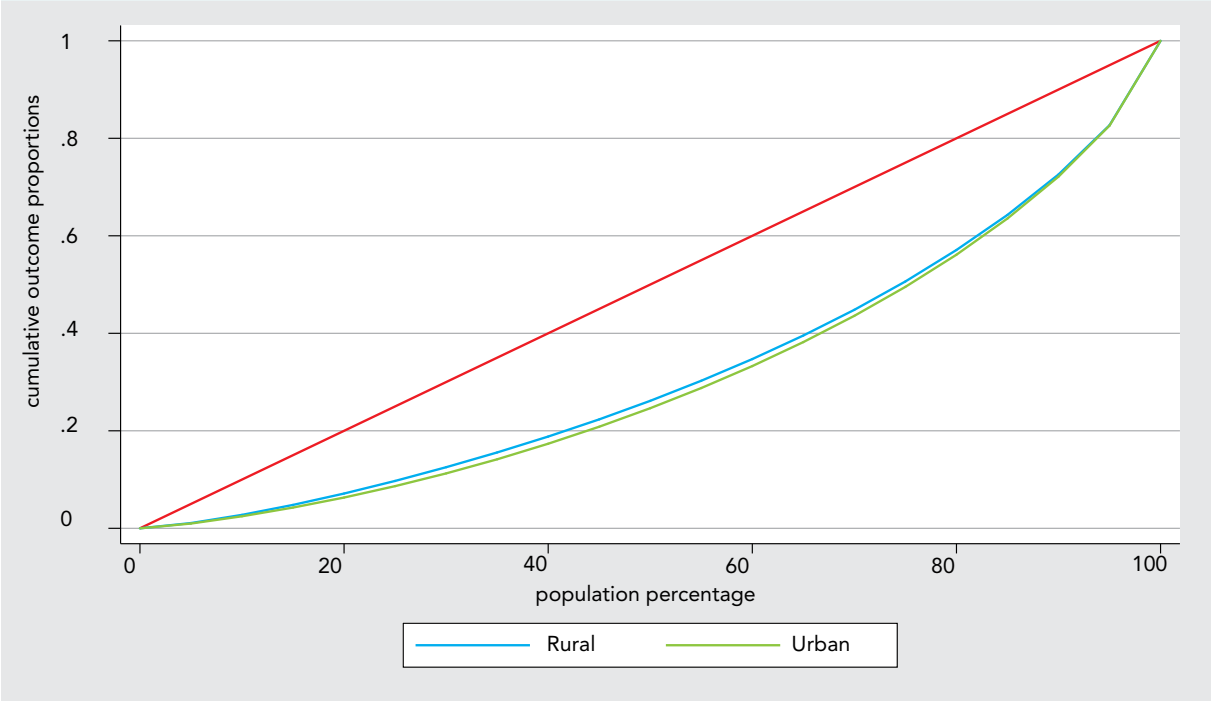
Figures 4.5 and 4.6 further show the Lorenz curves for rural and urban per capita expenditure distribution for 1994 and 2015/16. Figure 4.5 shows that the difference in per capita expenditure inequality was higher in urban areas than rural areas in 1994. However, the rural-urban differences have decreased over time as shown by the Lorenz curves for 2015/16, with the two Lorenz curves for rural and urban areas being very close to each other.

FIGURE 4.5: Lorenz curve on per capita expenditure for rural and urban regions for 1994



Source: *Own estimates based on WMS 1994 using household weights*

FIGURE 4.6: Lorenz curve on per capita expenditure for rural and urban regions for 2015/16



Source: *Own estimates based on KIHBS 2015/16 using household weights*

Inequality by Poverty Status

Table 4.5 shows that inequality is higher among the non-poor than the poor for all inequality measures, but it generally declined throughout the period for both groups. For the non-poor, the Gini coefficient for the non-poor increased from 0.374 in 1994 to 0.393 in 2005/06 and thereafter declined to 0.342 in 2015/16 while that for the poor increased from 0.242 in 1994 to 0.249 in 2005/06 and thereafter declined to 0.228 in 2015/16. The Palma ratio declined over time for both the poor and non-poor but the decline for the non-poor was higher than for the poor.

TABLE 4.5: Inequality measure based on expenditure per capita by poverty status, 1994-2016

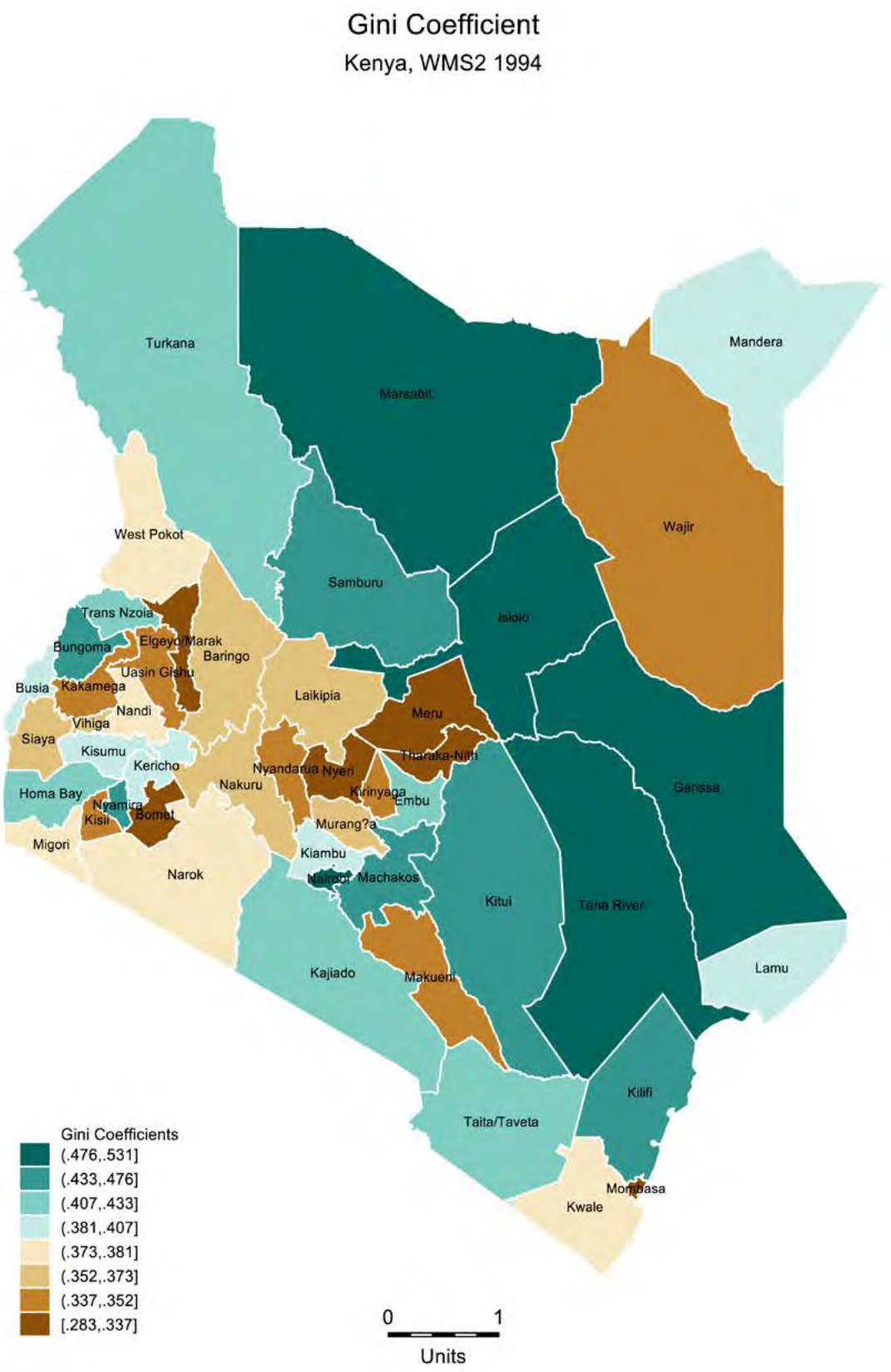
Poverty Status of Household	Year	Gini	Theil's Indices		Atkinson Indices		Bottom 40%	Middle 50%	Top 10%	Ratio
			GE(0)	GE(1)	A(1)	A(2)				
Poor	1994	0.242	0.138	0.101	0.129	0.306	17.9	58.0	24.0	1.3
	2005/06	0.249	0.118	0.104	0.111	0.268	23.9	55.7	20.4	0.8
	2015/16	0.228	0.095	0.086	0.090	0.215	25.6	55.3	19.1	0.7
Non-Poor	1994	0.374	0.231	0.327	0.206	0.306	15.7	49.5	34.7	2.2
	2005/06	0.393	0.253	0.338	0.223	0.334	18.2	48.6	33.2	1.8
	2015/16	0.342	0.187	0.213	0.170	0.283	19.7	55.3	19.1	1.4
Total population	1994	0.460	0.386	0.446	0.321	0.698	13.5	35.2	37.0	2.8
	2005/06	0.470	0.387	0.454	0.321	0.529	13.7	49.4	36.9	2.8
	2015/16	0.404	0.279	0.291	0.244	0.432	16.0	53.7	30.3	2.0

Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

Inequality at the County Level

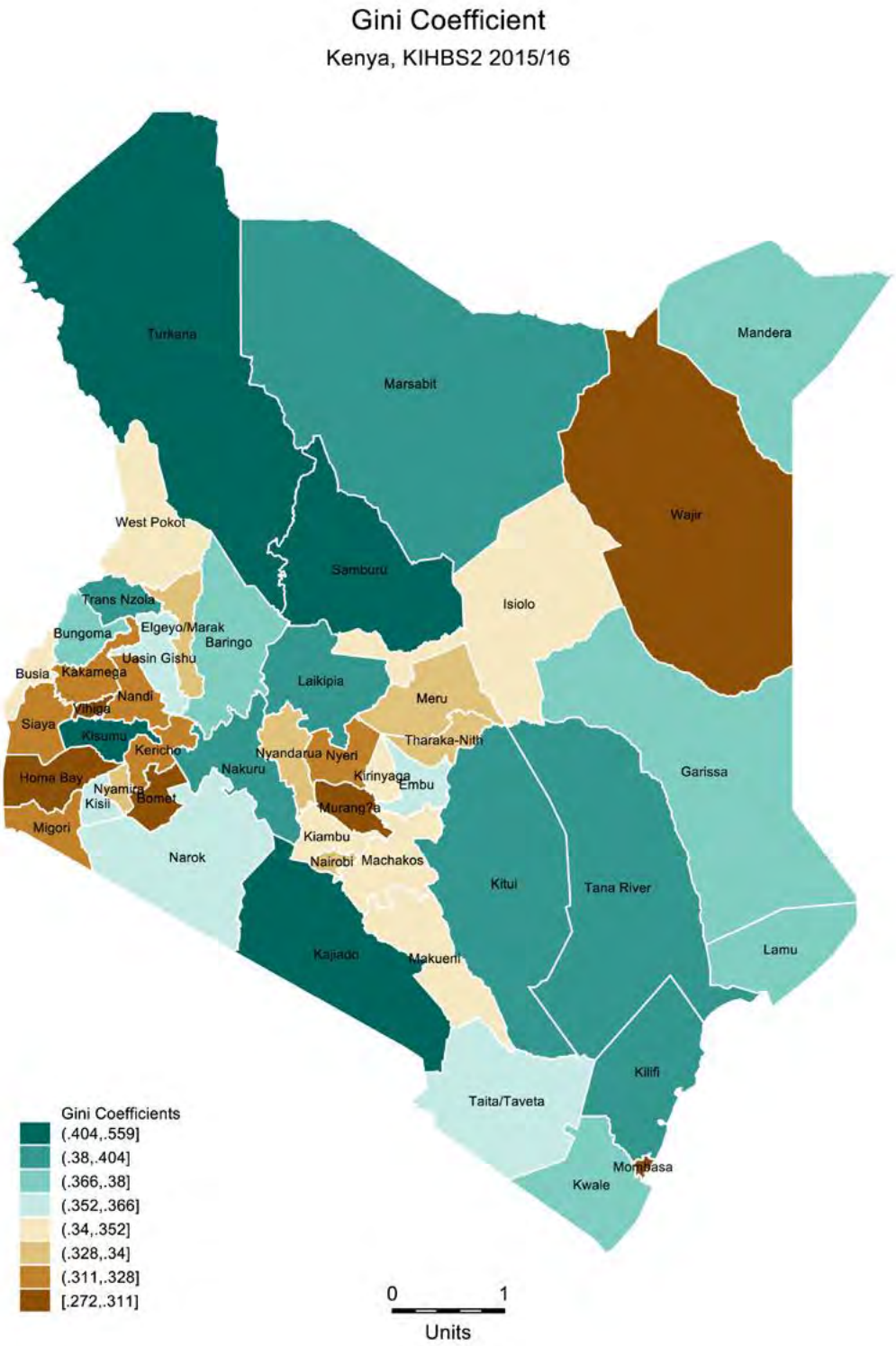
With the promulgation of the constitution of Kenya in 2010 and with county governments now in place, the county has become a key region for policy making. Gini coefficient estimates for each of the 47 counties in Kenya for the year 1994 and 2015/16 are presented in Table A3 in the Annex and also on Maps 4.1 and 4.2.The estimates show that 35 counties experienced a reduction in inequality between 1994 and 2015/16 while 12 counties experienced an increase in inequality over the same period. The highest reduction in inequality was in Nairobi, while the highest increase in inequality was in Turkana County with a Gini coefficient of 0.559 in 2015/16. Other counties that ranked high in inequality in 2015/15 were by Samburu, Kajiado, Kisumu, Tana River and Kilifi counties. Wajir had the lowest Gini coefficient of 0.272 in 2016/16.Generally, there is variation in inequality across counties, with some counties such as Turkana having the highest inequality and Wajir having the lowest inequality.

MAP 4.1: Inequality within counties measured by the Gini coefficient for 1994



Source: *Own estimates based on WMS II 1994 using household weights*

MAP 4.2: Inequality for counties measured by Gini coefficient for 2015/16



Source: *Own estimates based on KIHBS 2015/16 using household weights*

From the various analysis carried out in this section, inequality has generally declined over time at the national level, rural and urban areas, and across social characteristics especially in the last decade 2005/06 to 2015/16. The decline in inequality can be attributed to increase in the share of expenditure going to the middle 50 percent and lower 40 percent and the fall in the share of expenditure going to the top10 percent for the entire population and for almost all population groups. The decline can also be associated with several things that took place during the decade. These include among others increased economic growth, rising incomes in urban areas and devolution, which is associated with the formation of counties, and increased funding to the counties from central governments, increased transfer funds and devolved funding. However, it is not clear which of these has resulted in some of the decline in inequality. Further analysis is required to understand which of the fiscal actions have helped reduce inequality.

4.4 Inequality Decomposition by Sub-Groups

Theil's indices are additively decomposable and satisfy all the necessary and relevant axioms and principles (Shifa & Ranchhod, 2019). Therefore, Theil's indices are used to decompose the overall inequality into within-group and between-group components in this section. The purpose for the assessment is to identify the main contributors to overall inequality.

TABLE 4.6: Decomposition of expenditure inequality by gender of head of household, 1994, 2005/06 and 2015/16

Index	Gender of Head of Household	Absolute Contribution			Relative Contribution		
		1994	2005/06	2015/16	1994	2005/06	2015/16
Theil's Index GE(0)	Male-headed	0.316	0.275	0.194	0.785	0.711	0.704
	Female-headed	0.083	0.120	0.079	0.208	0.283	0.286
	Within contribution	*0.399*	*0.385*	*0.273*	*0.993*	*0.994*	*0.991*
	Between contribution	*0.003*	*0.002*	*0.002*	*0.007*	*0.006*	*0.009*
Theil's Index GE(1)	Male-headed	0.398	0.339	0.205	0.839	0.747	0.732
	Female-headed	0.073	0.113	0.073	0.155	0.248	0.260
	Within contribution	*0.471*	*0.452*	*0.278*	*0.994*	*0.995*	*0.992*
	Between contribution	*0.003*	*0.002*	*0.002*	*0.006*	*0.005*	*0.008*

Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

Table 4.6 shows Theil's indices decomposition of expenditure inequality by gender of head of household. Based on the GE(0) index of total inequality, for instance, the relative contribution of the within-group was 99 percent during all the three periods. During the period, individuals living in male-headed households contributed more to the within-group inequality although there was a slight decline over the period in the contribution of people living in male-headed households, with their contribution declining from 0.785 in 1994 to 0.704 in 2015/16. The contribution by individuals

in female-headed households increased marginally over the period. A similar trend is observed when looking at GE(1).

Table 4.7 shows the decomposition of the Theil's indices for inequality by education level of the head of household over time. Overall, the within contribution of education level of household head to declined. Inequality based on the education accounted for about 0.661 to 0.820 of the overall expenditure inequality in 2015/16 and 1994, respectively. The within education level contribution to overall inequality declined from 0.820 in 1994 to 0.739 in 2005/06 and finally to 0.661 in 2015/16.The main contributors to within-inequality when focusing on GE(0) are individuals living in households headed by individuals with primary education, followed by those living in households headed by household heads with secondary education. When considering GE(1), individuals living in households headed by individuals with primary and secondary education still contribute more to within-group inequality

TABLE 4.7: Decomposition of expenditure inequality by education level of the household head, 1994, 2005/06 and 2015/16

Index	Education of Household Head	Absolute Contribution			Relative Contribution		
		1994	2005/06	2015/16	1994	2005/06	2015/16
Theil's Index GE(0)	None	0.074	0.057	0.021	0.181	0.150	0.075
	Primary	0.090	0.114	0.074	0.223	0.295	0.267
	Secondary	0.064	0.082	0.053	0.139	0.213	0.193
	Higher	0.103	0.032	0.034	0.256	0.082	0.126
	Within contribution	*0.329*	*0.286*	*0.182*	*0.820*	*0.739*	*0.661*
	Between contribution	*0.073*	*0.101*	*0.093*	*0.180*	*0.261*	*0.339*
Theil's Index GE(1)	None	0.057	0.030	0.009	0.119	0.067	0.033
	Primary	0.141	0.049	0.053	0.296	0.206	0.188
	Secondary	0.138	0.127	0.034	0.290	0.280	0.200
	Tertiary	0.063	0.090	0.067	0.132	0.199	0.237
	Within contribution	*0.398*	*0.341*	*0.164*	*0.836*	*0.751*	*0.658*
	Between contribution	*0.098*	*0.113*	*0.095*	*0.164*	*0.299*	*0.342*

Source: *Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

Furthermore, decomposition of the Theil's indices by region of residence shows that within-region inequality contributes more to overall inequality accounting for about 70 percent of the overall inequality (Table 4.8). This implies that households in both rural and urban areas vary significantly contributing to inequality in the areas (but similar in expenditures as indicated by the low between-region contribution).Theil's index GE(0),shows that the main contributors to the within-inequality fluctuates between rural and urban dwellers with those residing in rural areas contributing more in 1994 and 2015/16. However, when looking at GE(1), the main contributors to the within region inequality are individuals residing in households in urban areas.

TABLE 4.8: Decomposition of expenditure inequality by region of residence and counties, 1994, 2005/06 and 2015/16

Index	Region of Residence	Absolute Contribution			Relative Contribution		
		1994	2005/06	2015/16	1994	2005/06	2015/16
Theil's Index GE(0)	Urban	0.079	0.088	0.114	0.196	0.485	0.275
	Rural	0.222	0.187	0.076	0.553	0.228	0.417
	Within contribution	*0.301*	*0.275*	*0.191*	*0.749*	*0.713*	*0.693*
	Between contribution	*0.101*	*0.111*	*0.085*	*0.251*	*0.287*	*0.307*
Theil's Index GE(1)	Urban	0.203	0.201	0.159	0.428	0.442	0.568
	Rural	0.155	0.132	0.044	0.326	0.290	0.158
	Within contribution	*0.357*	*0.333*	*0.204*	*0.754*	*0.732*	*0.726*
	Between contribution	*0.117*	*0.122*	*0.077*	*0.246*	*0.268*	*0.274*
	Counties						
Theil's Index GE(0)	*Within contribution*	*0.293*	*0.272*	*0.213*	*0.729*	*0.705*	*0.760*
	Between contribution	*0.109*	*0.114*	*0.067*	*0.271*	*0.295*	*0.240*
Theil's Index GE(1)	*Within contribution*	*0.342*	*0.330*	*0.222*	*0.723*	*0.727*	*0.763*
	Between contribution	*0.131*	*0.124*	*0.069*	*0.277*	*0.273*	*0.237*

Source: Own estimates based on WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights

Finally, inequality decomposition based on counties is as shown in Table 4.8 and it shows that within county inequality contributes more (over 70 percent) to overall inequality. Decomposition based on poverty status is shown in Table A4 in the Annex. The table shows that within-inequality status contributes more to overall inequality and the non-poor contribute more to the within-inequality. Based on Theil's inequality decomposition, the within group inequality accounts for the largest share of overall inequality than the between group inequality over the period 1994-2015/16.

4.5 Asset Inequality

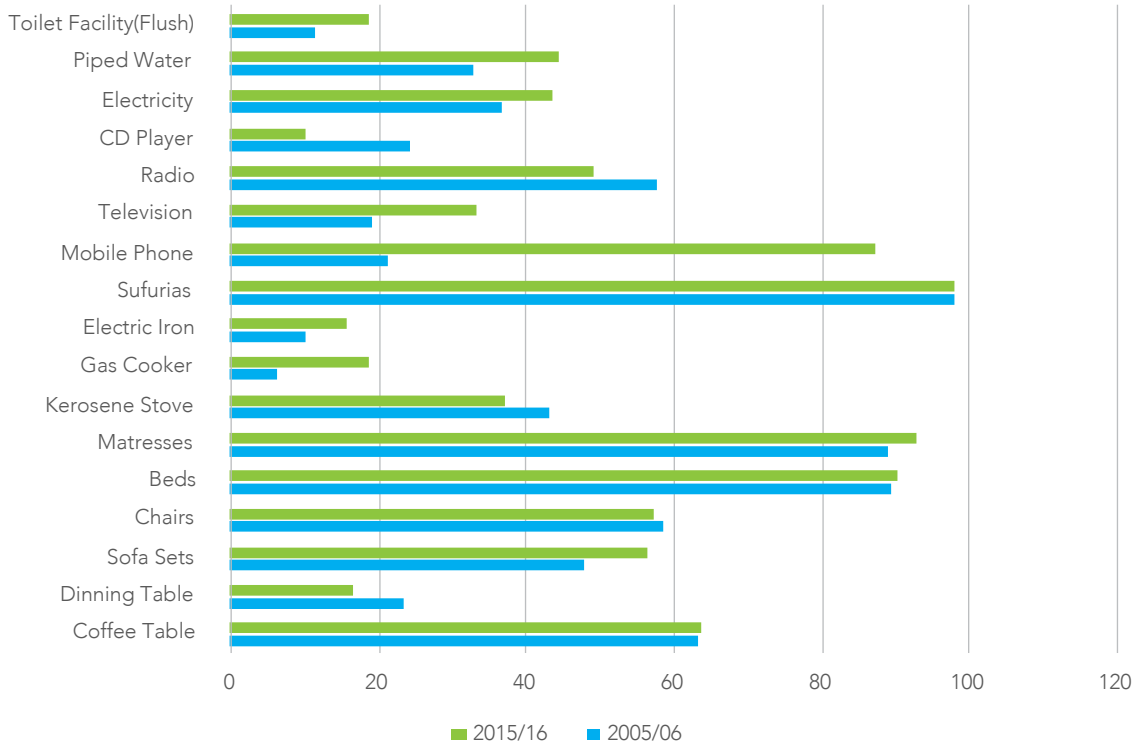
This section uses KIHBS data for 2005/06 and 2015/16 to construct an asset index that is used to analyse asset inequality. The information on assets for 1994 WMS II was not comparable with the two KIHBS datasets and was omitted from the analysis. The household asset indices are derived using the uncentred Principal Component Analysis (UC PCA) method suggested by Wittenberg and Leibbrandt (2015). The advantage of using this approach is that it allows for the estimation of Lorenz curves, Gini coefficients and others measures to measure asset inequality, given that the weights generated using this approach are always positive. This section looks at the distribution of assets in households and reviews trends in asset inequality, using the Lorenz curve, average asset index scores and Gini coefficient based on household asset indices.

4.5.1 Trends of household asset ownership

Profiling inequality in ownership of assets and access to basic needs can be seen as a complementary measure of inequality. This is due to the fact that assets can be a reliable indicator of long-run economic well-being and provide a wider picture of welfare status of households. The two datasets have 17 assets which are analysed. These include three public assets namely piped water, toilet facility (flush) and electricity connection and 14 assets that are regarded as private assets. Thus, it is important to point out that for services, the analysis will refer to "access" as "ownership" for ease of interpretation.

Figure 4.7 and Table 4.9 show the trend of household asset ownership and access to basic services. From the 17 selected assets, five registered a decline, namely CD players, radio, Kerosene stove, chairs and dining tables over the period 2005/06 and 2015/16. Over the same period, the proportion of households that own a radio dropped from 57.5 percent to 49.1 percent; CD player dropped from 24.2 percent to 10.1 percent; Kerosene stove dropped from 43.2 percent to 37.1percent; chairs from 58.4 percent to 57.2 percent; and dining tables declined from 23.3 percent to 16.7 percent. Some of the decline in ownership of assets such as a radio could be due to increased access of radio services on mobile phone and, in Kerosene stoves, could be due to increased access to gas cookers. The decline in CD players could be due to emergence of new and advanced alternative technologies such as flash disks.

FIGURE 4.7: Trends of household assets, 2005/06 and 2015/16



Source: *Own estimates based on KIHBS 2005/06 and 2015/16 using household weights*

TABLE 4.9: Trends of household assets (2005/06 and 2015/16)

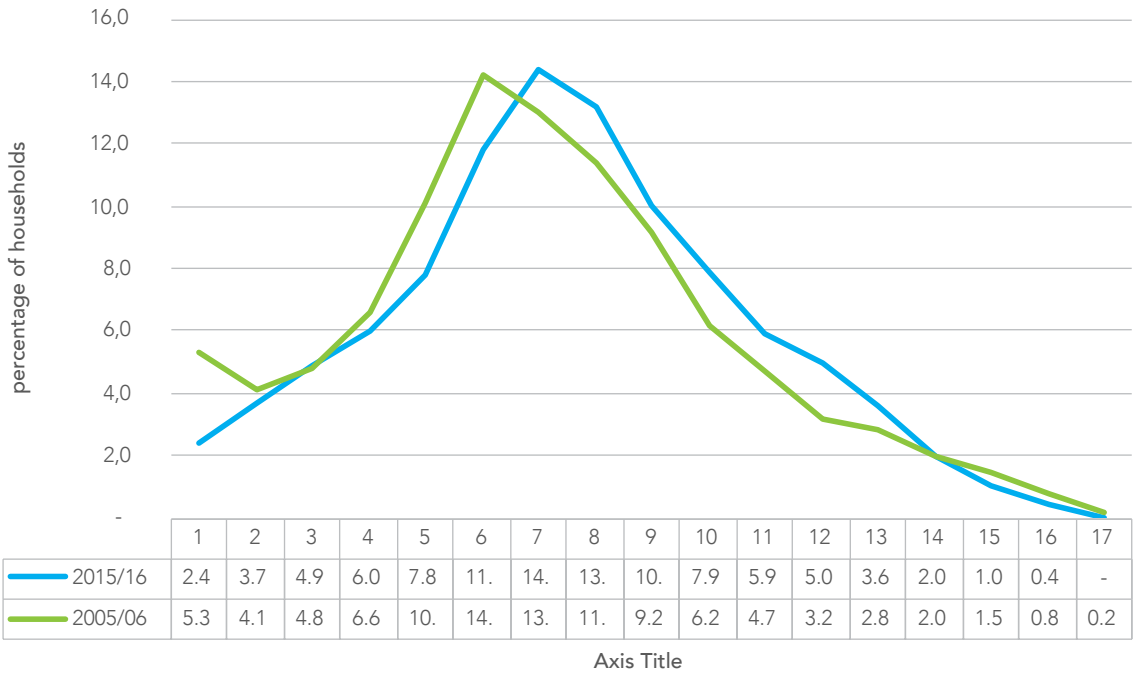
Asset	2005/06	2015/16
Coffee table	63.0	63.8
Dining table	23.3	16.7
Sofa sets	47.6	56.5
Chairs	58.4	57.2
Beds	89.3	90.2
Mattresses	88.7	92.9
Kerosene stove	43.2	37.1
Gas cooker	6.3	18.9
Electric iron	10.3	15.7
Sufurias	97.8	97.9
Mobile phone	21.3	87.1
Television	19.2	33.4
Radio	57.5	49.1
CD player	24.2	10.1
Electricity	36.6	43.5
Piped water	32.9	44.3
Toilet facility (flush)	11.4	18.9

Source: *Own estimates based on KIHBS 2005/06 and 2015/16 using household weights*

Mobile phone ownership increased rapidly over the period 2005/06 and 2015/16 from 21.3 percent to 87.1 percent. The assets that are mostly owned by households include beds (90.2 percent), mattresses (92.9 percent), sufurias (cooking pot, 97.9 percent), mobile phones (87.1 percent). The assets least owned by households are toilet facility – flush (18.9 percent), CD players (10.1 percent), electric iron (15.7 percent, gas cooker (18.9 percent)and dining tables (16.7 percent).The proportion of households that do not own any of the assets remained the same at about 2 percent over the period. There were no households that owned all the 17 assets, with only 1 percent of the households owning 15 of the 17 assets over the period.

In terms of well-being, the more assets a household/individual owns, the better off the household or individual is (Statistics South Africa, 2019). Figure 4.8 shows that about 2 percent of the households lack very basic assets such as sufurias (kitchen utensils) and about 10 percent do not own beds and mattresses. The figure (Figure 4.8) also shows most households owned 6 assets in 2005/06, which increased to 7 assets in 2015/16. Over time, the distribution of households slightly shifted to the right, suggesting an overall increase in the number of assets owned by households in Kenya.

FIGURE 4.8: Distribution of household by number of assets they own, 2005/06 and 2015/16



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2015/16	2.4	3.7	4.9	6.0	7.8	11.	14.	13.	10.	7.9	5.9	5.0	3.6	2.0	1.0	0.4	-
2005/06	5.3	4.1	4.8	6.6	10.	14.	13.	11.	9.2	6.2	4.7	3.2	2.8	2.0	1.5	0.8	0.2

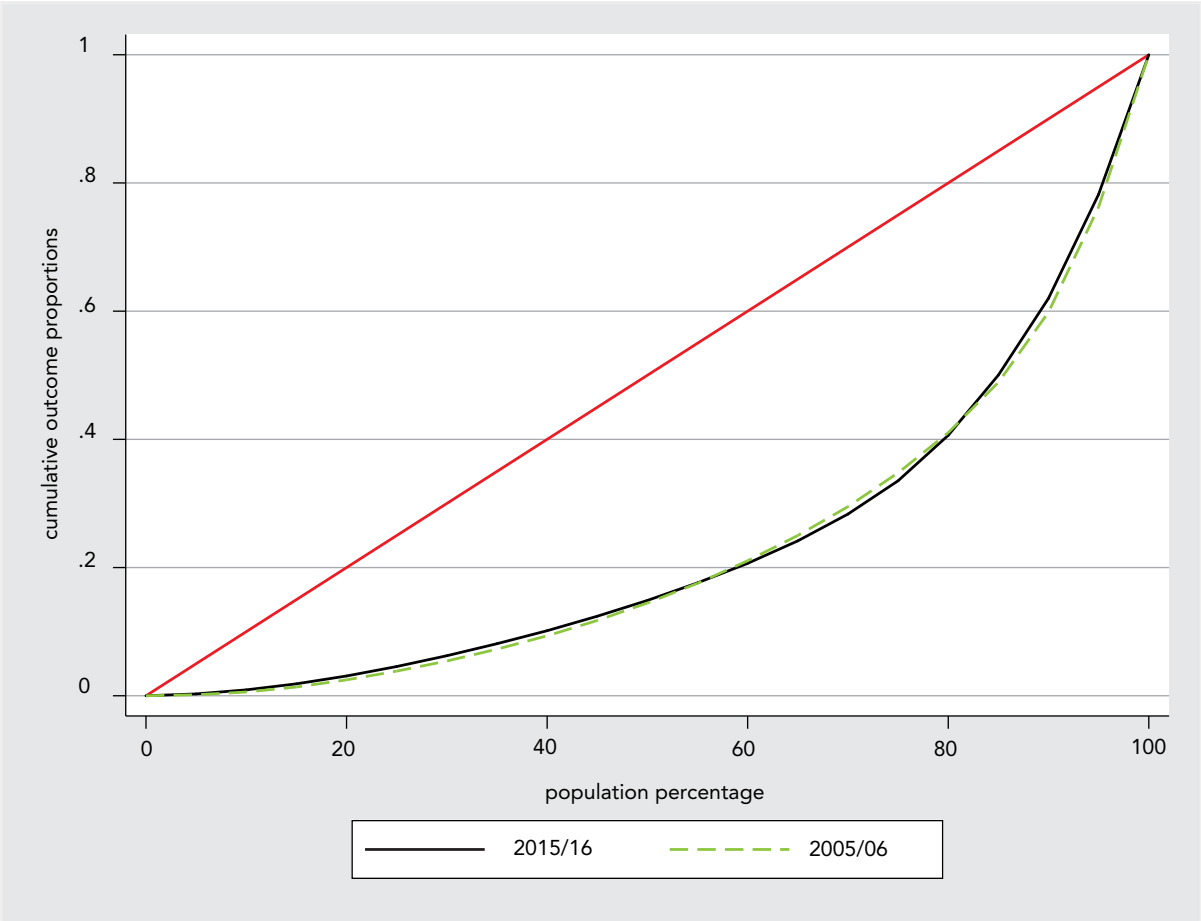
Source: *Own estimates based on KIHBS 2005/06 and 2015/16 using household weights*

4.5.2 Trends in asset inequality

The 17 assets and services are used to calculate asset indices using the technique suggested by Wittenberg and Leibbrandt (2017). The KIHBS data sets are used to maintain consistency of information collected on assets and due to the fact the two are part of the three main datasets used in the analysis of per capita expenditure inequality, and thus it is useful that we use the dataset in profiling of asset inequality. Unlike income/expenditure, there is no standard method to derive per capita measures in the case of asset indices. This section reports the Lorenz curve and the Gini coefficient based on asset index.

Figure 4.9 shows Lorenz curves based on asset indices using KIHBS data for 2005/06 and 2015/16. Based on the figure, there is not much difference in the Lorenz curves for 2005/06 and 2015/16. This shows that there is not much difference in asset inequality over the period 2005/06 and 2015/2016.

FIGURE 4.9: Lorenz curves based on asset index



Source: *Own estimates based on KIHBS 2005/06 and 2015/16 using household weights*

The Gini coefficient for asset index ranges from 0 to 1 and has the same interpretation as that for income/expenditure. A Gini coefficient that approaches unit shows that the population is more unequal; as the coefficient approaches zero, the more equal the population gets. Table 4.10 shows that the change in inequality in asset was negligible. The inequality in asset index was 0.54 in 2005/06 and increased marginally to 0.55 in 2015/16, confirming the information provided by the Lorenz curve above. Similarly, as shown in the table, the asset inequality for households headed by males and females is about the same as shown by the Gini coefficient. The same also applies to inequality in asset index, which is not so different in the rural and urban areas.

Table 4.10 shows the average asset indices scores by gender and region (urban and rural areas) for the years 2005/06 and 2015/16. The average asset indices score shows the inequality between groups in terms of availability of resources that are specific to the group compared to another group while the asset Gini coefficient provides the scale of inequality within groups. The table shows that the average score for asset indices for individuals in male-headed households remained higher than those for individuals in female-headed households over the period. This shows that economic well-being for individuals in male-headed households is better compared to that for individuals in female-headed households. The table also shows that the average asset indices is

higher for urban dwellers than for rural areas throughout the period. For urban areas, the average asset score declined slightly from 6.3 in 2005/06 to 5.8 in 2015/16 while that for rural areas increased slightly from 2.0 in 2005/06 to 2.3 in 2015/16. Again, there is a clear indication that economic well-being for individuals in urban areas is better compared to that for individuals in rural areas.

TABLE 4.10: Average asset index scores, Gini coefficient and population share by Gender of household head and place of residence (2005/06 and 2015/16)

	Year	Male	Female	Rural	Urban	Total
Average score	2005/06	3.9	3.0	2.0	6.3	3.6
	2015/16	5.0	4.2	2.3	5.8	4.8
Gini coefficient	2005/06	0.54	0.54	0.48	0.46	0.54
	2015/16	0.53	0.55	0.48	0.48	0.55
Population shares	2005/06	75.9	24.1	47.9	52.1	100
	2015/16	72.3	27.7	29.9	69.1	100

Source: *Own estimates based on KIHBS 2005/06 and 2015/16 using household weights*

It is also clear from the table that the share of assets for individuals in male-headed households is higher than that for individuals in female-headed households. The share of assets held by individuals in male-headed households was above 70 percent while that for individuals in female-headed households was generally below 30 percent, with marginal decrease in the share for male-headed households and marginal increase in the share for female-headed households between 2005/06 and 2015/16. Again, this could be a reflection of the dominance of male-headed households in the sample and thereby the large population share of assets for individuals in those households. Regarding the share of households in rural and urban areas, there was an increase in the share of assets held by urban dwellers from 52.1 percent in 2005/06 to 69.1 percent in 2015/16 while the share for rural dwellers declined from 47.9 percent in 2005/06 to 29.9 percent in 2015/16.

4.5.3 Inequality in access to land

The assets used in the analysis above exclude land and other assets. Land is a key asset and access to land can be an important driver for poverty and inequality in Kenya. Land ownership plays an important role in determining the pattern of development and is significance to social and political stability. This sub-section makes use of the 1997 WMS III and KIHBS 2005/06 study done by World Bank (2008) as the data on land for KIHBS 2015/16 has not been released. During the colonial times, land was appropriated by settlers across the country. At least since the 1980s, land administration and management, in particular, injustices and favours in land allocation and corruption in land-related institutions, have become major issues in public debates. Only 20 percent of the land is classified as medium to high potential with 3 out of 4 Kenyans concentrated therein and the rest living in vast areas of the arid and semi-arid lands (ASALs). With the rising population size and the continuing largely rural nature of income earning activities, access to land is critical to popular perceptions about well-being. Analysis in this section examines levels and trends in land

inequality in Kenya. However, we will not deal with several other land issues including controversies around internally displaced persons (IDPs), squatters and land fragmentation; insecure tenure/ overlapping rights by individuals/communities; environmental degradation; destruction of forests and desertification; although these issues affect land inequality.

Table 4.11 shows that overall, there is an increase in inequality based on reported size of land ownership between 1997 and 2005/06. The Gini coefficient for the size of land owned at the national level increased from 0.612 in 1997 to 0.832 in 2005/06. The worsening situation was more evident in the Coast and Nyanza provinces. The levels of inequality in 2005/06 are remarkably high in Nairobi and in the Rift Valley and the Coast. The estimates for Nairobi partly reflect the very high rates of tenancy.

TABLE 4.11: Gini Coefficient for land ownership all households at national and province level, 1997–2005/06

	2005/06	1997
National	0.832	0.612
Nairobi	0.993	0.757
Central	0.744	0.546
Coast	0.865	0.500
Eastern	0.731	0.601
Nyanza	0.815	0.475
Rift Valley	0.870	0.642
Western	0.769	0.579

Source: *World Bank (2008) based on 1997 WMS III and KIHBS 2005/06*

The estimates in Table 4.11 include both households that own land and those that do not own land. Analysis of land ownership inequality based on only households who own land (Table 4.12) shows that the Gini coefficient remains high even after excluding the landless. Thus, with this adjustments, measures of inequality are lower, though still high and the extent of increase in land inequality over the period is large, but less than when we looked at the whole sample. Similar to what we observed for the overall sample, there was a significant worsening of land inequality in Nyanza and Coast, and very high levels of inequality in the Rift Valley Province, with an estimated land Gini of close to 0.77.

TABLE 4.12: Gini coefficient for land ownership for landholders only at national and provincial level, 1997-2005/06

	1997	2005/06
National	0.612	0.711
Nairobi	0.757	0.642
Central	0.546	0.610
Coast	0.500	0.686
Eastern	0.601	0.606
Nyanza	0.475	0.737
Rift Valley	0.642	0.769
Western	0.570	0.697

Source: *World Bank (2008) based on 1997 WMS III and KIHBS 2005/06*

Thus, even among landholders only, it is notable that the reported levels of inequality at 0.711 Gini coefficient at the national level is much higher than the estimated inequality based on per capita consumption expenditure at 0.470 for the 2005/6 KIHBS data. The Gini coefficient for land ownership for the same year in this section though is closer to the Gini coefficient for earnings in the labour market at 0.692 (see next section estimates for KIHBS 2005/06). This shows that inequality in land ownership and labour market earnings could be contributing more to the overall inequality in Kenya, and these are areas the government should consider in attempts to bring down inequality in Kenya. Thus, the analysis shows that land ownership inequality is much higher than inequality in other assets, consumption and earnings and that it has worsened over time and in most parts of the country. A reduction to reduce land ownership inequality can help reduce the overall inequality.

4.6 Labour Market Inequality

This section examines the trends in employment, earnings and unemployment over a period of more than two decades. The data used in the analysis is the Labour Force Survey 1998/99, KIHBS 2005/06 and 2015/16. The analysis is complemented with data from official statistics and other sources for variables that are not well provided for in the three data sets.

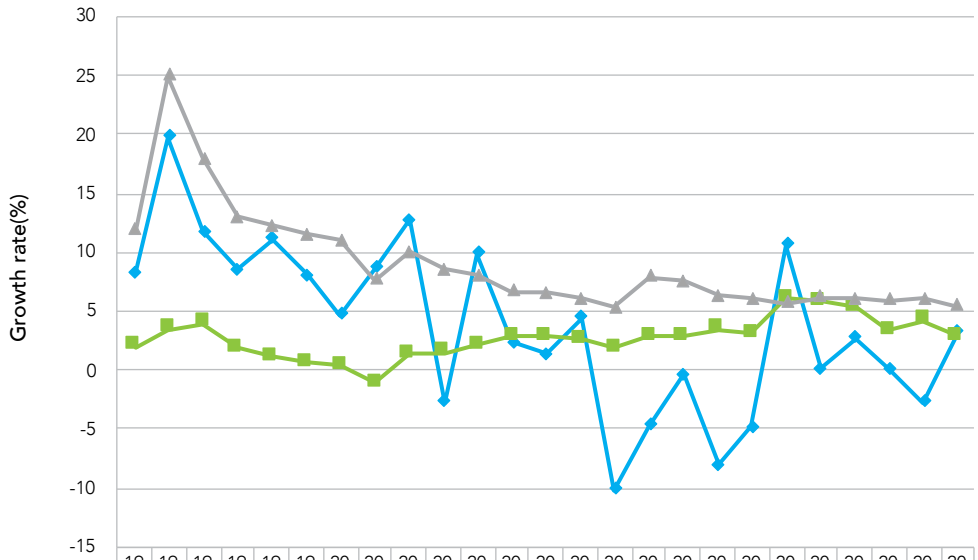
4.6.1 Labour market outcomes (employment, earnings and labour force participation)

Figure 4.10 shows the evolution of growth rates in employment in the informal sector and formal sector and growth of average real earnings in the formal sector since 1994. The growth of average real earnings during the period is characterised by rises and declines. However, average real earnings have declined over time. Formal employment growth has consistently been lower than informal employment growth except in 2013-2014. Although the informal sector has contributed the

highest share to job creation, employment growth in the sector has decelerated over the period. In contrast, employment growth in the formal sector depicts upward trend until 2014, followed by deceleration.

Figure 4.10 shows the evolution of growth rates in employment in the informal sector and formal sector and growth of average real earnings in the formal sector since 1994. There are swings in growth of average real earnings during the period, characterised by dramatic rises and declines. It is not clear why real wages in the formal sector have this pattern. Overall, however, average real earnings have declined over time. Formal employment growth has consistently been lower than informal employment growth except in 2013-2014. Although the informal sector has continued to bear the burden of job creation, employment growth has decelerated over the period. In contrast, employment growth in the formal sector depicts an upward trend until 2014, followed by deceleration.

FIGURE 4.10: Growth rates in employment and earnings in Kenya, 1994-2016



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Real wage	8.3	20	12	8.5	11	8	4.7	8.7	13	-3	9.9	2.4	1.3	4.5	-10	-5	-0	-8	-5	11	0.1	2.7	0.1	-3	3.2
Formal employment	2	3.4	4	1.8	1.1	0.6	0.4	-1	1.3	1.5	2.1	2.9	2.8	2.6	1.8	2.8	2.9	3.4	3.1	6	5.8	5.3	3.3	4.2	2.8
Informal employment	12	25	18	13	12	12	11	7.7	10	8.6	8	6.7	6.6	6.1	5.3	7.9	7.6	6.3	6	5.7	6.2	6	5.9	6	5.4

Source: *Authors construction based on data from KNBS (Various), Economic Survey*

Table 4.13 shows the evolution of official unemployment rates since 1998. Open unemployment declined from 14.6 percent of the labour force in 1998 to 7.4 percent in 2016. As formal sector employment growth was lower than that of informal employment, the drop in overall unemployment is attributed to informal sector job creation. Another feature of unemployment in Kenya is that the distribution is uneven. Youth and women have higher unemployment rates than adults and men, respectively.

TABLE 4.13: Unemployment rate, 1998/99-2015/16

	1998/99			2005/06			2015/16		
Age Group (years)	Males	Females	Total	Males	Females	Total	Males	Females	Total
15-19	21.8	26.4	24.3	19.2	18.8	19	6.5	8.4	14.9
20-24	19.0	33.9	27.1	31.1	33.8	32.6	6.9	12.3	19.2
25-29	8.2	21.6	15.5	20.2	21.5	20.9	2.6	6.4	9
30-34	4.8	16.8	10.8	8.1	8.5	8.3	1.4	3.2	4.6
35-39	5.0	11.8	8.4	6.6	6.6	6.6	1.1	2.6	3.7
40-44	7.8	10.6	9.1	5.6	4.5	5.0	1.3	1.4	2.7
45-49	4.9	12.5	8.2	3.5	3.5	3.5	0.6	1.2	1.8
50-54	6.3	11.1	8.7	2.6	1.7	2.1	0.7	0.8	1.6
55-59	14.2	12.7	13.5	2.0	0.9	1.4	0.6	1.3	1.9
60-64	7.5	15.7	11.7	1.1	0.2	0.6	0.7	0.9	1.6
Total	9.8	19.3	14.6	11.2	14.3	12.7	2.6	4.8	7.4

Source: *Own estimates based on Labour Force Survey 1998/99 and KIHBS 2005/06 and 2015/16 data*

Table 4.14 shows trends in the composition of employment in Kenya for a period of about 17 years. The structure of employment in Kenya changed from formal wage work towards informal jobs. The share of informal employment rose from 73 percent in 2001 to 83 percent in 2017. Over the same period, the share of formal wage employment declined from 21 percent to 12 percent of total employment. Casual employment increased marginally, while the share of self-employed in the formal sector remains very small at about 1 percent. Given the precariousness of much of informal sector employment and decline in formal employment, we can conclude that job quality in Kenya might have declined and, thus, creating decent jobs remains a challenge.

TABLE 4.14: Regular jobs, casual jobs and incidence of informal sector employment, 2001-2017

Year	Regular Wage emp	Share: Regular Wage emp*	Casual Wage emp	Share: Casual emp.*	Formal Self-emp	Share: Formal Self-emp	Informal emp	Share: Informal emp*	Total emp
2001	1 370.0	0.2137	307.1	0.0479	65.4	0.0102	4 668.7	0.7282	6 411.2
2002	1 381.1	0.2009	318.6	0.0464	65.5	0.0095	5 108.3	0.7432	6 873.5
2003	1 390.5	0.1894	337.1	0.0459	65.7	0.0090	5 546.4	0.7557	7 339.7
2004	1 425.2	0.1772	382.5	0.0476	66.3	0.0082	6 167.5	0.7670	8 041.5
2005	1 390.5	0.1636	417.3	0.0491	66.8	0.0079	6 626.6	0.7795	8 501.2
2006	1 439.2	0.1600	419.2	0.0466	67.2	0.0075	7 068.6	0.7859	8 994.2
2007	1 357.5	0.1432	552.3	0.0583	67.5	0.0071	7 501.6	0.7914	9 478.9
2008	1 317.9	0.1324	625.6	0.0629	67.4	0.0068	7 942.3	0.7980	9 953.2

Year	Regular Wage emp	Share: Regular Wage emp*	Casual Wage emp	Share: Casual emp.*	Formal Self-emp	Share: Formal Self-emp	Informal emp	Share: Informal emp*	Total emp
2009	1 412.1	0.1350	588.0	0.0562	67.5	0.0065	8 388.9	0.8023	10 456.5
2010	1 345.7	0.1228	713.3	0.0651	69.8	0.0064	8 826.2	0.8057	10 955.0
2011	1 478.8	0.1289	648.9	0.0565	75.4	0.0066	9 272.1	0.8080	11 475.2
2012	1 693.2	0.1325	455.8	0.0357	76.9	0.0060	10 548.4	0.8253	12 781.1
2013	1 806.7	0.1372	476.4	0.0352	83.8	0.0061	11 150.1	0.8249	13 517.0
2014	1 877.5	0.1311	492.7	0.0344	103.0	0.0072	11 846.0	0.8273	14 319.2
2015	1 937.8	0.1278	540.2	0.0356	123.2	0.0081	12 562.4	0.8285	15 163.6
2016	1 971.0	0.1232	582.6	0.0364	132.5	0.0083	13 309.7	0.8321	15 995.7
2017	2 009.2	0.1189	647.4	0.0383	139.4	0.0083	14 097.5	0.8345	16 893.5

Source: *KNBS (Various), Economic Surveys*

TABLE 4.15: Access to employment in Kenya (1998/99-2015/2016)

Sector	1998/99			2005/06			2015/16		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Family agriculture	3 531	5 437	8 968	3 778	4 384	8 162	3 582	2 916	6 498
%	39.79	61.88	50.78	38.14	53.13	44.95	21.63	18.37	20.45
Formal–wage	2821	921	3 742	1817	771	2 578	5 143	2 814	8195
%	32.01	10.56	21.35	18.14	9.34	14.20	31.06	17.72	24.53
Self-employed	2235	1991	4226	4 137	2 841	6 978	6 824	8 641	15 469
%	25.18	22.66	23.92	41.77	34.43	38.43	41.21	54.43	47.67
Unpaid worker	124	310	434	143	220	363	889	1 415	2296
%	1.40	3.53	2.46	1.44	2.67	2.00	5.37	8.91	7.08
Apprentice	20	3	23	24	13	37	34	20	54
%	0.23	0.03	0.13	0.24	0.16	0.20	0.21	0.13	0.17
Other	51	11	62	16	22	38	87	71	157
%	0.58	0.13	0.36	0.16	0.27	0.21	0.53	0.45	0.49
Total	8 782	8 673	17 455	9 905	8 251	18 156	16 559	15878	32 437
	100.00	100.00	100.00	100	100	100	100	100	100

Source: *Own estimates based on Labour Force Survey 1998/99 and KIHBS 2005/06 and 2015/16 data using household weights*

Table 4.15 shows access to various types of employment. First, family agriculture is the major source of employment and particularly so for women. However, its share declined over the period 1998/99 to 2015/16. Second, the share of self-employed (own account workers and working employers) rose significantly. Third, the share of wage employment (public and private) declined over this period. The

economy was clearly struggling to generate wage employment. Fourth, unpaid family work and self-employment are the major sources of employment for women while for men it is wage employment.

4.6.2 Earnings distribution

This section presents kernel density estimates of the natural logarithm of real annual earnings using the three Labour Force Survey datasets (1998/99, 2005/06 and 2015/16). The key observation is that the density for earnings in 1998 is to the left of those of 2006 and 2016 (Figure 4.11). This suggests that there is an overall decline in real earnings. However, the plots are similar at the upper tail, suggesting that real earnings for this group did not decline.

FIGURE 4.11: Kernel density plot of log real annual earnings by year

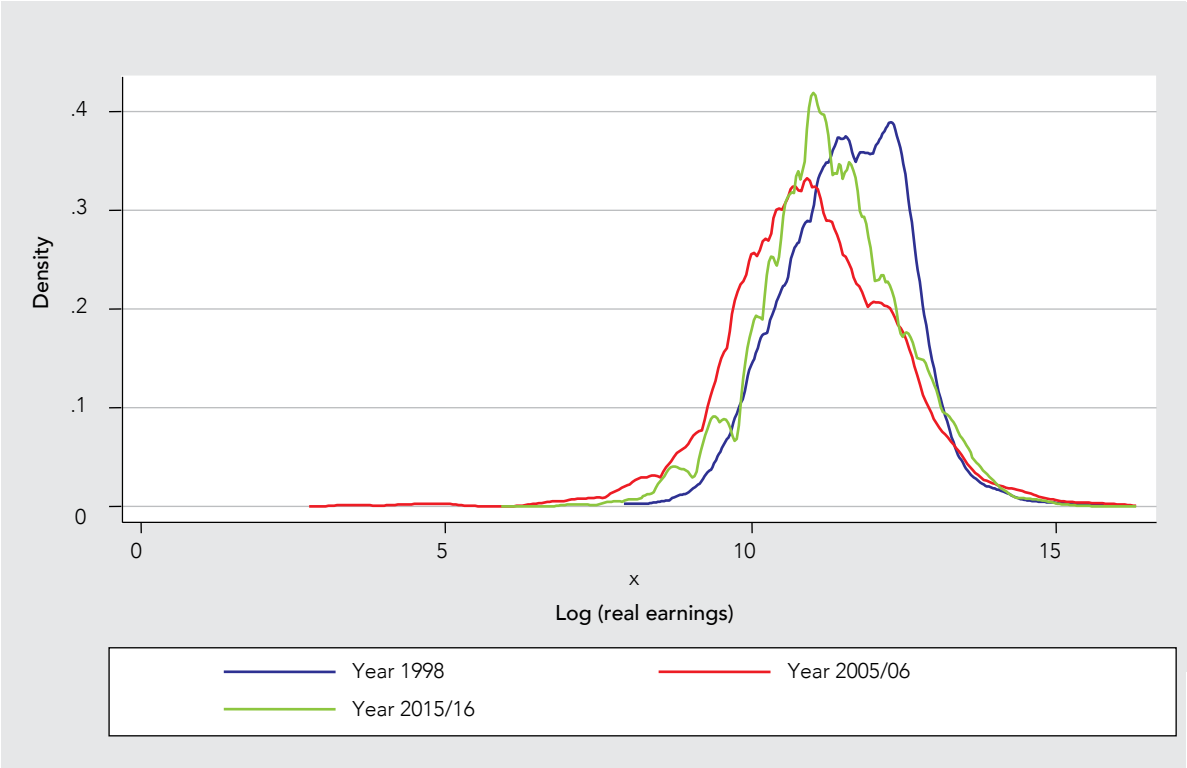
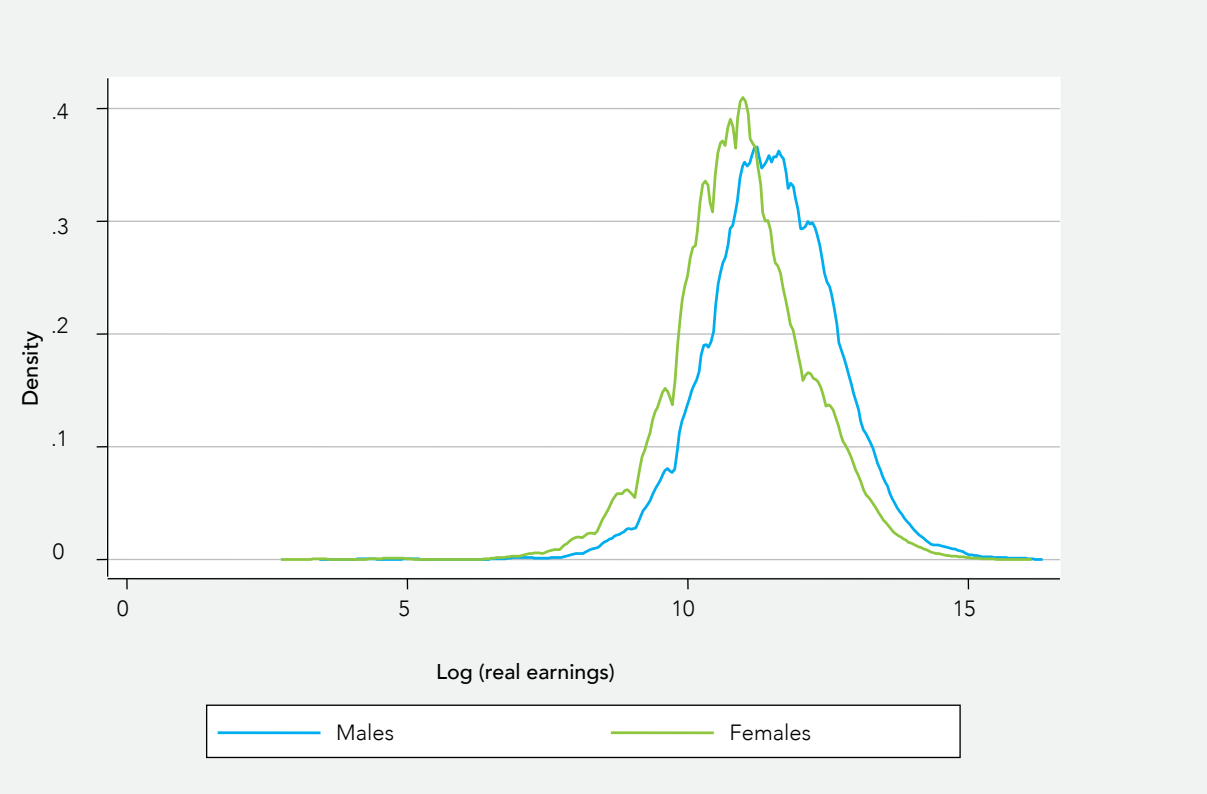


FIGURE 4.12: Kernel density plot of log real annual earnings (pooled) by gender



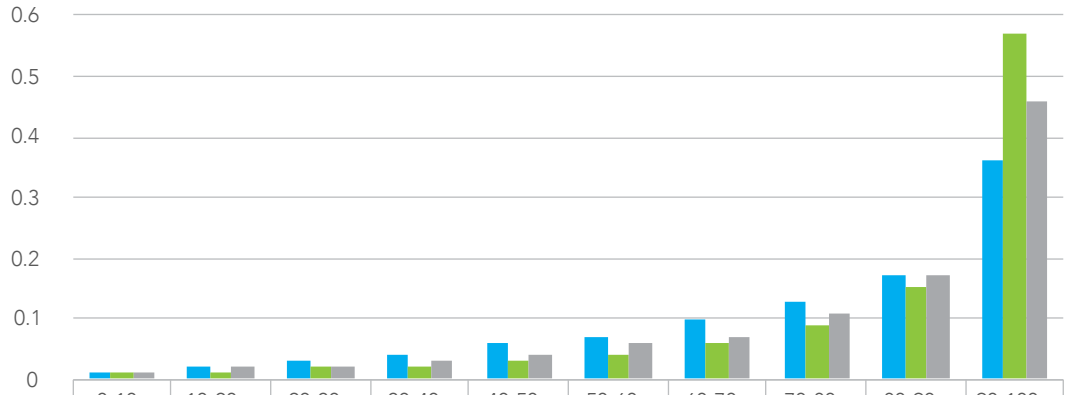
Source: *Own estimates based on Labour Force Survey 1998/99 and KIHBS 2005/06 and 2015/16 data*

The pooled earnings distributions for males and females are shown in Figure 4.12. The kernel density for male workers' earnings sits more to the right of the density for female workers. This suggests that men have higher earnings than women not only at the mean of the distribution, but also at other parts of the earnings distribution.

4.6.3 Inequality in earnings

Inequality in earnings means a higher distribution of incomes to a segment of the population compared to another. Figure 4.13 shows the share of real earnings going to each percentile. As shown in the table, the richest 10 percent received 36 percent of the earnings share in 1998/99 and this increased to 57percent in 2005/06 before falling to 46 percent in 2015/16. The poorest 10 percent of the employees received less than 1 percent of the earnings in the three years. Thus, the ratio of the earnings' share of the richest 10 percent to the poorest 10 percent is very high. Compared to the share of expenditure going to the richest 10 percent, the share of earnings going to the richest 10 percent of the employee is much higher. For instance, in 2005/06 and 2015/16, the share of expenditure going to the richest 10 percent was 41.6 percent and 29.8 percent, respectively, compared to 57percent and 46 percent of the earnings received by the richest 10 percent of the employees in the two years. This may imply that earnings in the labour market could be part of the main reasons pushing up the share of expenditure going to the richest 10 percent.

FIGURE 4.13: Percentile share of earnings

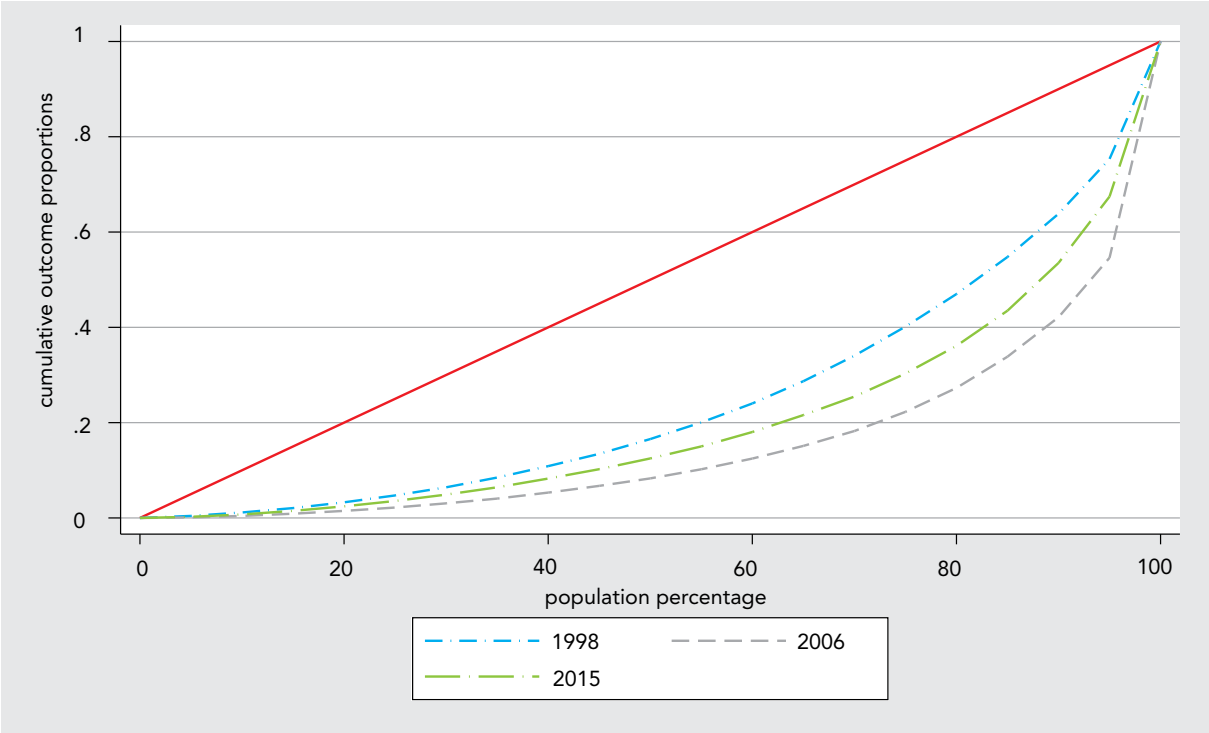


	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
1998/99	0.01	0.02	0.03	0.04	0.06	0.07	0.1	0.13	0.17	0.36
2005/06	0.01	0.01	0.02	0.02	0.03	0.04	0.06	0.09	0.15	0.57
2015/16	0.01	0.02	0.02	0.03	0.04	0.06	0.07	0.11	0.17	0.46

Source: *Own estimates based on Labour Force Survey 1998/99 and KIHBS 2005/06 and 2015/16 data using household weights*

Figure 4.14 shows the Lorenz curve for real monthly earnings for 1998-2016. The figure shows that earnings' inequality increased in 2005/06 and then decreased in 2015/16. This is as shown by the fact that the 1998/99 Lorenz curve is closer to the 45^0 line, compared to the 2005/06, which is far away from the line. The curves also show a very steep increase in the upper tail, reflecting earnings inequality where a small proportion of the people receive higher earnings.

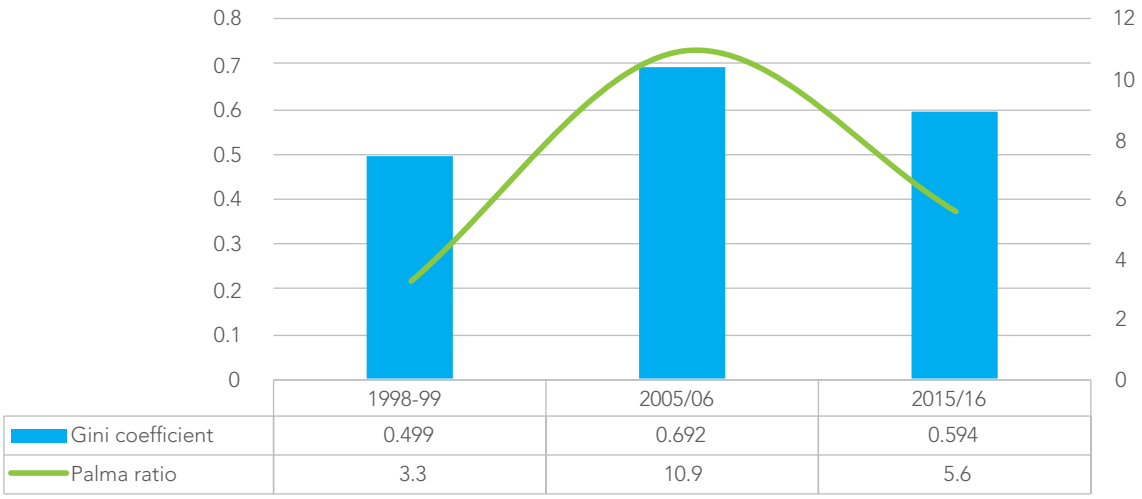
FIGURE 4.14: Lorenz curves for real monthly earnings by year, 1998 2016



Source: *Own estimates based on Labour Force Survey 1998/99 and KIHBS 2005/06 and 2015/16 data using household weights*

Further, Figure 4.15 presents estimates of Gini coefficient and Palma ratios of real monthly earnings from 1998-2016. The time trend for the coefficients shows an increase in the level of earnings inequality between 1998/99 and 2005/06, and thereafter a decline between 2005/06 and 2015/16. The Palma ratios also follow a similar pattern, increasing in the period 1998/99-2005/06 and declining in the period between 2005/06 and 2015/16.

FIGURE 4.15: Gini coefficients and Palma ratios for real earnings, 1998-2016



Source: *Own estimates based on Labour Force Survey 1998/99 and KIHBS 2005/06 and 2015/16 data using household weights*

Inequality in real earnings between men and women are shown in Table 4.16. We focus on the Gini coefficient and the Theil index. Both measures possess desirable properties (Haughton & Khandker, 2009). The earnings inequality measures are computed using data from the 1998/99 Labour Force Survey, and the 2005/06 and 2015/16 KIHBS data on males and females. Relative real earnings inequality for males and females, as measured by the Gini, increased between 1998 and 2016. This means that earnings distribution became more unequal over this period. The Theil index shows a similar temporal pattern of real earnings inequality. Real earnings inequality is higher among female earners than among male earners.

TABLE 4.16: Earnings inequality measures, 1998-2016 by gender

Inequality Measure	1998-99		2005/06		2015/16	
	Male	Female	Male	Female	Male	Female
Gini coefficient	0.491	0.514	0.678	0.706	0.576	0.582
Theil entropy index	0.479	0.452	1.084	1.171	0.661	0.673
Theil mean log deviation	0.446	0.512	0.942	1.100	0.631	0.641
Palma ratio	3.1	3.7	9.8	11.4	5.1	5.2

Source: *Own estimates based on Labour Force Survey 1998/99 and KIHBS 2005/06 and 2015/16 data using household weights*

In conclusion, the data show wide inequalities in labour market outcomes: access to employment, unemployment and real earnings. The inequalities are manifest over time and by gender. Women have relatively low earnings across the earnings distribution. Unemployment is high among women and youth. Overall, real earnings inequality worsened over the period 1998/99 and 2005/06 and improved to some extent thereafter in 2015/16.

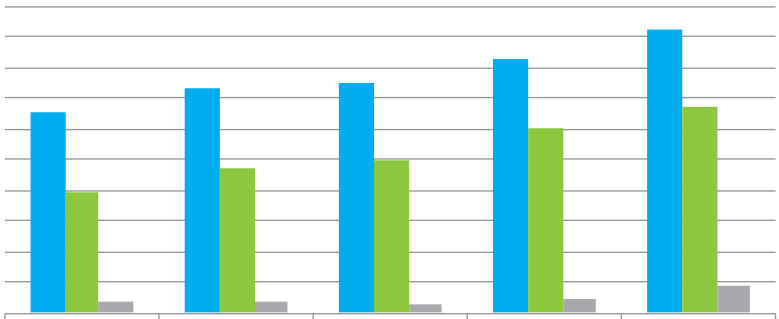
4.7 Inequality in the Social Domain

Inequality manifests itself not only through individual characteristics but also in social indicators such as access to services and amenities. The indicators include access to education, health facilities, clean drinking water, sanitation and waste removal, electricity, internet and mobile phones. This section highlights inequality in terms of access these amenities and services.

4.7.1 Access to education

Kenya has recorded substantial expansion in basic education since independence and especially following the 2003 launch of Free Primary Education (FPE) programme and the subsequent launch of Free Day Secondary Education (FDSE) programme in 2008 (National Gender and Equality Commission, 2016). Attention has also been given to Early Childhood Development Education (ECDE) which prepares children for primary education. Despite these programmes the sector is faced with various challenges including inequalities in access and unsatisfactory quality of education. The data available cannot allow analysis of inequality based on quality of education due to lack of relevant information in the dataset. Therefore, this report focuses on inequality in access to education given that education attainment is an important indicator of enabler of improved equality and inclusion in various social and economic activities.

FIGURE 4.16: Enrolment in primary, secondary and tertiary institutions



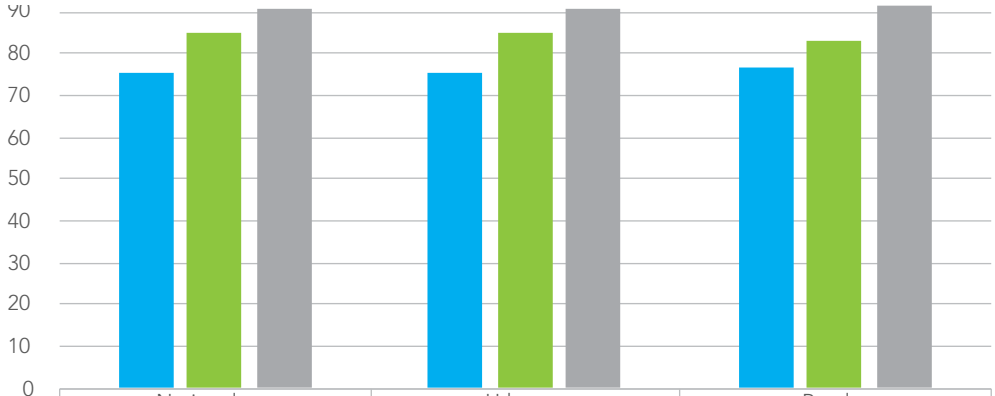
	2000	2004	2006	2009	2015
Primary Net Enrolment Rate	65,1	73,5	75,1	82,8	92,4
Secondary Net Enrolment Rate	39,2	46,9	49,9	60,2	66,7
University Gross Enrolment Rate	3,6	3,7	3	4,7	9,2

Source: *Own construction based on UNESCO (2018) data*

Figure 4.16 shows net enrolment for primary, secondary and university education. Net primary education enrolment rate has been on an upward trend from 65.1 percent in 2000 to 92.4 percent in 2015.The increase in net primary enrolment coincides with the launch of Free Primary Education in 2003. Net enrolment rate for secondary education was very low at about 40 percent in 2000 but increased over time, with notable increase coinciding with the launch of Free Day Secondary Education in 2008. For instance, net secondary education enrolment rate was 39.2 percent in 2000, 60.2 percent in 2009 and 66.7 percent in 2015. Although enrolment in tertiary institutions increased over time, it remained below 10 percent during the study period.

Using the Welfare Monitoring Survey 1994 and KIHBS 2005/06 and 2015/16, Figure 4.17 shows the proportion of individuals aged 6-18 years attending school. There is notable increase in the proportion of individuals aged 6-18 attending school, and this could be attributed to the advent of Free Primary Education and Free Day Secondary Education. At the national level, the proportion of individuals aged 6-18 years attending school increased from 75.2 percent in 1994 to 84.7 percent in 2005/06 and finally to 90.7 percent in 2015/16. In 1994 and 2015/16, the proportion of individuals aged 6-18 years attending school was high in rural areas compared to urban areas, while in 2005/06 the proportion of individuals attending school was higher in urban areas than rural areas. In both urban and rural areas, the proportion of individuals aged 6-18 years attending school increased over time as shown in Figure 4.17. In urban areas, the proportion of individuals aged 6-18 years attending school increased from 75.1 percent in 1994 to 90.4 percent in 2015/16 while the figure for rural areas increased from 76.4 percent in 1994 to 91.7 percent in 2015/16.

FIGURE 4.17: Proportion of individuals aged 6-18 attending school at national and regional level



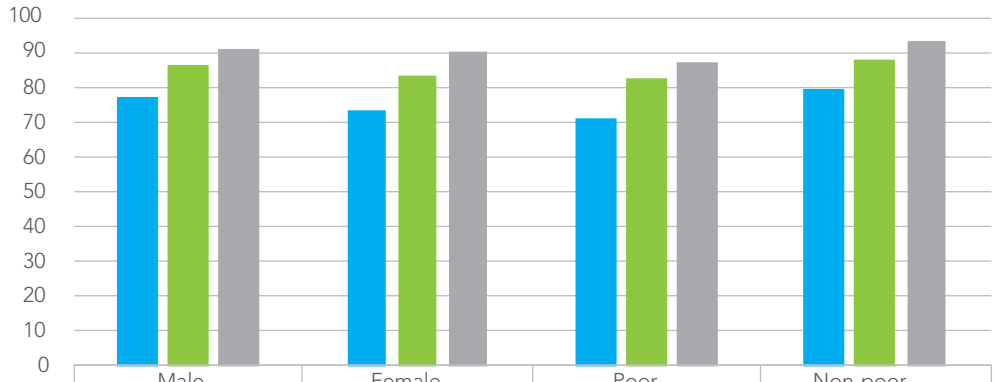
	National	Urban	Rural
1994	75.2	75.1	76.4
2005/06	84.7	85.1	82.7
2015/16	90.7	90.4	91.7

Source: Own construction based on WMS 1994 and KIHBS2005/06 and 2015/16

Figure 4.18 shows the proportion of school attendance for individuals aged 6-18 years by gender and poverty status. There is a notable increase in the proportion of individuals aged 6-18 attending school over the period 1994 and 2015/16, with more male learners attending school than female learners. The proportion of boys aged 6-18 years attending school increased from 77.2 percent in

1994 to 86.0 percent in 2005/06 and 90.9 percent in 2015/16 while the figure for girls increased from 73.3 percent in 1994 to 83.4 percent and 90.4 percent in 2005/06 and 2015/16, respectively. Similarly, there was an increase in the proportion of poor and non-poor individuals attending school over the same period. The proportion of poor individuals aged 6-18 years attending school increased from 70.9 percent in 1994 to 82.2 percent in 2005/06 and finally to 87.2 percent in 2015/16 while the figure for non-poor individuals increased from 79.4 percent in 1994 to 87.4 percent and 93.4 percent in 2005/06 and 2015/16, respectively. This comparison indicates that poverty status impacts on educational attendance, and ultimately educational attainment and future earnings.

FIGURE 4.18: Proportion of individuals aged 6-18 attending school by Gender and poverty status



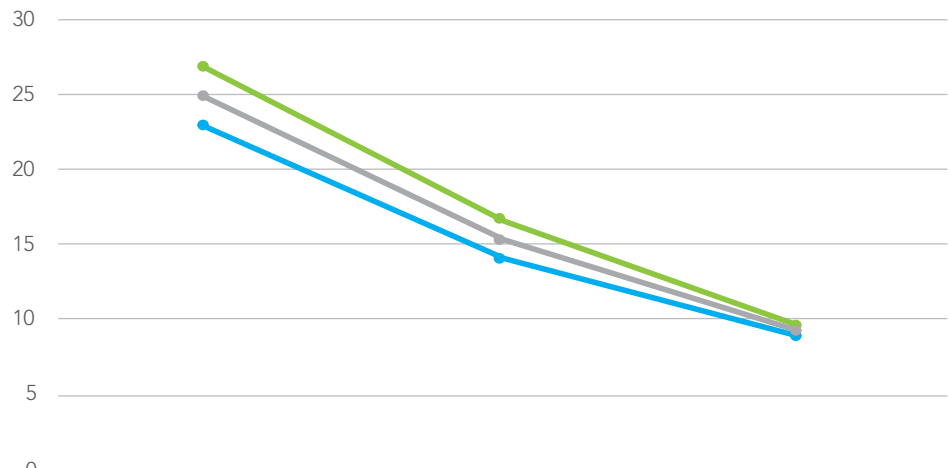
	Male	Female	Poor	Non-poor
1994	77.2	73.3	70.9	79.4
2005/06	86	83.4	82.2	87.4
2015/16	90.9	90.4	87.2	93.4

1994 2005/06 2015/16

Source: *Own construction based on WMS 1994 and KIHBS 2005/06 and 2015/16*

Figure 4.19 shows the proportion of individuals aged 6-18 years not attending an educational institution by gender. Generally, non-attendance of children aged 6-18 years has declined over time from over 20 percent in 1994 to less than 10 percent in 2015/16. For boys, the proportion of non-attendance declined by 13.8 percent from 22.8 percent in 1994 to 9.0 percent in 2015/16 while for girls it declined much faster by 17.1 percent from 26.7 percent in 1994 to 9.6 percent in 2015/16. This is an indication of a slight improvement in attendance by female learners.

FIGURE 4.19: Proportion of individuals aged 6-18 years not attending an educational institution by gender

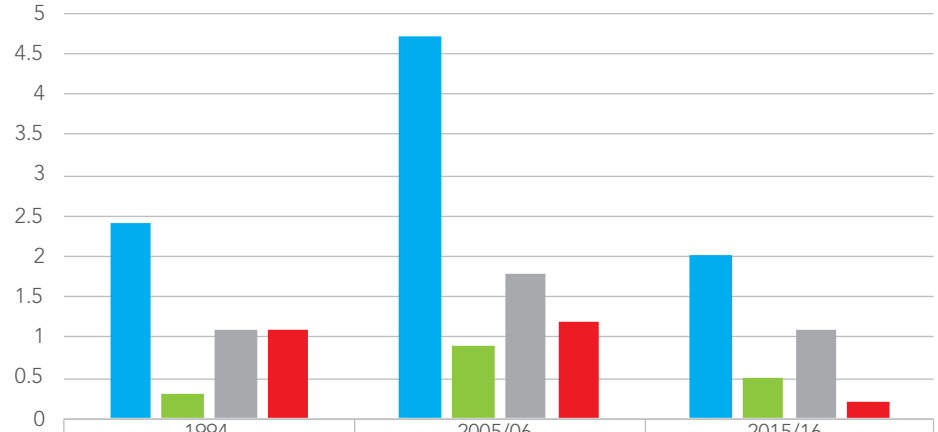


	1994	2005/06	2015/16
Male	22.8	14	9
Female	26.7	16.6	9.6
National	24.8	15.3	9.3

Source: *Own construction based on WMS 1994 and KIHBS 2005/06 and 2015/16*

Figure 4.20 shows the commonly cited reasons of school non-attendance for individuals aged 6-18 years. Monetary issues seem to contribute more to non-attendance of school by the learners, followed by lack of interest in education, and illness. However, the proportion of individuals citing these reasons is minimal. The advent of Free Primary Education and Free Day Secondary Education (subsidised secondary school education) seems to have reduced the monetary issues that reduced from 1994 (at 2.4 percent) and 2005/06 (at 4.7 percent) then a large decline in 2015/16 (at 2 percent)

FIGURE 4.20: Proportion of learners aged 6-18 years by reasons for not attending school

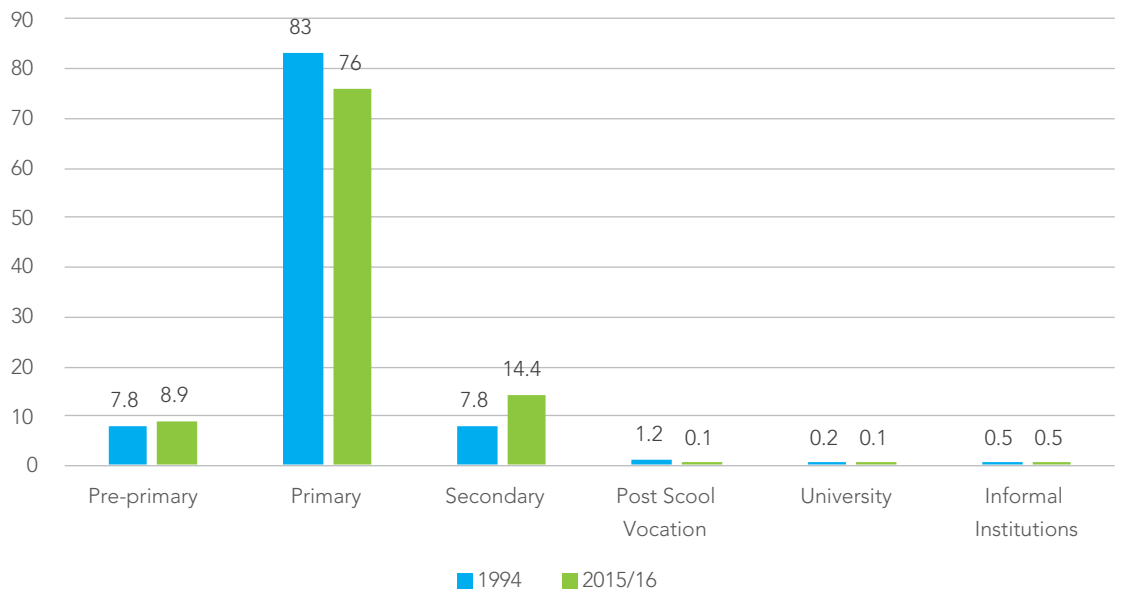


	1994	2005/06	2015/16
Monetary	2.4	4.7	2
illiness	0.3	0.9	0.5
Not intereted	1.1	1.8	1.1
other	1.1	1.2	0.2

Source: *Own construction based on WMS 1994 and KIHBS 2005/06 and 2015/16*

Figure 4.21 shows school attendance of individuals aged 6-18 years by type of education institutions. The largest share of learners is in primary school followed by those in secondary school. Post-school training, vocational and university shares of learners are very small.

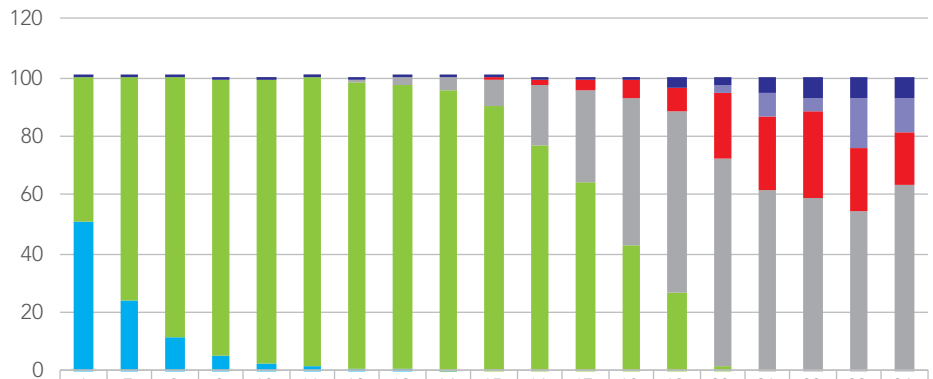
FIGURE 4.21: Share of individuals aged 6-18 years by type of education institution



Source: *Own construction based on WMS 1994 and KIHBS 2005/06 and 2015/16*

Figures 4.22 and 4.23 show the proportion of individuals aged 6-24 years by type of educational institution they attended in 1994 and 2015/16, respectively. The proportion of learners in preschool at age 6 increased from 50 percent in 1994 to 56 percent in 2015/16. The proportion for those in primary school was slightly higher at 49 percent in 1994 than at 43 percent in 2015/16. The proportion of those attending secondary school peaked at the age of 20 years in 1994 at 70 percent but in 2015/16 it peaked at the age of 18 at 73 percent. Another important observation is that the share of those in post-school and vocation, and university was much higher in 2015/16 than in 1994.

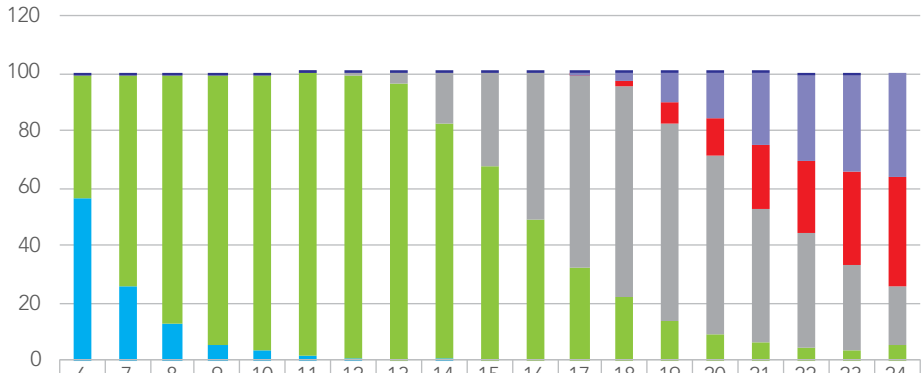
FIGURE 4.22: Proportion of individuals aged 6-24 years by type of institution, 1994



	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
informal institution	0.2	0.1	0.2	0.4	0.4	0.1	0.5	0.2	0.3	0.3	0.8	1	0.7	3	2.4	4.8	6.6	7.1	7.4
University	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.4	3	8.3	5.3	16.7	11.1
Post School. Vocation	0	0	0	0	0	0	0	0	0	0.4	1.4	3.5	6.2	8.5	22.5	25	28.9	21.4	18.5
Secondary	0	0	0	0	0.1	0.2	0.8	2	4.1	8.8	21	31.4	49.8	61.3	70.8	61.9	59.2	54.8	63
Primary	49.2	75.7	88.8	94.7	97.2	98	98.3	97.5	95.4	90.5	76.8	64.1	43.1	26.8	1.3	0	0	0	0
Preprimary	50.6	24.2	11	4.9	2.3	1.7	0.4	0.3	0.2	0	0	0	0	0	0	0	0	0	0

Source: *Own construction based on WMS 1994 using household weights*

FIGURE 4.23: Proportion of individuals aged 6-24 years by type of institution, 2015/16



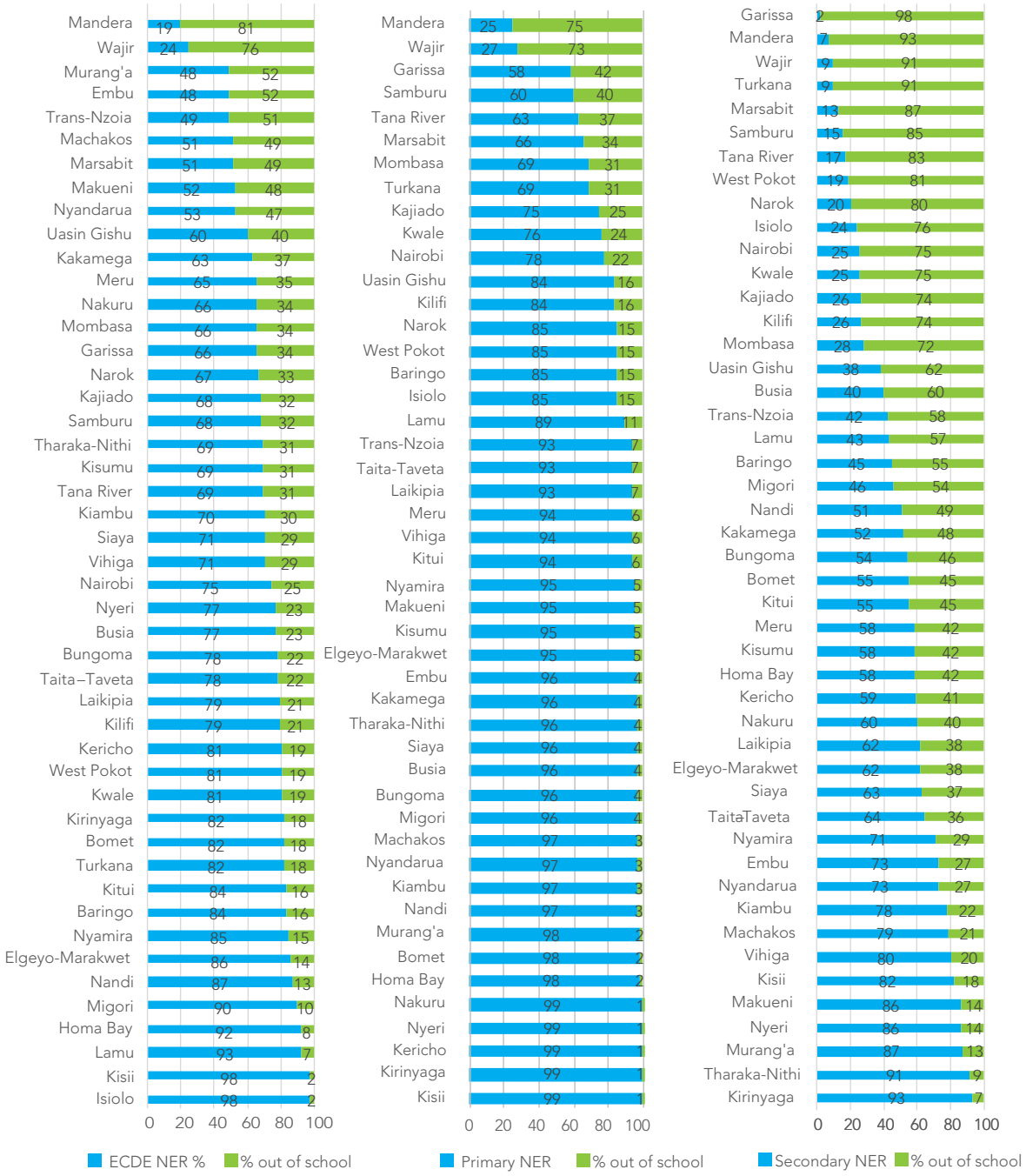
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Informal education	0.5	0.8	0.8	0.9	0.8	0.3	0.4	0.2	0.4	0.1	0.4	0.2	0.4	0.2	0.3	0.2	0.7	0.7	0
University	0	0	0	0	0	0	0	0	0	0	0	0.6	2.2	10	15	25	30	34	36
post School. Vocation	0	0	0	0	0	0	0	0	0	0	0	0.3	2.2	7.1	13	22	25	33	39
Secondary	0	0	0	0	0	0.1	0.5	3.7	17	32	51	67	73	69	63	46	40	29	20
Primary	43	74	86	94	96	99	99	96	82	68	49	32	22	13	8.8	6.6	4.1	3.5	5.3
Pre-Primary	56	25	13	5.2	3.1	1.1	0.6	0.1	0.2	0.1	0	0	0	0	0	0	0	0	0

Source: *Own construction based on KIHBS 2015/16 using household weights*

In terms of regional variations, Figure 4.24 shows that there are large variations across counties. As shown in the three panels, there is high variation across counties in terms of enrolment at both pre-primary, primary and secondary education. Some of the counties have low enrolment rates at the three levels, e.g. Mandera and Wajir, while some of the counties have over 80 percent enrolment

rates. Generally, the deep rural and Marginalis ed counties have had lower school enrolments as opposed to the urban counties.

FIGURE 4.24: County distribution of pre-primary, primary and secondary school level net enrolment rate, 2014



Source: *Estimates based on Republic of Kenya (2018) data*

Thus, there are disparities in enrolment especially at secondary school and tertiary institutions, where enrolment is lower compared to the pre-primary and primary level of education. The gender disparity in enrolment is more pronounced in tertiary institutions, and this could be due to a combination of factors, among them poor performance of girls in mathematics and sciences

at secondary school level. However, there are more serious disparities across regions, with some counties such as Mandera and Wajir recording low access to all levels of basic education compared to other counties which enjoy high levels of access. Also, urban counties perform well in terms of both accesses to primary and secondary school enrolments as opposed to the rural and Marginalis ed counties which have been consistently at the bottom position in terms of access.

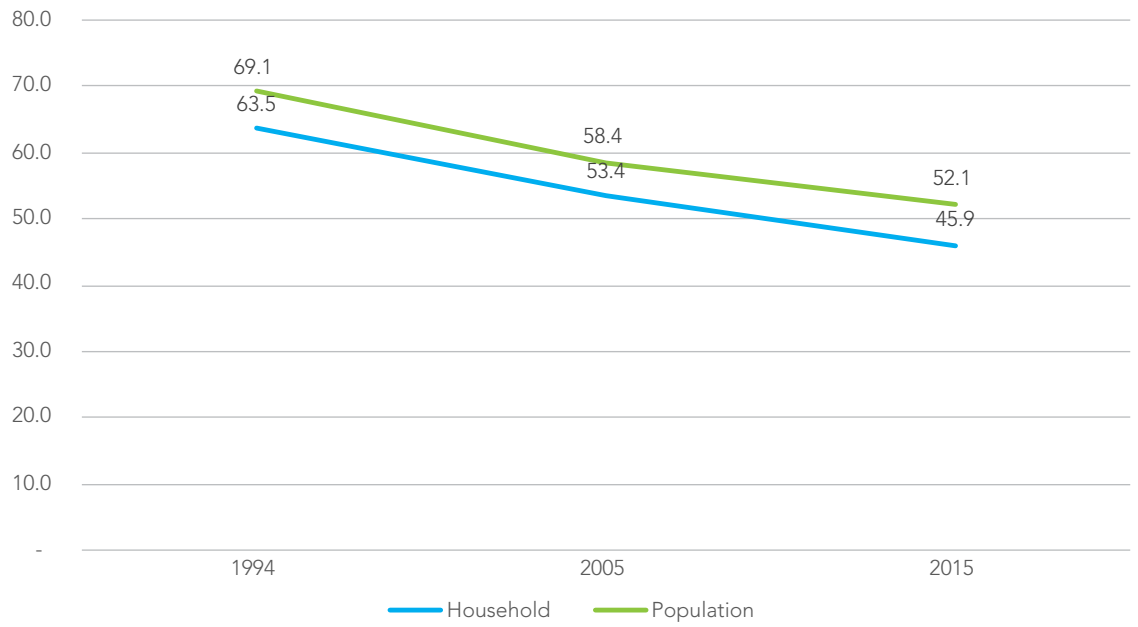
4.7.2 Access to healthcare services

This section looks at healthcare utilisation as a measure of health-seeking behaviour and a partial measure of access to healthcare. The section uses the three national survey data; that is, the Welfare Monitoring Survey of 1994, and the Kenya Integrated Household Budget Survey (KIHBS) of 2005/06 and 2015/16. The three surveys provide information on health, with key relevant questions on utilisation. Inequality analysis is looked at from different dimensions. These dimensions include the area of residence, education level of household head, the poverty status or well-being measure, types of health facilities visited, and region (county). These dimensions were also interacted to create within and between inequalities, which has provided a discussion on the multi-dimension perspective of inequalities in healthcare utilisation.

Healthcare utilisation

This section looks at inequality based on access to healthcare services. As shown in Figure 4.25, we display results for the household and the population in the households. As shown in the figure, there is higher access to health service when considering the population in the household than when considering access at household level. The figure also shows that there has been a decline in access to health services. At household level, access to health services declined from 64 percent in 1994 to 46 percent in 2015/16. At individual level, it declined from 69 percent in 1994 to 52 percent in 2015/16.

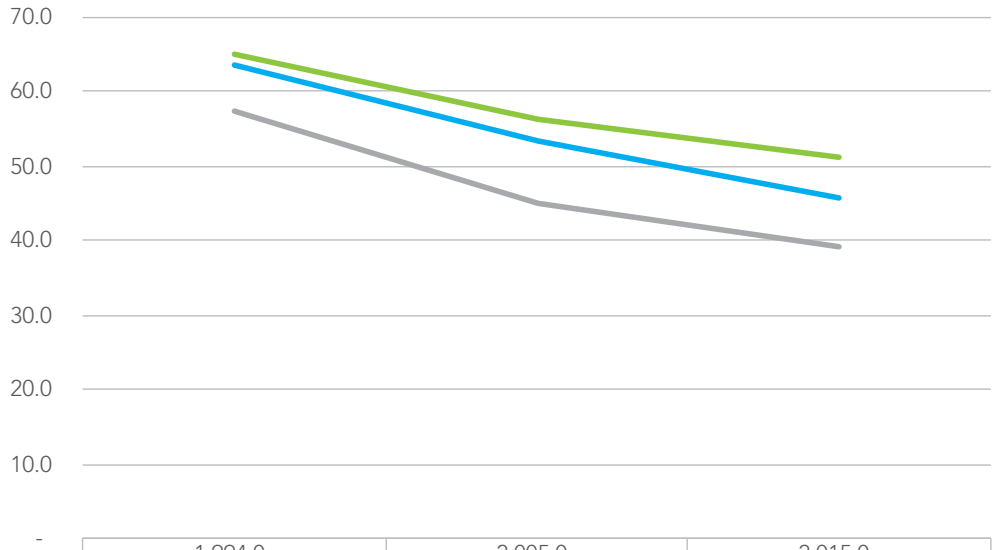
FIGURE 4.25: Utilisation of healthcare services by household and population



Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

Analysis of access to healthcare services by area of residence shows that it is higher for rural households than for urban households, but it has declined over time. Figure 4.26 shows that access by urban households declined from 57 Percent in 1994 to 39 percent in 2015/16 while that for rural households declined from 65 percent in 1994 to 51 percent in 2015/16.

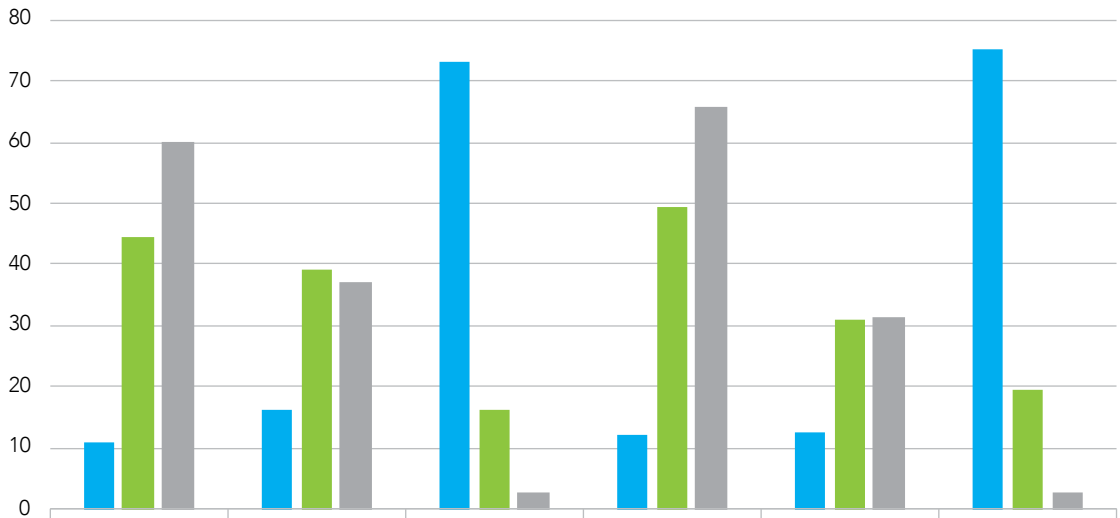
FIGURE 4.26: Utilisation of healthcare services by household residence



	1 994.0	2 005.0	2 015.0
National level	63.5	53.4	45.9
Rural Household	65.1	56.2	51.2
urban houseld	57.3	45.1	39.1

Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

FIGURE 4.27: Percentage of population seeking healthcare by place of residence and types of facility



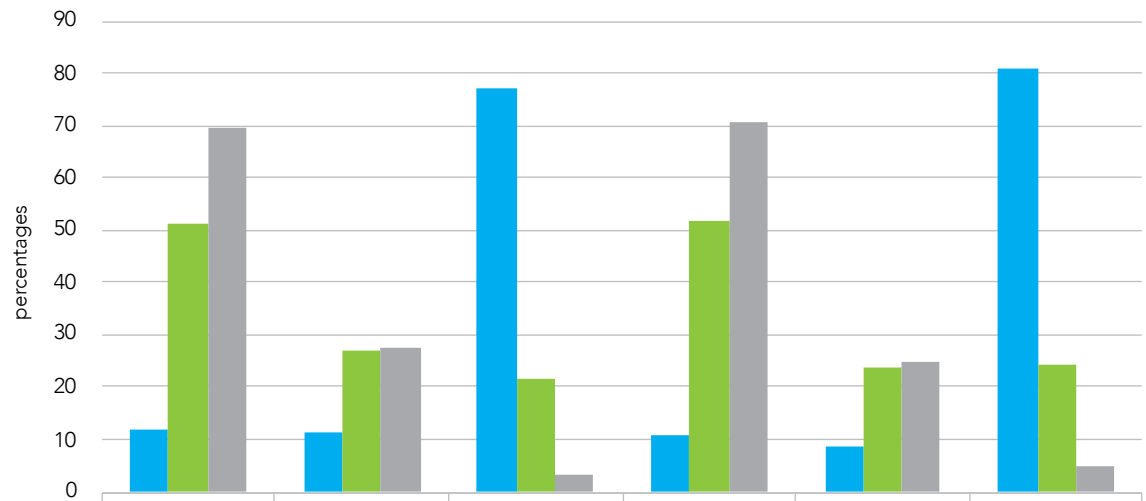
	Rural Public	Rural Private	Rural Others	Urban Public	Urban Private	Urban Others
1994	11	16	73	12	13	75
2005	45	39	16	49	31	19
2015	60	37	3	66	31	3

Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

Figure 4.27 presents the proportion of the population that sought for healthcare by place of resident and by type of facility. In 1994, the largest proportion of rural residents at 73 percent sought for healthcare in the category of "others" facilities compared to 11 percent in public facilities and 16 percent for private facilities. The same trend was evident among urban residents where 75 percent sought healthcare from "others" compared to 12 percent at public facilities, and 13 percent at private facilities.

In 2015, 66 percent of urban population were seeking healthcare from a public facility. A high proportion of rural dwellers sought services from public facilities compared to private ones in 2015. Surprisingly, "others" facilities attracted a very small proportion of population seeking for healthcare in both urban and rural areas. Only 3 percent of both rural and urban areas population sought for healthcare from "others" facilities. This trend can be attributed to devolution, and zero rating of user fees at the level two facilities. More rural residents seek for health care compared to the urban residents.

FIGURE 4.28: Percentage of population that sought healthcare by poverty status and type of facility



	Non-poor Public	Non-poor private	Non-poor others	poor Public	poor private	poor others
1994	12	11	77	11	8	81
2005	51	27	22	52	24	24
2015	69	28	3	70	25	5

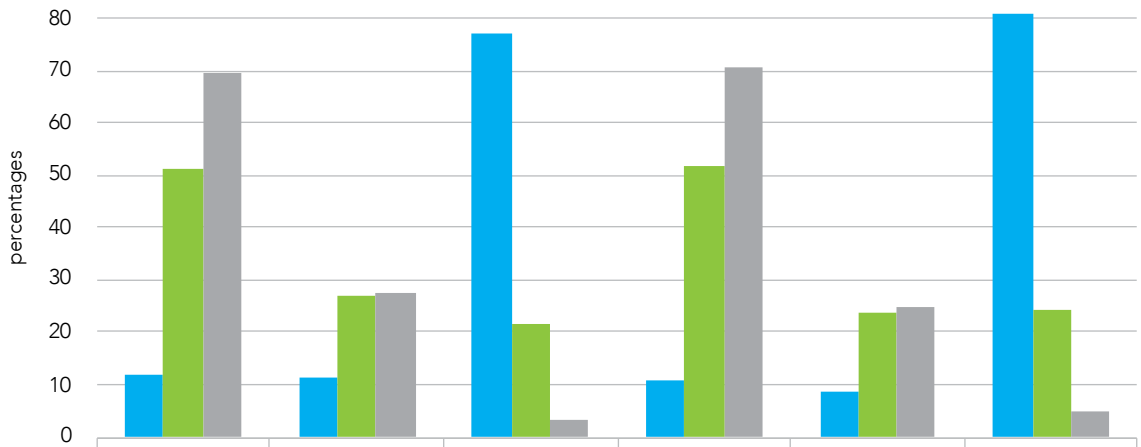
Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

Figure 4.28 shows the proportion of population that sought for healthcare by poverty status and type of facility. In 1994, there was no significant difference between demand for healthcare among the non-poor and the poor in terms of where they sought for healthcare. A majority, 77 percent and 81 percent of the non-poor and poor sought care from other facilities, respectively.

In 2015, there was a reversal of health-seeking behaviour for both the poor and non-poor seeking healthcare from public health facilities, with poor members of the population utilising public facilities with a slightly higher proportion than the non-poor; that is, 70 percent and 69 percent for

poor and non-poor, respectively. This result is a bit surprising because the expectation would be that non-poor would demand more health care services in private facilities. It could signal quality improvement that has taken place in public facilities after devolution. It is also notable that slightly more non-poor utilised private facilities more than the poor in 2015.

FIGURE 4.29: Percentage of population that sought healthcare by the level of education and facility type over the three survey periods, 1994, 2005 and 2015



	Non-poor Public	Non-poor private	Non-poor others	poor Public	poor private	poor others
1994	12	11	77	11	8	81
2005	51	27	22	52	24	24
2015	69	28	3	70	25	5

Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

Figure 4.29 shows the proportion of population that sought for healthcare by level of education and type of facility. Irrespective of the level of education, in 1994 a higher proportion of population sought for healthcare in "others" facility types. This trend changed in 2005/06 and 2015/16 where there was a dramatic shift to "others" type of facility to public and private facilities regardless of level of education of the individual.

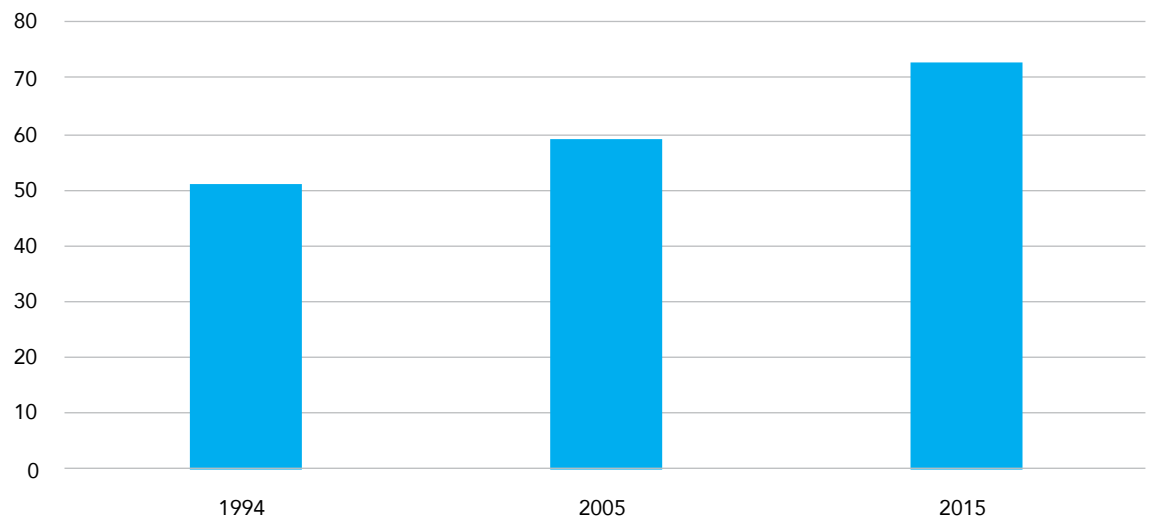
There is a glaring inequality between the proportion of population with no education and that with high education in terms of utilisation of public health facilities. A larger proportion of the population with high education are utilising public health facilities than those with no education. This is a surprising trend, for one would Hypothesise that those with higher education would seek for more healthcare in private facilities compared with those with no education. The vice versa is true for private facilities where a higher proportion of people with no education were found to utilise them more than those with higher education. Perhaps this could be explained by existence of many private health clinics whose quality is perceived to be slightly low by individuals with higher education

4.7.3 Access to safe drinking water

The United Nations classifies Kenya as a chronically water scarce country on the basis of having one of the lowest natural water replenishment rates, at 647 metres cubed per capita per annum, which is far below the recommended 1,000 metres cubed per capita per annum (UNICEF, 2019). To analyse household access to safe drinking water, three national surveys are utilised; that is the 1994 Welfare Monitoring Survey, Kenya Integrated Household Budget Survey for the years 2005/06 and 2015/16, and KPHC for 2009.

At the national level, access to safe drinking water rose substantially from 1994 to 2016 as shown in Figure 4.30.This could be explained by passing of the Water Bill, 2014 (Bill No. 7 of 2014) on 7th July 2015 which transformed the eight (8) Water Service Boards (Asset Holding Companies) into 47 Water Works Development Boards in each county of Kenya. However, there was substantial inequality in access to safe drinking water based on area of residence, education level of head of household, and poverty status

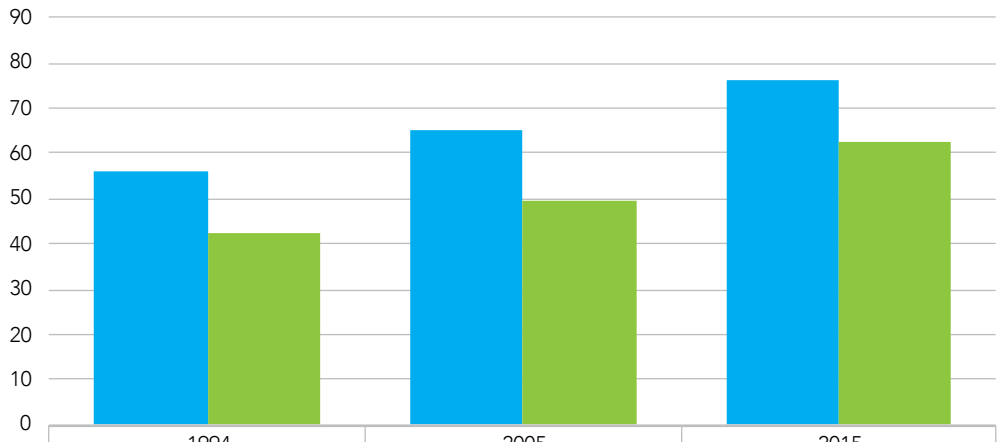
FIGURE 4.30: Proportion of household with safe drinking water, 1994-2016



Source: *Own calculations using the 1994 WMS and KIHBS 2005/06, 2015/16 using household weights*

Figure 4.31 shows the proportion of households accessing safe drinking water by poverty status of the households. The proportion of non-poor households accessing safe drinking water is higher than that for poor households over the period. The proportion of both the poor and non-poor households accessing safe drinking water seems to have increased over time. For instance, the proportion of non-poor households accessing safe drinking water increased from 56 percent in 1994 to 76 percent in 2015/16, while that for poor households increased from 42 percent in 1994 to 63 percent in 2015/16. It is also clear from the figure that the gap in access to safe drinking water between the poor and non-poor seems to be closing with time.

FIGURE 4.31: Proportion of households with safe drinking water by poverty status

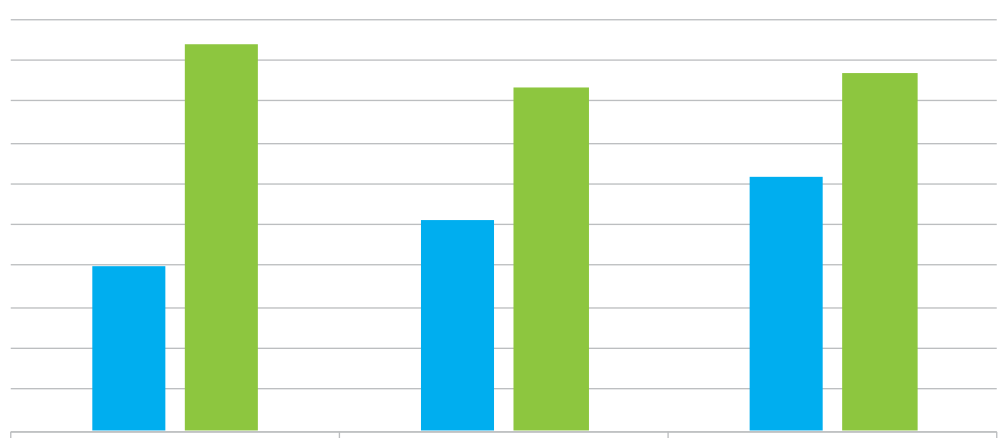


	1994	2005	2015
Non Poor	56.12	64.82	76.41
Poor	42.32	49.48	62.66

Source: *Own calculations using the 1994 WMS and KIHBS 2005/06, 2015/16 using household weights*

Figure 4.32 shows the proportion of households with safe drinking water in both rural and urban areas. Over the period of analysis 1994-2016, access to safe drinking water was higher in urban areas than in rural areas. In the rural areas, there was an increase in access to safe drinking water over time, from about 40 percent in 1994 to about 62 percent in 2015/16. However, in urban areas, there was a drop in the proportion of households accessing safe drinking water from 94 percent in 1994 to about 83 percent in 2005/06 before slightly increasing to about 87 percent in 2015/16. The decrease in proportion of those accessing safe drinking water can be explained by increased migration to the urban areas over time. This analysis indicates that there is still a significant difference in access to safe drinking water between urban and rural households.

FIGURE 4.32: Proportion of households with safe drinking water by area of residence

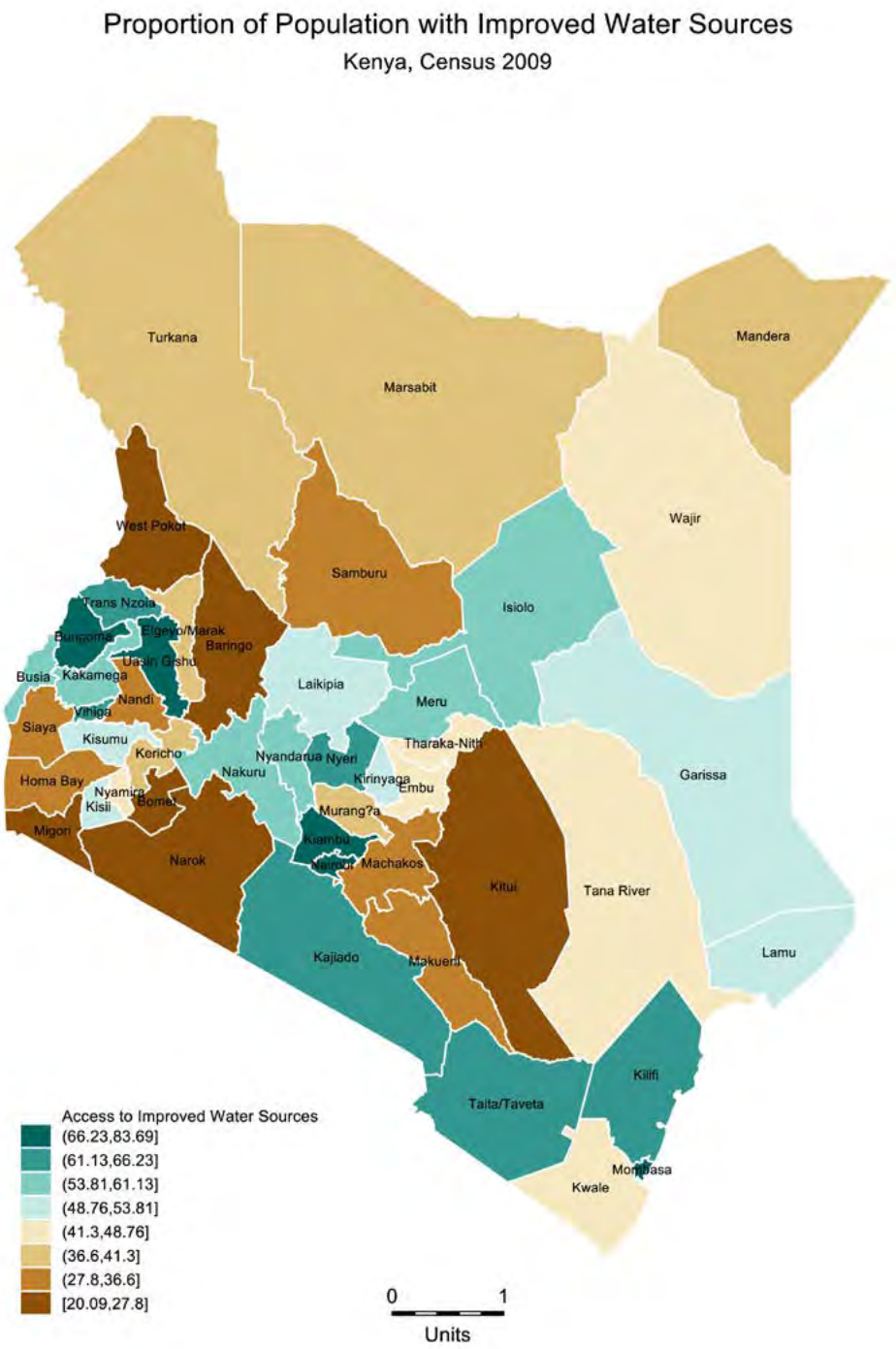


	1994	2005	2015
Rural	40.21	50.96	61.78
Urban	94	82.97	86.71

Source: *Own calculations using the 1994 WMS and KIHBS 2005/06, 2015/16 using household weights*

Analysis by county shows further differences in access to safe drinking water. As depicted on Map 4.3 showing distribution of access to safe drinking water by county, the counties highlighted in light green to dark green colour seem to have higher access to safe drinking water than those highlighted in light to dark brown colour. Going by this map, households in a greater portion of the country seem to have low access to safe drinking water. However, this shows the status as at 2009 and things have probably changed with time.

MAP 4.3: County population with access to improved water sources

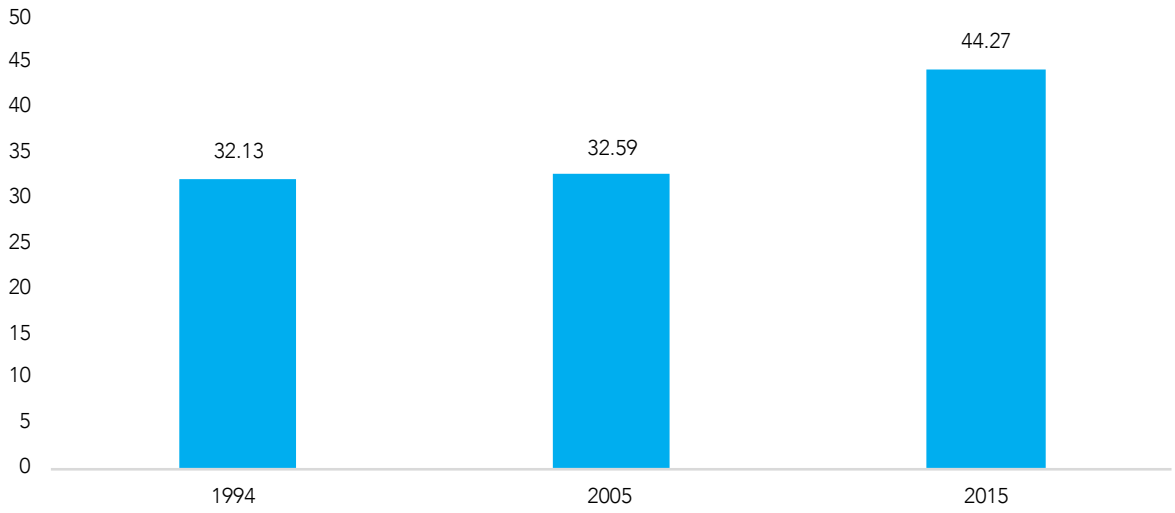


Source: *Calculations using 2009 census data*

Access to piped water

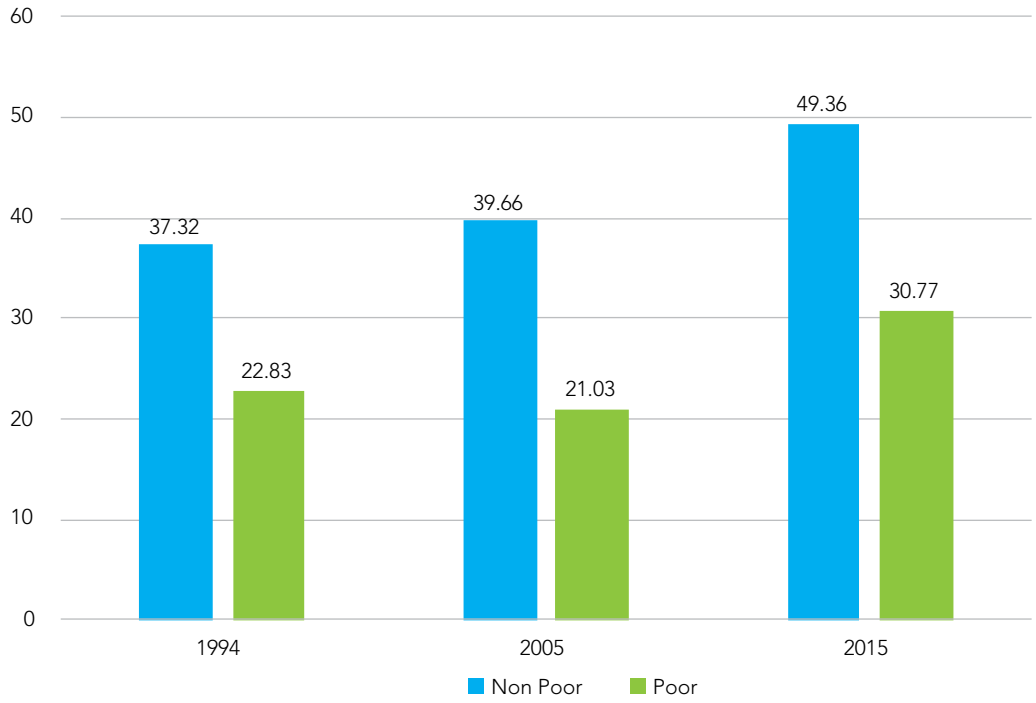
This section further looks at access to piped water. Piped water is just a subset of safe drinking water. As shown in Figure 4.33, the proportion of households with access to piped water connected at the area of dwelling increased over time from 32 percent in 1994 to 44 percent in 2015/16. However, analysis at the national level tends to mask regional differences in access.

FIGURE 4.33: Percentage of households with piped water connected at the dwelling



Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

FIGURE 4.34: Percentage of household with piped water connected to their dwelling by poverty status

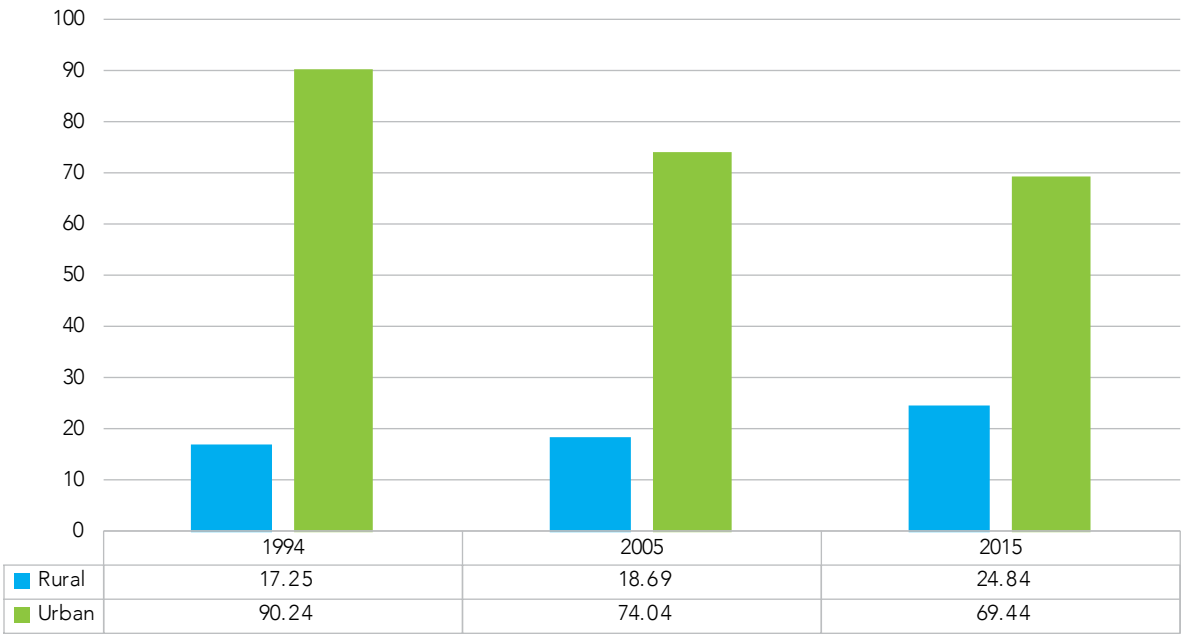


Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

Figure 4.34 shows the proportion of households connected with piped water in their place of dwelling by poverty status. A clear gap exists between the proportion of poor and non-poor connected with piped water at their place of residence. The non-poor households have higher access to piped water connectivity than the poor over the period 1994-2016. The connectivity for the non-poor increased from about 37 percent in 1994 to about 49 percent in 2015/16 while the percentage increase for the poor households was from about 23 percent in 1994 to about 31 percent in 2015/16.

Figure 4.35 presents the proportion of households with piped water connected to their dwelling by area of residence. Huge differences exist between rural and urban households in terms of access to piped water in their area of dwelling. For example, in 1994, only about 17 percent of rural households had access to piped water connected at the dwelling compared to 90 percent in urban areas. Urban households report consistently higher percentage of piped water connectivity than rural households. However, the proportion for urban households with access to piped water connection declined over time from 90 percent in 1994 to 69 percent in 2015/16. This is a huge drop that could be attributed to growth of informal settlements in urban areas over the period. The percentage of rural households connected with piped water in the dwelling increased overtime

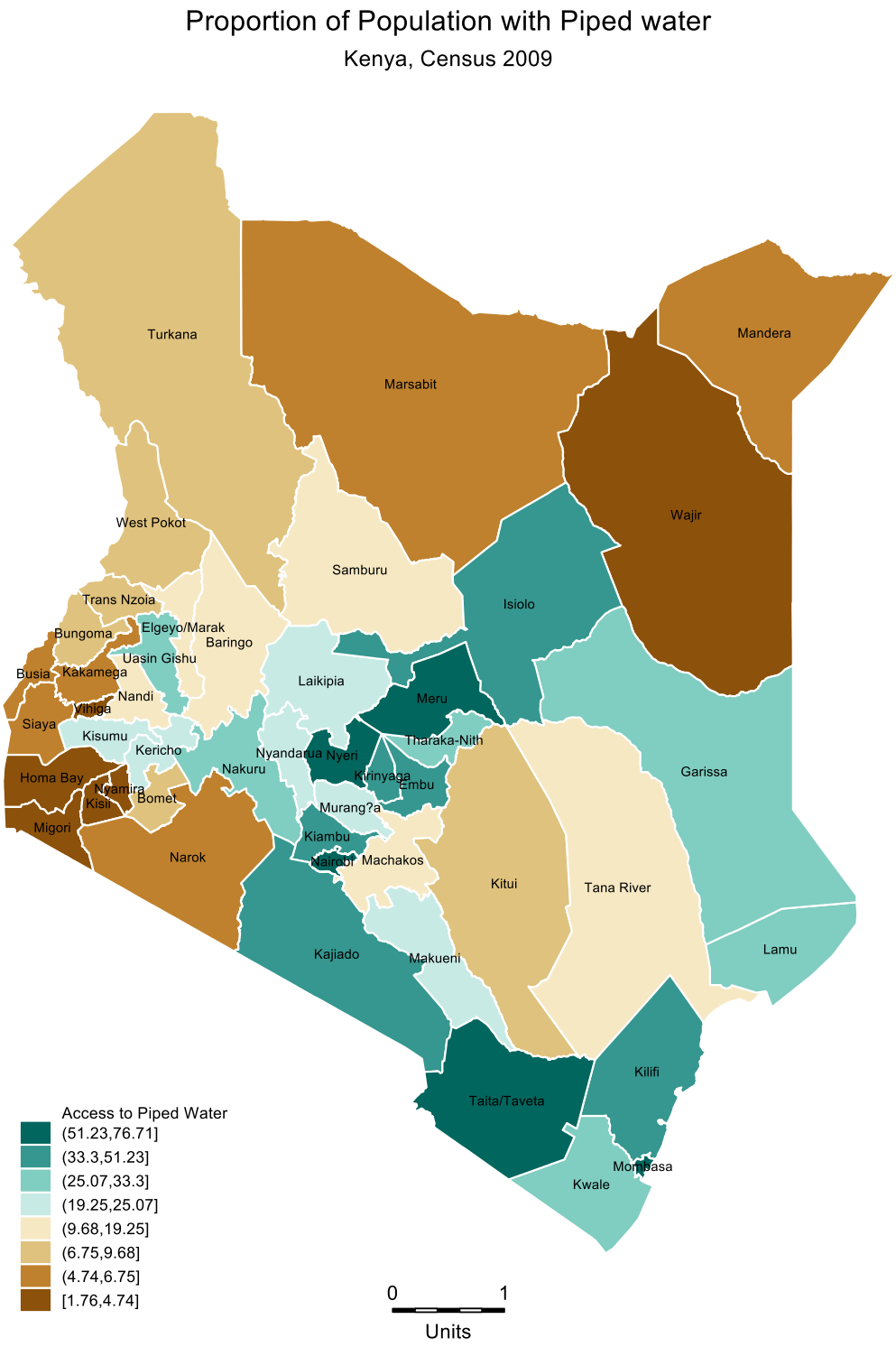
FIGURE 4.35: Percentage of households with piped water by area of residence



Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

Furthermore, breaking down the distribution in access across the 47 counties in Kenya reveals further difference by regions. Map 4.4 shows the distribution of piped water connectivity at the households dwelling in the 47 counties in 2009. The counties highlighted in light green to dark green colour seem to have higher access to safe drinking water than those highlighted in light to dark brown colour. Going by this map, households in most counties seem to have low connection to piped water in dwelling.

MAP 4.4: County population with access to piped water

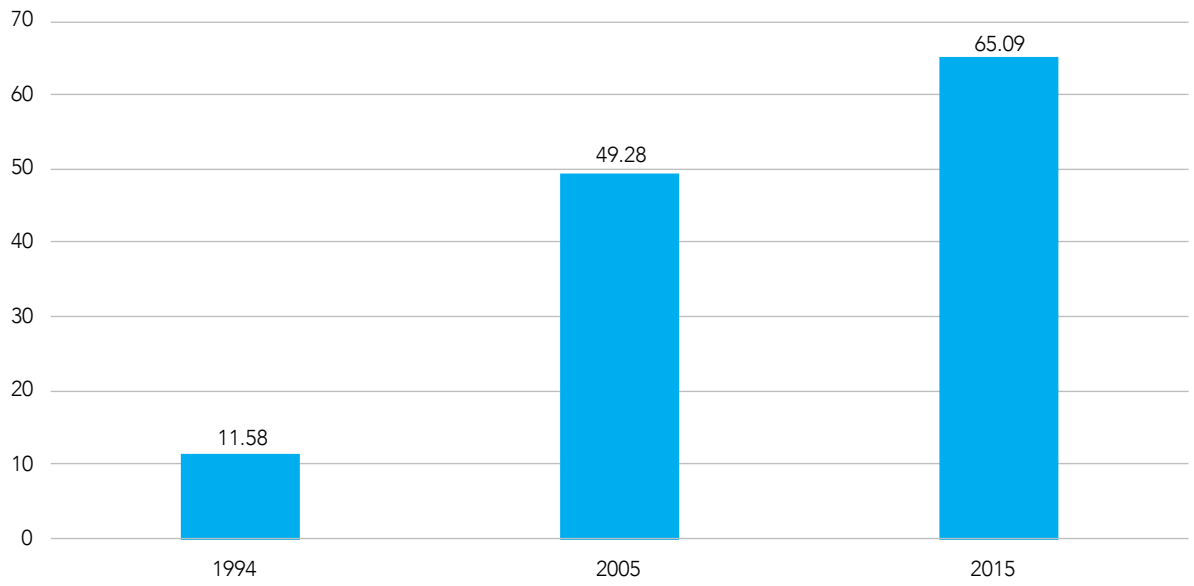


Source: *Calculations using 2009 Census data*

4.7.4 Access to improved sanitation

Access to improved sanitation is defined as having access to facilities for the safe disposal of human waste and other solid and household waste. It also refers to use of an improved type of sanitation facility that is not shared with other households and from which the excreta produced are either safely treated in situ or transported and treated off-site. The basic sanitation facilities include toilets or latrines. Figure 4.36 shows that households with improved sanitation have increased from about 12 percent in 1994 to about 65 percent in 2015/16 at the national level. This is a remarkable increase in households with access to improved sanitation. However, there exists considerable inequalities in access to improved sanitation when looking at different dimensions; that is, education level of the household, poverty status, area of residence and county where a household resides.

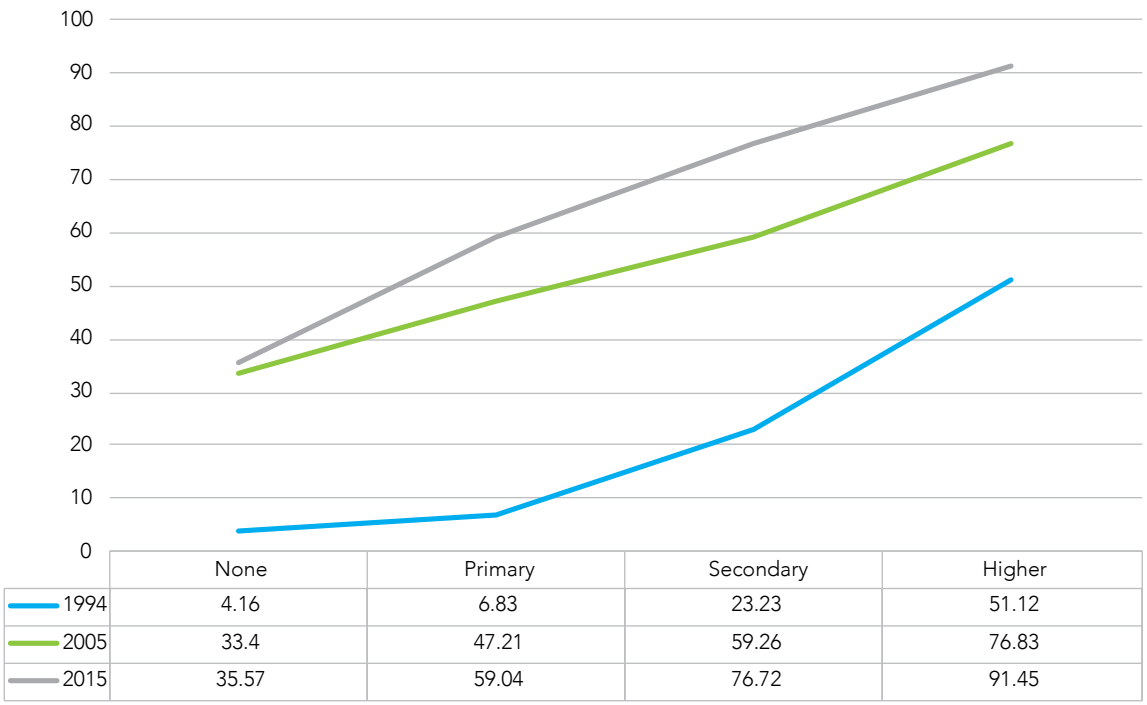
FIGURE 4.36: Percentage of households with improved sanitation



Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

Figure 4.37 shows the proportion of household heads with access to improved sanitation by education level of the household head. The figure shows that there was an increase in access to improved sanitation by all households regardless of the education level of the household head. However, access to improved sanitation is higher for households if the head has higher level of education than for those that had lower level of education. The proportion of access to improved sanitation among households where head had no schooling was consistently low compared with the rest of the groups where household heads had relatively higher level of education. For instance, in 2015, about 36 percent of the households whose head had no schooling had access to improved waste disposal compared to about 92 percent for households where the head had higher education. This shows the role of education in ensuring hygienic and healthy lifestyle.

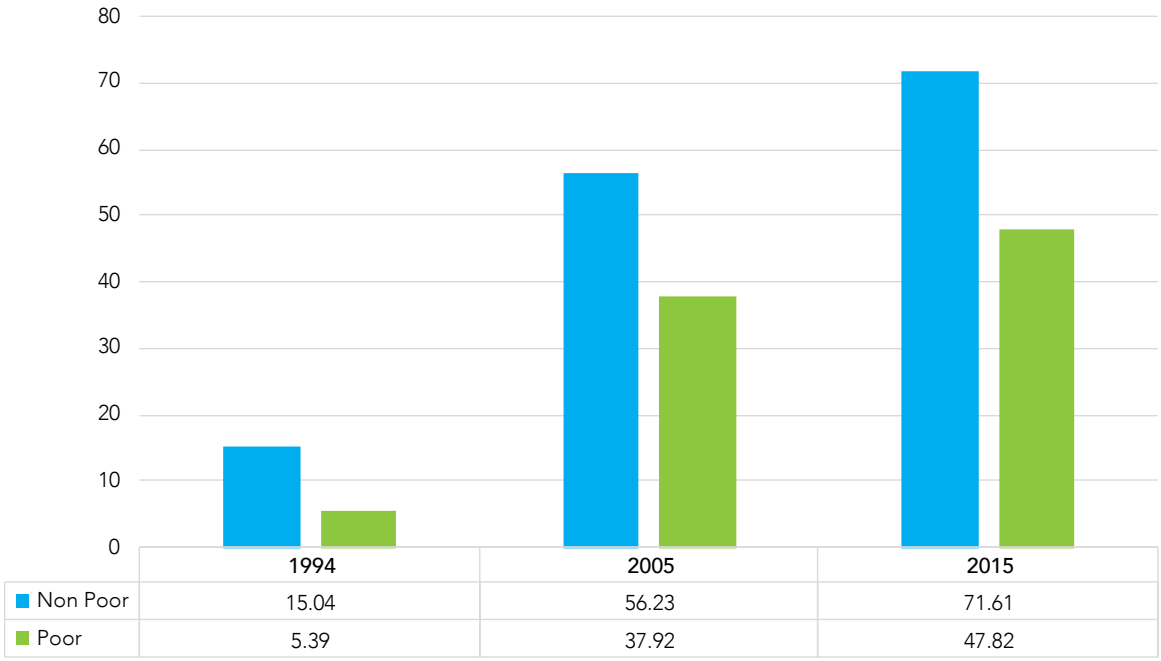
FIGURE 4.37: Percentage of household heads with access to waste disposal by level of education of the household head



Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

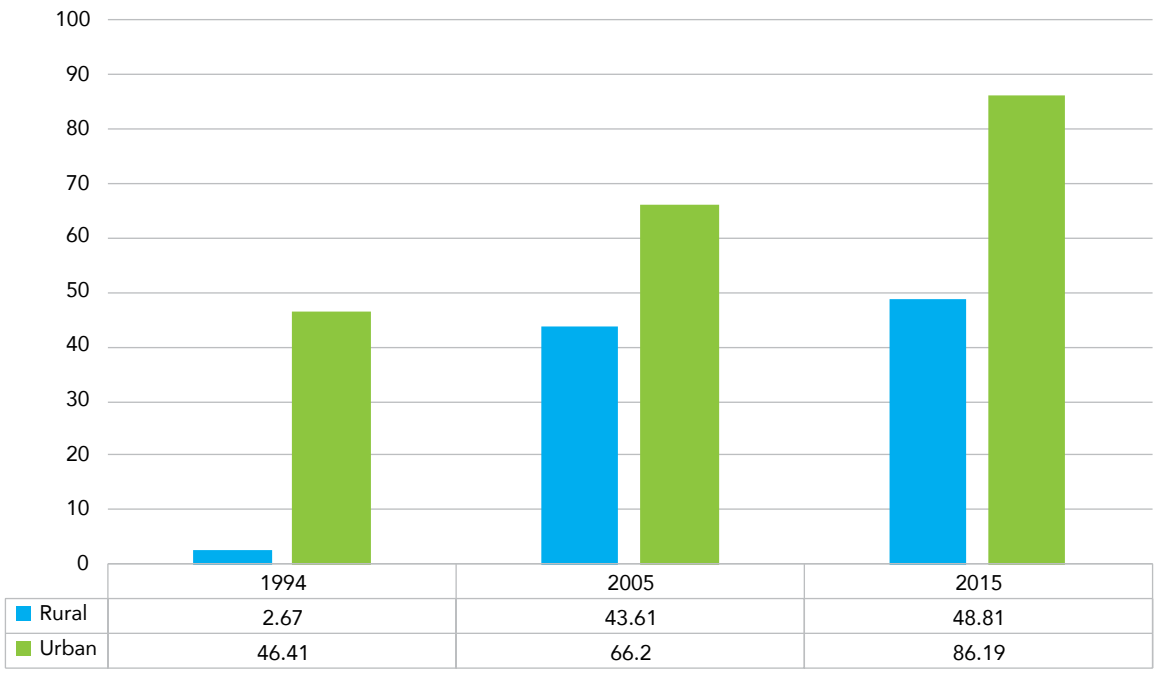
Figure 4.38 shows the percentage of households with access to improved waste disposal by their poverty status. Both poor and non-poor households experienced an increase in access to improved waste disposal between 1994 and 2015/16. However, non-poor households had higher access to improved waste disposal than poor households. In 1994, 5 percent of the poor households and 15 percent of the non-poor households had access to improved waste disposal. In 2015, about 72 percent of the non-poor and 48 percent of the poor households reported to have access to improved waste disposal.

FIGURE 4.38: Percentage of households with waste disposal by poverty status



Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

FIGURE 4.39: Percentage of households with waste disposal by area of residence

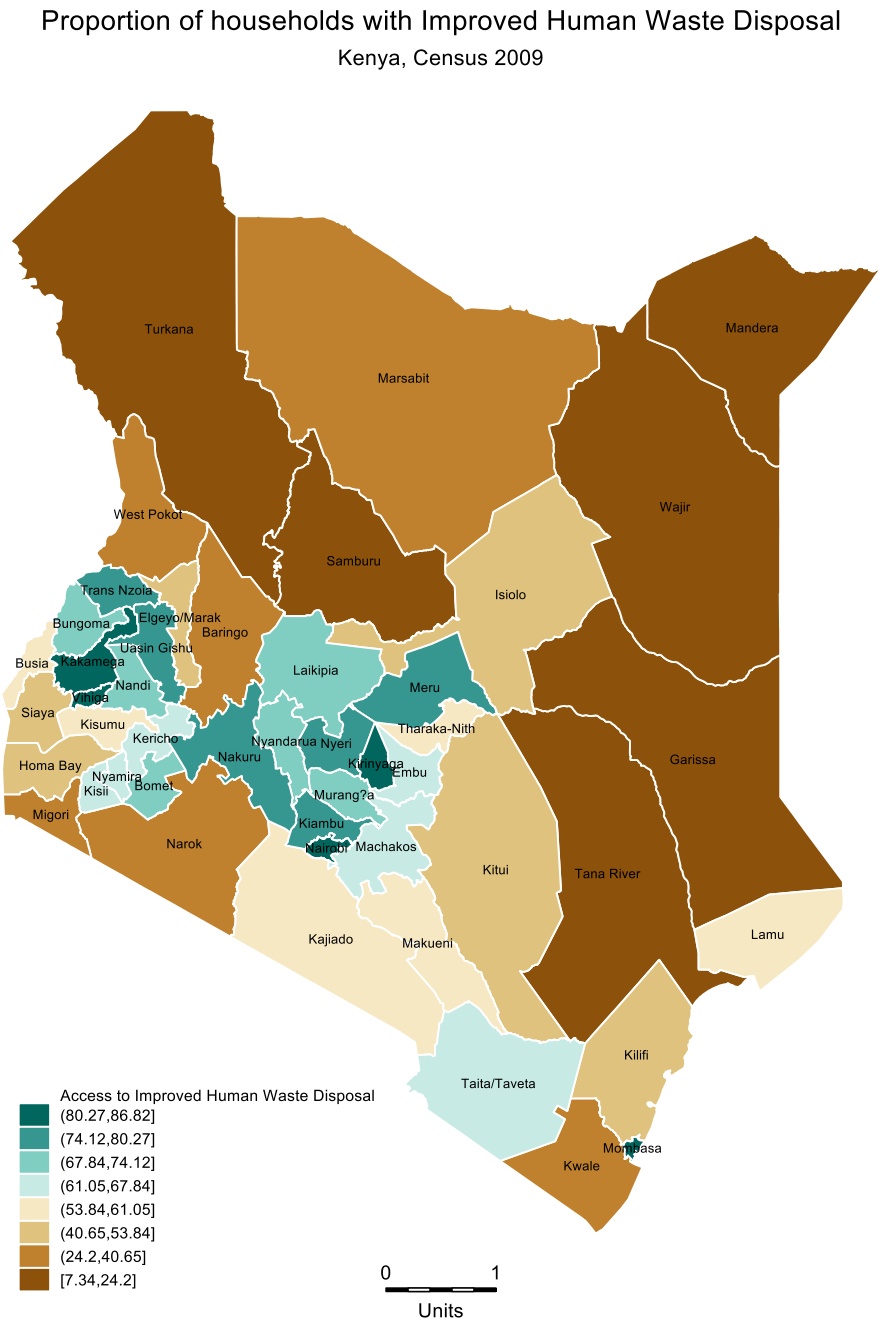


Source: *Own calculations using 1994 WMS and KIHBS 2005/06 and 2015/16 using household weights*

Figure 4.39 presents the proportion of households with access to improved sanitation by area of residence. Urban areas had higher access to improved sanitation than rural areas. Both rural and urban areas experienced increased access to sanitation between 1994 and 2015/16. For instance, in

1994, only 3 percent of rural households reported to have improved waste disposal compared with close to 47 percent of the urban residents, while it rose in 2005/06 to 44 percent and 66 percent of the rural and urban households, respectively. This improved further in 2015/16, where about 86 percent of urban residents reported to have waste disposal compared to 49 percent of rural residents. The high uptake of improved waste disposal in urban areas is likely to be influenced by the National Environmental Monitoring Authority (NEMA) whose activities are highly concentrated in urban centres.

MAP 4.5: County population with access to improved waste disposal



Source: *Calculations using 2009 census data*

Analysis of access to improved sanitation across the 47 counties in Kenya reveals major differences at county level as shown in Map 4.5. Counties highlighted in light green to dark green colour seem to have higher access to improved sanitation than those highlighted in light to dark brown colour.

4.7.5 Access to electricity

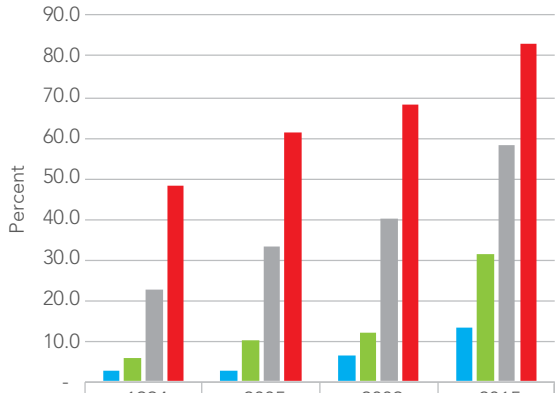
Goal 7 of the Sustainable Development Goals (SDGs) envisages the provision of affordable and universal electricity access by 2030. A steady supply of energy is critical to the achievement of the country's' "Big Four" agenda of expansion of manufacturing growth and jobs in the sector, food security and nutrition, universal health coverage and access to affordable housing. This implies that electricity is crucial in achievement of the Kenya Vision 2030 on industrialization in Kenya. This section, highlights achievement of universal access to electricity by the year 2030. The section reports the trends in relation to access to electricity by place of residence, education level of household head, poverty status of households and by region/county in Kenya.

Figure 4.40 a shows the proportion of households with access to electricity by place of residence. In general, there has been an increase in access to electricity by households in Kenya from 1994 to 2015. However, the results indicate that there is high inequality in access to electricity by place of residence. For instance, in 1994, only 2.2 percent of the population in rural areas had access to electricity compared to 43.2 percent of urban residents. The gap widened in 2009 where 60.5 percent of urban households had access to electricity compared to 6.0 percent of households in rural areas. However, the gap slightly decreased in 2015 where 73.9 percent of households in urban areas were connected to electricity against 20.0 percent of households in rural areas. This implies that, even though there is a general increase in household electricity connectivity nationally, the gap on electricity connectivity between households in rural and urban areas could be widening.

Guided by the Sustainable Development Goal 7on access to affordable, reliable, sustainable and modern energy for all, specifically target 7.1.1 on the proportion of population with access to electricity, the report presents the proportion of the population in Kenya with access to electricity. Figure 4.40ashows that the trend on access to electricity by individuals mimics the trend for households with electricity connectivity. Figure 4.40b further shows that in 1994, 45.1 percent of the urban population had access to electricity compared to 2.0 percent in rural areas. In 2015, 70.5 percent of the urban population had access to electricity compared to 16.8 percent of the rural population in the same year. Generally, the gap in access to electricity for individuals living in rural and urban areas increased over time.

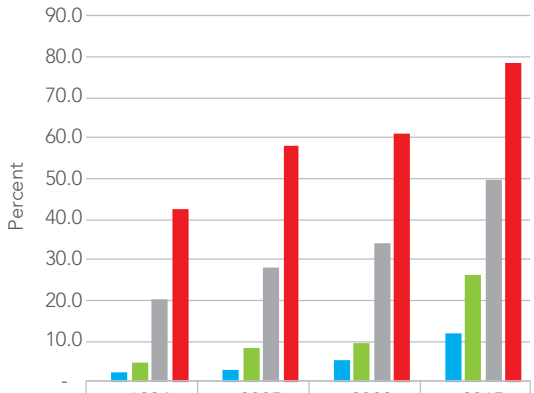
FIGURE 4.40: Proportion of households and population with access to electricity by level of education

(a) Proportion of households with access to electricity by education level of household head 1994-2015



	1994	2005	2009	2015
None	2.8	2.9	6.5	13.2
Primary	5.8	10.1	12.3	31.4
Secondary	23.0	33.3	40.1	58.1
Higher	48.1	61.6	68.3	83.2

(b) Proportion of population with access to electricity by education level of individuals 1994-2015

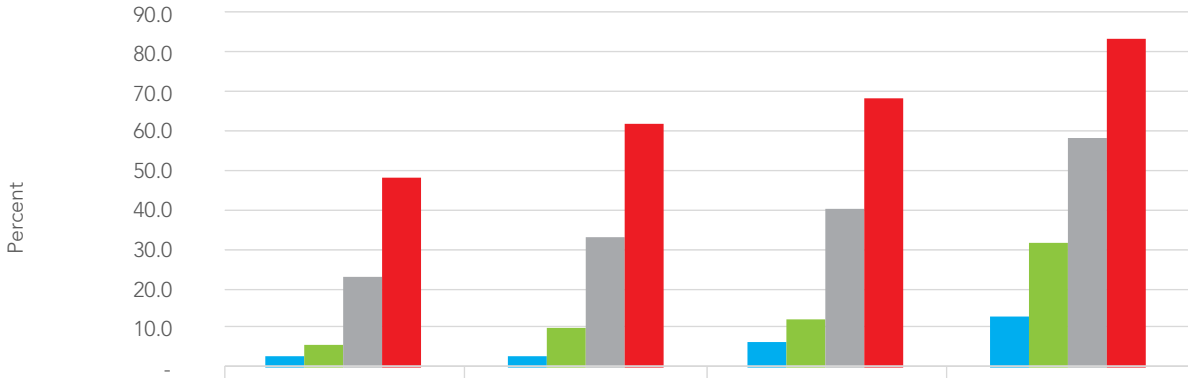


	1994	2005	2009	2015
None	2.5	2.6	5.3	11.7
Primary	4.4	8.4	9.6	26.1
Secondary	20.5	28.3	34.1	49.8
Higher	42.7	57.8	61.0	78.5

Source: *Own calculations using the WMS 1994, KIHBS 2005 and 2015/16, using household weights and 2009 Census data*

In terms of access to electricity by education level of the household head, Figure 4.41 indicates that households headed by people with higher levels of education have more access to electricity compared to those headed by individuals with lower levels of education. For instance, in 1994, only 2.8 percent of households headed by people with no schooling had electricity connected to their homes while in the same year, 48.1 percent of households headed by people with higher education had electricity. The gap widened more in 2015 where 83.2 percent and 13.2 percent of households headed by people with higher levels of education and others with no schooling, respectively. This implies that the higher the level of education of the household head, the higher the probability of having electricity connectivity. This could be attributed to the place of residence where people with higher levels of education are mostly to be found in urban areas compared to those with no schooling whose majority live in rural areas.

FIGURE 4.41: Proportion of households and population with access to electricity by level of education

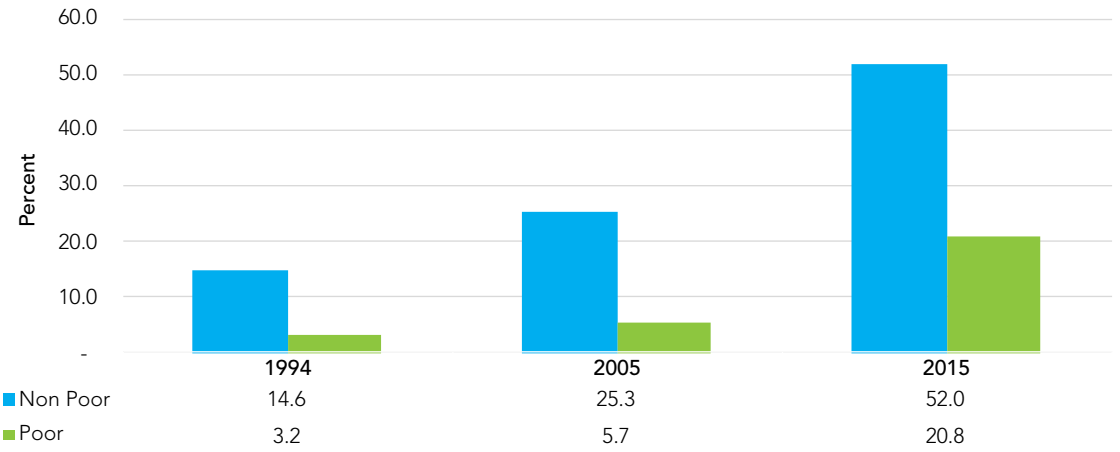


	1994	2005	2009	2015
None	2.8	2.9	6.5	13.2
Primary	5.8	10.1	12.3	31.4
Secondary	23.0	33.3	40.1	58.1
Higher	48.1	61.6	68.3	83.2

Source: *Own calculations using the WMS 1994,KIHBS 2005 and 2015/16, using household weights and 2009 KPHC data*

Figure 4.42 shows access to electricity by poverty status. The results indicate that a higher proportion of non-poor households had more access to electricity compared to poor households. For instance, in 1994, 14.6 percent of non-poor households had access to electricity compared to 3.2 percent of poor households. The gap widened more in 2015/16 where 52.0 percent of non-poor households were connected to electricity compared to 20.8 percent of the poor households. The gap on access to electricity widened over the years; for instance, in 1994, the difference between access to electricity by poor and non-poor households was 11.4 percent and in 2015/16 it increased to 31.2 percent. This implies that, although there was general improvement in provision of electricity to citizens, access rates keep on widening between the poor and non-poor households.

FIGURE 4.42: Proportion of households and population with access to electricity by level of poverty

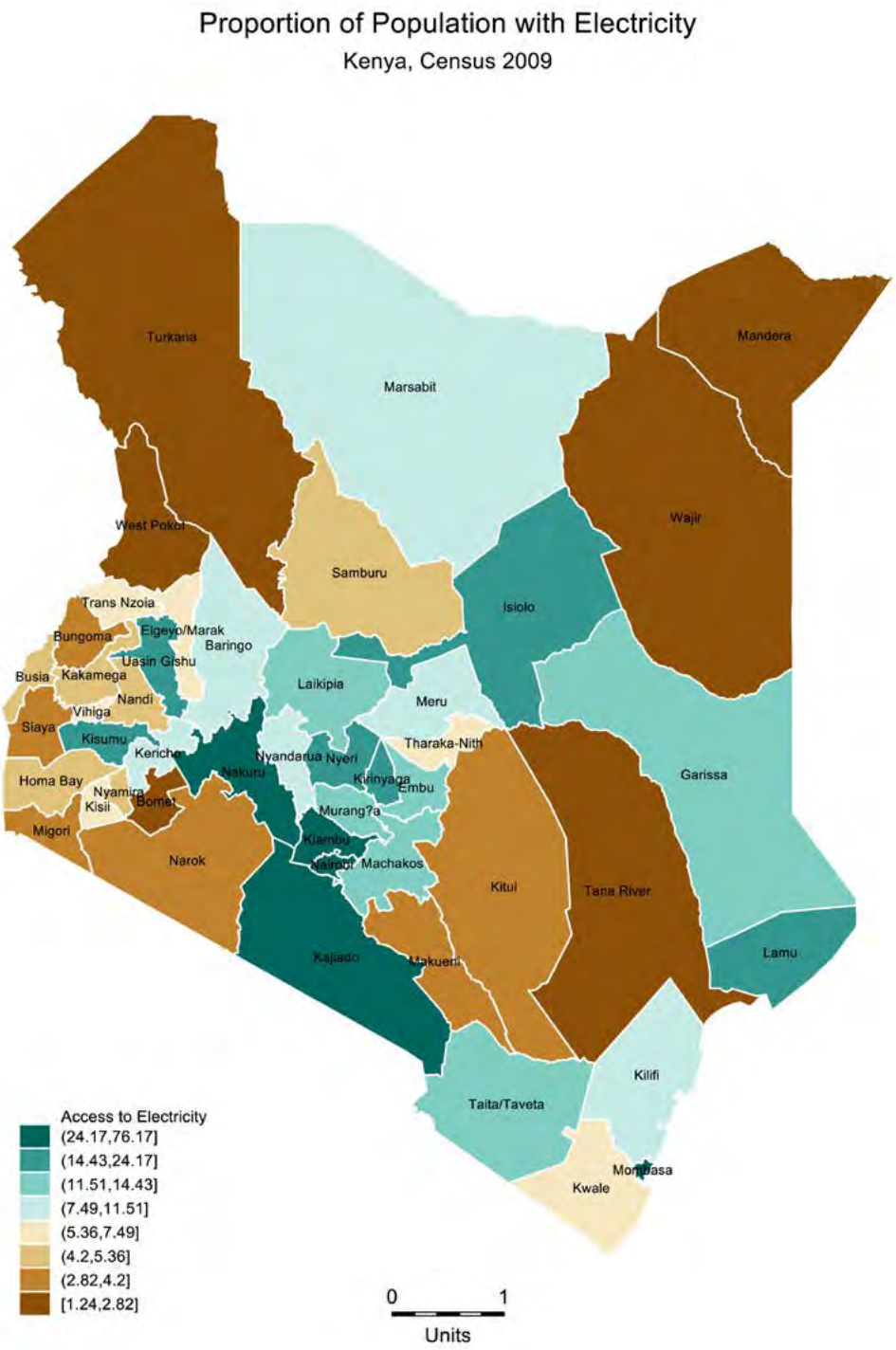


Source: *Own calculations using 1994WMS and KIHBS 2005/06 and 2015/16 using household weights*

Map 4.6 and Tables A5 and A6 in the Annex show that there is a wide disparity in access to electricity by counties in Kenya. For instance, Nairobi, Kiambu, Mombasa, Kajiado and Nyeri are the top counties with a higher proportion of households connected to electricity as attested by 91.0 percent, 80.4 percent, 78.6 percent, 68.5 percent and 61.8 percent of househods reporting access to electrity in those counties, respectively. The results also indicate that counties such as West Pokot, Bomet, Siaya, Busia and Bungoma are least connected to electricity at 7.5 percent, 9.3 percent, 10.2 percent, 11.0 percent and 11.2 percent in that order. Results further indicate that in the last two decades, Kiambu County enjoyed the highest growthof electricityconnectivity from31.3 percent in 2005/06 to 80.4 percent in 2015/16. This was a remarkable increase of 49.1 percent compared to Bomet which had an increase of 4.3 percent. In line with individualsin entire population, the distribution of indivulauals with access to electricity is as presented in Table A6 in the Annex. Table A6 shows that most of the population (92.04 percent) in Nairobi County have access to electricity compared to West Pokot, which has only 3.85 percent of households with access to electricity. This shows that there is very high inequality in access to electricity in Kenya by county.

Map 4.6 shows the distribution of electricity by county, using the 2009 census data. The counties highlighted in light green to dark green colour seem to have moderate to higher access to electricity connectivity while those highlighted in light to dark brown colour show low connectivity to electricity. Going by this map, households in a greater portion of the country seem to have low access to electricity. However, probably there is improvement given that this is the picture as at 2009.

MAP 4.6: Proportion of households with access to electricity



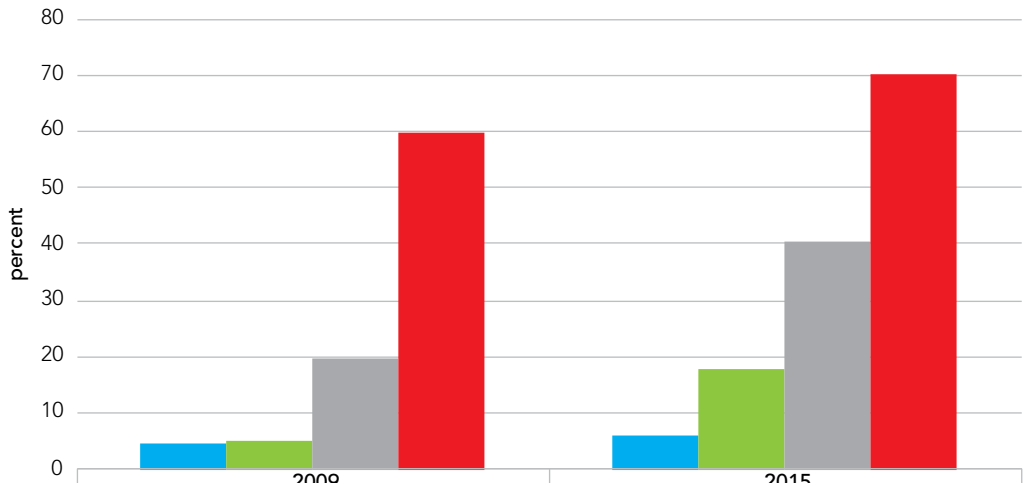
Source: *Calculations using 2009 Census data*

4.7.6 Access to internet

This report focuses on inequality in access to internet which is defined as the lack of "material access". This means lack of possession of a computer, mobile phones and network connection (Van Dijk and Hacker, 2003).

Figure 4.43 show that households headed by people with higher levels of education have higher access to internet than those without education. In 2009, the gap on access to internet between households headed by people with higher education and those headed by individuals with no schooling was 55 percent in 2009 and in 2015 the gap widened to 64 percent. This implies that the higher the level of education, the higher the probability of having internet connectivity, hence increasing inequality in internet access.

FIGURE 4.43: Proportion of households with access to internet by education level of household head

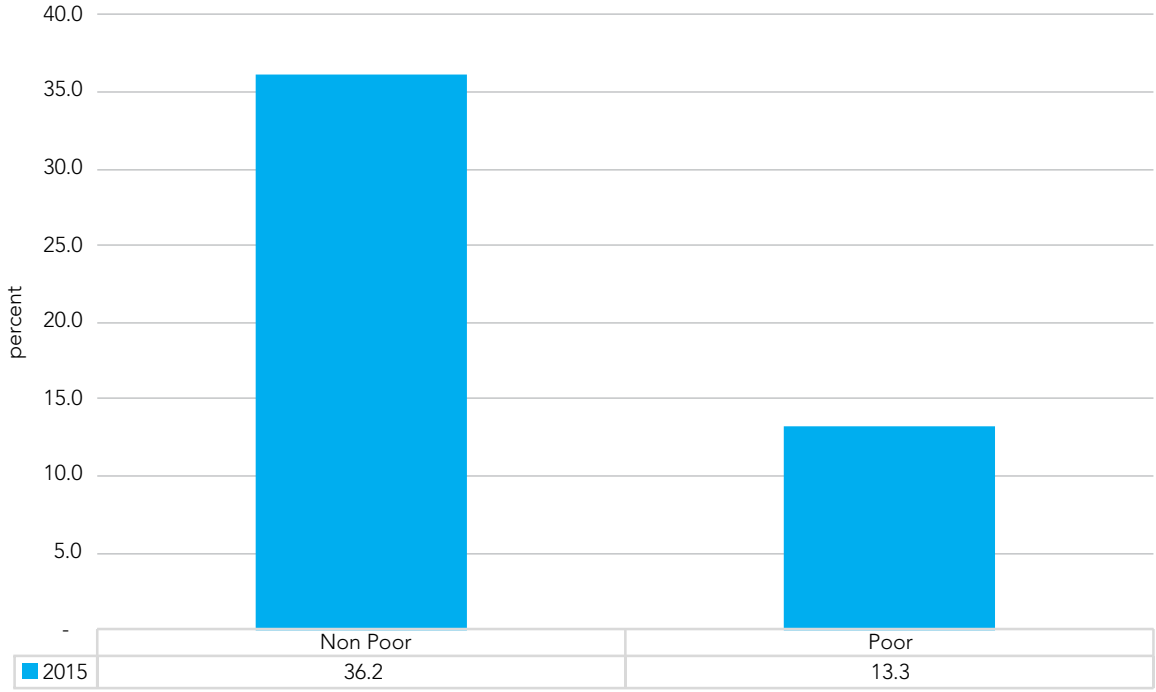


	2009	2015
None	4.51	6.2
Primary	4.87	17.8
Secondary	19.45	40.6
Higher	59.66	70.2

Source: *Own calculations using KIHBS 2015/16 and 2009 Census data using household weights*

Figure 4.44 shows that non-poor households have more access to internet compared to poor households. This is as attested by 36.2 percent of the non-poor households with internet connectivity compared to 13.3 percent of the poor households.

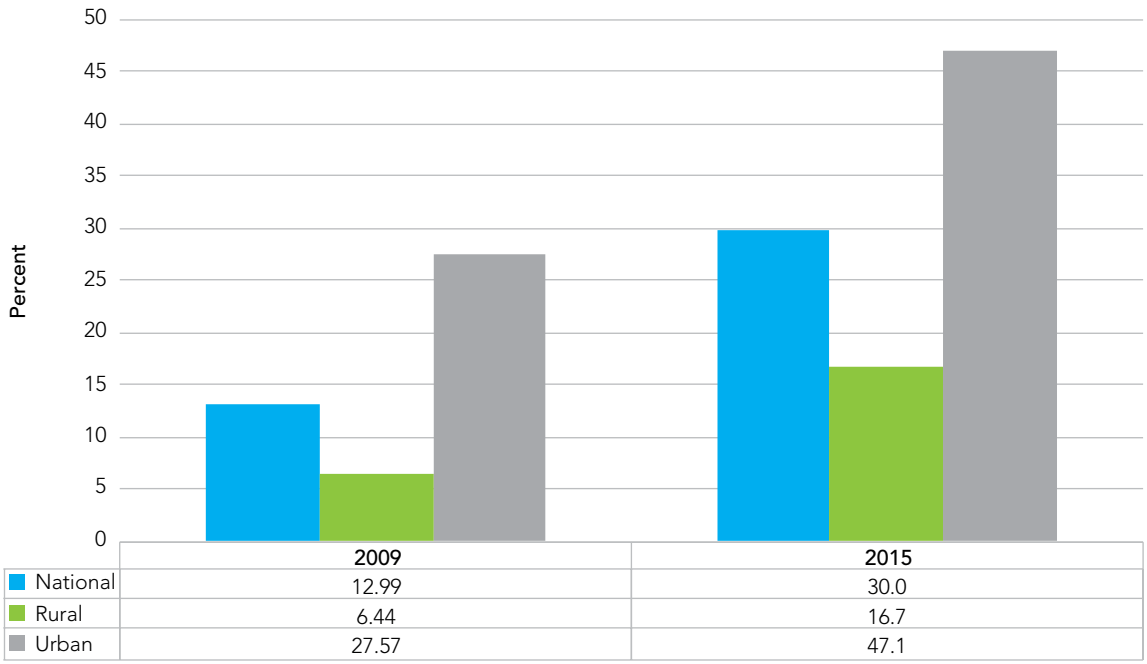
FIGURE 4.44: Proportion of households with access to internet by poverty level



Source: *Own calculations using KIHBS 2015/16 using household weights*

Figure 4.45 shows that in 2009 and 2015/16, there was a wide gap in access to internet between rural and urban households. For instance, in 2009, 27.6 percent of households in urban areas had internet access compared to about 6.4 percent in rural areas. In 2015, the gap widened with 16.7 percent of households in rural areas accessing internet compared to 47.1 percent in urban areas.

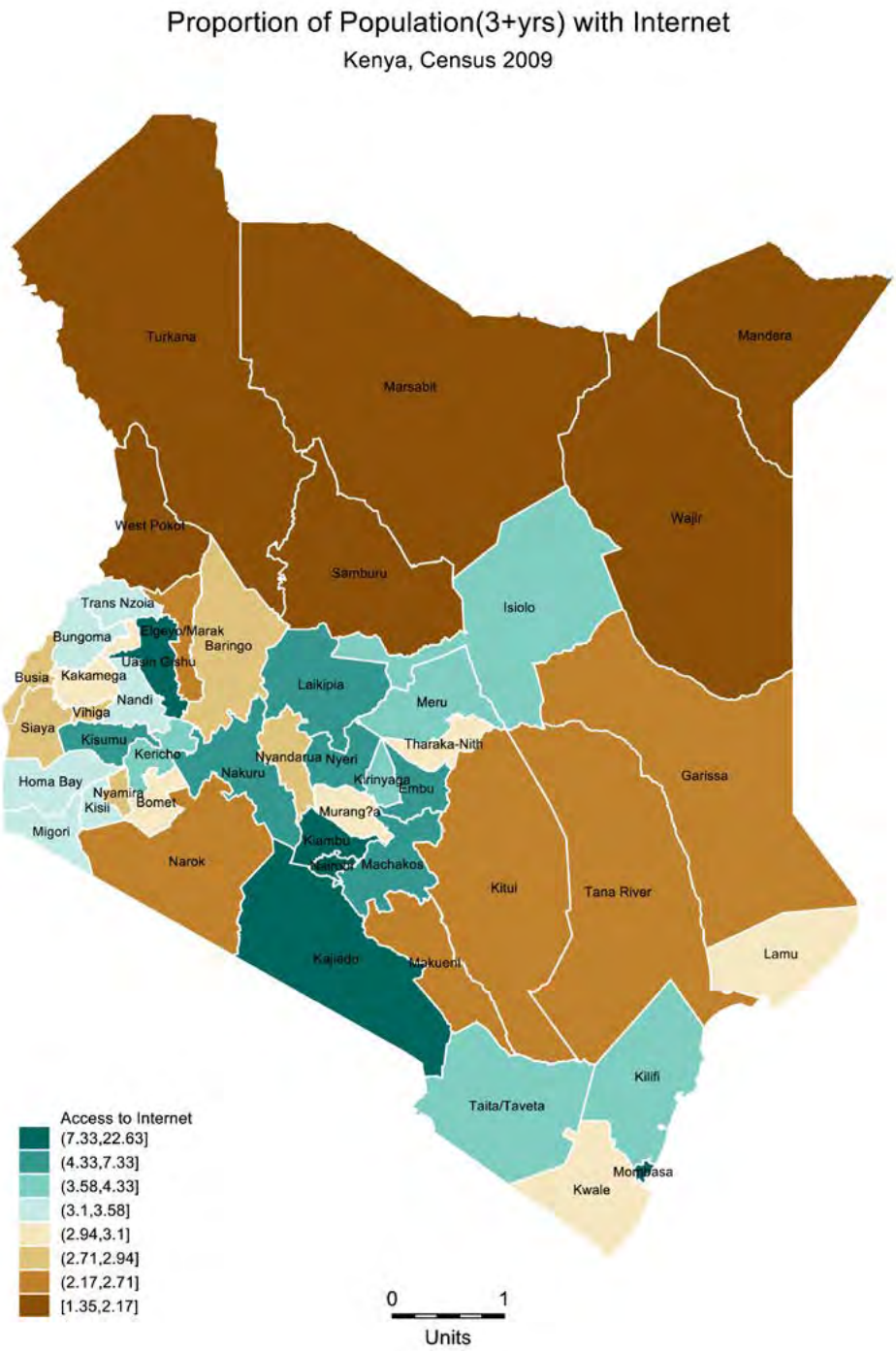
FIGURE 4.45: Proportion of households with access to internet by area of residence



Source: *Own calculations using KIHBS 2015/16 using household weights and 2009 Census data*

Map 4.7 and Table A7 in Annex shows that in 2009 Kisumu, Nairobi, Kiambu, Nakuru and Trans Nzoia counties had the highest internet connectivity at 67.6 percent, 66.1 percent, 42.0 percent, 41.5 percent and 41.0 percent, respectively. The counties with the least number of households with access to internet include Marsabit, Wajir, Garissa, Turkana and Garissa in that order. This implies that internet connectivity is skewed in favour of counties with large urban population.

MAP 4.7: Proportion of households with access to internet by county (2009 Census)



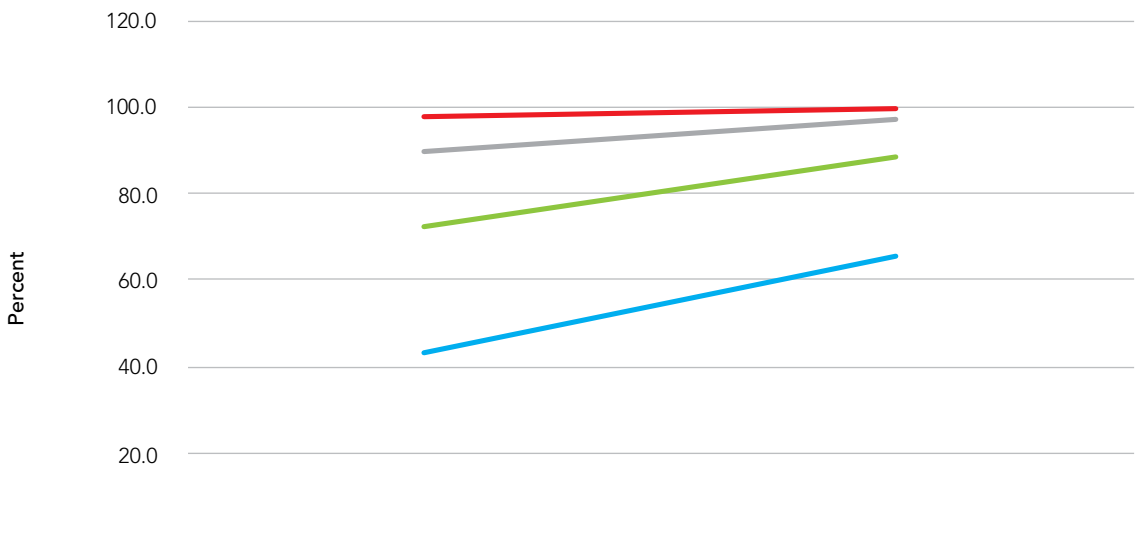
Source: *Calculations using 2009 Census data*

4.7.7 Access to mobile phone

Mobile phones have revolutionized the way of life and doing business for Kenyan households through wide range of services such as money transfer services, mobile banking and online shopping. These services play a key role in empowering households economically. This section seeks to establish the rate of mobile accessibility by area of residence, county, level of education of household heads and poverty levels.

The results in Figure 4.46 indicate that, nationally, 73.1 percent and 88.9 percent of households had at least one member owning a phone in 2009 and 2015/16, respectively. The results also show that in rural areas, 65.9 percent of households had a mobile phone compared to 89.1 percent of households in urban areas, respectively, in 2009. This shows that as access to mobile phones is increasing, the gap in access by households in rural and urban areas is decreasing.

FIGURE 4.46: Proportion of households with one member owning a mobile phone by education level of the household head

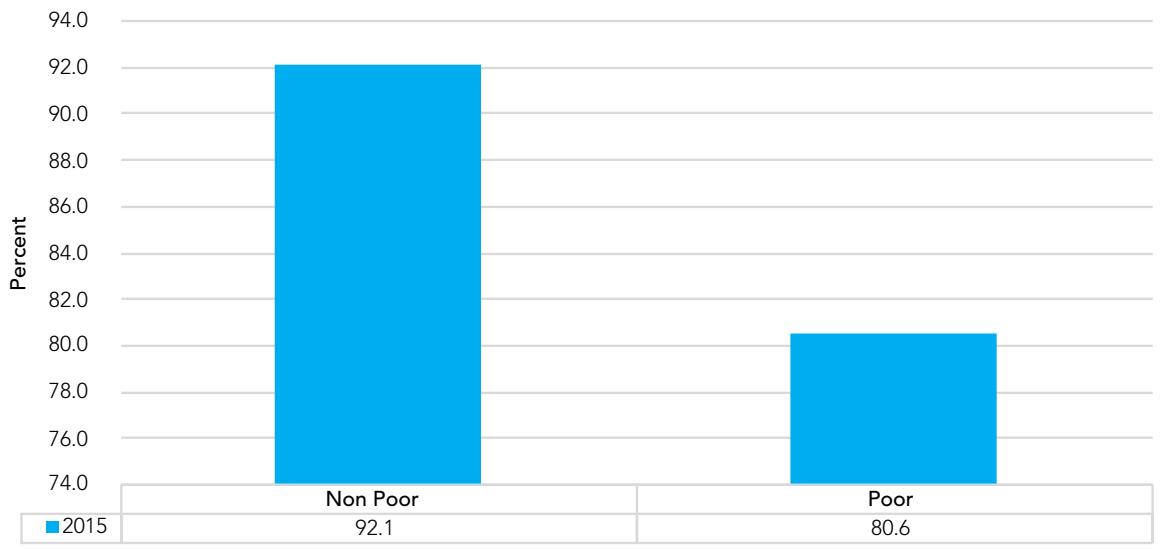


	2009	2015
None	43.6	65.3
Primary	72.3	88.5
Secondary	90.0	96.9
Higher	98.0	99.4

Source: *Own calculations using KIHBS 2015/16 using household weights and 2009 Census data*

Figure 4.47 shows that ownership of a mobile phone is higher among households headed by individuals with higher level of education compared to those headed by individuals with no schooling. However, the gap in ownership has been narrowing. The percentage of households with mobile phone remains almost the same for households headed by a person with higher education while for households headed by individuals with no schooling, the figure increased much faster from 44 percent in 2009 to 65 percent in 2015/16. Thus, there is a sharp increase in mobile phone ownership for households headed by people with no schooling and in households headed by people with primary level education.

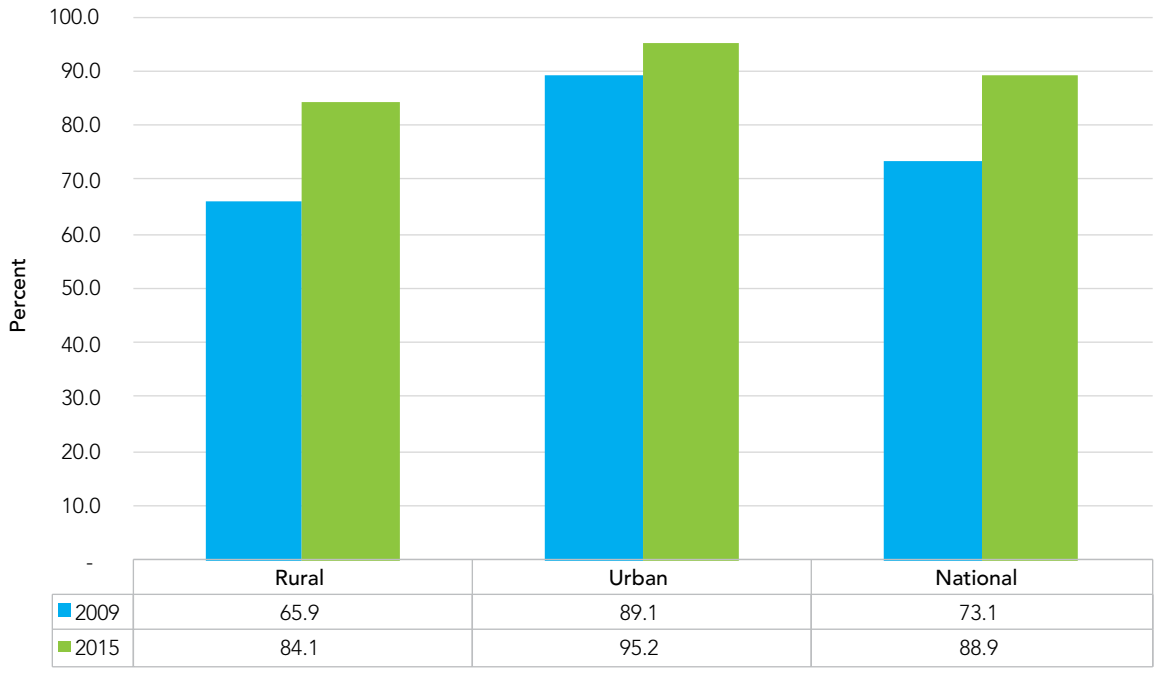
FIGURE 4.47: Proportion of households with one member owning a mobile phone by poverty level of the household



Source: *Own calculations using KIHBS 2015/16 using household weights*

Figure 4.48 shows that 80.6 percent of poor households own a mobile phone compared to 92.1 percent of non-poor households. This implies that the gap in ownership of mobile phones between the poor and the non-poor households is small. This is an indication that a mobile phone is a crucial gadget in every household due to its usefulness for mobile money transfer, mobile banking and online shopping alongside the communication function.

FIGURE 4.48: Proportion of households with one member owning a mobile phone by residence



Source: *Own calculations using KIHBS 2015/16 using household weights and 2009 Census data*

Map 4.8 and Table A8 in the Annex show the proportion of the population aged three (3) years and above that own a mobile phone by county. The results show that Nairobi, Mombasa, Kajiado, Nyeri and Kiambu are the leading counties with at least one member of the family owning a mobile phone as shown by 97.7 percent, 96.6 percent, 95.3 percent, 94.2 percent and 93.8 percent of the population having access to a phone, respectively. Among the counties with the lowest proportion of at least one household member owning a mobile phone are Turkana, Samburu, West Pokot, Mandera and Marsabit. It is important to note that this was the case in 2009, and the picture could be different today.

MAP 4.8: Population with ownership of mobile phone (3+ years) by county

Source: *Calculations using the 2009 Census data*

The map also, shows that Wajir, Garissa, Marsabit, Turkana, West Pokot and Mandera counties shave less than 23.3 percent of the population owning mobile phones, while Nairobi, Mombasa, Kiambu, Nyeri and Kirinyaga counties have at least 62.5 percent of their population owning mobile phones.

In summary, between 1994 and 2015, there was an increase in access to electricity, internet and mobile phones. The increased access to electricity, internet and mobile phones is due to individual households' attributes and government interventions. For instance, increased access to electricity by households can be attributed to the ratification of the Energy Act of 2006, which restructured the country's electricity sector and created the Rural Electrification Authority (REA). REA focuses on rural electrification and mostly covering government institutions such as secondary schools and the neighbouring households.

Access to electricity, internet and mobile phone, however, varies by area of residence (rural/urban), across counties and by poverty status and level of education of the household head. For example, based on the 2009 Kenya Population and Housing Census, rural and urban electrification rates in Busia and Siaya are low compared to other parts of Kenya. The gap in electricity access also varies, with the level of education of household head where households headed by people with higher level of education have more connection to electricity. The analysis further shows that the gap in access to electricity is widening between the poor and non-poor households. On internet, the results indicate that households headed by people with higher levels of education have more access to the internet than households headed by individuals with no primary education. This implies that the higher the level of education, the higher the probability of having internet connectivity, hence increasing inequality in internet access. The 2009 Census and the 2015/16 KIHBS internet access data shows that there is a widening gap between households in rural and urban areas in access to internet, with households in urban areas enjoying more access to internet connectivity than households in rural areas.

On mobile phones, the narrative is the same where at least one member of the household owns a mobile phone, depending on place of residence, poverty levels of the household, level of education of household head and by county. However, between 93 percent and 98 percent of households have at least one member of the household owning a mobile phone, hence enabling mobile money transfer. However, households in urban areas own mobile phones more than households in rural areas.

4.8 Gender Inequality

Inequality is a multidimensional challenge, and one of the crucial dimensions of inequality in Kenya is gender inequality. The Global Gender Gap Report 2017 ranks Kenya 76 out 144 globally with significant inequality between males and females in education attainment, health outcomes, representation in parliament and participation in the labour market (World Economic Forum, 2017b). Moreover, gender-based violence is pervasive, with almost half (45 percent) of women aged 15-49 having experienced either physical or sexual violence at some point in their life (Republic of Kenya, 2014). Women also face several challenges including the ability to participate effectively in decision making and leadership (Inter-Parliamentary Union, 2017). This section focuses on some of the various aspects of gender inequality.

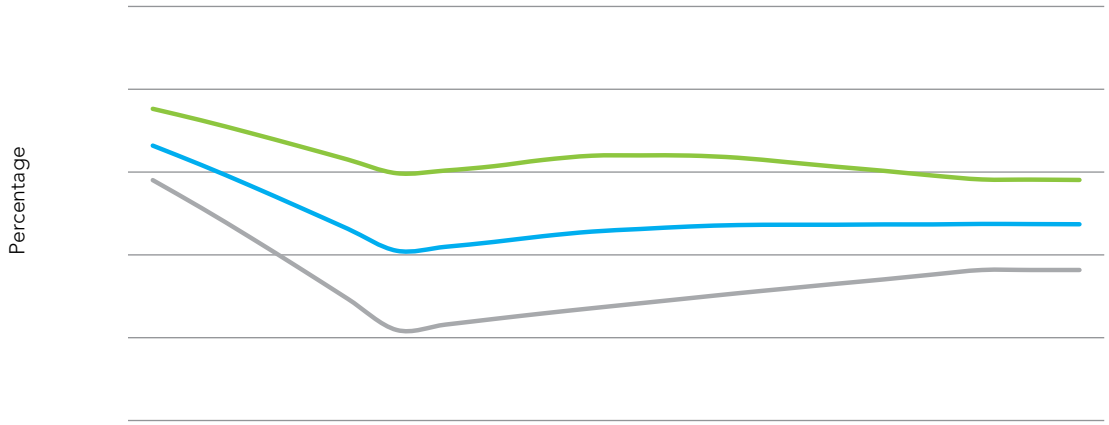
As per the 2019 Population Census, women constitute 50.5 percent of the population while 49.5 percent are men. As discussed in earlier sections, the median expenditure by female-headed households is lower than that of male-headed households over the period 1994-2016. Also, the mean expenditure is higher for male-headed households over the period except for the year 2015/16. However, the higher mean expenditure for female-headed households in 2015/16 may be driven by higher expenditure in a few female-headed households since the mean expenditure is greater than the median expenditure. A closer look at how the labour market; health outcomes; access to wealth and basic services (such as safe drinking water, piped water, waste disposal, access to electricity, access to mobile phones, access to internet, among others) are distributed by gender is key to giving more insights to gender inequality

4.8.1 Gender inequality in labour market and asset ownership

In the labour market, the economic participation and opportunity by gender can be analysed by examining labour force participation rate. Labour force participation is measured by the labour force participation rate, which is a measure of an economy's active workforce. It represents the sum of all workers who are employed or actively seeking employment, divided by the total working-age population.

In Kenya, in terms of the labour market participation by gender, labour force participation has remained steadily in favour of men. As shown in Figure 4.49, between 2000 and 2005, the gap in labour force participation widened, remained almost constant between 2005 and 2015, and has been narrowing since 2015. The male labour force participation rate has been, on average, above the combined labour force participation for both genders. Although the gap in participation rate has narrowed remarkably over the years, it is still in favour of men than women. The male labour force participation rates have generally remained about 70 percent and above, while those for female workers between 60 percent and 70 percent over the period spanning 2000 and 2019.

FIGURE 4.49: Labour force participation rate (%) by gender

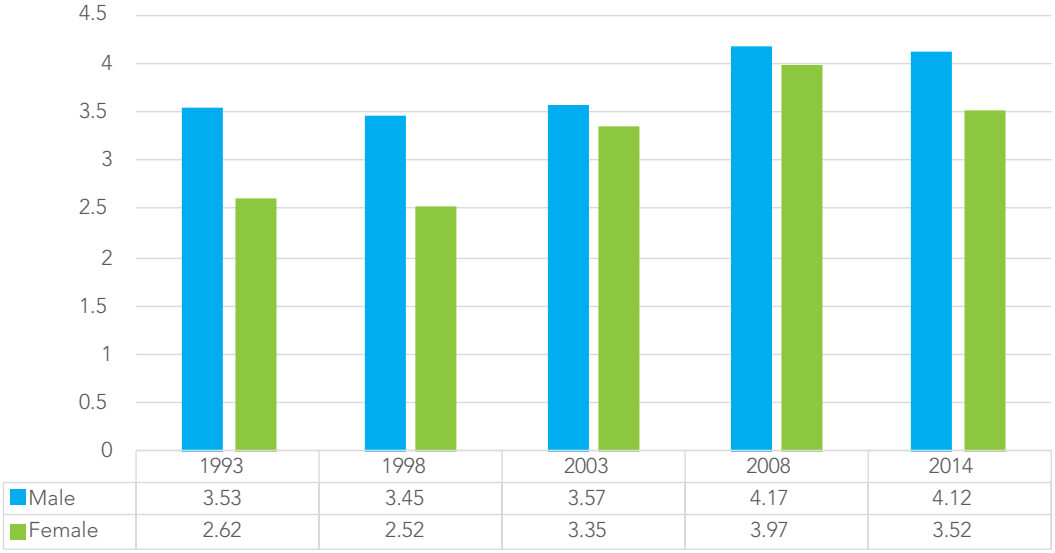


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	71.7	70.5	69.2	67.9	66.6	65.2	65.5	65.8	66.1	66.4	66.6	66.7	66.8	66.8	66.8	66.8	66.8	66.9	66.9	66.8
Male	73.8	73.2	72.4	71.6	70.8	70.0	70.2	70.4	70.8	71.1	71.1	71.1	70.9	70.7	70.4	70.2	69.9	69.6	69.6	69.6
Female	69.5	67.9	66.1	64.3	62.4	60.6	60.9	61.2	61.5	61.9	62.2	62.5	62.8	63.0	63.3	63.6	63.9	64.1	64.1	64.1

Source: *Own calculations based on ILO (2019)*

Figure 4.50 shows real monthly earnings for men and women in 1998-2016. As shown in the figure, real earnings for men have remained higher than for women over the period. For men and women, real monthly earnings increased between 1998/99 and 2005/06 and thereafter steeply declined in the period 2005/06 and 2015/16. Thus, both labour force participation and earnings in the Kenyan labour market seem to be in favour of men rather than women. However, there are differences in raw earnings (Agesa, 1999; Agesa, Agesa & Dabalen, 2009; Agesa, Agesa & Dabalen, 2013). Gender gaps in raw earnings in Kenya can be explained by differences in worker and job characteristics and differences in returns to characteristics. In particular, Agesa, Agesa and Dabalen (2013) empirical results support the hypothesis that the gender wage gap is largely explained by sorting of workers into occupations and industries by skill level and gender. For the 20th and 80th percentiles, gender differences in occupations and industries and post-secondary education widen the gender gap in earnings. In particular, female-dominated occupations (services, farm, fisheries and wildlife) and industries (community and social services, wholesale and retail trade) tend to pay lower wages. This may be because the jobs require fewer skills, have relatively better working conditions, or have relatively weak unions). The results show that male-dominated industries (transportation) and occupations (professional, and administration) tend to pay higher wages. In the middle of the distribution, differences in returns to characteristics drive the gender gap in earnings. Specifically, female workers receive lower returns in various occupations and industries and for post-secondary education.

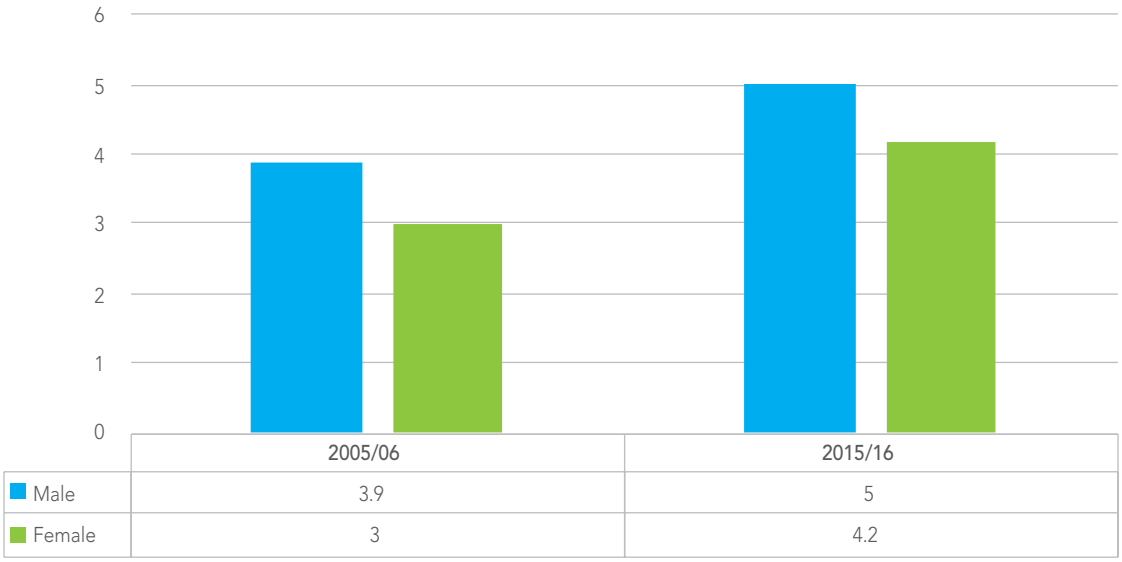
FIGURE 4.50: Real monthly earnings for men and women, 1998-2016



Source: *Own calculations based on Labour Force Survey 1998/99 and KIHBS 2005/06 and 2015/16 using household weights*

Turning to asset ownership, Figure 4.51 shows that average asset index for male-headed households is higher than for female-headed households in 2005/06 and 2015/16. The average asset index for male-headed households was 3.9 and 5.0 in 2005/06 and 2015/16, respectively, while that for female-headed household was 3.0 and 4.2. Furthermore, for both male- and female-headed households, the average asset index score has increased over time during the period. This shows an increasing trend in household ownership of asset overtime, with households headed by men owning more assets than those headed by women.

FIGURE 4.51: Average asset scores by gender of the household head, 2005-2016

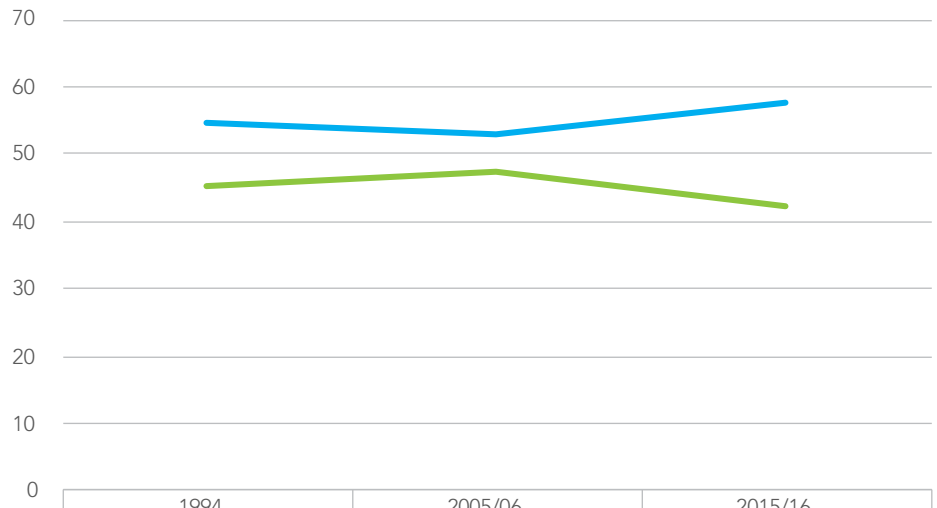


Source: *Own calculations based on KIHBS 2005/06 and 2015/16 using household weights*

4.8.2 Access to education by gender

From earlier analysis above, there seem to be no major differences by gender in enrolment in primary and secondary education. However, in Kenya, there seem to be major gender differences in access to education at Technical and Vocational Education Training (TVET) institutes and at the university level. The 1994, 2005/06 and 2015/16 datasets are used to give light to this issue. Figure 4.52 shows the share of learners in post-primary and vocational training institutes by gender. For the period 1994 and 2015/16, the share of male learners in the institutions was higher than female learners. The gap in the share declined between 1994 and 2005/06, and thereafter started widening. In terms of gender parity, enrolments in these institutions are clearly in favour of male students, depicting gender inequality in access to post-primary vocational training education.

FIGURE 4.52: Share of learners in post-primary vocational institutes, 1994-2016

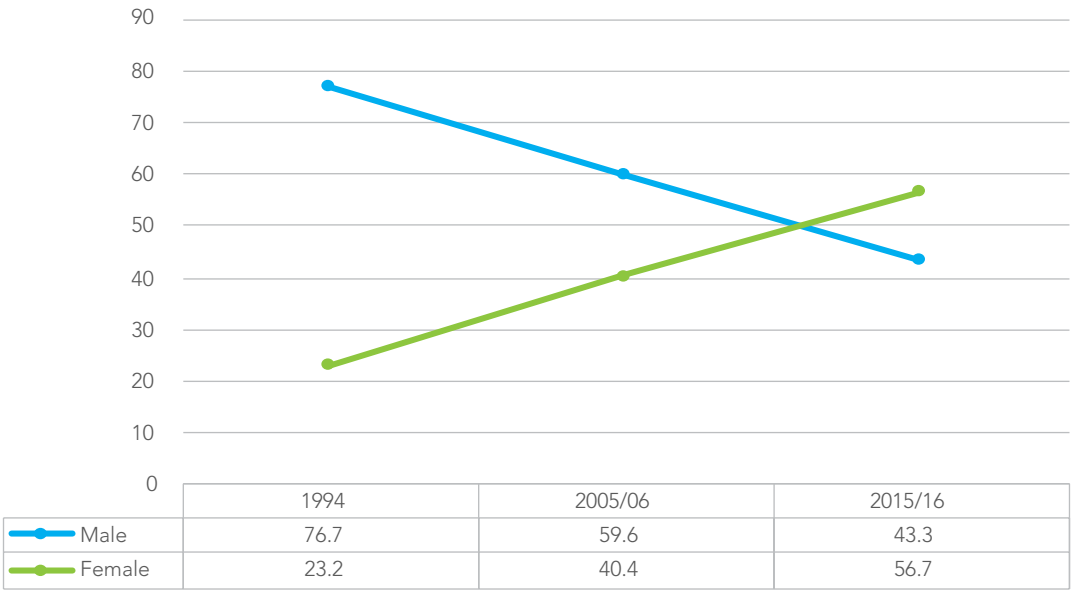


	1994	2005/06	2015/16
Male	54.6	52.8	57.6
Female	45.4	47.2	42.4

Source: *Own calculations using the WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

Figure 4.53 shows the share of learners in middle level colleges from 1994 to 2015/16. The share of men in middle level colleges learners has declined over time from 76.7 percent in 1994 to 43.3 percent in 2015/16 while the share of female learners has increased over time from 23.2 percent in 1994 to 56.7 percent in 2015/16. In fact, in 2015/16, the share of female learners in middle level colleges was 56.7 percent, which was higher than the figure for males which was at 43.3 percent. This could be attributed to a higher number of males joining TVET, leaving only a sizeable number to join middle level colleges.

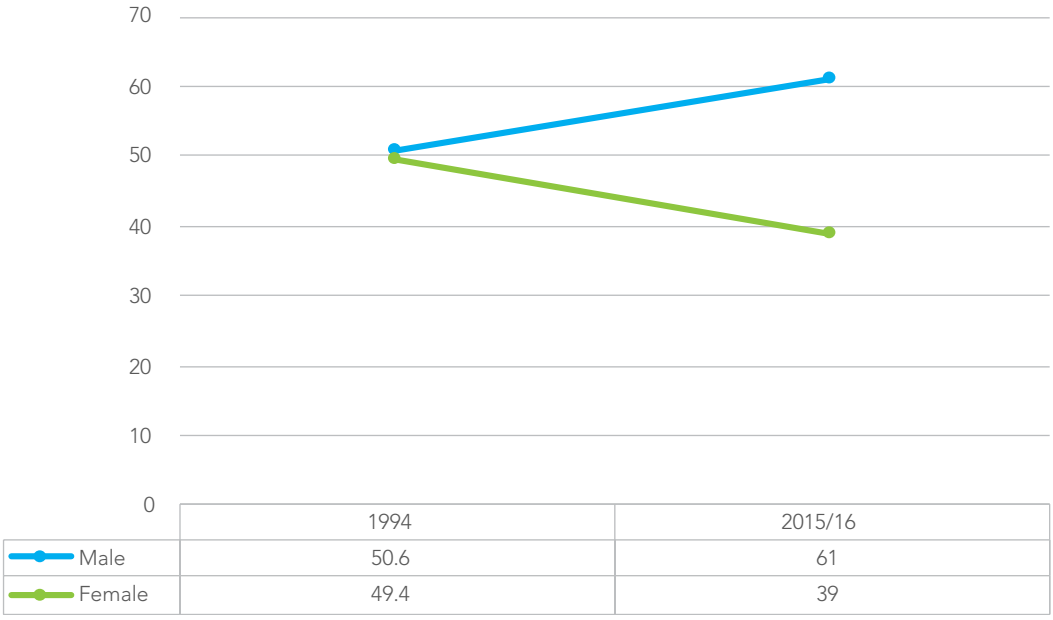
FIGURE 4.53: Share of learners in middle colleges by gender, 1994-2016



Source: *Own calculations using the WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

At university level, Figure 4.54 shows that the gender gap in access to university education is widening with time. The share of male and female learners in university was about 50 percent in 1994 but in 2015/16, the share of men was 61 percent while the share of women was 39 percent. Thus, access to university education increasingly favours men above women, an indication of increasing inequality in access to university education by gender due to the performance in Kenya Certificate of Secondary Education (KCSE), where male learners usually perform better than female learners, on average.

FIGURE 4.54: Share of access to university education by gender



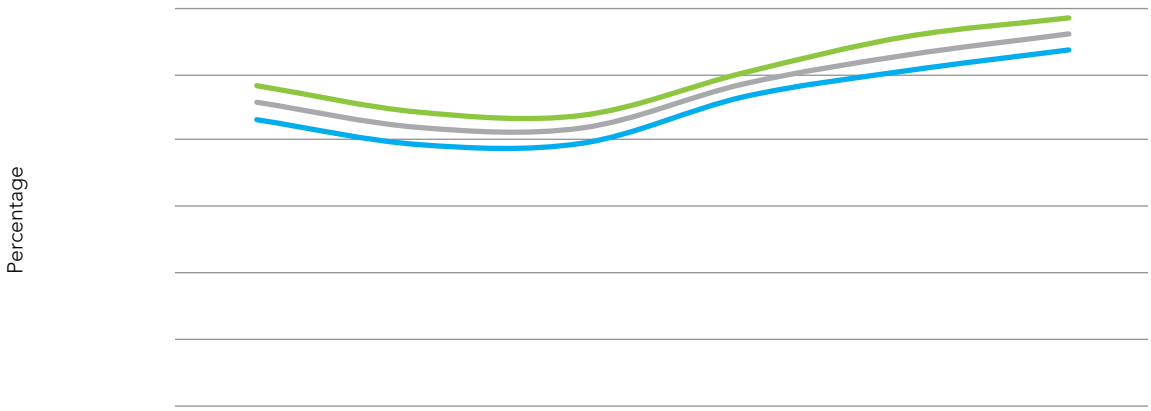
Source: *Own calculations using the WMS 1994 and KIHBS 2005/06 and 2015/16 using household weights*

4.8.3 Gender inequality in access to health

Health outcomes are important social development measures; a healthy nation is a wealthy nation and is associated with a productive labour force and improved development indicators. Health and survival provide an overview of the differences between women's and men's health through the use of one indicator known as life expectancy at birth. The gap between women's and men's healthy life expectancy provides an estimate of the number of years that women and men can expect to live in good health by taking into account the years lost to violence, disease, malnutrition and other relevant factors (UNESCO, 2019).

Figure 4.55 shows that although life expectancy at birth has been improving over the years, it has favored women as opposed to men in Kenya over the period of the study. The combined life expectancy for both men and women has been increasing steadily over the period spanning 2000 to 2019. The life expectancy at birth for women has been constantly above the combined for both genders, indicating that in general women have better health indicators compared to men.

FIGURE 4.55: Life expectancy at birth for male, female and combined in years

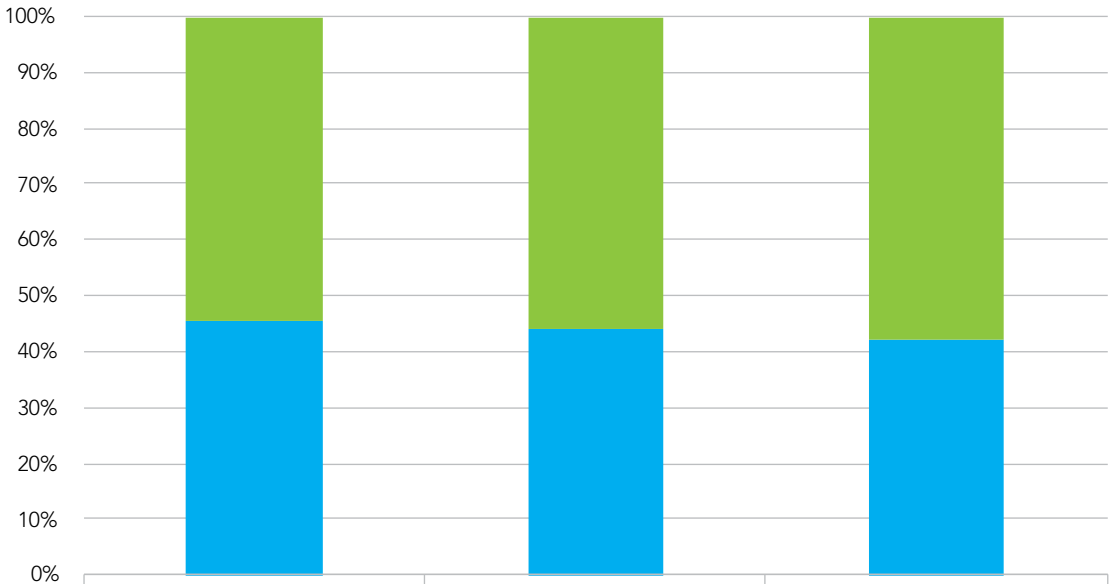


	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2019
Male	53.18	49.38	49.58	56.68	60.64	63.82
Female	58.34	54.37	53.89	60.28	65.7	68.5
National	55.66	51.77	51.69	58.49	62.92	66.18

Source: *Own calculations using the United Nations (2019) data*

Figure 4.56 shows the proportion of population that sought healthcare by gender in the three surveys. Out of the population that sought for healthcare services in 1994, 54 percent and 46 percent were female and male persons, respectively, while in 2005 it was 56 percent and 44 percent, respectively. However, the proportion of women seeking for healthcare services increased to 58 percent while that of men dropped to 42 percent in 2015/16.The figure shows that throughout the period 1994 to 2015/16, women sought more healthcare services than men throughout the period of analysis. This could be attributed to the fact that women seek more care due to their productive role which requires that they visit health provider for antenatal and other maternal services.

FIGURE 4.56: Proportion of individuals that sought for healthcare by gender



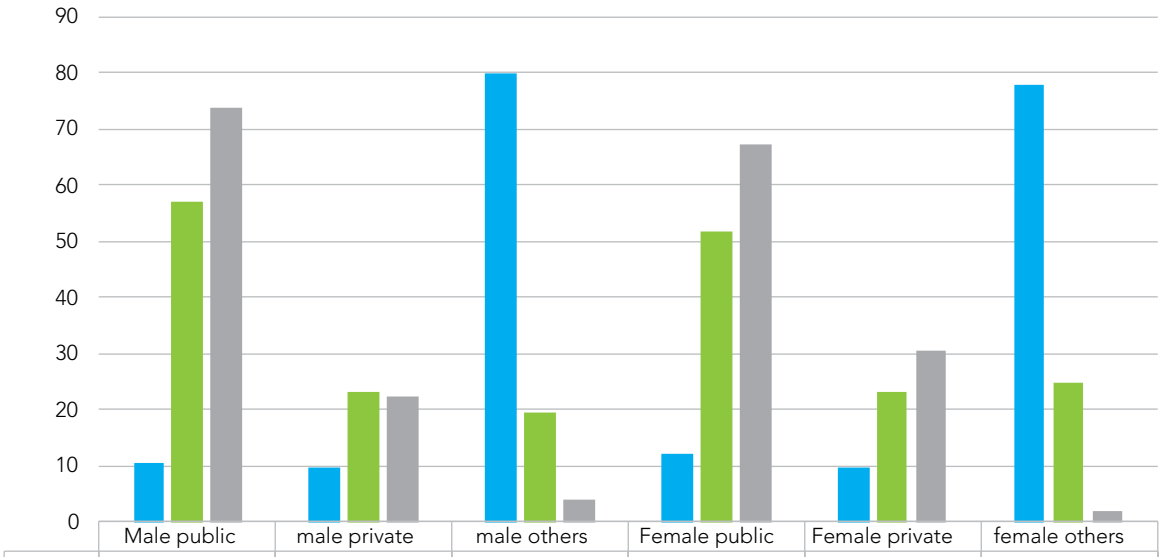
	1994	2005	2015
Female	54	56	58
Male	46	44	42

Source: *Own calculations using the 1994 WMS, and KIHBS 2005, 2015/16 using household weights*

Figure 4.57 presents the percentage of population that sought care by gender of household head and facility type. Facility type was classified as public, private and others. Here, we present a two-dimensional inequality. We have within inequality and between-inequalities. Within-inequality compares men versus men and women versus women while between inequalities compares men versus women. The figure shows that the proportion of individuals from male-headed households who visited public facilities have been more than those who visited private facilities, apart from the year 1994 which was somewhat similar. The proportion of members from male-headed households who visited "others" facilities dropped drastically from 80 percent in 1994 to 4 percent in 2015. The proportion of members from female-headed households that visited public facilities during the three decades was consistently higher than those who visited private facilities. Just like their male-headed household counterparts, the proportion of female-headed households that visited "other" facilities dropped drastically from 78 percent in 1994 to 2 percent in 2015.

Except for the year 1994, male-headed households had a slightly higher proportion of their members visiting public facilities than female-headed households. Female-headed households had a slightly higher proportion of their members visiting private facilities from the year 1994 when both had 10 percent of their members visiting private facilities. Generally, inequality in seeking for healthcare was not very pronounced with respect to household headship by gender.

FIGURE 4.57: Individuals who sought for healthcare by gender of household head and facility type in percentage

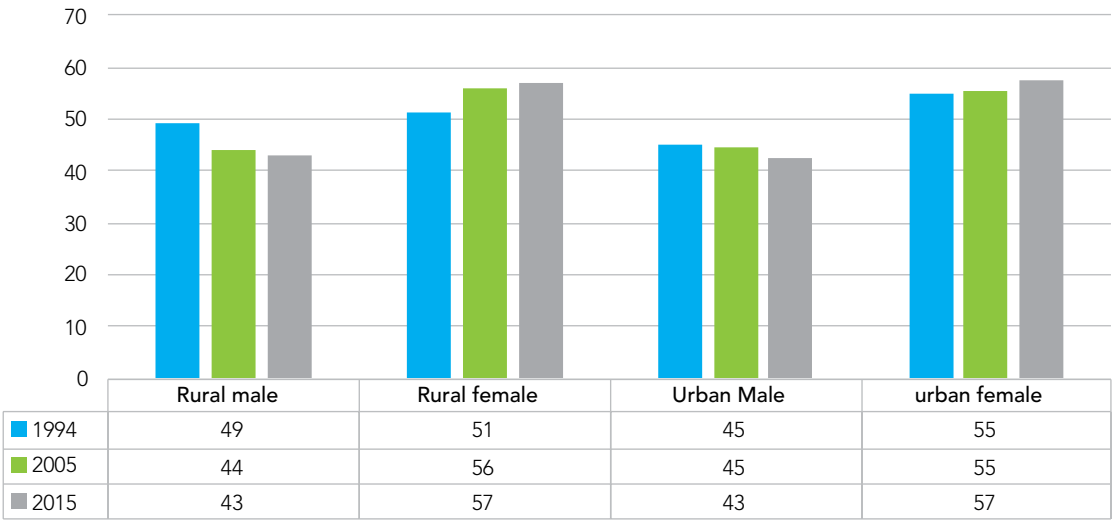


	Male public	male private	male others	Female public	Female private	female others
1994	11	10	80	12	10	78
2005	57	23	20	52	23	25
2015	74	22	4	67	30	2

Source: *Own calculations using the 1994 WMS, and KIHBS 2005, 2015/16 using household weights*

Figure 4.58 shows the proportion of individuals who sought for healthcare by area of residence (rural-urban areas) and gender of the head of household. The proportion of individuals in male-headed households residing in the rural areas who sought for healthcare is less than that for individuals in female-headed households over the period 1994-2016. Similarly, individuals in male-headed households residing in urban areas who sought healthcare were generally lower for individuals in female-headed households. For instance, 45 percent of urban residents who sought care were from male-headed households compared to 55 percent from female-headed households in 1994. In 2015/16, the proportion of urban residents seeking healthcare increased to 57 percent for female-headed households while it decreased to 43 percent for male-headed households. This could also be due to the reluctant attitude of men in seeking treatment unless the illness becomes serious.

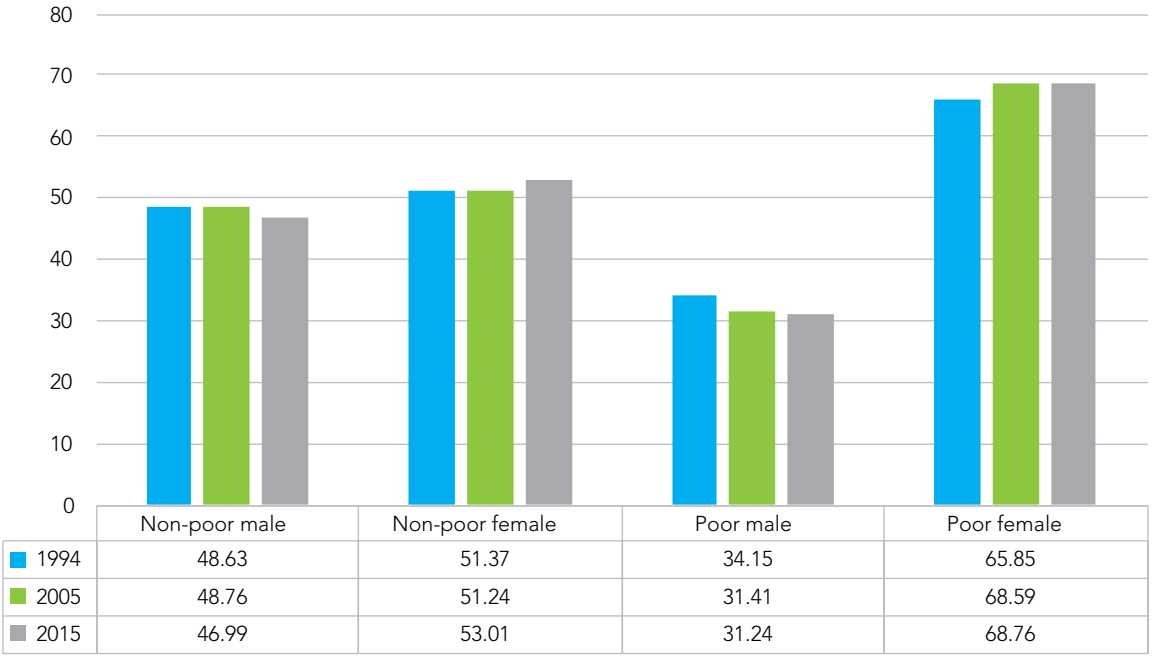
FIGURE 4.58: Proportion of the population who sought for healthcare by residence and gender



Source: Own calculations using the 1994 WMS, and KIHBS 2005, 2015/16 using household weights

Looking at within inequalities, however, the proportion of individuals in male-headed households who sought for healthcare in urban centres was not so different from those of male-headed households in rural areas. A similar trend is seen in individuals in female-headed households in urban and rural areas where there was not much difference between the two groups.

FIGURE 4.59: Percentage of population that sought for healthcare by poverty status and gender of the individual

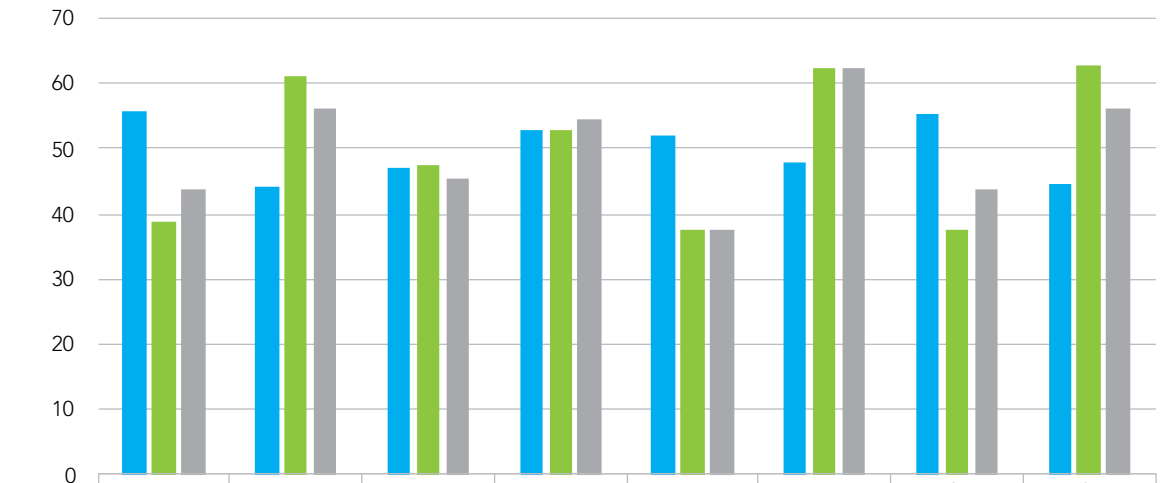


Source: Own calculations using the 1994 WMS, and KIHBS 2005, 2015/16 using household weights

Figure 4.59 shows the proportion of population that sought for healthcare by poverty status and gender of the head of household. A lower proportion of individuals in poor male-headed households use healthcare services than individuals in non-poor male-headed households in the entire period of two decades. The same pattern applies to individuals in non-poor and poor female-headed households as shown by estimates using data from the three surveys. Comparing male-headed and female-headed households, the proportion of individuals in poor female-headed households seeking healthcare is much higher compared to individuals in poor male-headed households, and this applies across the datasets of the three surveys. The proportion of individuals in poor female-headed households seeking healthcare was between 65 percent and 69 percent compared to 31 percent and 34 percent for the poor male-headed households between 1994 and 2016. Inequality between individuals in non-poor female-headed households and non-poor male-headed households was not very pronounced.

Figure 4.60 presents the proportion of population that sought healthcare by gender and level of education. In 1994, the proportion of population with no education indicates that more men than women sought healthcare, with men surpassing women by at least 12 percent points. However, in the following two national surveys, that is 2005/06 and 2015/16, there was reversal of trend whereby a higher proportion of women rather than men with no level of education sought more healthcare. This observation is also notable with the population with secondary and higher level of education. For the population with primary level of education, women dominate men in the proportion that sought healthcare in the three survey periods

FIGURE 4.60: Percentage of population that sought for healthcare by gender and level of education



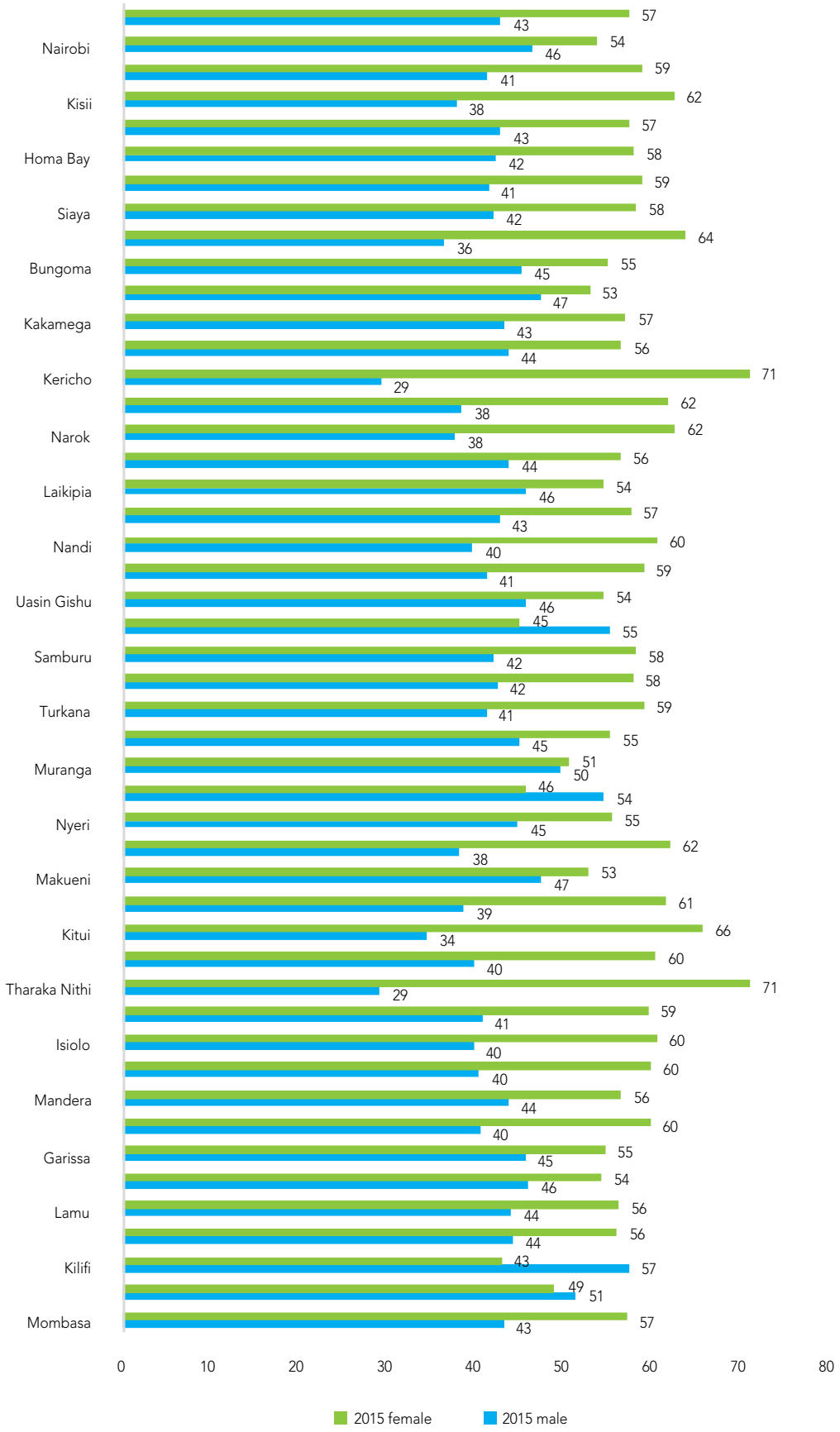
	None male	None female	Primary male	Primary female	secondary male	Secondary female	Higher education male	Higher education female
1994	56	44	47	53	52	48	56	44
2005	39	61	47	53	38	62	37	63
2015	44	56	46	54	38	63	44	56

Source: *Own calculations using the 1994 WMS, and KIHBS 2005, 2015/16 using household weights*

In terms of within-inequalities for both men with different levels of education, there was no noticeable pattern that could be linked or correlated to level of education. The pattern was not consistent in any way as shown in Figure 4.60, hence disqualifying any form of within-inequality. Within-inequality is also highly dispelled in the female level of education. A good support of equality in the proportion is support by the "no education level" and "higher education level". Both proportions mimic each other, indicating lack of support for a consistent pattern of within-inequality that could be driven by level of education.

Figure 4.61 shows the proportion of men and women that sought healthcare by county using the KIHBS 2015/16. Gender inequality in healthcare-seeking behaviour is evident among the 47 counties in Kenya. Generally, more women than men sought healthcare in 2015 as shown by most counties. A few counties appeared to have high inequality in terms of female dominance. These include Tharaka Nithi (71 percent female vs 29 percent male), Kitui (66 percent female vs 34 percent male), Nyandarua (62 percent female vs 38 percent male) and Machakos (61 percent female vs 39 percent male). There were some few counties where the proportion of men was higher than that of women. These counties include Kilifi (57 percent male vs 43 percent female), Kwale (51 percent male vs 49 percent female),Trans Nzoia (55 percent male vs 45 percent female), and Kirinyaga (54 percent male vs 46 percent female).

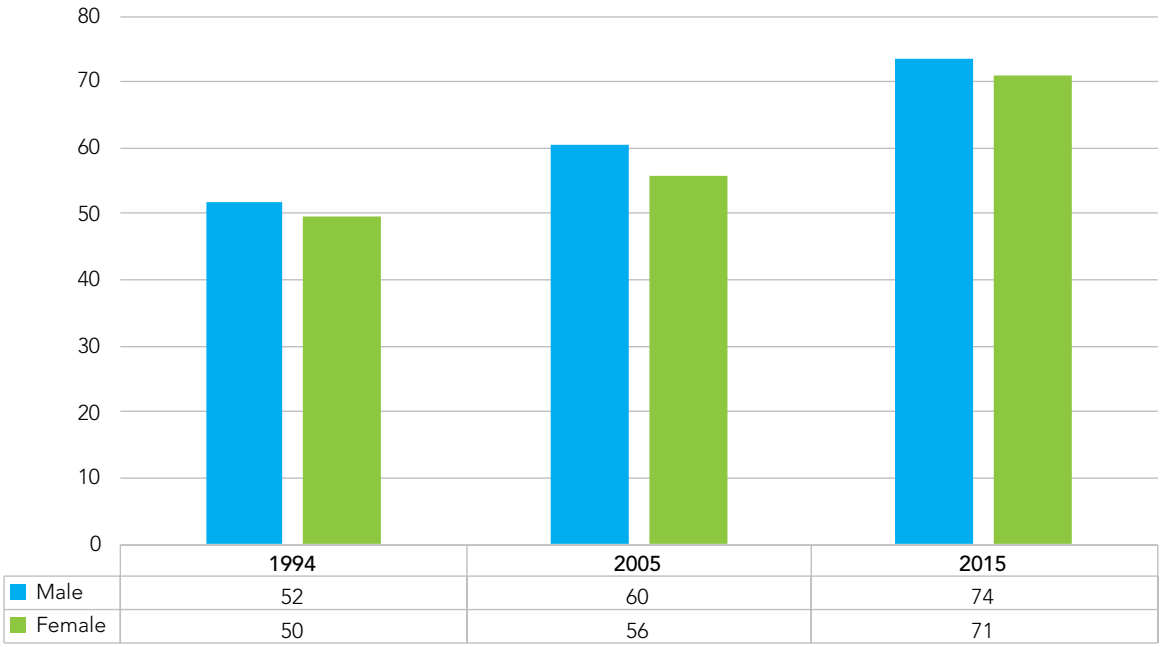
FIGURE 4.61: Proportion of population seeking healthcare by gender and county using KIHBS 2015/16



Source: *Own calculations using KIHBS 2015/16 data using household weights*

Figure 4.62 shows the percentage of households who access safe drinking water by gender of the household head. There was an increase in access to safe drinking water for both genders in the three decades of the surveys. The inequality between the two genders is quite small, though consistent in terms of male-headed households reporting a slightly higher percentage than the female-headed households. While access by the male-headed households increased by 22 percent, access by the female-headed households increased by 21 percent over the three decades.

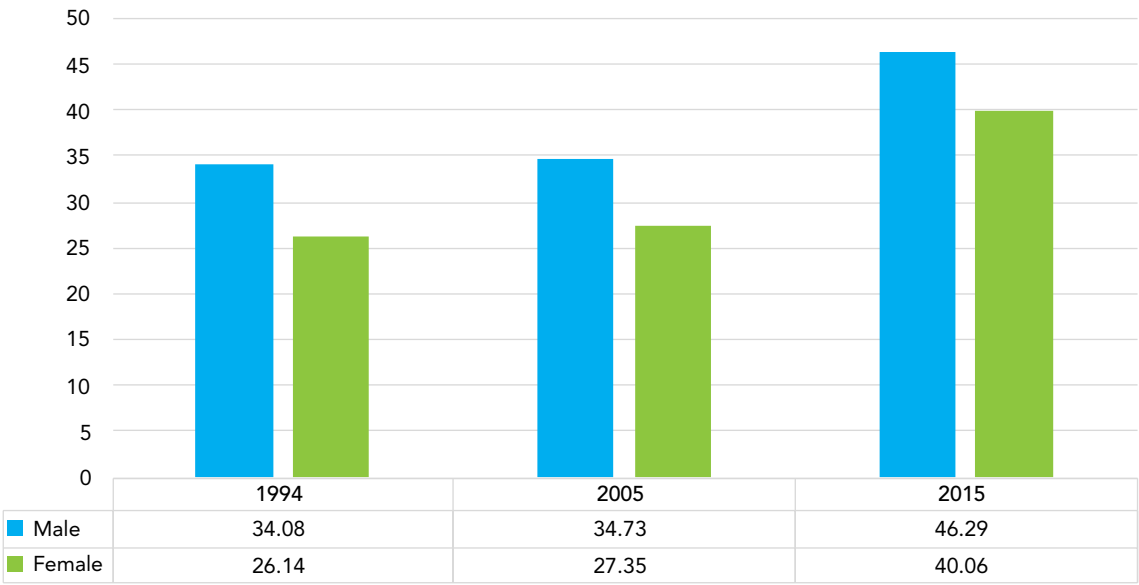
FIGURE 4.62: Percentage of households with access to safe drinking water by gender of the head of household



Source: *Own calculations using the WMS 1994 and KIHBS 2005, 2015/16 using household weights*

Figure 4.63 shows the percentage of households with access to piped water by gender of household head. The percentage of the households connected to piped water in their dwelling is below 50 percent for both male- and female-headed households for all the three survey periods. Male-headed households enjoy slightly higher piped water connectivity at place of dwelling than their female-headed counterparts, reflecting gender-based inequality. In 1994, male-headed households had about 34 percent connectivity compared to about 26 percent for female-headed households. The connectivity increased to about 46 percent in 2015 for male-headed households compared to about 40 percent for female-headed households.

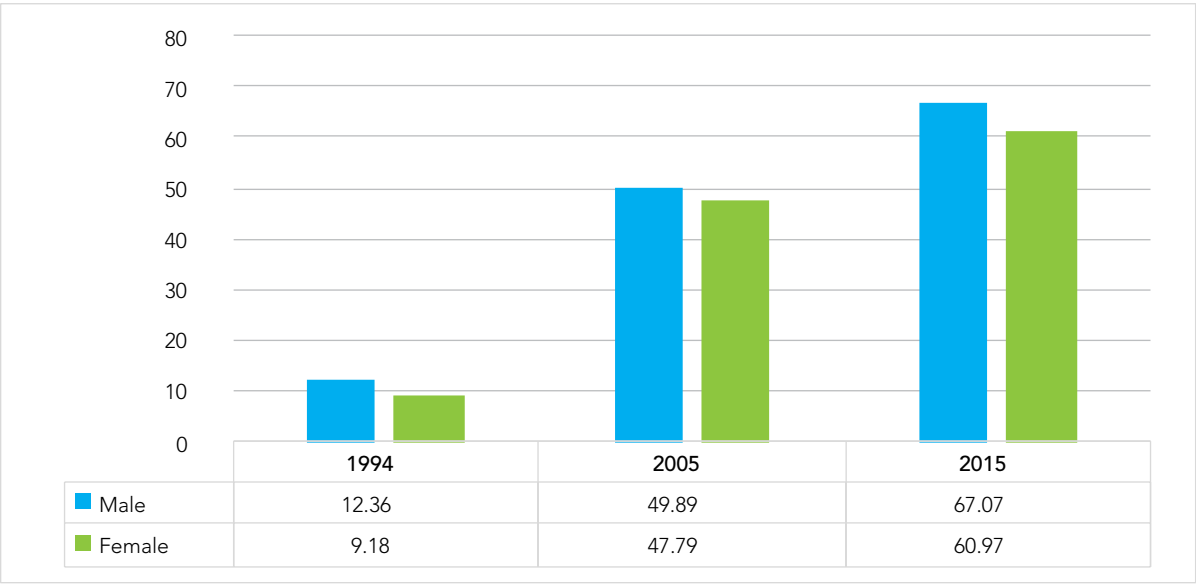
FIGURE 4.63: Percentage of households with access to piped water by gender of the household head



Source: *Own calculations using the WMS 1994, and KIHBS 2005, 2015/16 using household weights*

Figure 4.64 shows the percentage of households with access to safe waste disposal by gender of the household head. A higher proportion of male-headed households reported a higher access to safe waste disposal compared to female-headed households. Generally, the access to waste disposal in 1994 was low for both groups, at 12 percent and 9 percent for male- and female-headed households, respectively. Though access increased to above 60 percent for both groups in 2015, there was still a notable level of inequality between the two groups.

FIGURE 4.64: Percentage of households with access to waste disposal by gender of household head

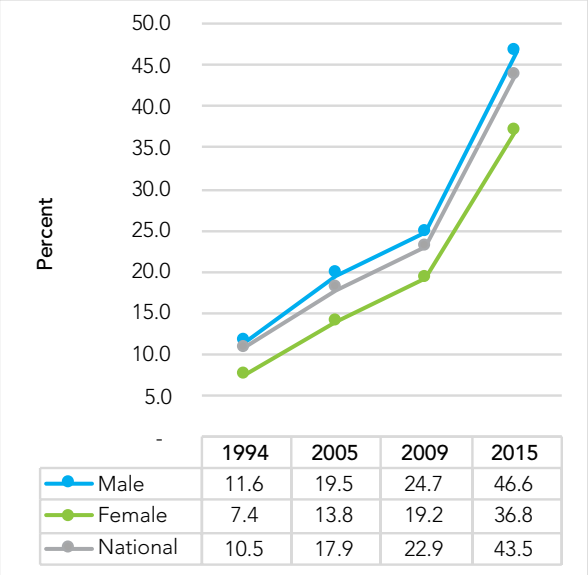


Source: *Own calculations using the 1994 WMS, and KIHBS 2005, 2015/16 using household weights*

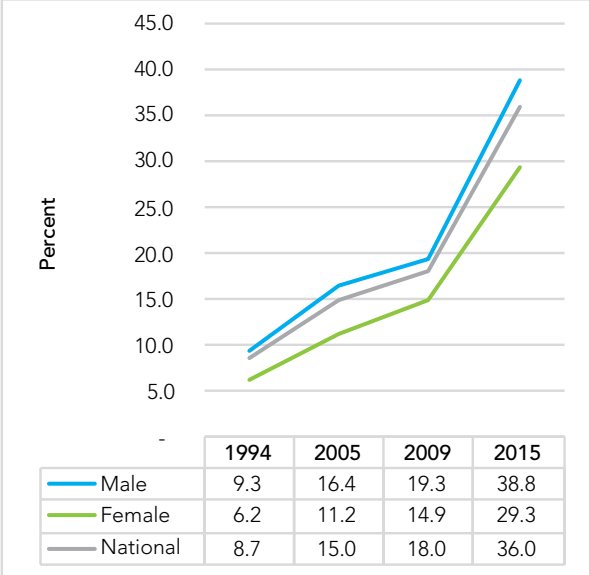
Figure 4.65a shows that households headed by men have slightly higher access to electricity compared to the ones headed by women. This could be attributed to the cost of electricity and household's income inequalities where households headed by women have lower incomes compared to households headed by men. This difference in access increased over the years from 4.2 percent, 5.7 percent and 9.8 percent in 1994, 2005 and 2015, respectively. The results also show that even though the differences in access to electricity between households headed by men and women increased over time, access to electricity nationally increased sharply from 17.9 percent in 2005 to 43.5 percent in 2015. Figure 4.65b indicates a similar trend where individuals in male-headed households had more access to electricity compared to female-headed households in Kenya. For instance, in 1994, only 6.2 percent of the population in female-headed households had access to electricity compared to 9.3 percent in male-headed households. In 2015, 29.3 percent of female-headed households had access to electricity against 38.8 percent of male-headed households

FIGURE 4.65: Proportion of households and population with access to electricity by gender of the household head

(a) Proportion of household with access to electricity by gender of household head. 1994-2015



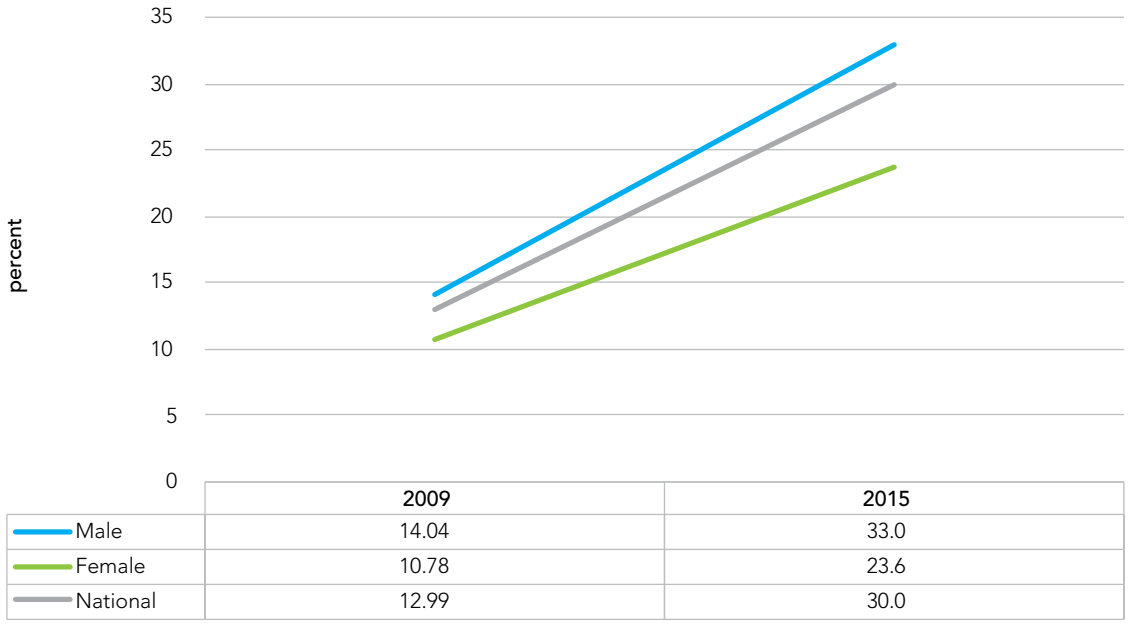
(b) Proportion of population with access to electricity by gender of household head. 1994-2015



Source: *Own calculations using the WMS 1994, KIHBS 2005/06 and 2015/16 using household weights and 2009 Census data*

Figure 4.66 presents the proportion of households with access to internet by ge of household head. The results indicate that there was a narrow gap of 3.26 percent in access to internet in 2009 but this increased to 9.4 percent in 2015. This implies that even though access to the internet is increasing, the gap in access to the internet between households headed by men and those headed by women increased over time.

FIGURE 4.66: Proportion of households with access to internet by gender of household head



Source: *Own calculations using the WMS 1994, KIHBS 2005/06 and 2015/16 using household weights and 2009 Census data*

Figure 4.67 shows that the gap between households with at least one member owning a mobile phone for households headed by men and women was 8.2 percent in 2009. In 2015, the gap narrowly increased to 8.8 percent. This implies that unlike access to other services such as electricity and internet, the gap between households headed by men and women have a narrow gap in terms of mobile phone ownership.

FIGURE 4.67: Proportion of households with one member owning a mobile phone by gender of the household head

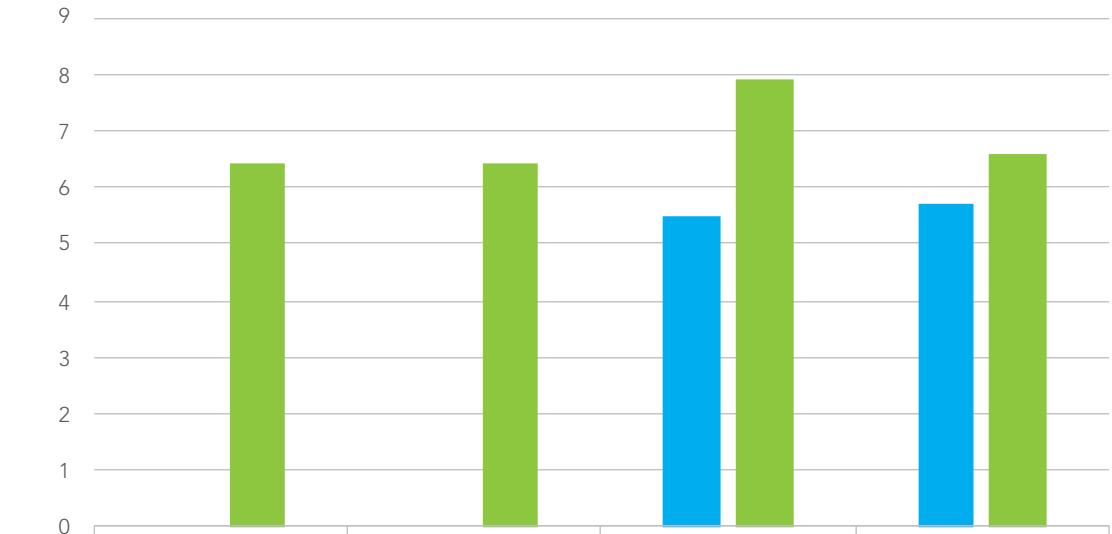
Source: *Own calculations using the WMS 1994, KIHBS 2005/06 and 2015/16 using household weights and 2009 Census data*

4.8.4 Gender inequality in political empowerment/participation

The gap between men and women at the highest level of political decision-making through the ratio of women to men in appointive positions and parliamentary positions is an indicator of political empowerment/participation. In 2017 general elections, out of the 14 501 candidates, only 1 259 (8.7 percent) were women. Out of the 1 862 persons elected, only 172 (9 percent) were women – among them 3 (6.4 percent) governors, 3 (6.4 percent), senators, 23 (7.9 percent) single constituency members of National Assembly/Parliament (MNAS) and 96 (6.6 percent) members of the County Assemblies (MCAs). The ratios are far below the minimum one-third of any gender required by the 2010 constitution (USAID Kenya, 2019).

As indicated in Figure 4.68, the success rate of women in 2017 increased compared to 2013, with around 13 percent of candidates winning office (excluding the women member of National Assembly position). With the net increase in the number of women competing, the 13 percent success rate still translated to even more women gaining offices. Compared to 2013, the number of women elected to office increased by 18.6 percent.

FIGURE 4.68: Percentage of women Members of National Assembly

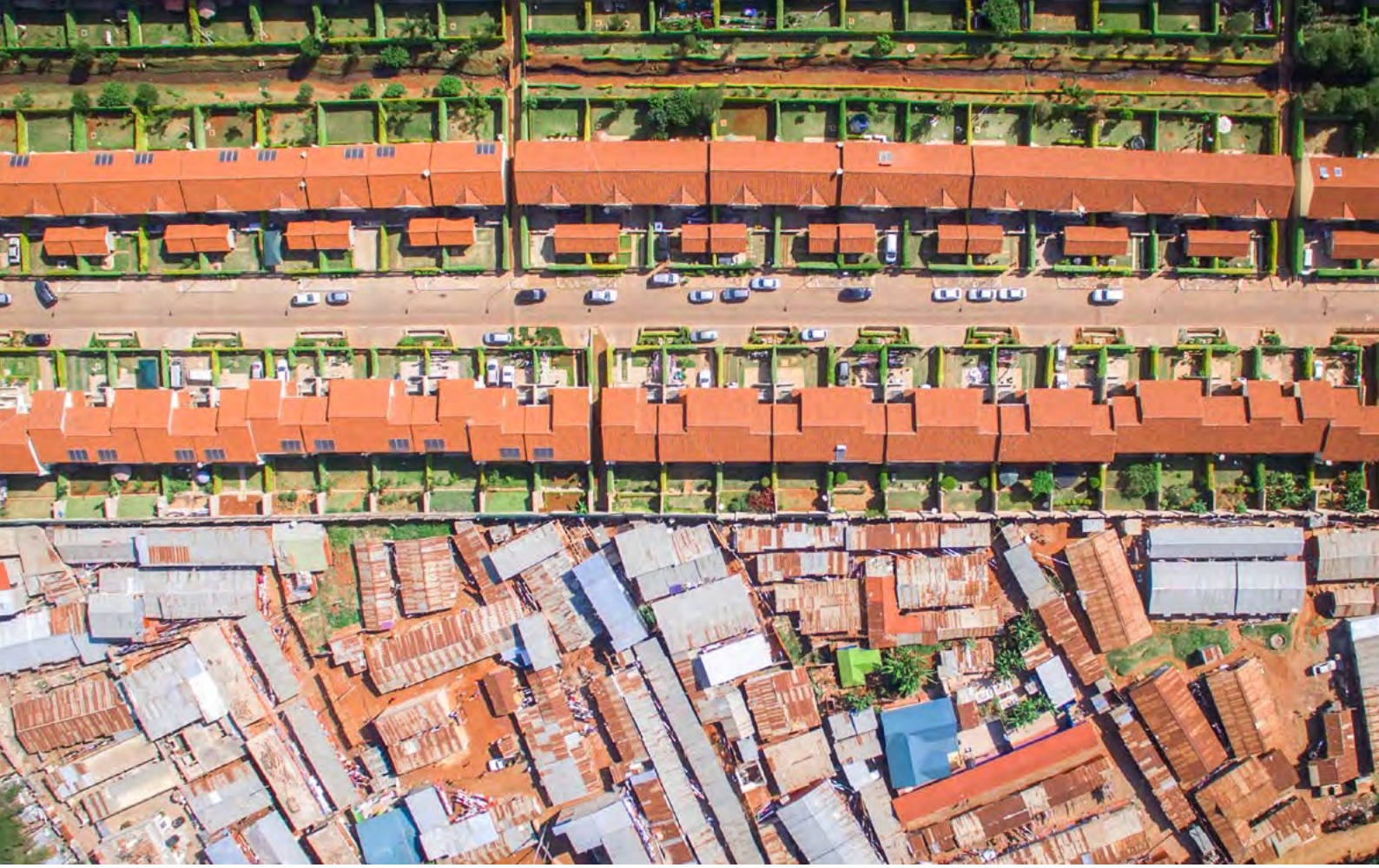


	Governor	Senator	MNAs	MCAs
2013	0	0	5.5	5.7
2017	6.4	6.4	7.9	6.6

Source: *Own calculations based on the data from Inter-Parliamentary Committees*

In summary, inequality between men and women is widespread in Kenya. Inequality in per capita expenditure is high among households headed by women than men. For instance, in labour markets, male participation rates are higher for men than for women. Also, men receive higher earnings, have lower unemployment rates, and own more assets than women. Although access to education for men and women is almost at par in the basic education sector, there exists higher inequality in access to college and university education with women lagging behind. In terms of health comparisons, life expectancy for women is generally higher than that for men and the proportion of women who seek healthcare services is higher than that for men.

Furthermore, households headed by men have relatively higher access to safe drinking water, piped water and improved sanitation compared to households headed by women. Similarly, households headed by men have higher access to electricity, internet and household members owning a phone compared to those headed by women. The gap between male- and female-headed households in terms of access to electricity and internet is widening, although access to electricity and internet is increasing for both households over time. Representation of women in various legislative bodies is still very low, below 10 percent, although the figure is slightly increasing. Gender inequality has therefore remained one of the major obstacles to sustainable human development in Kenya.



5. SUMMARY OF FINDINGS AND WAY FORWARD

This section begins by providing summaries and conclusions highlighting the main findings followed by a brief discussion of the policies that can be implemented to reduce inequalities in Kenya. Thereafter, the section briefly discusses the way forward, and provides discussion on the need to continue analysis of inequality in Kenya to support reporting and monitoring of the SDG on inequality and provide the evidence base to support inclusive growth strategies in Kenya. It concludes by discussing what needs to be done to improve the availability and quality of datasets to be used in future analysis of inequality.

5.1 Summary of Findings

This report has used five national representative datasets released by the Kenya National Bureau of Statistics (KNBS) to profile trends in inequality in Kenya. These are discussed in detail in section 3. By focusing on inequality trends and diagnostics of the many inequalities that exist in Kenya, this report contributes towards measuring and reporting on inequality in line with the SDG (SDG 10) for addressing inequalities. It is hoped that this report will serve as a cornerstone for inequality measurement and reporting in Kenya and eventually monitoring of the achievement of SDG 10 by 2030. Below is a summary and conclusion of the findings of the report.

5.1.1 Economic inequality

This report has used real per capita consumption expenditure to measure economic inequality in Kenya. The three main datasets used in this analysis are the 1994 WMS II, 2005/06 KIHBS and 2015/16 KIHBS. The three datasets are augmented where necessary with two other datasets as discussed in section 3, and with information from previous reports/studies. Several measures of inequality including the Gini coefficient, Generalised Entropy measures, the Atkinson class of measures and the Palma ratio are used to estimate inequality indices. The analysis is done at the national level, by region and social economic characteristics, mainly education level, gender and poverty status.

Nationally, the mean and median annual real per capita consumption expenditure declined between 1994 and 2016. Over the period, the mean real annual per capita consumption expenditure was higher than the median real annual per capita consumption expenditure, indicating skewed distribution among households. The mean and median annual real per capita consumption expenditure varies across various groups and regions. Male-headed households have higher mean and median real per capita consumption expenditure than individuals in female-headed households. Regarding the education level of head of household, individuals in households whose head had higher education had the highest annual mean and median real per capita consumption expenditure, followed by those living in households whose head had secondary and primary education. In terms of regions, urban dwellers had higher annual mean and median real per capita consumption expenditure than the rural dwellers as expected. Further, the annual real per capita consumption expenditure was higher than the median annual real per capita consumption expenditure for both rural and urban areas and declined over time. Generally, expenditure inequality declined at the national and regional level and across groups.

The expenditure shares between groups are disproportionate relative to their population shares. About 66 percent of the individuals living in male-headed households accounted for almost three quarters of the total expenditure share in the country in 2015/16 while roughly 34 percent of individuals living in female-headed households accounted for 26 percent of the total expenditure share in the same period. When it comes to education level, the expenditure share of individuals in households where the head has no formal education and primary education was significantly smaller than their large population share while the expenditure share of individuals in households where the head has secondary and higher education is disproportionately higher than their population share. Similarly, 40 percent of urban dwellers controlled for 61 percent of the total expenditure shares in 2015/16, while 61 percent of the rural dwellers accounted for 39 percent of the total expenditures.

Kenya experienced a decline in inequality between 2005/06 and 2015/16. All the inequality measures that is the Gini coefficient, generalised entropy, Atkinson class of inequality and Palma ratio estimates show that inequality declined in the period 2005/06 and 2015/16. The same decline was witnessed in both rural and urban areas with the decline being higher for urban areas than rural areas - leading to substantial narrowing down of the gap in rural-urban inequality. However, over the period, inequality remained higher in urban areas compared to rural areas. As per the Palma

ratio, the decline was as a result of an increase in the share of expenditure going to the middle 50 percent and the lower 40 percent of the population, resulting in a decline in the share of expenditure going to the top 10 percent. For instance, the share of expenditure going to the middle 50 percent increased from 35.2 percent in 1994 to 53.7 percent in 2015/16 while that of the lower 40 percent increased slightly from 13.5 percent in 1994 to 16.0 percent in 2015/16. At county level, inequality declined in most of the counties except in a few counties which experienced increase in inequality over the same period (2005/06 to 2015/2016). There are also substantial variations in inequality across counties, with the Gini coefficient ranging from 0.272 to 0.559 across the 47 counties in Kenya in 2015/16.

Inequality in both male-headed and female-headed households increased slightly between 1994 and 2005/06 before declining between 2005/06 and 2015/16. The decline in inequality in male-headed households between 2005/06 and 2015/16 was much higher than that for female-headed households over the same period, leading to lower inequality in male-headed households compared to that of female-headed households in 2015/2016. Similarly, all the measures show that inequality in all households regardless of the education level of the head declined between 2005/06 and 2015/16. Generally, inequality was higher for individuals in households where the head had higher education. Furthermore, inequality is higher among the non-poor than the poor and both the poor and non-poor experienced a decline in inequality in the period 2005/06 and 2015/16.

The decomposition of per capita consumption expenditure using Theil's indices shows that the within-group inequality accounts for almost all the inequality relative to between-group inequality. During the period, individuals living in male-headed households contributed more to the within-group inequality than those living in female-headed households. Thus, the contribution to inequality is proportional to their population share which is manifested in the dominance of male-headed households in the sample and thereby the large population share of assets for individuals in those households. Also, the within education level contribution to overall inequality declined from 0.820 in 1994 to 0.661 in 2015/16, and the main contributors to within-inequality are individuals living in households headed by individuals with primary education, followed by those living in households headed by heads with secondary education. The within-region inequality accounts for most of the overall inequality, with those residing in the rural areas contributing more in 1994 and 2015/16. The within-region inequality accounts for most of the overall inequality, with those residing in the rural areas contributing more to the within region inequality in 1994 and 2015/16.

The findings on inequality analysis have shown that inequality has generally declined over time at the national level, rural and urban areas, and across social characteristics during the period 2005/06 to 2015/16. Whereas we know the groups that contributed most to the overall inequality, the decline in inequality during the period can be attributed to the increase in the share of expenditure going to the middle 50 percent and lower 40 percent, and the fall in the share of expenditure going to the top 10 percent.

5.1.2 Asset inequality

Analysis based on 17 selected assets shows that, on average in Kenya, most households owned 6 to 7 assets out of the 17 assets while 2 percent did not own any of the 17 assets. Overall, between 2005/06 and 2015/16, household ownership of assets improved slightly, suggesting an overall increase in the number of assets owned by households.

The set of the 17 selected assets and services was used to calculate asset index based on the Uncentred Principal Component Analysis (UC PCA) method and KIHBS data for 2005/06 and 2015/16. The estimated asset Gini coefficient of 0.54 in 2005/06 and 0.55 in 2015/16 was higher than the monetary inequality measured using Gini coefficient for per capita consumption expenditure in the two years. Similarly, asset inequality for households headed by men and women is about the same as shown by the Gini coefficient. The same also applies to inequality in asset index, which is not so different in the rural and urban areas.

Whereas the asset Gini coefficient provides the scale of inequality within groups, the average asset indices score shows the inequality between groups in terms of availability of resources that are specific to the group compared to another group. The average score for asset indices for individuals in male-headed households remained higher than those for individuals in female-headed households over the period 2005/06 to 2015/16, an indication that economic well-being for individuals in male-headed households is better compared to that for individuals in female-headed households. The average asset indices are also higher for urban dwellers than for rural areas throughout the period. This is a clear indication that economic well-being for individuals in urban areas is better compared to that for individuals in rural areas.

The 17 selected assets do not include land. Yet, land is a key asset and access to it can be an important driver for inequality in Kenya. The analysis reveals high inequalities in land distribution in Kenya. It shows that the levels of land inequality are high and indeed much higher than the measured inequality using real per capita consumption expenditure and asset index. Land inequality also seems to have worsened over time between 1997 and 2005/06 in most parts of the country over time, and at a rate of change that suggests that land inequality is rapidly becoming more serious over time. Although we do not have access to recent data to measure recent inequality in land ownership, there is no reason to believe that land inequality has improved between 2005/06 and 2015/16. Based on this analysis, inequality in land may be contributing more to overall inequality, and there is need for more effort to reduce land inequality and thus reduce overall inequality in Kenya.

Asset ownership is thus critical if households are to live a healthy and productive life in Kenya as in other countries. The financial value of all assets owned by an individual or household is a measure of the individual's or household's wealth. This report does not report on wealth inequality due to the difficulty of determining the value of the assets owned by households using the available data, yet this may give useful insights on inequality in Kenya.

5.1.3 Labour market inequality

This report shows large inequalities in the Kenyan labour market. First, formal employment growth has consistently been lower than informal employment growth, with the structure of employment in Kenya changing over time away from formal wage work towards informal employment. The share of informal sector employment rose from 73.0 percent in 2001 to 83.2 percent in 2017. With earnings being low in the informal sector and employment in the sector being unstable, incomes may continue to decline and job quality in Kenya may have declined over time, posing the challenge of creating more decent jobs. Another important observation is that family agriculture is the major source of employment for women, and the share of self-employed has also increased. Furthermore, unemployment has declined over time from 14.6 percent of the labour force in 1998 to 7.4 percent in 2016, and unemployment mainly affects the youth and women. Furthermore, variations in gender gap exist across some occupations and industries especially in manual occupation and transportation industry.

On average, real earnings have declined over time in the Kenyan labour market. The share of earnings going to the richest 10 percent increased from 36 percent of total real earnings in 1998/99 to 58 percent in 2005/06 before falling to 46 percent in 2015/16. The poorest 10 percent of the population received less than 1 percent of the total real earnings over the period. Also, over the period 1998 to 2016, men received higher earnings than women.

Earnings inequality increased between 1998/99 and 2005/06 and then reduced between 2005/06 and 2015/16. This means that the distribution of earnings became more unequal over the period 1998 and 2005/06 before improving again. In terms of gender, despite female labour market earnings being lower than the male earnings, inequality in earnings is higher among women than men, perhaps reflecting the fact that women are concentrated in a few low paying occupations with only a few in higher paying occupations. The earnings inequality is higher than the inequality in real per capita consumption expenditure, and this could be an indication that the labour market could be contributing more to the existing inequality.

5.1.4 Inequality in the social domain

Inequality manifests itself in terms of access to education, healthcare and other basic services such as water, sanitation and waste removal, electricity, internet and mobile phones. Kenya has strived to provide these services and has achieved varying degrees of success in terms of access to the services. To a large extent, access to education has improved over time. Enrolment rates in pre-primary, primary education and secondary education have increased over time, showing improved access to basic education in Kenya. However, at about 67 percent in 2015/06, net enrolment rates in secondary school are still low. Disparities in access are more serious across regions, with enrolment in some counties being below 30 percent while others register very high enrolment rates. Also, urban counties perform well in terms of both access to primary and secondary school enrolments as opposed to the rural and Marginalis ed counties, which have been consistently at the bottom position in terms of access. The gender disparity in enrolments is more pronounced in tertiary institutions, and this could be due to a combination of factors, among them poor performance of

girls in mathematics and sciences at secondary school level. The disparity in access by gender in tertiary institutions could be even higher in terms of enrolment for particular degree courses such as engineering where there are few female students compared to male students.

Generally, Kenya's health status indicators have improved over time, indicating improved access to health services. Over time during the period 1994 to 2015, many Kenyans sought healthcare mainly from public facilities, with a higher proportion of the non-poor seeking healthcare from private health facilities. In terms of education, a larger proportion of the population with higher education used public and private health facilities more than those with no education. Further, a large proportion of both rural and urban residents sought medical care from public facilities as compared to both private and "others" facilities.

Access to water from improved water sources and sanitation services increased substantially between 2009 and 2015/16 at the national level. In terms of regions, rural areas have low access compared to urban areas. For instance, in urban areas, 86.7 percent of households have access to safe drinking water compared to 61.8 percent in rural areas. At county level, the progress in enhancing access to water from an improved source was more pronounced in a few counties with significant improvements achieved but the proportion of households with access reducing in some counties.

Access to safe human waste disposal technologies is crucial for the health and well-being of people. The proportion of households with access to improved sanitation services remained the same at 65 percent over the period 2009 and 2015/16. In rural areas, half of households (50.8 percent) do not have access to improved sanitation services compared with only 13.2 percent in urban areas. At county level, the share of access to improved sanitation in counties such as Nairobi County was 15 times greater than in Wajir County (6.7 percent), an indication that access to waste disposal varies across counties. Many counties (29) experienced significant improvements in access to improved waste disposal between 2009 and 2015/16, but access to improved sanitation services reduced in 18 counties.

The period 1994-2015 evidenced an increase in access to electricity, the internet and mobile phones. Access to electricity, the internet and mobile phones, however, varies by areas of residence (rural urban), across counties, by poverty status and level of education of the household head. For instance, based on the 2009 Kenya Population and Housing Census, rural and urban electrification rates in Busia and Siaya were low compared to other parts of Kenya. The gap in electricity access also varies with the level of education of household head, where households headed by people with higher level of education have more connection to electricity compared to the rest of the households. Furthermore, the gap in access to electricity is widening between the poor and non-poor households. Overall, the increased access to electricity during the period can be attributed to government interventions. For instance, the increased household connectivity to national electricity grid can be attributed to the ratification of the Energy Act of 2006, which restructured the country's electricity sector and created the Rural Electrification Authority (REA), an agency that operates independently. The REA focuses more on rural electrification and mostly covering government institutions such as secondary schools, where consequently the households' neighbouring schools were connected to electricity.

In addition, people living in urban areas have more access to internet services compared to those in rural areas. Furthermore, the internet access gap is widening between households in rural and urban areas, with households in urban areas enjoying more access to internet connectivity. Also, men have more access to internet services compared to women. More men than women access the internet through their mobile phones. Individuals with secondary and higher education have more access to internet than those with primary and no education.

On mobile phones, the narrative is the same. Between 2009 and 2015/16, the proportion of households with at least one member owning a mobile phone increased from 73 percent to 89 percent. Mobile ownership is higher for individuals with higher education but the rest are catching up with time. Further, ownership of mobile phone by households in urban areas is higher than for households in rural areas.

5.1.5 Gender inequality

Inequality between men and women seems to be widespread in Kenya. Inequality in real per capita expenditure is high among households headed by women than men. In the labour markets, male participation rates are higher than for women. Also, men receive higher earnings than women and unemployment is higher for women than for men. Also, in terms of asset ownership, men own more assets than women. Although access to education for men and women is almost at par in the basic education sector, there exists higher inequality in access to college and university education with gender inequality gap widening in terms of access to university education. In terms of health, life expectancy for women is generally higher than that for men as expected. Also, the proportion of women who seek healthcare services is higher than for men. Furthermore, households headed by men have relatively higher access to safe drinking water, piped water and improved sanitation compared to households headed by women, with all showing an upward trend in access.

Households headed by men have higher access to electricity, the internet and a household member owning a phone compared to those headed by women. The gap between male- and female-headed households is widening in terms of access to electricity and internet access but access to both electricity and internet is increasing for both male- and female-headed households. Representation of women in various legislative bodies is still very low, with the figure being below 10 percent, although the figure is slightly increasing. Gender inequality, therefore, remains one of the major obstacles to sustained human development in Kenya despite strides made by the government to reduce the disparities. This could be mainly due to disadvantages facing women and girls in access to various opportunities such as education, employment, and political participation.

5.2 Areas for Government Intervention

The analysis has shown that, generally, inequality has been declining in Kenya in the period 2005/06 to 2015/16. However, there are still wide differences in inequality between rural and urban areas and across the 47 counties in Kenya. The reduction in inequality was higher in urban than in rural areas for male-headed households than for female-headed households, and in some counties while in

other counties inequality increased. In particular, there is need to understand what has been done for urban areas and some of the counties for inequality to reduce by a bigger margin and use lessons from those areas to be replicated in rural areas and counties that are lagging behind.

Inequality in asset ownership and inequality in land ownership seems to be higher than inequality in real per capita consumption expenditure. Finding ways and means of reducing asset inequality and land inequality could go a long way in helping to reduce the overall inequality in the long run.

Focus should also be put on the labour market, as what happens in the labour market affects individual and household incomes. Real earnings have declined sharply and earnings inequality remains high. In particular, there is the need to Prioritise the elimination of disparities along gender lines in terms of employment and earnings as part of the effort to reduce inequality in Kenya. Further, efforts are needed to improve the quality of jobs and productivity in the informal sector to Stabilise the incomes in the sector. There is also the need to reduce inequality in earnings as it may be contributing more to the existing inequality.

A lot has been achieved in the education sector in terms of access to basic education, but more needs to be done at the tertiary level. First, at the basic education level, access at secondary school level should be increased. At the university level, immediate effort should be directed towards achieving gender parity in enrolment, and enrolment in the various courses.

Regarding access to electricity, water and sanitation and the internet, there should be immediate efforts towards increasing access to safe drinking water, improved sanitation, electricity and the internet in the rural areas where access is low, even as access to these services is enhanced in urban areas. Like land and assets ensuring increased access to these services is very important in driving long-run inequality reduction.

Concerted efforts should be put in place to eliminate all forms of gender inequality, be it in the labour market, education particularly in tertiary education, and in access to electricity, safe drinking water and internet services.

5.3 The Way Forward

This section discusses the way forward, giving attention to improving SDG reporting, harmonisation of inequality measurements across countries and data challenges and gaps. The section finally provides a Prioritisation wish list on data requirements.

5.3.1 Improving SDG reporting on inequality

Kenya, like other member states in the United Nations, adopted the SDG framework in 2015 to address various developmental challenges and achieve a sustainable development by 2030. SDGs are a set of international targets used to measure progress on overcoming various developmental challenges. Unlike the MDGs which did not directly address inequalities, SDG Goal 10 calls for

reducing inequalities in income and those based on socio-economic status within a country. It also addresses inequalities among countries (United Nations Development Group, 2017). Given the high inequality in Kenya compared to other East African countries, there is a need for a concerted effort to improve the availability and reliability of data to measure and monitor the country's progress in reducing inequality in all its forms. Thus, it is hoped that this report on inequality trends and diagnostics will serve as a basis for inequality measurement efforts in the country going forward, and that it will eventually lead to improvements in SDG reporting responsibilities. Thus, following this report, there will be a concerted effort in estimating and reporting on inequality in Kenya as a basis for monitoring progress in achieving SDG 10 on reducing inequality.

5.3.2 Harmonisation of inequality measurements and computations

The Gini coefficient has in the past been used widely for measuring and monitoring inequality. However, this report has shown that its ability to serve as a single indicator of inequality and thereby for monitoring inequality is limited. First, is due to the Gini coefficient oversensitivity to changes in the middle of the income distribution and insensitivity to changes in the bottom and top ends of the income distribution. Second is that the SDG on inequality is mainly focused on uplifting the incomes of the poorest 40 percent of households and their overall share of income and on the adoption of inclusive development policies. With this change in focus, there has been an ongoing debate to find a more broad-based robust measure of inequality to capture this aspect (Statistic South Africa, 2019). Limitations in using Gini coefficient estimates to decompose inequality means that there is need to harmonise measures of inequality so that Gini coefficient estimates are complemented with other measure to provide a comprehensive picture on inequality.

Worldwide efforts have resulted in production and reporting on the Palma ratio to supplement the Gini. The Palma ratio, as discussed earlier, measures the income/expenditure share of the richest 10 percent of the population with respect to the income/expenditure share of the poorest 40 percent. When interpreting the Palma ratio, high ratio values indicate higher levels of inequality between the two groups while lower ratio values imply greater parity. This report has estimated and reported on the Palma ratio as a measure of inequality, and the authors of this report agree that the inclusion of the Palma ratio along with the Gini coefficient is a welcome move on improving the reporting on inequality and particularly in monitoring SDG 10. Further, for purposes of decomposing the inequality measures, Generalised Entropy measures are part of the measurements for purposes of decomposition of the inequality estimates.

This report has shown the importance of wealth and asset ownership in driving longer run improvements in well-being, which in turn highlights the need for harmonisation in the measurement of assets and wealth ownership for purposes of measuring asset and wealth indices. For purposes of comparison across countries, there is need for harmonisation of a range of assets to be included in the measurement of asset index and wealth index, and to give guidance on the quality of the assets to be included in the set of assets.

5.3.3 Challenges with existing data

This report has described in some detail that the data that is available for use in analysing inequality. There is no doubt that these data are very useful but that they have several challenges. First, the household budget datasets that are suitable for the analysis of inequality in Kenya were collected in 2005/06 and the subsequent one was collected in 2015/16, a period of 10 years. This means that any comprehensive analysis of inequality can only be done after a period of ten years. For improved reporting on inequality and for better and effective monitoring of inequality to meet targets set in SDG 10 by 2030, there is need for the datasets to be collected more frequently. This will ensure frequent estimates and monitoring of inequality with the hope of putting in place appropriate measures towards progress in achieving SDG 10 by 2030.

Better still, it would be important for Kenya to invest in collecting panel data that will not only be useful in measuring and monitoring the trends in inequality in Kenya, but would also allow for analysis of certain aspects of inequality that may not be done using cross section survey data such as considering intra-generational and inter-generational mobility as done for South Africa using NIDS panel data (Statistics South Africa, 2019).

5.3.4 Gaps in existing data

The household budget data used in the analysis in this report, though comprehensive, has several gaps that need to be addressed to enrich the analysis on inequality. Below is a discussion on some of the data gaps.

Assets and wealth

Assets and wealth form the basis of individuals' or households' abilities to thrive and earn income. To get a clear picture of these abilities, the collection of comprehensive data on assets and wealth is key to ensuring accurate measuring and their role in determining inequality. Whereas the datasets used in the analysis in this report had information on assets owned by households and enabled us to carry out analysis on how the assets are distributed across households and estimate asset index used in the analysis of asset inequality, the information on the assets was not comprehensive. For instance, the data was not sufficient for use in estimating wealth.

Detailed information on the condition/quality of the assets would be useful in estimating the current value of the assets and household wealth. Most importantly, breaking the cycle of inequality requires access to functional, high quality assets and services.

In many developed countries, tax data is used in the estimation of wealth, providing an opportunity to analyse the role of wealth in driving inequality (Statistics South Africa, 2019). However, this is not realistic in Kenya due to lack of administrative data on assets owned by households. For immediate estimation of wealth, alternative ways of measuring wealth rather than use of tax would be easier to implement in the short term. There is need, therefore, to come up with ways of collecting comprehensive data on assets, which will enable measuring wealth even as the use of tax data remains a solution to be implemented in the long term.

Furthermore, housing and land are key household assets that are important in any discussion on wealth in Kenya and on sustainable livelihoods. As mentioned earlier, land is an important determinant of inequality in Kenya. Information on the two assets is scanty in the available datasets or is poorly collected. There is need, therefore, for greater focus on the collection of quality data that can improve the measurement of the two assets and their effect on inequality. Also, for international comparison of household asset and wealth, there is need to agree on the types of assets to include in the analysis, and the estimation of the value of assets owned by households to obtain estimates of wealth.

Education, health and social services data

Going beyond discussions on income/expenditure, assets and earnings inequality to include analysis on inequality in access to education, health and several other services is important in providing a comprehensive picture on inequality. Progress in access to education, healthcare, electricity, the internet and other services over time contributes to improving inequality. However, an assumption made in this report when carrying out the analysis of access to these services is that the services provided are of the same quality. Yet, this is not true for a developing country such as Kenya, where quality of these services differs within and across regions.

Generally, this report due to data limitations, has profiled inequality in access to social domains but has not taken into account whether households have access to the same quality of services, and the changes in quality over time. This limits the ability to ensure that the analysis of multidimensional inequalities gives sufficient attention to the quality of services being provided. It also limits the ability to correlate access and quality to households' income, and tracking this correlation, among other things. There is need to consider the nature and quality of services accessed by households and individuals to allow for further analysis of the access. For instance, while it is important to know that households have access to primary education, it is equally important to know the quality of the primary education provided. Such analysis will, apart from ensuring improved access, lead to improving the delivery of quality services to the households in Kenya.

This could be done through, for instance, integrating learners in the survey to characteristics of their school, such as teacher-learner ratio and class size of the school. In Kenya, much of the information on each school is available through administrative systems in the Ministry of Education, and it is possible to integrate it with learners in survey data. Indeed, in Kenya such work has been started in integrating administrative data from clinics into Kenyan Demographic and Health Surveys. Countries such as South Africa have managed to integrate their panel data with school and clinic level information to show that quality of services is important in livelihood trajectory. Kenya could, therefore, learn from the experience of South Africa in integrating the survey and administrative dataset in education and other services.

Income and earnings

Labour market information from household budget surveys can be improved through integrating information from employer/firm surveys. According to Statistics South Africa (2019), the inclusion

of tax data in the data mix is becoming increasingly common place in developed countries and is much discussed in developing countries. In particular, inclusion of information on tax is important as it supplements the description and understanding of the top end of the income and earnings distributions. It also provides rich sources of information on the behaviour of firms and on the income and earnings of those who pay tax. An integrated labour market information system is therefore key to addressing data gaps to undergird labour market policy.

Gender inequality data

Gender inequality analysis in this report is constrained by lack of time use data in the country. Time use surveys provide insight into non-monetized activities, showing how gender differentials affect the unpaid work whose effort is not Recognised in the national accounts. Availability of such data will provide evidence-based policy options that will go hand in hand with reducing unintended consequences of gender differentials in productive activities.

Perceptions on inequality

The Afro Barometer collects data on aspects such as poverty but not on inequality perception by the population. There is need to assess how Kenyans perceive inequality in different social-economic domains. Therefore, future collection of perception data should include some questions on inequality perception to build evidence on how citizens perceive inequality and its effect.

5.3.5 Prioritisation of the data wish list

To conclude this section, we outline our priorities in the data wish list. Firstly, is the need for more frequent collections of household budget surveys or to launch panel data surveys that will be useful for frequent inequality measurements and for reporting on the SDG achievements and on progress made in reducing inequality. Secondly, is the integration of survey data with administrative data on, for instance, institutions in education and health, labour market survey data integration with employer/firm data, and income tax information to improve on the information and quality of the data available for use in carrying out analysis on inequality and access to services. Finally, there is need to improve the quality of information collected on household assets that are comparable across countries and regions.

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7. ANNEXURES

7.1 Annex A

ANNEX TABLE A 1: Population shares by sub-groups (1994, 2005/06 and 2015/16)

Variable	Sub-Group	1994	2005/06	2015/16
Gender of household head	Male	75.4	70.3	66.0
	Female	24.6	29.7	34.0
Education level of household head	No schooling	38.7	24.4	21.5
	Primary	37.2	42.3	44.2
	Secondary	20.6	26.1	22.4
	Higher	3.5	7.2	11.9
Residence type	Rural	84.5	64.4	60.1
	Urban	15.5	35.6	39.9
Poverty status	Poor	38.4	40.8	33.1
	Non-poor	61.6	59.2	66.9
Total	All	100	100	100

Source: *Own calculations using WMS II 1994 and KIHBS 2005/06 and 2015/16 using household weights*

ANNEX TABLE A 2: Distribution of annual mean and median real per capita expenditure by county (1994, 2005 and 2016)

County	Mean			Median		
	1994	2005/2006	2015/2016	1994	2005/2006	2015/2016
Mombasa	82 618	79 858	79 266	64 926	59 766	67 829
Kwale	52 074	28 846	44 284	40 735	17 811	30 203
Kilifi	50 377	38 319	55 238	29 412	22 425	38 532
Tana River	50 351	22 428	32 215	28 360	16 541	22 666
Lamu	88 035	49 246	52 993	65 004	35 968	39 165
Taita Taveta	41 210	44 495	49 066	30 460	27 226	36 955
Garissa	80 977	32 019	30 234	52 702	27 011	22 350
Wajir	40 413	15 921	22 130	32 630	12 871	18 641
Mandera	45 681	16 214	21 443	29 283	12 707	15 043
Marsabit	21 547	18 418	29 435	12 686	13 024	19 967
Isiolo	43 035	28 048	42 273	21 256	21 588	28 899
Meru	45 223	50 174	50 311	41 631	36 429	39 207
Tharaka Nithi	41 322	38 234	50 859	33 587	31 725	38 936
Embu	37 820	40 698	50 245	27 798	30 356	36 243
Kitui	49 357	27 267	37 966	31 127	20 386	26 360
Machakos	38 618	39 956	59 952	24 725	24 597	49 555
Makueni	30 594	29 129	42 752	23 398	20 411	32 987
Nyandarua	44 286	38 023	47 386	37 984	27 099	38 318
Nyeri	48 873	50 306	66 896	42 118	38 324	55 073
Kirinyaga	46 412	47 591	52 545	37 649	38 819	40 642
Murang'a	46 113	42 732	45 257	37 882	33 093	35 693
Kiambu	52 199	62 830	69 623	39 179	51 004	56 503
Turkana	26 673	12 623	33 921	20 696	5 616	15 488
West Pokot	46 222	23 602	24 897	34 219	17 409	19 544
Samburu	27 353	17 153	29 667	17 845	14 384	15 882
Trans Nzoia	62 723	35 606	44 428	42 448	24 436	32 152
Uasin Gishu	68 260	75 167	48 968	52 642	35 742	38 520
Elgeyo Marakwet	53 228	33 650	32 581	44 559	22 061	25 088
Nandi	49 541	36 660	35 499	38 264	27 767	28 431
Baringo	59 306	34 996	45 201	46 006	23 063	33 038
Laikipia	40 907	54 135	43 243	32 706	38 010	31 638
Nakuru	63 078	46 034	60 576	47 662	36 594	43 265

County	Mean			Median		
	1994	2005/2006	2015/2016	1994	2005/2006	2015/2016
Narok	58 481	40 740	54 934	40 088	29 093	38 998
Kajiado	87 248	77 862	59 845	61 616	50 590	45 496
Kericho	45 294	47 025	38 024	32 494	30 546	29 801
Bomet	40 248	37 198	30 689	33 487	24 456	23 861
Kakamega	44 331	34 679	34 977	33 679	23 343	27 487
Vihiga	37 475	36 413	31 625	29 499	27 367	25 449
Bungoma	40 030	29 752	38 871	30 113	23 586	26 793
Busia	36 116	26 580	26 525	26 689	18 901	19 315
Siaya	47 832	39 086	40 729	37 744	32 065	32 135
Kisumu	51 834	49 423	52 324	38 246	34 588	35 860
Homa Bay	58 062	32 517	36 821	39 087	26 059	30 431
Migori	60 313	35 326	33 925	44 341	26 256	25 634
Kisii	56 049	28 159	36 031	43 245	20 113	26 471
Nyamira	56 647	32 903	39 437	33 832	26 080	30 265
Nairobi	174 071	124 281	103 774	94 086	74 512	80 472
Total	62 374	50 141	54 819	39 793	30 669	38 235

Source: Own calculations using WMS II 1994 and KIHBS 2005/06 and 2015/16, using household Weights

ANNEX TABLE A 3: Gini coefficient by county 1994-2016

County	Gini Coefficient		Absolute Poverty (%)	
	1994	2015/16	1994	2015/16
Mombasa	0.306	0.289	24.5	27.1
Kwale	0.381	0.377	33.0	47.4
Kilifi	0.447	0.404	46.5	46.4
Tana River	0.510	0.404	59.8	62.1
Lamu	0.382	0.367	23.5	28.5
Taita Taveta	0.417	0.362	45.1	32.3
Garissa	0.482	0.379	41.7	65.5
Wajir	0.344	0.272	46.9	61.6
Mandera	0.397	0.369	57.0	77.6
Marsabit	0.506	0.396	76.9	34.8
Isiolo	0.522	0.352	60.3	51.9
Meru	0.326	0.340	24.6	19.4
Tharaka Nithi	0.337	0.339	32.0	23.6
Embu	0.412	0.366	53.8	28.2
Kitui	0.439	0.384	47.8	47.5
Machakos	0.456	0.346	60.6	23.3
Makueni	0.347	0.341	63.4	34.8
Nyandarua	0.343	0.330	28.4	34.8
Nyeri	0.283	0.318	19.5	19.3
Kirinyaga	0.350	0.352	25.5	20.0
Murang'a	0.354	0.311	29.6	25.3
Kiambu	0.384	0.343	24.8	23.3
Turkana	0.418	0.559	65.0	79.4
West Pokot	0.381	0.344	39.2	57.4
Samburu	0.471	0.463	72.7	75.8
Trans Nzoia	0.433	0.382	33.7	34.0
Uasin Gishu	0.352	0.360	19.4	41.0
Elgeyo Marakwet	0.314	0.338	23.2	43.4
Nandi	0.376	0.316	31.7	36.0
Baringo	0.373	0.380	33.8	39.6
Laikipia	0.367	0.386	39.0	45.9
Nakuru	0.371	0.381	27.0	39.1
Narok	0.376	0.358	24.1	28.6

County	Gini Coefficient		Absolute Poverty (%)	
	1994	2015/16	1994	2015/16
Kajiado	0.408	0.413	21.4	40.7
Kericho	0.384	0.313	45.1	30.3
Bomet	0.336	0.294	40.7	48.8
Kakamega	0.338	0.321	40.5	35.8
Vihiga	0.359	0.299	49.5	43.2
Bungoma	0.443	0.376	53.4	35.7
Busia	0.397	0.342	49.8	69.3
Siaya	0.373	0.328	38.7	38.8
Kisumu	0.407	0.405	39.9	33.9
Homa Bay	0.414	0.296	34.3	33.5
Migori	0.381	0.319	27.8	41.2
Kisii	0.352	0.354	27.6	41.7
Nyamira	0.476	0.337	43.9	32.7
Nairobi	0.531	0.340	23.3	16.8

Source: *Own calculations using WMS II 1994 and KIHBS 2005/06 and 2015/16 using household weights*

ANNEX TABLE A 4: Decomposition of expenditure inequality by region of residence (2005/06 and 2015/16)

Index	Poverty Status	Absolute Contribution		Relative Contribution	
		2005/06	2015/16	2005/06	2015/16
Theil's Index GE(0)	Poor	0.045	0.028	0.117	0.101
	Non-poor	0.156	0.132	0.403	0.479
	Within contribution	0.201	0.159	0.520	0.579
	Between contribution	0.186	0.116	0.480	0.421
Theil's Index GE(1)	Poor	0.014	0.009	0.031	0.034
	Non-poor	0.292	0.181	0.642	0.642
	Within contribution	0.306	0.190	0.674	0.676
	Between contribution	0.148	0.091	0.326	0.324

Source: *Own calculations using WMS II 1994 and KIHBS 2005/06 and 2015/16, using household weights*

ANNEX TABLE A 5: Proportion (%) of households with access to electricity by county

County	1994	2005/06	2009	2015/16
Mombasa	41.3	51.4	59.1	78.6
Kwale	2.7	5.2	10.6	29.6
Kilifi	11.2	12.3	16.6	40.9
Tana River	-	2.0	2.4	17.7
Lamu	36.1	20.3	16.6	53.7
Taita Taveta	2.3	11.5	15.0	37.0
Garissa	16.6	7.0	15.3	28.8
Wajir	2.3	2.3	3.4	9.2
Mandera	10.8	2.5	2.5	13.9
Marsabit	2.1	5.6	7.7	19.0
Isiolo	3.9	2.5	18.6	39.8
Meru	2.3	11.7	13.7	32.1
Tharaka Nithi	-	1.7	8.3	23.6
Embu	8.7	9.8	14.3	27.4
Kitui	5.3	1.5	4.7	18.4
Machakos	6.5	7.8	17.0	41.7
Makueni	0.4	1.6	5.7	23.2
Nyandarua	2.1	7.3	10.6	52.2
Nyeri	11.1	15.3	26.3	61.8
Kirinyaga	5.0	9.2	16.5	46.4
Murang'a	2.1	7.8	13.9	41.0
Kiambu	14.0	31.3	54.4	80.4
Turkana	3.0	3.1	2.1	11.2
West Pokot	-	2.9	2.9	7.5
Samburu	3.4	-	5.9	17.9
Trans Nzoia	4.4	9.7	9.0	31.2
Uasin Gishu	7.3	23.5	28.0	50.5
Elgeyo Marakwet	3.4	8.4	7.0	20.8
Nandi	1.7	3.5	6.2	19.1
Baringo	4.9	5.1	9.4	25.4
Laikipia	5.8	20.1	18.2	40.3
Nakuru	10.7	28.3	34.0	58.2
Narok	8.3	2.2	5.9	30.8
Kajiado	12.7	31.5	40.0	68.5

County	1994	2005/06	2009	2015/16
Kericho	1.7	5.1	10.6	28.3
Bomet	-	5.0	3.6	9.3
Kakamega	5.8	3.5	5.5	15.6
Vihiga	3.4	9.9	7.0	31.5
Bungoma	7.3	2.2	4.5	11.2
Busia	2.0	2.7	5.5	11.0
Siaya	0.8	4.3	4.3	10.2
Kisumu	6.0	20.9	18.3	46.4
Homa Bay	8.0	3.3	5.3	12.0
Migori	0.6	3.4	3.3	10.4
Kisii	1.3	5.2	8.0	29.5
Nyamira	5.8	10.2	5.9	26.7
Nairobi	49.0	74.3	72.4	91.0

Source: *Own calculations using WMS II 1994; KIHBS 2005/06, 2015/16 using household weights; and 2009 Census data*

Annex Table A 6: Proportion (%) of population with access to electricity by county

County	1994	2005/06	2009	2015/16
Mombasa	46.25	57.49	62.06	79.00
Kwale	4.24	4.44	7.29	27.12
Kilifi	12.12	9.14	11.51	34.36
Tana River	-	1.84	2.19	17.40
Lamu	29.07	19.39	14.88	54.76
Taita Taveta	2.43	8.65	12.83	33.97
Garissa	8.44	5.47	12.29	26.00
Wajir	1.46	2.65	2.82	10.24
Mandera	10.84	2.61	2.18	14.99
Marsabit	2.72	5.95	7.51	17.67
Isiolo	3.85	3.95	14.89	37.49
Meru	1.75	9.14	10.48	26.25
Tharaka Nithi	-	1.79	6.40	22.02
Embu	6.42	7.23	12.21	26.42
Kitui	4.06	0.87	3.16	11.08
Machakos	5.60	6.36	13.47	35.68
Makueni	0.25	0.64	3.64	19.45
Nyandarua	1.71	6.13	8.39	47.77
Nyeri	9.52	12.57	24.17	60.77
Kirinyaga	4.56	7.17	14.81	46.49
Murang'a	1.50	6.73	12.1	39.16
Kiambu	13.28	31.6	53.14	79.76
Turkana	2.57	1.03	1.24	9.65
West Pokot	-	3.53	1.95	3.85
Samburu	2.78	-	4.70	12.91
Trans Nzoia	3.43	8.68	7.49	26.47
Uasin Gishu	4.85	19.5	23.18	42.41
Elgeyo Marakwet	2.92	5.37	6.42	17.96
Nandi	1.59	3.27	5.36	17.14
Baringo	4.76	4.05	7.94	19.46
Laikipia	4.52	14.84	14.43	30.12
Nakuru	9.54	28.67	29.71	49.91
Narok	3.82	1.76	3.65	23.65
Kajiado	10.27	27.49	34.55	61.32

County	1994	2005/06	2009	2015/16
Kericho	1.34	5.18	9.03	26.77
Bomet	-	4.35	2.54	6.33
Kakamega	6.00	2.75	4.76	14.51
Vihiga	3.91	10.27	6.75	31.79
Bungoma	7.11	2.99	3.67	9.42
Busia	1.41	1.58	5.05	9.34
Siaya	0.81	4.95	4.20	8.12
Kisumu	7.08	24.49	17.84	46.53
Homa Bay	6.83	2.69	4.82	10.85
Migori	0.12	3.40	2.96	7.71
Kisii	1.44	4.38	6.90	27.3
Nyamira	2.08	7.12	5.30	20.74
Nairobi	51.35	76.41	76.17	92.04

Source: *Own calculations using WMS II 1994; KIHBS 2005/06, 2015/16 using household weights; and 2009 Census data*

ANNEX TABLE A 7: Proportion (%) of households with access to internet by county

County	2009	2015/16
Mombasa	24.59	30.8
Kwale	7.86	25.4
Kilifi	11.32	31.8
Tana River	5.62	18.2
Lamu	8.13	14.7
Taita Taveta	10.08	2.1
Garissa	7.42	1.3
Wajir	4.94	-
Mandera	4.02	6.9
Marsabit	4.75	-
Isiolo	9.11	14.3
Meru	8.40	28.8
Tharaka Nithi	7.19	14.6
Embu	10.24	1.7
Kitui	5.32	9.5
Machakos	10.07	23.7
Makueni	6.01	14.1
Nyandarua	7.02	28.6
Nyeri	13.11	27.3
Kirinyaga	7.52	24.4
Murang'a	6.61	28.9
Kiambu	21.77	42.0
Turkana	4.90	1.7
West Pokot	4.75	5.3
Samburu	5.33	11.8
Trans Nzoia	8.62	41.0
Uasin Gishu	17.75	29.6
Elgeyo Marakwet	7.06	24.8
Nandi	8.50	19.2
Baringo	7.52	36.0
Laikipia	11.35	31.6
Nakuru	14.26	41.5
Narok	6.34	7.1
Kajiado	19.82	26.6

County	2009	2015/16
Kericho	10.09	22.9
Bomet	7.70	2.9
Kakamega	7.07	20.9
Vihiga	6.31	23.4
Bungoma	7.67	25.6
Busia	7.21	3.1
Siaya	6.74	21.5
Kisumu	15.00	67.6
Homa Bay	8.95	12.9
Migori	7.74	21.4
Kisii	8.09	20.2
Nyamira	6.73	18.4
Nairobi	33.65	66.1

Source: *Own calculations using KIHBS 2015/16 using household weights; and 2009 Census data*

ANNEX TABLE A 8: Proportion (%) of households with one member owning a mobile phone by county

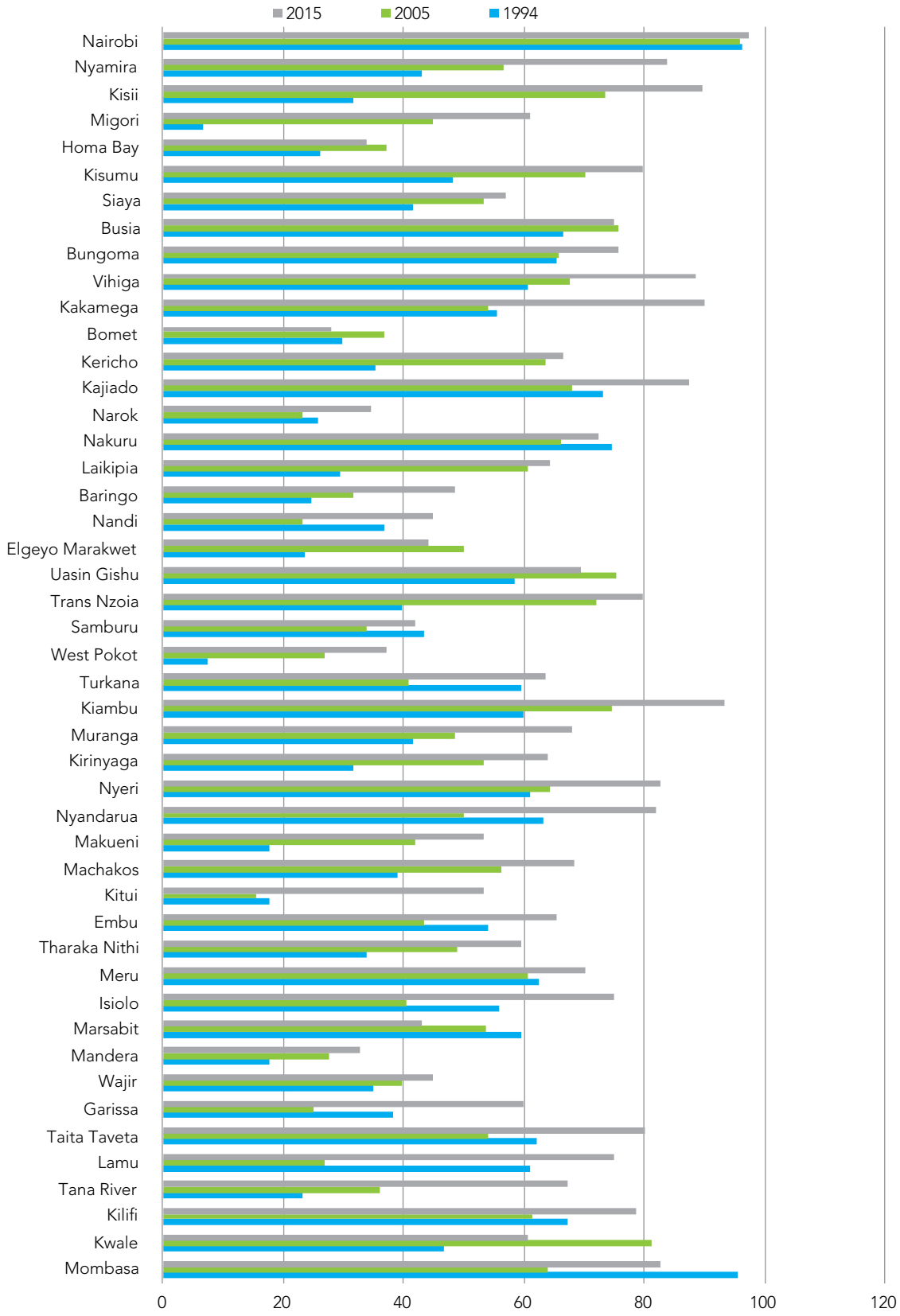
County	2009	2015/16
Mombasa	86.6	96.6
Kwale	62.8	87.1
Kilifi	68.6	89.9
Tana River	44.8	81.9
Lamu	74.4	87.1
Taita Taveta	73.1	91.9
Garissa	39.5	92.8
Wajir	21.8	79.2
Mandera	33.4	69.0
Marsabit	33.6	71.1
Isiolo	54.1	84.8
Meru	72.1	87.1
Tharaka Nithi	68.5	82.3
Embu	74.6	86.9
Kitui	67.2	87.8
Machakos	79.7	93.1
Makueni	78.7	91.2
Nyandarua	82.5	93.1
Nyeri	85.1	94.2
Kirinyaga	78.1	91.1
Murang'a	71.1	89.1
Kiambu	87.7	93.8
Turkana	17.7	52.7
West Pokot	35.0	68.1
Samburu	35.3	66.5
Trans Nzoia	70.4	89.5
Uasin Gishu	82.2	92.5
Elgeyo Marakwet	63.7	80.1
Nandi	71.3	88.2
Baringo	58.3	84.7
Laikipia	76.8	88.9
Nakuru	81.7	92.6
Narok	64.3	87.3

County	2009	2015/16
Kajiado	80.0	95.3
Kericho	73.1	83.8
Bomet	70.6	79.6
Kakamega	69.3	88.4
Vihiga	66.2	89.7
Bungoma	59.8	84.7
Busia	63.0	81.1
Siaya	69.3	86.5
Kisumu	78.3	93.0
Homa Bay	70.1	81.4
Migori	70.0	84.8
Kisii	72.6	88.9
Nyamira	75.0	90.0
Nairobi	92.2	97.7

Source: *Own calculations using KIHBS 2015/16 using household weights; and 2009 Census data*

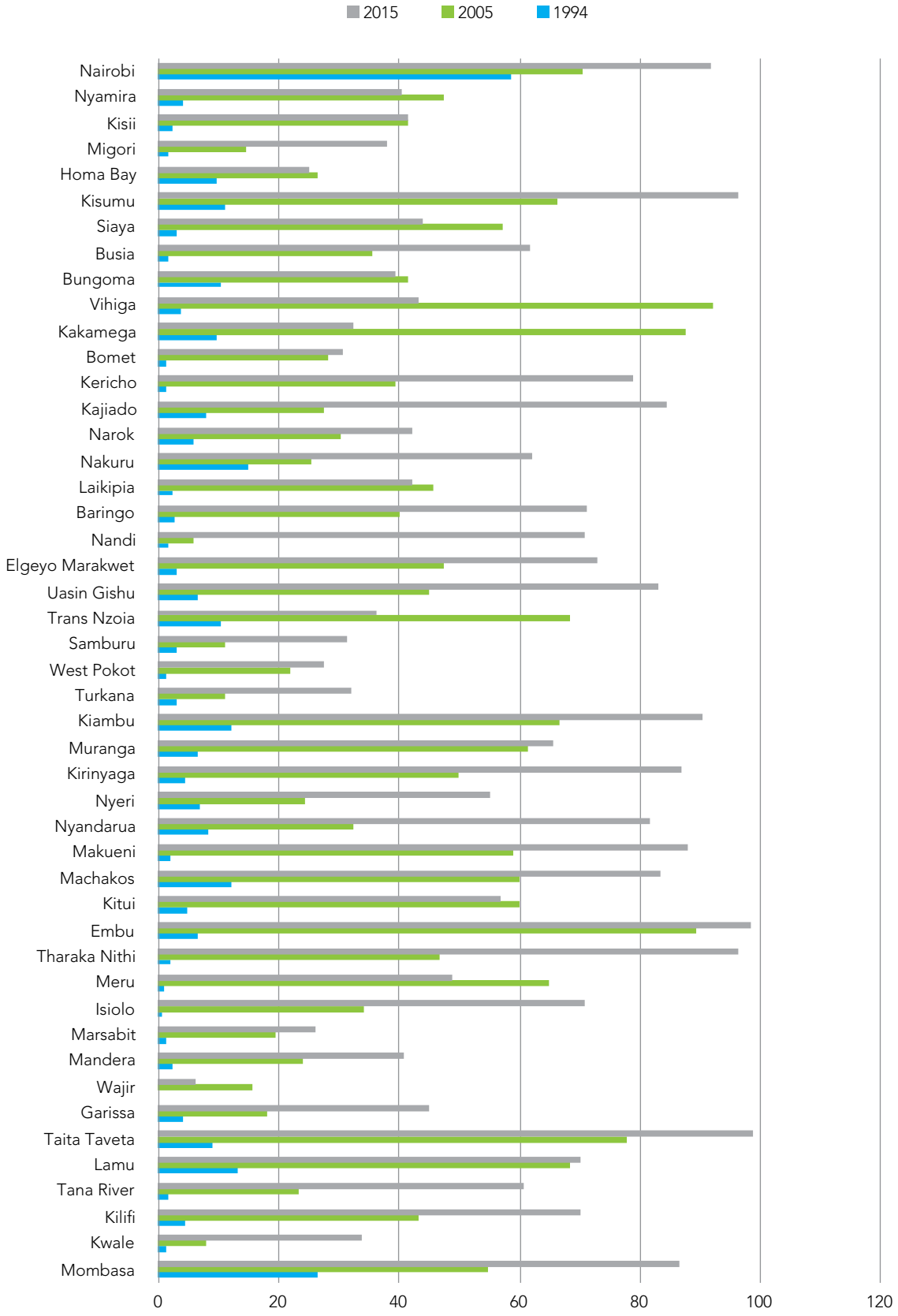
7.2 Annex B

ANNEX FIGURE B 1: ACCESS TO IMPROVED WATER BY COUNTY (1994 - 2016)



Source: *Own calculations using WMS 1994 and KIHBS 2005/06 & 2015/16 using household weights*

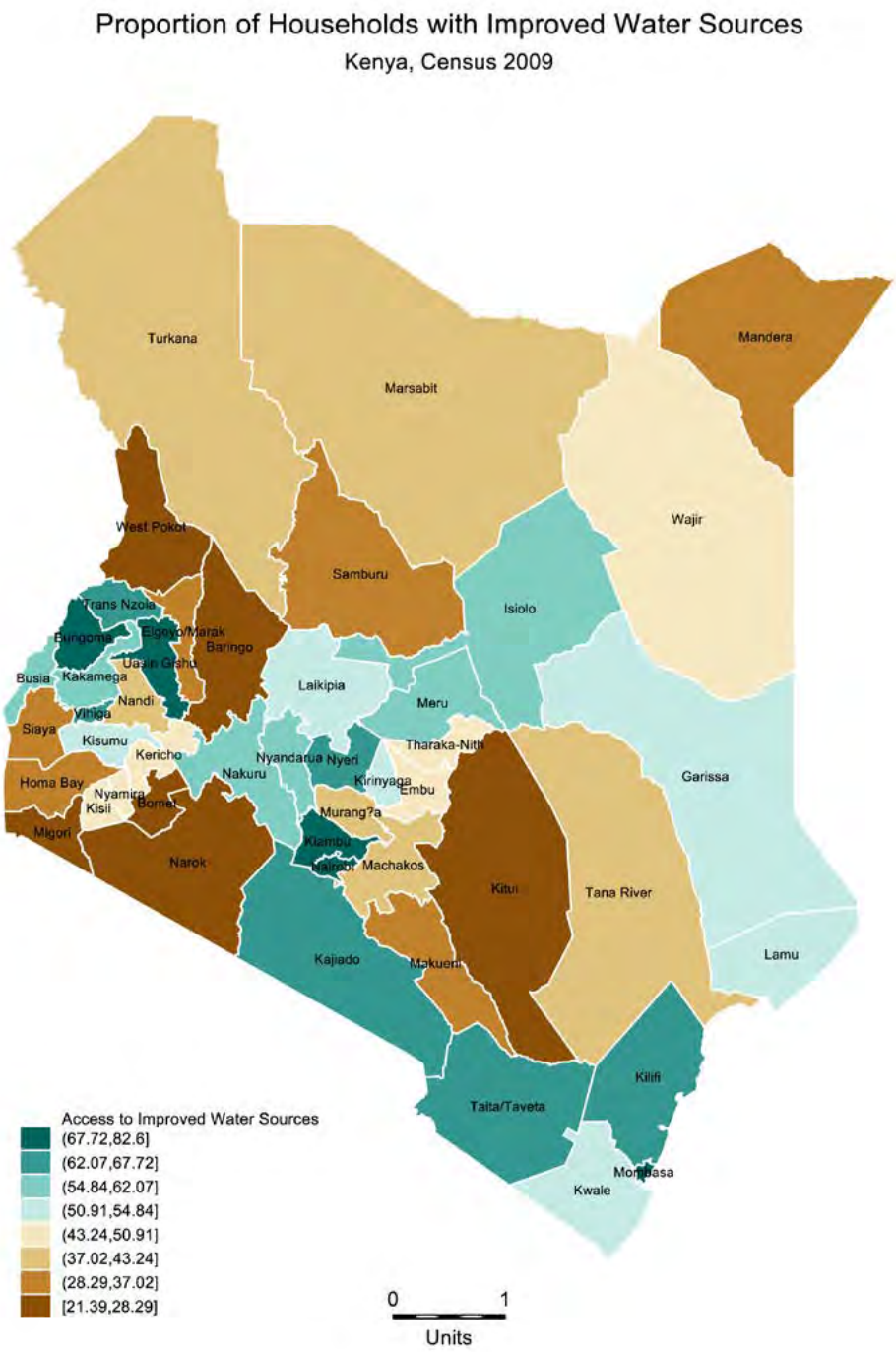
ANNEX FIGURE B 2: IMPROVED SANITATION BY COUNTY (1994- 2016)



Source: *Own calculations using WMS 1994 and KIHBS 2005/06 & 2015/16 using household weights*

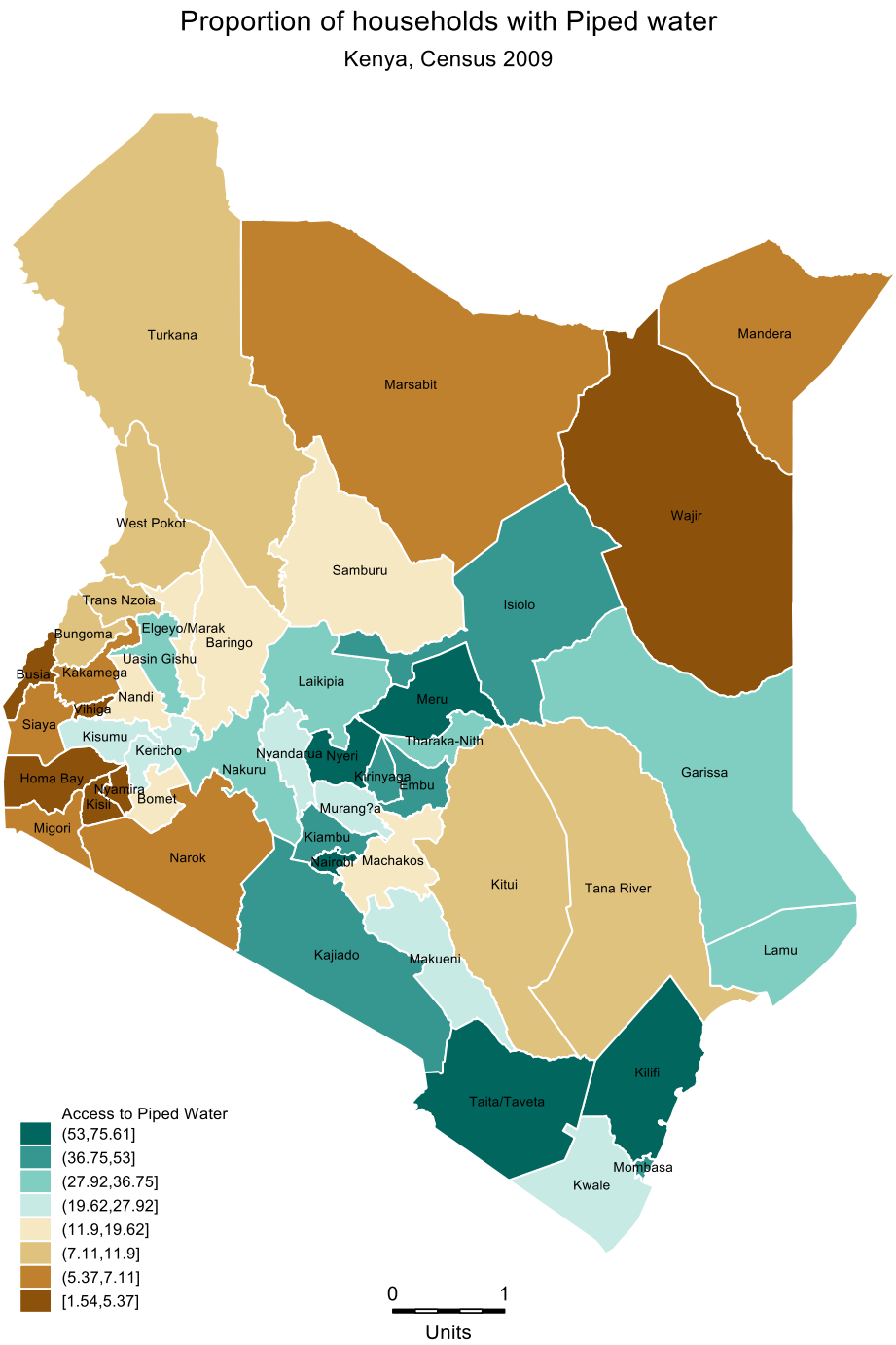
7.3 Annex C: Maps

ANNEX MAP C 1: Proportion of households with improved water sources



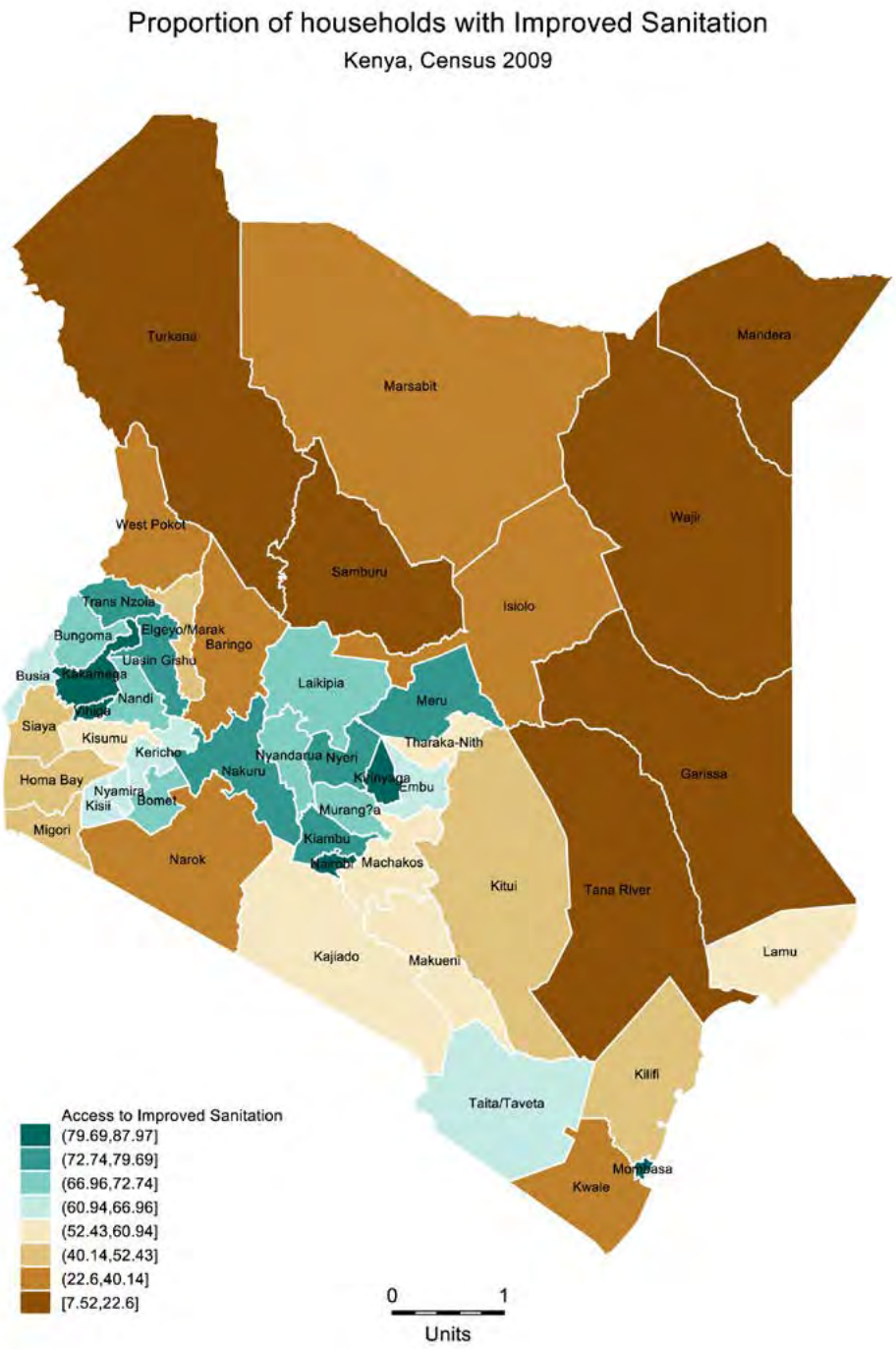
Source: *Kenya Population Census 2009*

ANNEX MAP C 2: Proportion of households with piped water



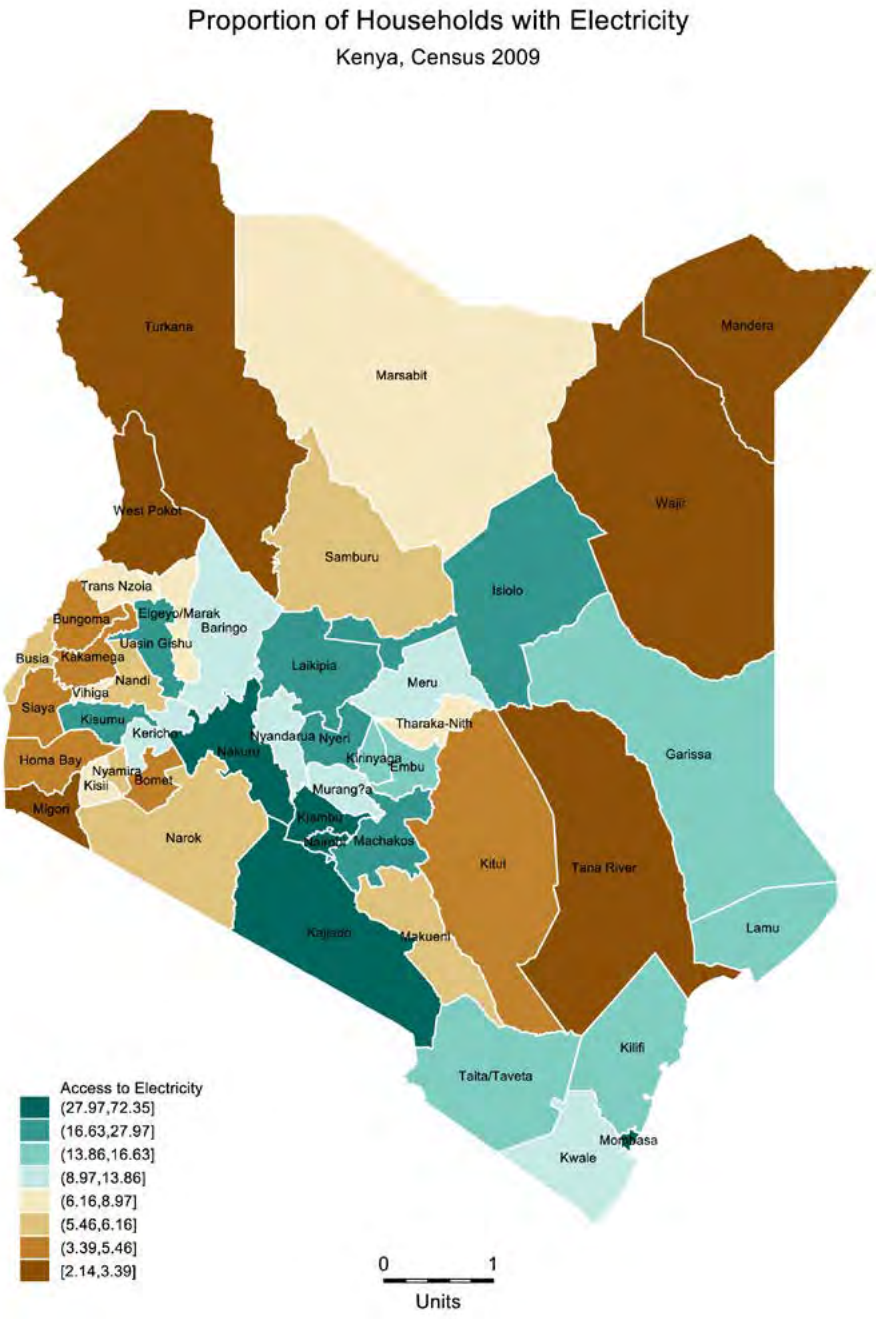
Source: *Kenya Population Census 2009*

ANNEX MAP C 3: Proportion of households with improved sanitation



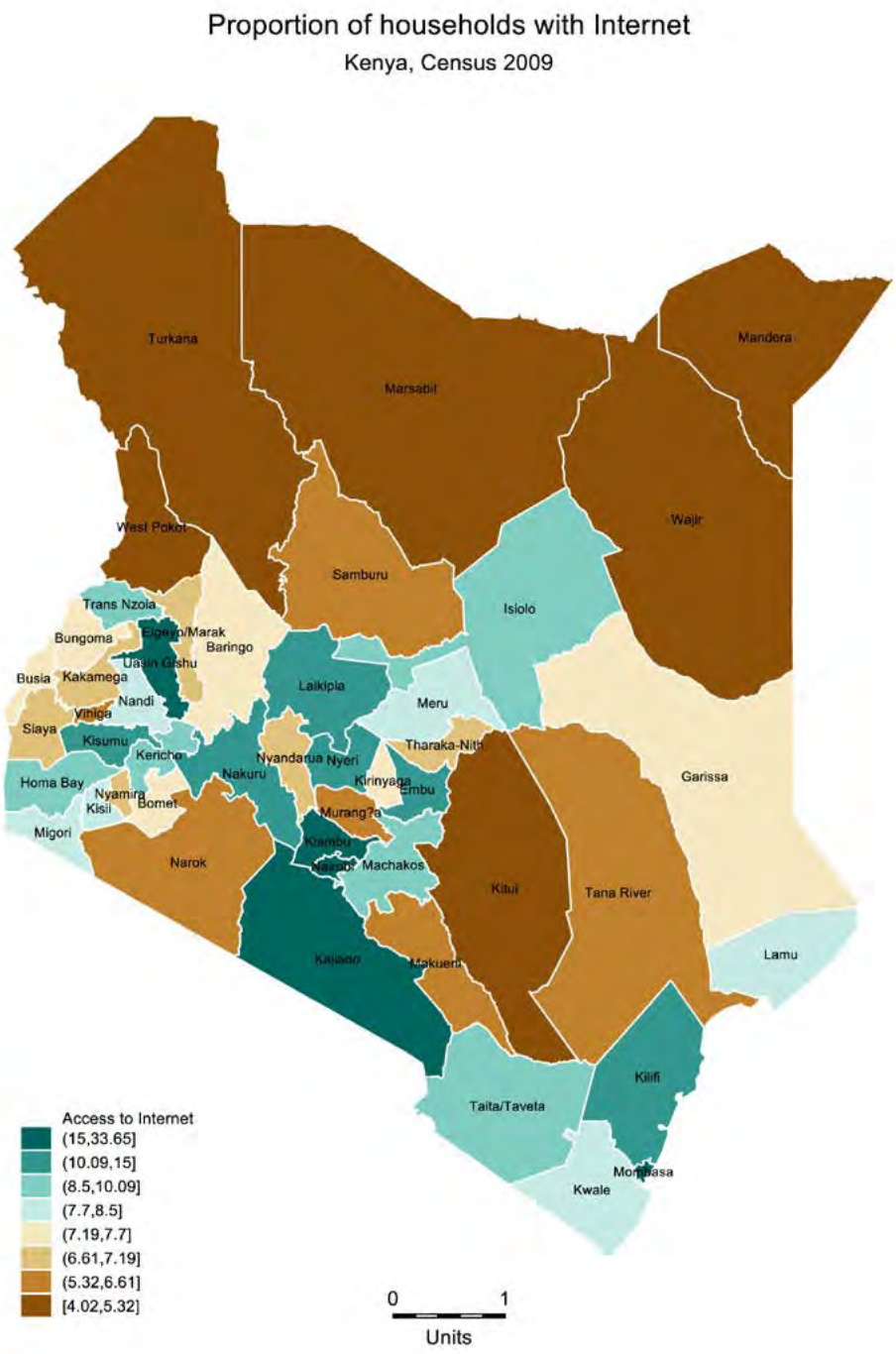
Source: *Kenya Population Census 2009*

ANNEX MAP C 4: Proportion of households with electricity



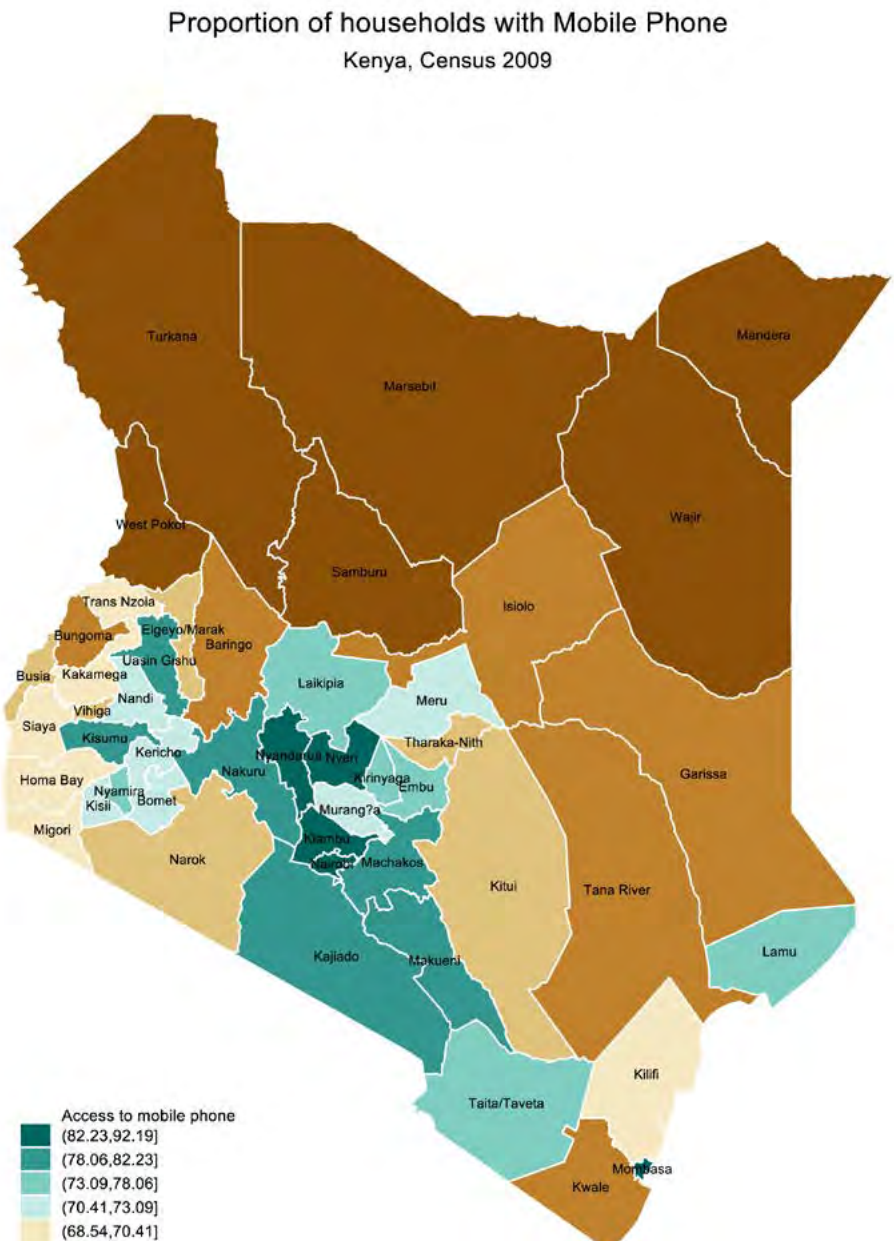
Source: *Kenya Population Census 2009*

ANNEX MAP C 5: Proportion of households with internet



Source: Kenya Population Census 2009

ANNEX MAP C 6: Proportion of households with mobile phone



Source: *Kenya Population Census 2009*

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