

SOURCES AND METHODS

National Accounts Statistics Kenya



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The Vision of the Bureau is “to be a centre of excellence in statistics production and management”

Mission

The mission of the Bureau is “to effectively manage and coordinate the entire National Statistical System to enhance Statistical Production and Utilization”.

Mandate

The KNBS is a Semi Autonomous Government Agency (SAGA) mandated by law (Statistics Act 2006) to collect, analyze and disseminate socio-economic statistics needed for planning and policy formulation in the country.

Organization

The Kenya National Bureau of Statistics comprises of six Directorates namely;

Production Statistics

Macroeconomic Statistics

Strategy and Development

Finance and Administration

Population and Other Social Statistics

Information and Communication Technology

Teamwork

We are committed to face challenges and opportunities of the 21st Century together with our stakeholders.

Director General

Kenya National Bureau of Statistics

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ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
AFRITAC	Africa Technical Assistance Centre
BCI	Building Cost Index
BEC	Broad Economic Categories
BEE	Business Expectations Enquiry
BM	Benchmark
BOP	Balance of Payment
CBK	Central Bank of Kenya
CFC	Consumption of Fixed Capital
CIP	Census of Industrial Production
CPV	Current Price Values
EAC	East Africa Community
FISIM	Financial Intermediation Services Indirectly Measured
GDP	Gross Domestic Product
GFCE	Government Final Consumption Expenditure
GFCF	Gross Fixed Capital Formation
GFS	Government Finance Statistics
HCDA	Horticultural Development Authority
HFCE	Household final consumption expenditure
IC	Intermediate Consumption
ICBT	Informal cross border trade
IGAD	Intergovernmental Authority on Development
ILRI	International Livestock Research Institute
IMF	International Monetary Fund
IOT	Input-Output Table
IPD	Implicit Price
IPPs	Independent Power Producers
IRA	Insurance Regulatory Authority
ISIC	International Standards for Industrial Classifications

ISS	Integrated Survey of Survey
KenGen	Kenya Electricity Generating Company
KEPHIS	Kenya Plant Health Inspectorate Services
KIHBS	Kenya Integrated Household Budget Survey
KNBS	Kenya National Bureau of Statistics
KPHC	Kenya Population and Housing Census
KPLC	Kenya Power and Lighting Company
KWS	Kenya Wild life Services
MEFMI	Macro Economic and Financial Management Institute of Eastern and Southern Africa
MFS	Monetary and Financial Statistics
MSA	Macroeconomic Statistics Advisor
MSIP	Monthly Survey of Industrial Production
NAS	National Accounts Statistics
NHIF	National Hospital Insurance Fund
NPISH	Non Profit Institution Serving Household
NSSF	National Social Security Fund
PFCE	Private Final Consumption Expenditure
PIM	Perpetual Inventory method
PPI	Producer Price Index
QGDP	Quarterly Gross Domestic Product
SACCOS	Savings and Credit Cooperatives
SAM	Social Accounting Matrix
SASRA	Sacco Societies Regulatory Authority
SNA	System of National Accounts
SUT	Supply and Use Tables
VAT	Value Added Tax
WIP	Work In Progress

INTRODUCTION

1.1 Background of Kenya's compilation of the NAS

The history of the National Accounts Statistics (NAS) compilation in Kenya dates back to the 1940s. The first official estimates of the domestic income and product of Kenya were prepared by the East African Statistical Department for the year 1947. The main sources of information for these estimates were the annual censuses of employment, data on the output of the agriculture sector and the accounts of the government and other public organizations. The quality of the estimates was seriously undermined by the lack of information on income from rents, interest, profits and self-employment and by the limited data on the output of the manufacturing and service sectors. The estimates essentially covered the monetary economy. The methodology and sources established for the 1947 estimates were by and large retained for the following decade.

Subsequently, the East African Statistical Department progressively expanded its data collection activities. Surveys of industrial production were conducted in 1954, 1956, and 1957 and a sample survey of agriculture was undertaken in 1950/51. Substantial improvements were also achieved in the coverage and detail of existing sources of data such as income tax files. Further, during this period, considerable experience was gained in East Africa in adapting the methodology of national accounting to the conditions to be found there. Hence, in 1957 a major revision of the original series was effected and the details on sources and methods published. In this series, which covered the years 1954-1956, the procedures and terminology recommended by the United Nations were followed with minor modifications.

The quality of the estimates was generally better than that in the previous series. Nevertheless, the reliability of the estimates on gross value added of agriculture, quarrying, distribution and ownership of dwellings was still weak. This was principally due to the problems encountered in trying to quantify and value activities outside the recorded monetary economy which had been expanded to include non-monetary production of livestock and similar production associated with forestry, hunting and fishing. The difficulty of obtaining adequately disaggregated data on the operating surplus of private enterprises, particularly those in the construction and service sectors, was also a limiting factor. The new series, in addition to the estimates of domestic product and income, also provided estimates of capital formation for the first time.

The second major revisions to the National Accounts series were undertaken in 1967 and the third series of national accounts produced. It incorporated the new economic data that had become available since the initial compilation of

the second series and benefited from an improved classification and sub-classification of enterprises. Also a more comprehensive estimate of the size of the non-monetary economy was attempted. Besides the non-monetary activities mentioned above, estimates were made of non-monetary production of building and construction, water collection and ownership of dwellings. However, such estimates, too, were weak being based on limited data and, in some cases, on questionable assumptions.

Up until the publication of a new series in 1969, all the series consisted of estimates at current prices. The base year for the constant prices estimates was 1964. Another significant revision in this series was the gradual adoption, to the Kenya situation, of the definitions laid down in the United Nations System of National Accounts (1953). The methodology was used until 1974, when the third major revision to the National Accounts was undertaken. The third revision was completed and published in 1976 with 1972 as the base year for the new estimates. The concepts and definitions were consistent with those laid down in the 1968 System of National Accounts.

The fourth revision of the national accounts was completed in 1985 with the base year of 1982 and consistent with (1968, SNA). In total, national accounts were compiled for 13 major economic activities (industries) plus Domestic Services and Producers of Government Services for the monetary¹ economy. In addition, 5 economic activities for the non-monetary² economy were included.

The fifth revision of the national accounts was completed in 2005 and disseminated in the Economic Survey of the same year. This revision aligned the overall structure of national accounts statistics, in terms of concepts and definitions, to the 1993 SNA guidelines to the extent the data available could allow but with a few exceptions. The base year for the estimates at constant prices was 2001; while a variety of improved data sources and methodology were used. A systematic product flow technique was largely employed in the compilation of the estimates. The technique entailed a systematic confrontation of supply and use data for products at detailed level. In total, national accounts were published for 16 industries, financial intermediation services indirectly measured and taxes less subsidies on products. The level of the compilations was more detailed.

¹marketed production in; agriculture; forestry; fishing; mining and quarrying; manufacturing; building and construction; electricity and water; trade, restaurant and hotels; finance, insurance, real estate and business services; ownership of dwellings; other services and imputed bank services charges

²non-marketed production in; collection of firewood, collection of water, fishing, construction, ownership of dwelling

1.2 The current revision

The Kenya National Bureau of Statistics initiated the process of rebasing and revising the National Accounts in 2010. This is the sixth major revision in the history of national accounts in the country. The main objectives of the revision was to implement recommendations of 2008 System of National Accounts (2008 SNA), change base year from 2001 to 2009 and, incorporate new sources of data that had become available since the last major revision. In addition, the revision was to include the development of Supply and Use Tables (SUT) as an integral part of the National Accounts Statistics. The Supply and Use Tables provides detailed information on the production processes, the interdependencies in production, the use of goods and services and the generation of income in production.

Broadly, the revision process involved use of a wide range of information from surveys, censuses and administrative records done in a coherent and consistent manner to achieve the overall goal of improved National Accounts statistics. Before the actual revision, the Bureau took stock of the available data for national accounts and assessed their suitability. A data collection strategy was formulated and key surveys were conducted to fill the gaps. However, a few of the required surveys were not executed mainly due to financial constraints.

The output of this revision and rebasing exercise include revised annual and quarterly national accounts estimates for the period 2006 to 2013 at current and constant prices; development of a 2009 Supply and Use Tables (SUT); 2009 Input-Output Table (IOT) and 2009 Social Accounting Matrix (SAM).

The revision project has been done with the support of a regional national accounts consultant. Additional technical support was provided by Macroeconomic Statistics Advisor (MSA) from IMF, East AFRITAC while Macroeconomic and Financial Management Institute of Eastern and Southern Africa (MEFMI) also provided financial support for technical assistance. The revision process also greatly benefited from peer reviews most notably by the Macroeconomic Statistics Advisor from the IMF EastAFRITAC. The African Development Bank (AfDB) also peer reviewed the revised estimates through three national accounts experts from Zambia, Ghana, and Gambia. The estimates were also peer reviewed by the World Bank who sent two experts to review and support the KNBS with the communication and dissemination strategy.

1.3 Rationale for revision and rebasing of NAS

National accounts are a set of macroeconomic statistics³ which are key in understanding the workings of an economy and crucial for macroeconomic analysis and decision taking. They provide information on the economic transactions between different economic agents in an economy and also with the rest of the world and are also used for international comparability. Frequent revisions of NAS is therefore an internationally recommended best practice that is undertaken in many countries. The reasons for this are varied and include; changes in relative prices, structural changes in the economy, new compilation methods, and emergence of new or improved data sources.

Structural changes; over a period of time, changes take place in production structure of an economy. Furthermore, the relative prices prevailing during a certain period have a decisive impact on numerous economic circumstances, e.g. production methods and consumption patterns. As time passes and relative prices change, the economic circumstances also change accordingly. Then, it does not make sense to continue the calculation of national accounts at the prices of some distant base period as the results tend to be less and less relevant.

Besides, on account of continuous developments and innovations, new products appear in the market while old products disappear. Similarly, many quality changes occur and result in the non-comparability of goods and services between far apart periods. Furthermore, structural changes occur to the final demand side as well; the consumption patterns and utilisation and acquisition of capital goods. All these factors justify the necessity to rebase the national accounts series periodically. As the changes in structure of production or consumption appear almost continuously, it is desirable to do frequent rebasing. Rebasing on an annual basis is the most ideal proposition as recommended by the 2008 System of national Accounts (SNA). If that is not possible, rebasing should be at least every five years.

New methods; apart from changes in the economy, there has been significant advancement in the methods that need to be adopted. First, the revision has endeavored to implement the recommendations of the 2008 System of National Accounts (2008, SNA) as much as the available data could allow. Secondly, new data sources that better describe current economic development experiences of the country are now available to support the requirements of the new methodology and adoption of a new reference period.

³ Other macroeconomic statistics include GFS, BOP and MFS.

The most notable improvements in methodology in this revision include; development of 2009 SUT to inform the benchmarks; adoption of work-in-progress technique in crops, livestock and construction; compilation of estimates of research and development (R&D); adoption of the 2008 SNA recommendation for the calculation of the output of banks and insurance companies; military expenditures and; adoption of ISIC Rev 4 for the classification of economic activities.

Revision also serves to reconcile the different estimates of gross domestic product (GDP) and provides the occasion for methodological and conceptual reviews and improvements. Generally, the revision process does not necessarily require rebasing, benchmarking and review of the methodology to be conducted at the same time. However, it is convenient to approach the three tasks together to avoid causing confusion to users.

New data sources; Benchmarking of national accounts estimates, as a component of the revision process, is also periodic. However, this process is designed to improve the quality of the short-term national accounts by linking the high frequency information with the low frequency data into a consistent time series. For instance, annual estimates are based on relatively less comprehensive information compared to a five or ten years estimates derived from comprehensive surveys/censuses such as household budget surveys and population census. Therefore, the process provides an opportunity to incorporate irregular and periodic datasets that become available since the previous benchmarks.

In principle, a change of base year (rebasings) in the national accounts implies;

- changing the price and quantity base for the individual price and quantity relatives, and
- updating the weights used in aggregating the individual quantity relatives into sub-indices

Changes in current price or nominal GDP reflect the changes in total value of goods and services produced in an economy. The change in value of a good or a service can be due to: change in price; and/or change in quantity (changes in the volume). The assessment of economic growth entails the removal or adjustment of the price effect, or equivalently, the compilation of GDP at constant prices, the changes of which are often referred to as real GDP growth. It is a recommended practice to periodically rebase, at least once in every five years, to update the production structure; structural changes in relative prices of various products and; incorporate product changes due to developments and innovations. In addition, changes on the demand side like consumption patterns, utilization and acquisition of capital goods are all also updated through such a process.

Rebasing is essentially done to ensure that the principal measure of economic growth yields good estimates over the medium term following the base year. Prior to this revision, the constant national accounts estimates were based on 2001 prices and first released in 2005 with the revised series from 1996 to 2005.

1.4 Revision and harmonisation of national accounts in the EAC

The East African partner states have agreed on harmonization of the national accounts in line with the EAC integration calendar. In pursuance of this goal, Kenya plans to undertake and finalize the following activities before 2017;

- rebasing to a common base year of 2015 for the partner states
- expand the scope of national accounts; quarterly estimates of GDP by expenditure, the compilation of institutional sector accounts, gross fixed capital formation by activity and further disaggregation of consumption expenditure items
- improve estimation of the informal sector
- improve data quality for agriculture
- expanding PPI to include utilities, construction, mining and quarrying
- publish revised and rebased national accounts by end of 2017

HIGHLIGHTS OF THE RESULTS OF REVISION AND REBASING

The revised⁴ GDP is 20.5 percent higher than previously estimated while for the other years between 2006 and 2013, the gap between the revised GDP gradually increases from 15 to 25 per cent. Broadly, the major reason that led to the upward revision of the GDP include use of better data, improved coverage and revised input-output production structures which were lower in a number of sectors compared to the revised estimates. In terms of data improvement, the 2009 Population Census; Kenya Integrated Household Budget Survey (KIHBS) of 2005/06; and 2010 Census of Industrial Production majorly contributed to the upward revisions.

2.1 Production approach

Regarding economic activities, the revisions in the transport and communication was informed by the expenditure data obtained from KIHBS as well as expanded coverage in the information and telecommunication industry. In manufacturing activities, the revision was mainly supported by improved source data derived from Census of Industrial Production. Real estate activities registered the largest upward revision due to significant increase in stock of high quality dwellings (modern dwelling), higher inter-census annualized growth rate of 6.9 per cent in 2009 compared to 4.7 per cent from the previous 1999 census and more accurate estimates of average rentals. The new stock of dwellings and inter-census annualized growth rate are based on the 1999 KPHC and 2009 KPHC while the previous estimates were based on the 1989 KPHC and 1999 KPHC. Agriculture and forestry also contributed significantly to the upward revision on account of new data sources from Cost of Agriculture Survey, livestock census data from 2009 KPHC, and consumption data from the 2005/06 KIHBS. In addition, agriculture benefited from refined assumptions based on the International Livestock Research Institute (ILRI) and Inter-Governmental Authority on Development (IGAD) reports⁵. However, wholesale and retail trade was revised downwards on basis of new data from survey of trade margins conducted in 2010.

2.2 Expenditure approach

The overall structure shows minimal changes except for exports and imports (see Appendix tables). Private consumption expenditures averaged 78.2 per cent between 2006 and 2013 while government consumption averaged 14.6 per cent over the same period.

⁴ Detailed tables with revised series are in Appendix tables.

⁵ILRI study on animal productivity (February, 2011) and IGAD report "The contribution of livestock to the Kenyan economy" IGAD LPI Working Paper No. 03 - 11.

From the demand side, all the expenditure components were revised upwards except for changes in inventories where the revisions were minimal. New household benchmark estimates derived from KIHBS and expanded coverage in government sector informed the upward changes. Though, final consumption by government is estimated based on the usual existing annual accounts, the coverage of state corporations had been limited in the past leading to lower consumption estimates.

2.3 Implications of the current revision

The current revision has resulted in better quality national accounts estimates. The KNBS will avail the revised estimates and support documents to users as they adjust to the new series. The new system of compiling national accounts requires more data and resources and more collaboration with data providers.

Kenya's revised GDP per capita for 2013 is US \$1,269 compared to the previous estimate of US \$994 for the same year. This implies that Kenya will now be categorized as a middle-income country as its GDP per capita is well above the World Bank's benchmark of \$1,036. The new GDP estimates will most probably result to an improved international perception and rating for the country. This could also result in Kenya becoming eligible for extra borrowing in international markets and increase the likelihood of getting access to the World Bank's non-concessional facility.

METHODS AND DATA SOURCES

3.1 Overview of methods

The most widely used concept in the national accounts is the gross domestic product. It is the starting point of national accounts compilation before proceeding to other variables. This section therefore is dedicated to describing how it is estimated mainly through production and expenditure approaches. In principle, GDP can be estimated by using either of three approaches;

- (a) the production approach: the sum of values added (gross output less intermediate consumption) of each producer
- (b) the expenditure approach as the sum of final uses: private final consumption expenditure, government final consumption expenditure, increases in inventories, gross fixed capital formation and exports minus imports.
- (c) the income approach: the sum of the components of value added (compensation of employees, operating surplus, consumption of fixed capital and indirect taxes on products (e.g. VAT) minus subsidies on products.

In the current compilation of national accounts, none of the approaches is compiled completely independently. The level and movements of GDP at current and constant prices is mainly determined by the production approach, because the sources and methods for that approach are in general considered more reliable. That doesn't necessarily mean that there are no adjustments on the production side. The production approach has been used for compiling value added for most industries (Appendix II for a list of all industries), but in some instances it has been replaced by the expenditure approach or the income approach, because of lack of reliable data for either output or intermediate consumption. The expenditure approach has been combined with the product flow method, which starts with estimates of the supply of products in purchasers' prices and proceeds to estimates for categories of expenditure expressed in purchasers' prices.

The revised national accounts are generally in accordance with 2008 SNA guideline though there are some departures. It has not been possible to include coverage of a few activities recommended by the SNA due to unavailability of data. Activities not currently covered in the national accounts include illegal activities. Furthermore, it has not been possible to measure expenditure on computer software and database and entertainment, literary and artistic originals, which is defined as capital expenditure.

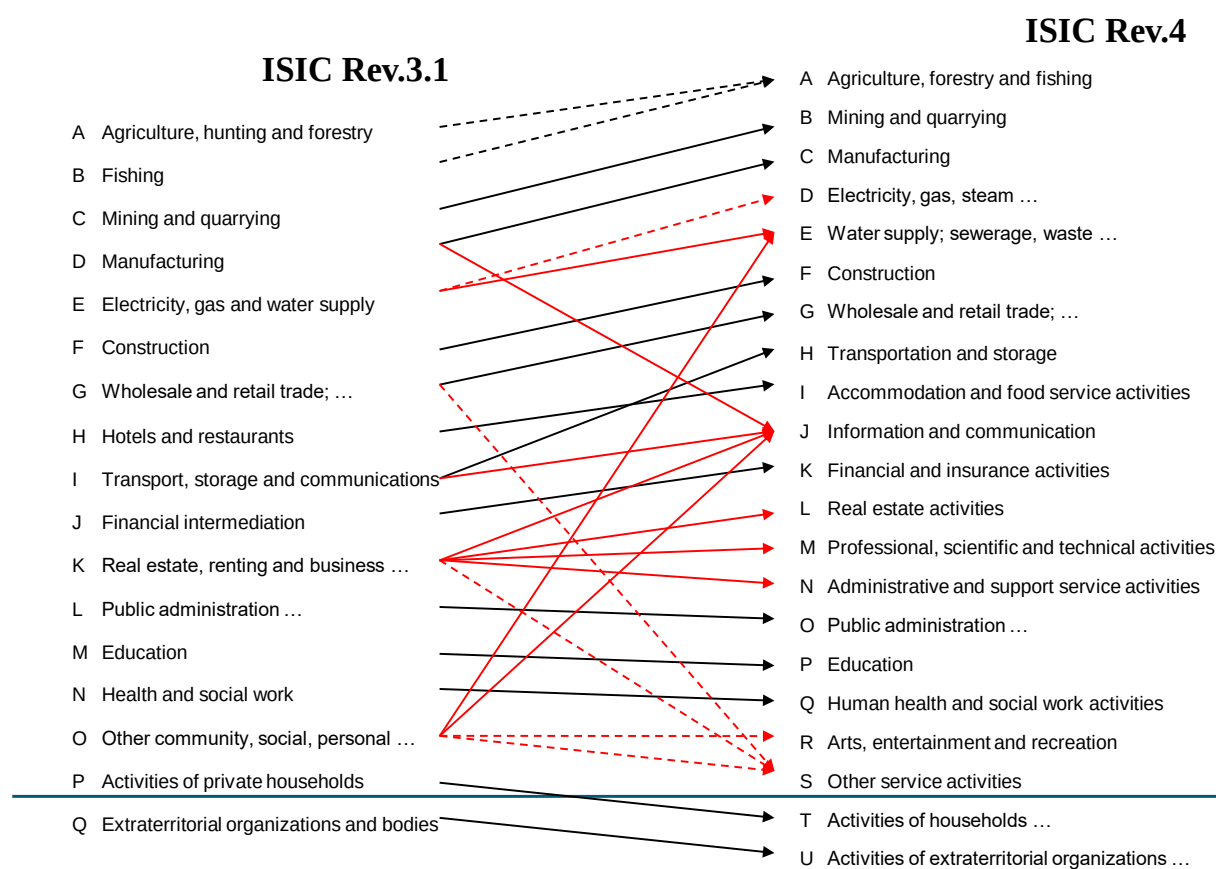
For deflation of the intermediate consumption, weighted average implicit deflators have been constructed on basis of the 2009 SUT and are widely used in the current national accounts compilation. The weighted average implicit deflator (also referred to as IC deflator) has been constructed by deriving the implicit deflator for each product based on the input matrix of the 2009 SUT. Weighted average deflators are then derived for all economic activities used as input for each industry.

3.2 Classifications and indices

3.2.1 Classification of economic activities

Classifications consist of coded, discrete, exhaustive and mutually exclusive categories and are the “common language” for statistics. The revised national accounts are now based on International Standard Industrial Classification of All Economic Activities revision 4 (ISIC Rev 4). The ISIC allocates the statistical units in the classes where they have their principal activity. The correspondence of the previous economic classification (ISIC Rev 3.1) and the new classification (ISIC Rev 4) for national accounts is as shown in Figure 1.

Figure 1: High-level concordance



3.2.2 Indices and indicators

There are currently four collections of price indices compiled regularly in Kenya. The consumer price index (CPI) is compiled on a monthly basis, producer price index (PPI) and building cost index (BCI) are on a quarterly basis while unit value prices are compiled on annual basis. The various detailed groups of these indices are used as deflators in the national accounts for many variables. In addition to the CPI and BCI, gazetted minimum wages and population numbers are used for the estimates at constant prices for a number of variables.

Consumer price index

The base period for the Consumer Price Index (CPI) is currently February 2009. The monthly indices are captured and quarterly and indices are calculated as the averages of three and twelve months respectively. The 12 published groups of the CPI and the all items index are treated in this way. In addition, a few other indices are derived from the CPI. CPI, non-food (excluding food, alcoholic beverages and tobacco) is calculated both as a weighted average and a straight average. CPI with the effects of VAT excluded is calculated for all items, food and non-alcoholic drink, and the variants of non-food. It is then assumed that changes in the VAT-rate reflect entirely as price changes. CPI, non-food (straight average) is used as a general deflator in many cases where nothing else is available.

Building cost index

There are three series of the Building Cost Index (BCI): buildings, civil engineering, and overall (weighted average of the two) and are calculated on a quarterly basis. Totals are derived for material, labour and all items. There are quite many different commodities (sand, timber, etc). Only the overall index with its details is rebased and used in the national accounts.

Other indices and indicators

Annual VAT-rates are used in the product flows. Changes in the rates normally take effect in mid June, and the annual average is calculated with the weights 0.45 and 0.55 for the first and second part of the year.

Minimum wage index: Gazetted minimum wages are recorded and made into index numbers.

Population: Averages changes in population and household numbers are calculated for rural, urban and the total. The annual changes are assumed to be equal to the average change between 1999 and 2009 according to the population censuses. The annual population number is also recorded.

Government salary index: is an index generated by wages paid to public servants. It is used to deflate compensation of employees.

3.3 Production Approach

3.3.1 Agriculture, forestry and Fishing

Agriculture is estimated to contribute the largest share of GDP at nearly 25 percent. At the compilation stage, estimates are made for the following detailed level of economic activities;

- growing of crops
- farming of animals
- support activities to agriculture
- forestry
- fishing

Growing of crops and horticulture

Separate estimates of output are compiled for; maize; other cereals (wheat, barley, sorghum and millet); beans, other leguminous crops and oil seeds; rice; potatoes and other root crops; vegetables; sugar cane; tobacco; fibre crops (sisal, cotton); pyrethrum and other non-perennial crops; fruit, nuts and spice crops; coffee; tea; other perennial crops (wattle, khat); cut flowers. Estimates of plantation developments and land improvement are also compiled.

Maize, beans, other cereals, other leguminous crops and oil seeds, rice, potatoes and other root crops ; output is derived for marketed products, own final use and seeds. Output for own final use is derived from the KIHBS while marketed output is the sum of uses; household purchases, intermediate consumption and exports as derived from KIHBS, SUT structure and foreign trade statistics, respectively. Relevant CPI components (e.g. maize grain - Loose, green maize, millet), rural market price, average prices to farmers are used as deflators. For barley an adjustment⁶ is made on output to match the intermediate input into the brewing industries.

Farming of animals

Estimates for livestock are disaggregated by; cattle; camels; sheep and goats; wool; pigs; poultry; eggs; raw milk; manure; other animals; other animal products. Other estimates include support services to agriculture.

⁶the adjustment is based on confrontation of supply and use of barley

Contribution of livestock to the GDP is derived from a model developed through a work-in-progress technique. The model's assumptions are largely based on data and information from the Livestock Department of the Ministry of Agriculture, 2009 Kenya Population and Housing Census, animal productivity study by ILRI and a report of "The Contribution of Livestock to the Kenyan Economy" by IGAD.

The 2009 Kenya Population and Housing Census collected data on the stock of livestock by type. The ILRI study on animal productivity provided information on the proportion of female and male animals and the time taken between births for exotic and indigenous cattle, sheep and goats. The KIHBS provided data on the number of animals bought, received as gifts, dead, and slaughtered. The IGAD report provided information on average milk production for the various types of animals by regions and proportion of animals under zero grazing and free grazing. In addition, the report also provided data on the average farm gate prices for the various animal products e.g. milk, live animals and manure. Data on imports and exports is derived from the foreign trade statistics while sales to abattoirs were derived residually.

The Department of Livestock provided information on average weights of carcass, offal and lard. From these details estimates are computed for

- live animals: GFCF is calculated on the basis of changes in number of female while the changes in the numbers of male animals are defined as changes in the inventories
- animal products: meat, offal, lard, milk, manure (marketed), hides and skins, eggs, and honey

Ratios of intermediate consumption to output are derived from KIHBS data. The livestock module of KIHBS collected data on medicines, dips, sprays, vaccines, artificial insemination, animal feed and fodder, water, electricity, fuel and lubricants, routine repairs and maintenance and other expenses.

Support services to agriculture

Production account is derived for the national government and non-market government producers (Parastatals). For the national government, output is derived as a sum of costs; intermediate consumption, compensation of employees and consumption of fixed capital on basis of data from the government's books of account. Parastatals engaged in provision of support activities to agriculture are Horticultural Development Authority (HCDA) and Kenya Plant Health Inspectorate Services (KEPHIS) and their output is also derived in a similar way as that of national

government. For the parastatals, depreciation⁷ is used to estimate consumption of fixed capital while that of the national government is derived through the Perpetual Inventory Method (PIM). Data for the parastatals is collected from their respective financial statements.

Forestry and logging

Estimates have been compiled for the national government, Kenya Forestry Services and the household activities of firewood collection for the following products.

- Hardwood and soft wood
- Firewood and charcoal
- Non-wood forest products
- Support services to forestry

Output of the national government and Kenya Forestry Services are computed as sum of costs based on the government's books of accounts and the financial statements, respectively. For constant prices, the government salary index is used to deflate the compensation of employees while implicit deflator derived from the SUT structure is used to deflate the intermediate consumption.

The 2005/06 HBS collected data on the time spent on firewood collection while the 2009 KPHC collected data on the number of households using firewood and charcoal as their main sources of energy. Output of firewood collection is then valued based on the time spent and gazetted monthly basic minimum wage of unskilled labour for agriculture. Estimates of charcoal output are based on the KIHBS data on household acquisition of charcoal.

Fishing

Marketed output both at current and constant prices, for fish and other fishing products, are based on data from the Fisheries Department on fish landed by quantities and values. Constant prices are derived using catches of the four major categories as volume indicators. Intermediate consumption is assumed to be 15% of output (at constant prices) and reflated using the implicit deflator from the SUT structure. Unreported output (includes production for own-consumption) is assumed to be 5 per cent of market output informed by household consumption pattern and employment in KIHBS.

⁷as measured in business accounting

Data sources for agriculture, forestry and fishing are;

- Kenya Integrated Household Budget Survey⁸ 2005/06
- Kenya Population and Housing Census 2009
- Cost of Agricultural Production Survey 2012
- Administrative data from the Ministry of Agriculture
- IGAD 2010 report; "The Contribution of Livestock to the Kenyan Economy"
- Kenya Forest Service (KFS)
- Fisheries Department in Ministry Agriculture

3.3.2 Mining and quarrying

Estimates are compiled for gold; fluorspar; soda and soda ash; other minerals⁹, stones, sand and clay. Broadly the production account is derived as follows;

Metal ores (excluding gold); the value of output is derived from exports and then deflated using volume index from quantities of exports to get constant price values.

Gold; the value of output is derived from exports and then deflated using world gold price index to get the constant values.

Fluorspar; output at current prices is derived from the production values. For output at constant, a benchmark for the base year is derived from CIP then it is extrapolated using the quantities produced as provided by the Department of Mines and Geology.

Stone, sand and clay; for the formal sector, a benchmark for the base year is computed from the CIP then extrapolated using quantities of cement produced. Current price values are then derived by reflatting using a weighted building and construction index of sand and aggregate. Output of the informal sector is derived the same way except the benchmark for the base year is computed from the KIHBS.

⁸the survey contained modules on consumption, education, housing, informal sector, agriculture (holding, crops and livestock), labour, energy, water and sanitation

⁹gypsum, lime and limestone, carbon dioxide, corundum, garnets, diatomite, vermiculite, sapphire, tourmaline etc

Soda Ash; a benchmark is compiled for the base year using the CIP then the output at constant is extrapolated using the quantities produced while the current values are derived by extrapolating the base year values using the values of sales of soda ash collected from Magadi Soda.

Other minerals; output at current is derived from exports. Constant values are generated by deflating the current using the implicit deflators derived from the SUT structure.

Mineral exploration; output is computed from data on expenditures on mineral exploration and evaluation¹⁰ provided by the Ministry of Energy. A weighted composite index of all minerals is used a deflator to generate the constant estimates.

Non-metallic mineral products nec; benchmark estimate at constant for the base year were derived from CIP (production values) and are extrapolated using volume index of quantities of cement produced from the survey of industrial production. Estimates for current values are derived by reflatting the constant using weighted index of BCI cement and concrete products.

Base year estimates of intermediate consumption are derived from CIP for formal sector and KIHBS for informal sector. The base year ratio of IC to output is applied for the other years and the IC deflator is used to establish a backward and forward series.

Data sources

- Department of Mines and Geology
- Ministry of Energy
- Census of Industrial Production (CIP)
- Foreign Trade Statistics
- 2005/06 KIHBS
- MSIP

3.3.3 Manufacturing

The manufacturing activity is compiled for 30 industries and 49 products. For most industries the annual estimates have been done as follows: a benchmark estimate of output for 2009 (the base year) was computed based on Census

¹⁰ for petroleum, natural gas, geothermal and coal

of Industrial Production (CIP). The census was conducted in 2010 and collected data for 2009 on output, inputs, employment, compensation of employees, gross fixed capital formation and inventories among other variables. The ratio of intermediate consumption over output, for constant prices, is also estimated on the basis of the CIP. A product flow is compiled for each product.

Output is calculated by extrapolation forwards and back to 2006. The methods are as follows:

- Extrapolation by the manufacturing quantum index to derive constant prices for 20 industries and reflation by suitable price indexes
- Extrapolation by VAT turnover to derive current prices for a few industries and deflation by suitable price indexes
- Specific methods for a few industries; examples:
 - Processing of tea and coffee, for example, are made to be consistent with the output of corresponding crops.
 - Exports data are used for extrapolation where the bulk of output is exported
 - Manufacture of refined petroleum products is based on data on supply and uses of petroleum products

Deflators are mainly computed from the MSIP. In some cases, where the output mainly comprises consumer goods, the relevant CPI component is used.

For most of the industries, intermediate consumption is computed by moving the benchmark with output at constant prices and reflation by a deflator computed on the basis of the SUT.

The main departure from the ISIC REV 4 classification is that the processing of tea and coffee have been treated as manufacturing as opposed to being considered as minor processing of agricultural products. The repair of ships and aircrafts are also included as per ISIC recommendations.

Data sources

The data sources for the manufacturing sector are diverse and include;

- Monthly Survey of Industrial Production (MSIP)
- Census of Industrial Production (CIP)
- Value Added Tax (VAT) records
- Kenya Integrated Household Budget Survey (KIHBS)

- Business Expectations Enquiry (BEE)

3.3.4 Electricity generation and supply

The industry comprises the production, transforming, transmission and distribution of electricity. There are two major enterprises, KPLC and Kenya Electricity Generating Company (KenGen) as well a number of independent power producers (IPPs). The value added for this industry is estimated by subtracting the cost of intermediate consumption or inputs (such as fuel cost recoveries for electricity generation and distribution, and non-fuel inputs) from the gross value of output, which is the sum of sales of electricity to domestic users and exports. The output of the IPPs that supply electricity to the national grid is estimated from electricity sales to KPLC. The SUT is used to derive a benchmark value for the intermediate consumption, based on data from KPLC and KenGen which is then moved by fuel power generation costs and output at constant prices. To generate constant price estimates the current price IC for fuel inputs is deflated by IC deflator for fuel and similarly for nonfuel inputs with a generate IC deflator that excludes fuel.

Data sources

- The annual reports and financial statements of Kenya Power and KenGen
- Monthly survey of industrial production (MSIP)

3.3.5 Water supply, sewerage and waste management

The national accounts have separately compiled the accounts for two industries; water supply and sewerage and waste collection and treatment, to get aggregate output for this activity. Sewerage and waste management output is estimated using the CIP as a benchmark for market producers and data from local authorities and water boards are used to arrive at nonmarket output. The KIHBS 2005/06 is used to estimate the output of household enterprises that are water vendors. The average CPI services is used to deflate both the market and non-market output. The IC deflator, based on the SUT is used to arrive at constant price value for IC. Output for own final consumption (collection of water) is based on the population censuses 1999 and 2009 and the KIHBS

Data Sources

The institutions involved in the supply of water and waste management are often supervised by local authorities. Similarly, parastatals involved in water supply and management including water service boards. Other data sources include the KIHBS 2005/06 and the Census of Industrial Production (CIP).

3.3.6 Construction

The estimates for the industry at current and constant prices are based on the product flow approach i.e. by supply of building materials. The Bureau does not conduct regular costs structure surveys for intermediate consumption in construction. However, domestic supply is estimated through use of industrial output data of key inputs in construction activities e.g. cement and corrugated iron sheets and imports of construction materials. Additions have been made for inputs not typical for construction (for example fuel).

An improvement in methodology for estimating Work in Progress (WIP) for monetary (residential buildings, other buildings, and civil works) and construction of traditional dwellings for both quarterly and annual national accounts. Intermediate consumption is estimated from the sum of construction materials (such as cement, bitumen and wood/timber), and associated costs in construction (fuel, electricity, building repairs and machinery, machinery repair and services, and other services associated with construction). The WIP methodology also provides estimates by type of construction activity which are then aggregated in product flows (i.e., resources/uses) and sectors (i.e. institutional sectors) for market producers and non-market producers.

Imports sorted by Broad Economic Categories (BEC) include a category for industrial supplies, among which goods mainly used for input in construction have been identified. This is recorded as intermediate consumption by market producers with deduction of intermediate consumption by central government. Supply from domestic producers originates mainly in quarrying and certain sub-sectors of manufacturing. The ratio of value added over intermediate consumption is based on the CIP. Compensation of employees is based on the annual employment and earnings statistics. Output and intermediate consumption at constant prices are derived by deflation, mainly using the building cost index.

Data Sources

Data captured to calculated aggregates for this industry include data on repairs and investments in new buildings, expenditure on public civil works both central and county governments, employment and wages and input price indices. The main sources of data are;

- Census of Industrial Production (CIP)
- Trade statistics
- Kenya Population and Housing Census (KPHC) 2009 and 1999

- Industrial output of key construction inputs such as cement and corrugated iron sheets
- Building cost index
- Employment and earnings statistics

3.3.7 Wholesale and retail trade, repairs

Wholesale and retail; Output is calculated as the sum of trade margins in the product flows both at current and constant prices. This is checked against the VAT turnover. The trade margins are based on the results of a survey (Survey of Trade Margins) that was conducted in 2010 and collected the percentage trade mark-ups for the sale of motor vehicle and motor vehicle parts, wholesale trade, and retail trade. The appropriate margins are applied to the marketed products at the product flow level to determine the output for this industry.

Intermediate consumption is estimated on basis of the KIHBS and ISS benchmarks which are then extrapolated using the output at constant prices. An implicit deflator (weighted average of all products used as intermediate consumption in wholesale and retail trade) is used to compute the constant estimates of the intermediate consumption at current prices.

Repair of motor vehicles and motorcycles; Output of repair services is based on a supply and use tables. For the formal sector, intermediate consumption is estimated at 40 per cent of output. Estimates of the intermediate consumption for the informal sector are based on a benchmark from the KIHBS. The benchmark is then extrapolated using the total number of motor vehicles operating on Kenyan roads. Current price estimates are then computed by reflatting using CPI services.

Data sources

- VAT records
- Integrated Survey of Services (ISS)
- 2005/06 KIHBS
- Study of trade margins

3.3.8 Transport and storage

The sector's output has been estimated separately for the twelve industries (Appendix II) and subsequently aggregated for activity output. However, it can be broadly grouped into five divisions; land transport and transport via

pipelines, water transport, air transport, warehousing (and support activities for transportation), and postal and courier activities.

Land transport and transport via pipelines

Railway: output and intermediate consumption are derived from annual reports of Rift Valley Railways. Output is derived from total revenue including receipts for passenger and cargo transportation. Intermediate consumption current price is deflated by the IC deflator for constant prices.

Passenger road transport: output estimates are based on benchmark from 2005/06 KIHBS from which expenditures on various modes of passenger transport (matatu, taxi, bus, bodaboda, school transport) are used to calculate output. The CPI for various fares have been computed and used to arrive at constant price estimates.

Freight transport by road: the output is estimated on the basis on number of the number of licensed lorries, trucks and heavy vans and estimates of average revenue per vehicle and month. Output at constant prices is moved with sales of diesel transport margins at constant prices. Current prices are derived by reflation using CPI for transport.

Transport via pipelines: the output of this industry is estimated as revenue of the Kenya Pipeline Company (KPC) with intermediate consumption derived from operating expenses. A volume index of throughput of crude petroleum deflating current price output and intermediate consumption to get constant prices values.

Water transport

Output for water transport is estimated from returns from the Kenya Ports Authority (KPA). A 2009 benchmark estimated for 2009 is derived from the sum of ISS revenue data for private water transport operators (such as boats) and moved by volume of exports to derive constant prices. These are then reflat by an average of CPI for services and diesel. Intermediate consumption at benchmark is assumed to be a ratio (30 per cent) of the output. The benchmark constant price IC value is moved by output at constant and reflat by the IC deflator for current prices.

Air transport

The output of air transport is estimated from turnover data of Kenya Airways (passengers, cargo and other income) with the benchmark of 2009 from the ISS which provided comprehensive coverage of both local and foreign airlines operating in the country. Current price benchmarks are deflated by an average CPI index of local and international

flights. The average of sales and fees collected by the Kenya Civil Aviation Authority (KCAA) and Kenya Airports Authority (KAA) provide estimates for the output of the service activities incidental to air transport industry and operating costs as intermediate consumption. Output at constant prices is moved by an average weighted volume index of total passengers, aircraft movements and freight for current price values.

Warehousing and support activities for transportation

The industries under this broad category include; warehousing, storage and cargo handling. A 2009 benchmark for output and intermediate consumption ratios are obtained from the ISS and VAT data for these industries. The current price output values for warehousing and storage are moved by VAT turnover data, and deflated by CPI services for constant price estimates. Benchmark estimates of output for cargo handling are moved by growth in the volume of exports and imports for constant price estimates which are then reflat by the CPI services for constant values.

Postal and courier activities

The aggregates for postal and courier industries are estimated separately. Output and intermediate consumption for postal services is derived from the income statement of the sole provider of the service, Postal Corporation of Kenya. CPI services and IC deflator are used to deflate output and IC values obtain constant price estimates. The courier industry 2009 benchmark output and intermediate consumption from the SUT input matrix and constant price values moved by the number of courier outlets reported by the Communication Authority of Kenya (CA), and subsequently reflat for current prices. The benchmark IC is derived from benchmark 2009 for key operators IO ratio and moved by changes in the ratio for constant prices and reflat by the IC deflator for current prices.

Data Sources

The transport and storage activity is mainly dominated by private actors especially in land transport (road and freight) and partly public owned corporations. Data on fuel consumption is from the Ministry of Energy while for other industries the financial statements of public corporations are used. Other data sources for this activity include;

- 2005/06 KIHBS
- Kenya Railways annual report
- Kenya Airways annual reports
- Kenya Pipeline Corporation (KPC)
- Kenya Postal Corporation

- Integrated Survey of Services (ISS)
- Kenya Civil Aviation Authority (KCAA)
- Kenya Airports Authority (KAA)
- Value Added Tax (VAT)
- Communications Authority of Kenya (CA)

3.3.9 Accommodation and food service activities

Hotels; output of hotels is based on average room nights available, occupancy rate and average room rates estimated from data collected in the monthly survey of hotel and restaurants. Average room rates have been estimated for the year 2009 for five categories; high class hotels in Nairobi, beach hotels at the coast, other hotels, game lodges (full catering) and game lodges (self service). Room rates for other years have been estimated on the basis of a deflator calculated as the average of CPI, accommodation services. Output is then derived by multiplying the room nights by occupancy rate and average room rates. The constant values are derived the same as current but using the base year room rates.

Informal (households); Output is derived from the household enterprise module of the KIHBS for both accommodation and food and beverages. Accommodation is about 20 percent of the total output of the informal sector. Output at current prices is extrapolated using VAT sales for accommodation and food and beverages services. Output at constant prices is derived by deflating current prices with the respective CPI components (CPI-accommodation services and CPI-food and beverages services). Intermediate consumption; at constant is derived as a ratio of output (from KIHBS) while the current is derived by reflating with the implicit deflator.

Data sources

- Monthly survey of hotels and lodges
- 2005/06 KIHBS
- Value Added Tax (VAT)

3.3.10 Information and communication

The activity covers; publishing, audiovisual and broadcasting activities, recording and publishing of music, telecommunications, and IT and other information service activities. The dynamism of this activity is reflected in new and more disaggregated data sources as well as the lack of recent sources to measure the informal economy. The adoption of ISIC REV 4 implies that publishing activities are now part of this classification from manufacturing.

Publishing, audiovisual and broadcasting activities; recording and publishing of music

The output for this industry is derived from VAT records for; publishing and motion picture, video and television programme production; music and television programming and broadcasting. Constant price estimates are derived by deflation with; an average CPI for publishing (books, primary and secondary text books, newspapers and magazines); motion picture, video and television programme production and music by a CPI for cinema entry fees; and a straight CPI average for services for television programming and broadcasting.

Telecommunications

Financial statements of telecommunication companies allows for the calculation of output, intermediate consumption, gross value added and capital formation at current prices. Constant price measures are obtained by deflating the current value by the selected price index of communication component of CPI (local calls, cell phone airtime, internet cost, and an average for all communication services). The output of new services notably MPESA has been estimated as output of telecommunications services.

IT and other information service activities

The output for this industry is estimated separately for; Computer programming, consultancy and related services, which is the major output; wireless telecommunications services; satellite TV; and Internet. The benchmark is based on the ISS while VAT records are used for extrapolation. Generated CPIs for cell phone airtime, internet costs and all services are used to deflate the current price output for the respective products. An Input-Output ratio from the ISS estimates is used to derive the total intermediate consumption for the industry which is then moved with output at constant prices. The IC deflator is used to get current price IC estimates.

Data Sources

The data sources for this activity are composed of both administrative and surveys.

- VAT records
- Annual reports of telecommunication companies
- Integrated Survey of Services (ISS)
- 2005/06 KIHBS

3.3.11 Financial and insurance services

The sector is categorized into five industries; central banking, other monetary intermediation, other financial service activities, insurance, reinsurance and pension funding, and activities auxiliary to financial service and insurance activities. included in these industries are the activities of commercial banks, non bank financial institutions, the Central Bank of Kenya (CBK), micro-financing institutions, forex bureaus, insurance companies, brokers and agents, insurance regulatory authority, and Savings and Credit Cooperatives (SACCOS).

The primary data sources for the activity are mainly administrative records from the supervisory authorities (both private and public financial corporations). These include the Central Bank of Kenya (CBK), Insurance Regulatory Authority (IRA), and SASRA.

Central bank services

The Central Bank is defined as non-market producer. The cost approach is used to estimate the output for the central bank services using financial statements. These current price estimates are deflated using CPI for non-food goods and services and the implicit deflator for GFCF for the consumption of fixed capital (CFC) component.

FISIM

In the revised national accounts, FISIM is calculated according to the 2008 SNA with separate estimates of FISIM on loans and deposits as follows:

$$\text{FISIM on loans} = L \times (RL - RR)$$

$$\text{FISIM on deposits} = D \times (RR - RD)$$

$$\text{Total FISIM} = \text{FISIM on loans} + \text{FISIM on deposits}$$

Where; L = stock of loans; D = stock of deposits; RL= interest rate on loans; RD = interest rate on deposits; and RR= reference interest rate (the “SNA-interest”). The interest rates on loans and deposits have been derived as the implicit rate (interest payable/receivable divided by stock of loans/deposits).The reference rate has been calculated as the average of the interest rates on loans and deposits. There is no recommendation for deflation of FISIM, and the approach used in the Kenya national accounts is to deflate current price values with the CPI all items.

Insurance

The output for insurance activity is calculated according to the 2008 SNA in the revised national accounts and based on data provided by the Insurance Regulatory Authority (IRA). Output for life, nonlife insurance and pension

funding, is calculated from the difference between insurance premium income and investment income less incurred claims and actuarial reserves. However, an increase of 2% is made on output to cater for pension funding in life insurance. This is informed by the ratio of premiums for pension funding as a proportion life insurance premiums data from the Integrated Survey of Services (ISS) while insurance premium levy deductions are made for insurance premium levy. Property income allocated to policyholders (premium supplements) is factored in here. . Intermediate consumption in insurance is estimated similarly for both life and nonlife insurance as sum of costs of reinsurance, commissions, and management expenses less the compensation of employees. The IC deflator is used to derive constant price estimates. The intermediate consumption for both life and nonlife insurance is estimated on the basis of data compiled by the IRA. Output at constant prices is calculated by deflating premiums by CPI insurance. Output is then moved with deflated premiums.

Data Sources

The primary data sources for the activity are mainly administrative records from supervisory authorities (for both private and public financial corporations). These include;

- CBK depository corporation survey
- CBK income statement
- Insurance Regulatory Authority (IRA) annual report
- SASRA annual report
- Integrated Survey of Services (ISS)

3.3.12 Real estate activities

Estimates have been compiled for dwelling services and other real estate services.

Dwelling services

Estimates have been done for both market and non-market output (ownership of dwellings). For national accounts purposes, four categories of dwellings are defined according to main type of roofing material:

- Tiles / Concrete / Asbestos
- Iron sheets
- Grass / Makuti / Tin
- Other types

Actual rentals; the 2009 Kenya Population and Housing Census collected data on stock of dwelling units by type of ownership and tenure. Ownership included, individual, private companies, parastatals, government (both national and county) and faith based organizations. In addition, the census collected details on roof, floor and wall materials which have been used to group the dwellings into various categories. The different categories of dwellings have different rental values. The 2005/06 Kenya Integrated Household Budget Survey collected data on rental values for the different categories of dwellings. The rental values for 2009 were estimated by price updating the 2005/06 rental values (from KIHBS) using the CPI increase in rent between the two years. Output of each type of dwelling is then established by multiplying the stock of dwellings by the rental values. The inter-censal growth rate¹¹ between 1999 and 2009 is used to retropolate/extrapolate the output at constant prices. Current price estimates are derived by reflating using the CPI rentals.

Owner-occupied; output is compiled using imputed rents and applying a similar approach as for the actual rentals as discussed above. Average rentals for different types of dwellings are assumed to be the same actual rentals paid to individual owners.

Intermediate consumption at constant is derived from input/output structure generated from the Integrated Survey of Services (ISS) for the base year. The same ratio is then used for the other years. Current price estimates are derived by reflating the constant price estimates by the implicit deflator (weighted average of implicit deflator of all inputs for dwelling services).

Real estate services except dwellings

Benchmark estimates were developed on basis of the SUT, i.e. total intermediate consumption of real estate rentals. Secondary output of real estate services from other industries is also estimated from the SUT. Output of the real estate industry is then derived as the difference between the SUT estimate and the secondary output of the other industries. The constant price estimates are extrapolated using the gross capital stock of other buildings. The current estimates for real estate industry are generated by reflating by CPI actual rentals paid by tenants.

Data sources

- 2009 KPHC and 1999 KPHC
- 2005/06 KIHBS

¹¹ own and rented dwellings for each of the categories – is assumed to increase with the annual average from 1999 to 2009

3.3.13 Public administration and defence

The main functions of government are to assume responsibility for the provision of collective and individual services (such as health and education). Government units are normally engaged in the production of non-market goods and services. Total output for governments is valued as the sum of production costs; that is cost of intermediate goods/services, compensation of employees and consumption of fixed capital. Constant price values calculated by deflation with the IC deflator for intermediate consumption and a government salary index for compensation of employees, Consumption of fixed capital is calculated at constant prices applying the perpetual inventory method and the reflatd by the implicit deflators for GFCF

Data Sources

The local government data has historically been composed of municipalities and county councils which are mainly financed by the central government. From the year 2013/14 financial year these have been replaced by county government's data. The annual financial statements of all parastatal bodies, the National Social Security Fund (NSSF) and National Hospital Insurance Fund (NHIF) are also used.

3.3.14 Education

Education services are provided by both the government and the private sector in Kenya. Production accounts are prepared for

- pre-primary and primary education
- general secondary education
- technical and vocational secondary education
- higher education and
- other education¹²

Pre-primary and primary

Private; the production account is derived from the National Education Account¹³ which has details on enrollment, average fees¹⁴ per student/pupil, and intermediate consumption¹⁵. The average fees per pupil were computed from fees structures for a number of private schools. Output for teaching and accommodation activities, is then computed

¹²

¹³ developed by the Ministry of education, UNESCO and KNBS

¹⁴ for teaching activities and boarding activities

¹⁵ boarding fees, text books, exercise books, activity fees, transport, medical, repair and maintenance, exam fees, games kit, other charges

as average fees per student multiplied by the enrollment in private schools. Output at constant is then derived by deflating current using the respective CPI (education and accommodation services).

Intermediate consumption at constant price is taken as a ratio (27 per cent) of output based on the national education account. The constant price intermediate consumption is then reflatd using an implicit deflator to get the IC at current price.

Government; Output at current prices is calculated as the sum of intermediate consumption, compensation of employees and consumption of fixed capital (for the national government only) from the government books of accounts. Output at constant prices is derived from enrollment numbers while the intermediate consumption is deflated using the implicit deflator.

The major part of government schools are sponsored by the Teachers' Salary Commission, a statutory body, which pays the teachers' salaries while county governments also operate some schools and their estimates are also included.

General Secondary Education

Private: the production account is compiled the same way as for the private pre-primary and primary schools with the enrollment, average fees per student, and intermediate consumption being those of the secondary schools as derived in the national education account. Output at constant prices is then derived by deflating current using the respective CPI (secondary tuition and secondary boarding fees).

Intermediate consumption, at constant prices, is taken as a ratio of output (base year). The constant intermediate consumption is then reflatd using an implicit deflator to get output at current prices.

Government; Output at current prices is calculated as the sum of intermediate consumption, compensation of employees and consumption of fixed capital computed from the government's books of accounts. Output is deflated using CPI-pre primary-tuition while the intermediate consumption is deflated using the implicit deflator. National government also pays other costs by providing funds direct to the schools on basis of the number of students. County governments do not operate secondary schools.

Technical and Vocational Education

Private; output is derived as average unit cost (for registration, tuition and boarding fees) multiplied by the enrollment. The unit cost is based on the national education account. Output for education services is deflated using CPI-secondary tuition while output of boarding services is deflated using CPI-secondary boarding fees.

The intermediate consumption at constant is taken as a ratio (52 per cent) of output based on the Integrated Survey of Services (ISS). The intermediate consumption at constant is then reflatd using the implicit deflator to derive the current prices.

Public; output is computed as a sum of costs: compensation of employees, intermediate consumption and consumption of fixed capital based on the government's books of accounts. The compensation of employees is deflated using the government's salary index while the intermediate consumption is deflated using the implicit deflator.

Higher education

Private; output is compiled for teaching and boarding services using enrollment and unit costs per student for teaching and boarding. The unit cost for teaching is from the national education account and is based on tuition and miscellaneous fees for higher institutions of education. The compilation assumes that 70 per cent students are boarders. The respective outputs are deflated using CPI-tertiary tuition and CPI-boarding secondary boarding fees.

Intermediate consumption is taken as a ratio (28 per cent) of output at constant and then reflatd using the implicit deflator to derive the intermediate consumption at current prices.

Public; output is compiled for teaching, boarding and non-education activities based on data from the public universities financial statements. Output for teaching services is taken as sum of tuition and related fees, research income and other teaching related incomes. Output for non-teaching activities is taken as equal to non-education incomes. For accommodation, output is based on boarding fees paid by the resident students. CPI-tertiary tuition, CPI-secondary boarding fees and CPI-services are used to deflate the respective outputs to get the constant values. Public universities also receive grants from the national government which are treated as subsidies in the national accounts. Intermediate consumption and compensation of employees are adjusted for what is recorded by the parastatals engaged in tertiary education.

Intermediate consumption and compensation of employees are compiled from the relevant components in the public universities' financial statements. The intermediate consumption is deflated using the implicit deflator.

Government; output is computed as a sum of costs: compensation of employees, intermediate consumption and consumption of fixed capital based on the government's books of accounts. The compensation of employees is deflated using the government's salary index while the intermediate consumption is deflated using the implicit deflator.

Other education; these are activities of general continuing education and continuing vocational education and training for any profession. This category driving schools, the provision of instruction in athletic activities to groups or individuals, foreign language instruction, instruction in the arts, drama or music or other instruction or specialized training, not comparable to formal education.

Data sources

- Ministry of Education
- Teachers Service Commission (TSC)
- Integrated Survey of Services (ISS)
- Income statements of relevant parastatals

3.3.15 Health and social work

Human Health

Government; public health facilities are operated by both national and county governments. For general government, estimates have been compiled for national government, county governments and parastatals. Output is valued as the sum of its costs of production as follows;

Output = Intermediate consumption + Compensation of employees + Consumption of fixed capital

The net operating surplus is by convention assumed to be zero.

To derive the output at constant prices, compensation of employees is deflated using the government salary index while the intermediate consumption is deflated using the implicit deflator. For the parastatals, consumption of fixed capital is deflated using the implicit deflator¹⁶.

Social work

Activities of social work include the provision of a variety of social assistance services directly to clients. These are services such as counselling, welfare, refugee, referral and similar services which are delivered to individuals and families in their homes or elsewhere and carried out by public or by private organizations, disaster relief organizations and national or local self-help organizations and by specialists providing counselling services. These activities are mainly carried out by non-profit institutions serving households (NPISH).

Estimates of output are derived as sum of costs of intermediate consumption, compensation of employees and consumption of fixed capital. Estimates of the costs for 2009 benchmarks were computed from the ISS and employment statistics (by raising the ISS values using employment). The benchmarks are then moved with employment to determine the output at constant prices for other years.

Current values of intermediate consumption are derived by reflating constant price estimates with implicit deflator while the compensation of employees is reflated by earnings from employment and earnings statistics to derive the current price estimates.

Estimates of both national and county governments are also derived as sum of costs from their respective books of accounts. The compensation of employees is deflated using the government salary index while IC is deflated by the implicit deflator.

Data sources

- Integrated Survey of Services (ISS)
- Government finance statistics

¹⁶ current GFCF/constant GFCF

3.3.16 Arts, entertainment and recreation

This industry includes a wide range of activities to meet varied cultural, entertainment and recreational interests of the general public, including live performances, operation of museum sites, gambling, sports and recreation activities. Estimates have been compiled for the private sector, NPISH and the Kenya Wildlife Services (KWS).

For the private sector, output is compiled from the VAT turnover and CPI is used to derive the output at constant prices. The financial statements of the KWS have been used to provide data on output, intermediate consumption and compensation of employees. For NPISH, output is derived as sum of costs. Implicit deflators, government salary index and CPI have been used as deflators.

Data sources

- Kenya Wildlife Service (KWS)
- VAT records

3.3.17 Other service activities

This category includes the activities of membership organizations, the repair of computers and personal and household goods and a variety of personal service activities not covered elsewhere in the classification.

Activities of membership organizations

A benchmark for the 2009 output was derived from the ISS and employment and earnings statistics. Current price output is extrapolated by earnings to the estimates for the other years. CPI is then used to deflate in order to compute constant price output. Intermediate consumption is also compiled from the ISS then for the private sector is derived as a ratio of the output at constant price.

For NPISH, output is derived as the sum of costs. The compensation of employees and intermediate consumption are extrapolated by employment numbers.

Repair of computers, personal and household goods

Output is estimated for; repair of footwear and other leather goods; electrical repair shops; watch, clock and jewelry repair; repair (unspecified); and other repair shops n.e.c. For the formal sector, a 2009 benchmark was computed from the ISS and employment and earnings data. KIHBS is used to compute a 2009 benchmark for the informal

sector. The sum of the two outputs is then moved with VAT turnover for these activities. CPI for all services is used to deflate current price estimates to constant prices.

The intermediate consumption for both formal and informal sectors are derived as a ratios of output at constant prices then reflatd using implicit IC deflator to get the current price values.

Other personal service activities

The estimates are based on the ISS and employment and earnings datasets. Included here are laundry, salon and barber shop, massage and funeral services.

Data sources

- Integrated survey of services (ISS)
- 2005/06 KIHBS
- VAT turnover

3.3.18 Taxes less subsidies on production and imports

Taxes on production and imports comprise all taxes that enterprises incur by engaging in production. They are recorded as being payable out of the value added of producers or, if not being attributed to a specific producer, as payable at the level of the total economy. There are two categories, namely taxes on products and other taxes on production.

Taxes on products are payable on goods and services when they are produced, sold or used. Taxes on products are proportional to or vary in other ways with the value or quantity of the goods and services on which they are levied.

Other taxes on production are payable out of the value added of producers but lack the characteristics of taxes on products. They do not include taxes on profits or other income received by the enterprise and are payable whether the production is profitable or not. This category of taxes may be levied on land, fixed assets or the labour employed.

Subsidies are current transfers that government pays to producers that constitute additions to the income receivable from their output. By convention, subsidies are recorded as a negative item on the uses side of the generation of

income account. From an accounting point of view, they are equivalent to negative taxes on production. As for taxes, there are two categories, subsidies on products and other subsidies.

In line with recommendations of the 2008 SNA output and value added in Kenya's national accounts are valued at basic prices. The basic price is the amount receivable by the producer exclusive of taxes on products and inclusive of subsidies on products. On the other hand, value added at basic prices include other taxes on production and excludes other subsidies. Thus, taxes on products are not attributed to a specific producer; they are recorded as payable at the level of the total economy.

Taxes on products

Taxes on products in Kenya can be categorized as follows:

- a) Import duties
- b) Sugar levy
- c) Excise duties on beverages and tobacco
- d) Excise duties on toiletries
- e) Excise duties on second hand motor vehicles
- f) Taxes on petroleum products (road maintenance levy and excise duties)
- g) Excise duty on airtime
- h) Insurance premium tax
- i) Value added tax (VAT)

GDP compiled by the production approach is the sum of values added at basic prices plus taxes on products. Thus, taxes on products must also be calculated at constant prices.

Total import duties are available from the KRA. In principle, KRA records the duties at the same time as the imports are recorded. This is on an accrual basis in line with the SNA. The totals for the other categories are taken from government financial statistics, which are on a cash basis. This is used as an approximation of accrual data assuming that the difference between cash and accrual recording is fairly stable.

The totals for categories b)-f) above are allocated to the relevant product flows. Constant prices are calculated within that framework by multiplying the implicit tax rates for the base year with the relevant variable at constant prices, for example imports c.i.f. in the case of import duties.

VAT is calculated in the product flows for all products and uses where non-deductible VAT applies. This is mainly household consumption but also a small proportion of intermediate consumption and GFCF to cover for producers that are not registered for VAT. Constant prices are calculated by multiplying the VAT rate for the base year with the relevant variable at constant prices. The sum of VAT calculated in the product flows should be and is bigger than the recorded VAT. This could be used as an estimate of accrued VAT. However, this is not done considering the uncertainty in the various source data used for the products flows and tax evasion.

Other taxes on production

Other taxes on production include various licenses and stamp duties payable to the central government as well as rates (levied on real estate) and licenses and cesses payable to the local authorities. These taxes should be allocated to industries and recorded in their generation of income accounts. Currently this has not been done. Total other taxes on production amount to about half a percent of GDP.

Subsidies

Subsidies in Kenya are small amounts and are paid by national government go to the transport industry and education.

3.3.19 Consumption of fixed capital

Estimates of consumption of fixed capital at constant prices have been developed using the Perpetual Inventory Method (PIM). Various lifespans have been assumed for the different fixed assets; 40 years for dwellings, non-residential buildings, and other structures; 8 years for transport equipments 10 years for other machinery and equipment; and 5 years for ICT equipment. The lifespan is then used together with stock of the assets to compile the consumption of fixed capital.

The consumption of fixed capital is deflated using implicit deflators of the respective component of the gross fixed capital formation. For instance, the constant price output values of motor vehicles derived from the CIP 2009 benchmark are extrapolated using volume index of assembled vehicles, coaches and bus bodies and lorries/truck bodies. The current price output is derived through extrapolating the 2009 benchmark with the VAT turnover of

manufacture and assembly of motor vehicles. An implicit deflator¹⁷ for consumption of fixed capital is then derived from the two output values.

3.4 Expenditure approach

The components in the expenditure approach¹⁸ are; private consumption (expenditure by households and NPISH), government consumption expenditure, gross fixed capital formation, changes in inventories (value of physical changes in stocks) and exports of goods and services; imports of goods and services. The product flow approach has been used to compile the expenditure components for 150 products which are then aggregated to derive the totals on the expenditure side.

The compilation is based on the general identity model;

$$Y = C_g + C_p + I + (X - M)$$

Where, C_g = Government consumption expenditure;

C_p = Private consumption expenditure;

I = Gross fixed capital formation

X = Export; M = Import.

3.4.1 Private final consumption expenditure (PFCE)

Private final consumption expenditure (PFCE) refers to the final consumption expenditure of households and NPISH including the final consumption expenditure of resident households abroad but excludes the expenditure of non-resident households locally.

The coverage for PFCE includes;

- The final consumption expenditure of residents including those temporarily stationed abroad
- the goods and services produced on own account by households
- goods and services received as income in kind
- the final consumption expenditure of NPISH

The level and structure of household consumption – a benchmark for 2006 – is based on the household consumption data of the KIHBS 2005/06. The benchmark estimates are valued at market prices, since the survey measures actual expenditures by households on goods and services. Various indicators are then used in the product flows to the

¹⁷ output at current at price/output at constant price

¹⁸ The revised data for the components of this approach are in Appendix tables.

benchmark, often the supply for the domestic market (output minus exports). The allocation to uses for imports of goods is based on the classification by Broad Economic Category (BEC). Two categories of imported services are allocated to household consumption: life insurance and direct purchases abroad by residents.

Output for own consumption: This is all household consumption by definition. Output for own consumption is calculated for agricultural and animal products, fish, fuel wood, water collection, and owner occupied dwellings.

Owner occupied dwellings; imputed output value for similar types of privately rented accommodation are estimated and recorded as final consumption expenditure of households. A benchmark value for the output by type of dwellings based on KPHC 2009 and extrapolated using a volume index of the inter-censal increase in the stock of houses and a rentals consumer price index to obtain market price estimates.

Final consumption by NPISH: The estimates of output by NPISH are estimated for education, health, social work, arts entertainment and recreation, and activities of membership organizations. NPISH final consumption is defined as: Output minus sales and fees receivable and sales. Output is measured as the sum of costs The IC deflator has been used to arrive at constant price estimates.

Data Sources

There are various sources of data for PFCE including;

- Kenya Integrated Household Budget Survey (KIHBS) 2005/06
- VAT turnover data
- Kenya Population and Housing Census (2009)
- Foreign trade statistics
- Balance of Payment (BOP) statistics
- Integrated Survey of Services (ISS)
- Administrative records for services; such as electricity, telecommunications, education (and enrolment numbers), financial services.

3.4.2 Government final consumption expenditure (GFCE)

Government final consumption expenditure is defined as the non-market output by government institutions minus revenue from incidental fees. It consists of both national – including parastatals – and county government units. There are two categories of GFCE:

Individual GFCE; this is defined as the value of individual goods and services which are produced by the government sector and distributed free to individuals. Examples include education, health, social security and welfare and recreation.

Collective GFCE; collective final consumption expenditure of government for example public administration and defense services.

The output for both collective and individual government consumption are estimated separately. The non-market output of Government is valued as the sum of the costs of production. Since there is no tax on output of the government final consumption equals to the non-market output of the government sector.

Non-market output is the sum of;

- Compensation of employees
- Intermediate consumption
- Consumption of fixed capital
- Other taxes on production

The non-market output is deflated by the cost approach where goods and services used as intermediate consumption by government are deflated by price indexes of the respective goods and services bought and the compensation of employees is deflated by a government salary/wage index. However, government output of education services at constant prices is moved by the relevant enrolment numbers.

Data Sources

Data used for compilation of GFCE include;

- National government accounts
- County governments accounts
- Annual financial statements of parastatals
- NHIF and NSSF financial statements

3.4.3 Gross fixed capital formation (GFCF)

The GFCF measures the value of acquisitions (by producers) of new and existing fixed assets by the economy (both private and governments sectors) less disposals of fixed assets. It shows how much of the new value added in the economy is invested rather than consumed. Fixed assets consist of buildings, civil works, machinery and equipment with a productive life of more than one year. Fixed assets also include, intellectual property¹⁹ and costs of major improvements to existing assets. New purchases comprise acquisition of new locally produced items and imports of both new and used items.

The distinction for gross fixed capital formation between increases in inventories and intermediate consumption for certain activities have been adopted. The general guide is that acquisitions of assets with a lifespan of at least one year are to be included in gross fixed capital formation. Repair and maintenance expenses are generally counted as intermediate consumption, but are considered gross fixed capital formation if the repairs or maintenance work are so sizeable that the lifetime of the asset is expected to be extended or result in higher productivity. Large expenses for land improvements in agriculture and forestry are considered capital formation; similarly, all expenses for oil drilling and oil exploration are to be included as gross fixed capital formation. In the WIP model for livestock, the part of the change in livestock numbers which relates to breeding stock, draught animals, and dairy cattle is considered to be gross fixed capital formation, while the rest of the changes in livestock numbers are considered increase in stocks.

The product flow approach is used to estimate GFCF. From trade data, imported machinery and equipment classified as capital goods is distinguished from intermediate and final consumption commodities. Estimates for transport equipment and other machinery and equipment is derived from the product flows as virtually all such goods are imported. The product flow method is used to derive GFCF in machinery and equipment. The production and trade values are adjusted for trade and transport margins and taxes to convert the values to purchaser's prices.

Data sources

The main data sources for GFCF include; foreign trade statistics and survey of industrial production for the on domestic production of capital goods. The sources for GFCF in buildings and structures are as described under construction above.

¹⁹ research and development; mineral exploration and evaluation; computer software and databases; Entertainment, literary and artistic originals

3.4.4 Changes in inventories

Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and the value of any recurrent losses of goods held as inventories. The estimates of changes in inventories cover only a few products, petroleum products among them. Changes in livestock numbers, as described above, are also included.

3.4.5 Exports and imports of goods and services

Coverage for exports and imports of goods and services is highly disaggregated at product level to capture as much detail as possible.

Data sources

The data sources for the estimation of exports and imports of goods are foreign trade statistics, and informal cross border trade (ICBT) survey. The source of data for estimation of exports and imports of services is the balance of payments (BOP) statistics.

3.5 Supply and Use Tables (SUT)

The development of 2009 SUT serves both statistical and analytical purposes. As a statistical tool, SUT provides an accounting framework for systematic and detailed description of the economy; its various components on the supply and demand side; and its relation to other economies. Therefore, it presents a powerful tool with which to compare and contrast data from various sources and improve the coherence of the economic information system. The SUT is extensively used to inform policy decisions.

This is the first time KNBS has compiled supply and use tables (SUTs) as part of the rebasing of gross domestic product (GDP). The 2009 SUTs include 81 economic activities and 150 products. The methodology provides for more comprehensive coverage of economic activities and a more robust quality assurance approach through balancing of the supply and use of products. This has contributed to the 2009 benchmark estimates being of better quality than the 2001 benchmark estimates.

The SUT as a core table in the System of National Accounts consists of two tables - the Supply table and the Use table that are closely linked together. The supply table shows both the value of different products at basic prices produced in every industry and the total supply of every product in both basic and purchasers' prices. The use table

shows both the cost of production in every industry, and the use of every product at purchasers' prices in the economy.

The basic layouts of the two tables presented in this section are highly simplified. They do not show detailed classification of industries and products. Similarly, identification of output by type of producers such as market producers and producers for own final use and other non-market are not highlighted. However, the layout is complete and the valuation of domestic output and imports including the adjustment items (i.e. trade and transport margins and taxes and subsidies on products) are shown.

Simplified Supply Table

	Industry			Imports	Total supply at basic prices	Trade and transport margins	Taxes less subsidies on products	Total supply at purchasers' prices
	Agriculture	Industry	Services					
Agricultural products	<i>Output by products and by industry (at basic prices)</i>			<i>Imports by products (CIF)</i>	<i>Total supply by products (at basic prices)</i>	<i>Margins</i>	<i>Taxes</i>	<i>Total supply by products (at purchasers' prices)</i>
Industrial products								
Services								
Total	Total output by industry			Total imports	Total supply (basic prices)		Total taxes	Total supply (purchasers' prices)

Simplified Use Table

	Industries	Final uses	Total
Agricultural products	<i>Intermediate consumption by products and by industry</i>	<i>Final uses by products and by use category</i>	<i>Total use by product</i>
Industrial products			
Services			
Value added	<i>Value added by components and by activity</i>		<i>Total Value added by components</i>
Total	Total output by industry	Total final uses by category	

The SUT framework provides the natural statistical framework to include the components of the production, income and expenditure approaches to measuring GDP, thereby enabling a coherent and balanced estimate of GDP both in current prices and constant prices to be achieved.

A detailed balanced SUT consisting of 151 products by 81 industries has been compiled and the results are available at KNBS. Detailed input matrix (151 by 81), Use matrix by broad use categories (151 by 6) and Production matrix (151 by 81) have also been compiled.

Glossary

Basic prices: The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any product tax payable, and plus any product subsidy receivable, by the producer as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer (SNA, 2008).

Compensation of employees is defined as the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period.

Gross mixed income: Mixed income is the term reserved for the balancing item in the generation of income account for unincorporated enterprises owned by members of households either individually or in partnership with others in which the owners, or other members of their households, may work without receiving a wage or salary. It contains an unknown element of remuneration for work done by the owner of the enterprise, or other members of the same household, as well as the operating surplus accruing from production.

IC deflator: This is a weighted average implicit deflator constructed by deriving the implicit deflator for each product based on the input matrix of the 2009 SUT. Weighted average deflators are then derived for all economic activities used as input for each industry.

Industry output: Industry output is the total value of all products produced by an industry including both primary and secondary products.

Industry: An industry consists of a group of establishments engaged in the same, or similar, kinds of activity. At the most detailed level of classification, an industry consists of all the establishments falling within a single Class of ISIC and which are therefore all engaged on the same activity as defined in the ISIC. The ISIC is the United Nations *International Standard Industrial Classification of All Economic Activities* and the basis of these classifications is the establishment (the statistical unit).

Market producer is an establishment or enterprise in which all or most of its output is marketed.

Market, own final use and other non-market producers: Industries/producers in the SNA are grouped into three broad categories: Market, own final use and other non-market producers.

Operating surplus is a balancing item, which is equal to value added minus compensation of employees, minus taxes less subsidies on production and imports. Operating surplus that includes consumption of fixed capital is called *gross operating surplus*; without consumption of capital, it is called *net operating surplus*.

Other non-market producers consist of establishments owned by government units or non-profit institutions serving households (NPISHs) that supply goods or services free, or at prices that are not economically significant, to households or the community as a whole.

Other subsidies on production: These consist of subsidies except subsidies on products which resident enterprises may receive as a consequence of engaging in production.”

Other taxes on production consist “mainly of taxes on the ownership or use of land, buildings or other assets used in production or on the labour employed, or compensation of employees paid. These taxes are not proportional to the value of goods and services produced.

Own-account producers consist of establishments engaged in gross fixed capital formation for the enterprises of which they form part or unincorporated enterprises owned by households all or most of whose output is intended for final consumption or gross fixed capital formation by those households: for example, owner-occupiers or subsistence farmers who sell none, or only a small fraction, of their output.

Producer’s price: The producer’s price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer (SNA, 2008). Neither the producer’s nor the basic price includes any amounts receivable in respect of VAT, or similar deductible tax, invoiced on the output sold.

Product balance for any product recognizes that the sum of output at basic prices plus imports plus trade and transport margins plus taxes on products less subsidies on products is equal to the sum of intermediate consumption, final consumption and capital formation, all expressed at purchasers’ prices, plus exports.

Product: "Products" are used interchangeably with "goods and services" and are classified according to the United Nations *Central Product Classification* (CPC). However, a domesticated classification has been developed where products are classified by activity, an approach which links products with the main industry source. This is known as a Classification of Products by Activity (CPA).

Product output: Product output is the total value of a product produced by all industries, i.e. all resident producers in the economy.

Purchaser's price: The purchaser's price is the amount paid by the purchaser, excluding any VAT or similar tax deductible by the purchaser, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place (SNA, 2008).

Subsidies on production and imports: "Subsidies are current unrequited payments that government units, including non-resident government units, make to enterprises on the basis of the levels of their production activities or the quantities or values of the goods or services which they produce, sell or imports.

Subsidies on products: "A subsidy on a product is a subsidy payable per unit of a good or service.

Supply table at purchasers' prices consists of a rectangular matrix with the rows corresponding to the same groups of products as the matching use tables and columns corresponding to the supply from domestic production valued at basic prices plus columns for imports and the valuation adjustments necessary to have total supply of each.

Taxes on production and imports include taxes on products and other taxes on production.

Taxes on products are "payable on goods and services when they are produced, delivered, sold, transferred or otherwise disposed of by their producers; they include taxes and duties on imports that become payable when goods enter the economic territory by crossing the frontier or when services are delivered to resident units by non-resident units.

Use table at purchasers' prices consists of a set of product balances covering all products available in an economy arranged in the form of a rectangular matrix with the products, valued at purchasers' prices, appearing in the rows and the columns indicating the disposition of the products to various types of uses.

Valuation of outputs: The preferred method of valuation of goods and services produced for sale in the market at economically significant prices is *basic price*. "Basic price" is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, on that unit as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.

Value added measures the value created by production process which is derived as the difference between the industry output at basic prices and the intermediate consumption of the industry at purchasers' prices. It is represented as a balancing item in the production account for an institutional unit or sector, or establishment or industry.

APPENDICES

Appendix I: Activity, industry classification and deflation method for IC

Code	Description	Gov	Psl	KP
A	Agriculture, forestry and fishing			
A0110	Growing of crops			D
A0140	Animal production			D
A0160	Support activities to agriculture	X		F
A0200	Forestry and logging	X		F
A0300	Fishing and aquaculture	X		A
B	Mining and quarrying			
B0800	Mining and quarrying			A
C	Manufacturing			
C1010	Processing and preservation of meat			B
C1020	Processing and preserving of fish, crustaceans and molluscs			B
C1030	Processing and preserving of fruit and vegetables			A
C1040	Manufacture of vegetable and animal oils and fats			C
C1050	Manufacture of dairy products			C
C1060	Manufacture of grain mill products; starch and starch products; and prepared animal feeds			C
C1071	Manufacture of bakery products			C
C1072	Manufacture of sugar			B
C1076	Processing of coffee			B
C1077	Processing of tea			C
C1079	Manufacture of other food products			A
C1100	Manufacture of beverages			A
C1200	Manufacture of tobacco products			A
C1300	Manufacture of textiles and clothing			A
C1500	Manufacture of leather and related products incl. footwear			A
C1600	Manufacture of wood and of products of wood and cork, except furniture			A
C1700	Manufacture of paper and paper products			A
C1800	Printing and reproduction of recorded media			A
C1900	Manufacture of refined petroleum products			B
C2010	Manufacture of basic chemicals, fertilizers, primary plastics			A
C2020	Manufacture of other chemical products			A
C2100	Manufacture of pharmaceutical products and preparations			A
C2200	Manufacture of rubber and plastics products			C
C2300	Manufacture of other non-metallic mineral products			A
C2500	Manufacture of basic metals and fabricated metal products, ex. machinery and equipment			A
C2800	Manufacture of machinery and equipment			A
C2900	Manufacture of transport equipment			A
C3100	Manufacture of furniture			A
C3200	Other manufacturing			A
C3300	Repair and installation of machinery and equipment			A
D	Electricity, gas, steam and air conditioning supply			

Appendix I: Activity, industry classification and deflation method for IC –Cont’d

D3510	Electric power generation, transmission and distribution			B
E	Water supply; sewerage, waste management and remediation activities			
E3600	Water supply and sewerage	X		A
E3800	Waste collection and treatment	X	X	A
F	Construction			
F4100	Construction	X		F
G	Wholesale and retail trade; repair of motor vehicles and motorcycles			
G4500	Wholesale and retail trade and repair of motor vehicles and motorcycles			A
G4700	Wholesale and retail trade			A
H	Transportation and storage			
H4910	Transport via railways			D
H4921	Passenger road transport			A
H4923	Freight transport by road			A
H4930	Transport via pipeline			D
H5000	Water transport			E
H5100	Air transport			A
H5210	Warehousing and storage			A
H5222	Service activities incidental to water transport			A
H5223	Service activities incidental to air transport		X	A
H5229	Cargo handling; other transportation support activities			A
H5310	Postal activities			D
H5320	Courier activities			A
I	Accommodation and food service activities			
I5500	Accommodation and food service activities			A
J	Information and communication			
J5800	Publishing, audiovisual and broadcasting activities; recording and publishing of music	X		A
J6100	Telecommunications			D
J6200	IT and other information service activities			A
K	Financial and insurance activities			
K6411	Central banking			F
K6419	Other monetary intermediation			A
K6490	Other financial service activities			A
K6500	Insurance, reinsurance and pension funding			A
K6600	Activities auxiliary to financial service and insurance activities			A
L	Real estate activities			
L6800	Real estate activities			A
M	Professional, scientific and technical activities			
M6900	Professional, scientific and technical activities	X	X	A
N	Administrative and support service activities			
N7700	Renting and leasing activities			A
N7900	Travel agency, tour operator, reservation service and related activities			A
N8200	Other administrative and support service activities			A
O	Public administration and defence; compulsory social security			
O8400	Public administration and defence; compulsory social security	A		F

Appendix I: Activity, industry classification and deflation method for IC–Cont’d

P	Education			
P8510	Pre-primary and primary education	X		F
P8521	General secondary education	X		F
P8522	Specialised secondary education	X		F
P8530	Higher education	X	X	F
P8540	Other education and support activities	X		F
Q	Human health and social work activities			
Q8600	Human health activities	X		F
Q8700	Social work activities	X		F
R	Arts, entertainment and recreation			
R9000	Arts, entertainment and recreation	X	X	A
S	Other service activities			
S9400	Activities of membership organizations			A
S9500	Repair of computers and personal and household goods			A
S9600	Other personal service activities			A
T	Activities of households as employers of domestic personnel			
T9700	Activities of households as employers of domestic personnel			n/a

A	Constant prices moved with output at constant prices Current prices reflatd with IC index based on SUT
B	Dominant IC product from product flow at CP and KP Other IC moved with major IC product and reflatd
C	Both current and constant prices moved with output
D	Double deflation
E	Single deflation; IC deflator used for output
F	Other method
Gov	Government
Psl	Parastatals

Appendix II: Tables

Table 1: Gross Domestic Product by Activity

Industry	Current prices, Ksh million							
	2006	2007	2008	2009	2010	2011	2012	2013
Agriculture, forestry and fishing	382,085	442,891	551,148	668,969	786,826	980,063	1,113,572	1,249,700
Growing of crops	251,938	276,432	372,892	451,647	530,759	685,959	765,395	874,981
Animal production	88,810	117,262	124,136	150,045	178,459	200,947	232,691	243,855
Support activities to agriculture	9,976	11,806	13,279	16,933	19,354	23,497	28,690	29,566
Forestry & logging	21,955	25,263	27,711	34,216	39,143	46,661	57,900	67,295
Fishing & aquaculture	9,407	12,129	13,130	16,128	19,111	22,999	28,895	34,003
Mining and quarrying	10,027	13,770	16,785	18,134	26,027	32,506	46,576	38,680
Manufacturing	236,281	275,167	300,345	342,532	356,717	437,798	463,998	496,313
Manufacture of food, beverages and tobacco	68,816	77,727	90,099	112,918	129,558	165,937	181,361	196,489
Other manufacturing and repair and installation	167,466	197,440	210,246	229,614	227,158	271,861	282,637	299,823
Electricity supply	17,744	17,527	29,590	39,162	33,077	36,055	48,024	50,579
Water supply; sewerage, waste management	22,669	22,374	21,703	24,869	29,406	33,420	37,806	41,232
Construction	74,219	86,419	92,998	112,220	142,668	164,622	190,852	212,103
Wholesale and retail trade; repairs	122,509	147,983	181,172	200,032	243,009	300,666	331,396	373,680
Transport and storage	112,563	136,346	172,046	205,774	217,000	266,181	329,346	351,209
Land transport	58,412	74,907	108,824	134,896	145,251	186,742	245,111	270,748
Air transport including support services	25,795	28,218	23,243	17,077	16,878	15,689	14,476	14,671
All other transport including postal and courier activities	28,356	33,220	39,979	53,800	54,871	63,750	69,759	65,790
Accommodation and food service activities	43,051	52,609	39,493	51,510	49,908	50,283	57,520	58,327
Information and communication	49,929	58,915	62,861	73,691	68,331	61,000	67,588	68,452
Telecommunications	33,970	40,250	40,801	47,516	39,732	29,226	33,100	31,251
Publishing, broadcasting, other IT and information activities	15,959	18,665	22,060	26,175	28,598	31,774	34,488	37,202
Financial and insurance activities	90,605	103,150	131,838	150,411	177,336	212,671	251,750	313,077
Financial activities	70,536	83,798	105,359	126,810	155,846	181,419	206,780	238,509
Insurance activities	20,068	19,352	26,479	23,601	21,490	31,252	44,970	74,568
Real estate	188,031	209,240	224,439	246,546	262,652	300,396	342,876	375,330
Professional, scientific and technical activities	21,766	25,588	29,162	33,085	34,922	37,470	42,740	47,296
Administrative and support service activities	33,905	37,927	37,234	44,151	46,237	50,100	54,640	56,960
Public administration and defence	83,437	96,829	113,517	127,807	138,929	159,085	189,748	228,523
Education	118,459	130,803	163,456	177,993	174,480	199,110	228,761	258,406
Pre-primary and Primary education	56,636	61,403	80,728	85,679	78,546	91,343	104,660	118,868
General sec education	39,269	43,183	53,941	57,936	56,856	65,982	79,365	90,343
Higher and other education	22,554	26,217	28,787	34,378	39,079	41,785	44,736	49,195
Human health and social work activities	39,385	45,001	50,099	58,686	66,040	67,827	69,931	75,257
Arts, entertainment and recreation	3,105	3,292	3,559	4,326	5,076	5,740	6,167	6,877
Other service activities	16,644	17,443	18,361	20,885	22,116	22,808	25,967	29,262
Activities of households as employers;	14,273	15,446	17,390	17,383	18,605	21,027	24,138	25,462
FISIM	-30,692	-35,248	-45,749	-59,373	-71,891	-90,687	-111,631	-122,407
All economic activities	1,649,996	1,903,472	2,211,447	2,558,792	2,827,470	3,348,141	3,811,764	4,234,319
Taxes on products	212,044	247,878	271,611	304,896	341,865	377,910	443,008	523,214
GDP at market prices	1,862,041	2,151,349	2,483,058	2,863,688	3,169,335	3,726,052	4,254,772	4,757,532

Table 2: Gross Domestic Product by Activity

Industry	Percentage Contribution to GDP							
	2006	2007	2008	2009	2010	2011	2012	2013
Agriculture, forestry and fishing	20.5	20.6	22.2	23.4	24.8	26.3	26.2	26.3
Growing of crops	13.5	12.8	15.0	15.8	16.7	18.4	18.0	18.4
Animal production	4.8	5.5	5.0	5.2	5.6	5.4	5.5	5.1
Support activities to agriculture	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.6
Forestry & logging	1.2	1.2	1.1	1.2	1.2	1.3	1.4	1.4
Fishing & aquaculture	0.5	0.6	0.5	0.6	0.6	0.6	0.7	0.7
Mining and quarrying	0.5	0.6	0.7	0.6	0.8	0.9	1.1	0.8
Manufacturing	12.7	12.8	12.1	12.0	11.3	11.7	10.9	10.4
Manufacture of food, beverages and tobacco	3.7	3.6	3.6	3.9	4.1	4.5	4.3	4.1
Other manufacturing and repair and installation	9.0	9.2	8.5	8.0	7.2	7.3	6.6	6.3
Electricity supply	1.0	0.8	1.2	1.4	1.0	1.0	1.1	1.1
Water supply; sewerage, waste management	1.2	1.0	0.9	0.9	0.9	0.9	0.9	0.9
Construction	4.0	4.0	3.7	3.9	4.5	4.4	4.5	4.5
Wholesale and retail trade; repairs	6.6	6.9	7.3	7.0	7.7	8.1	7.8	7.9
Transport and storage	6.0	6.3	6.9	7.2	6.8	7.1	7.7	7.4
Land transport	3.1	3.5	4.4	4.7	4.6	5.0	5.8	5.7
Air transport including support services	1.4	1.3	0.9	0.6	0.5	0.4	0.3	0.3
All other transport including postal and courier activities	1.5	1.5	1.6	1.9	1.7	1.7	1.6	1.4
Hotels and restaurants	2.3	2.4	1.6	1.8	1.6	1.3	1.4	1.2
Information and communication	2.7	2.7	2.5	2.6	2.2	1.6	1.6	1.4
Telecommunications	1.8	1.9	1.6	1.7	1.3	0.8	0.8	0.7
Publishing, broadcasting, other IT and information activities	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8
Financial and insurance activities	4.9	4.8	5.3	5.3	5.6	5.7	5.9	6.6
Financial activities	3.8	3.9	4.2	4.4	4.9	4.9	4.9	5.0
Insurance activities	1.1	0.9	1.1	0.8	0.7	0.8	1.1	1.6
Real estate	10.1	9.7	9.0	8.6	8.3	8.1	8.1	7.9
Professional, scientific and technical activities	1.2	1.2	1.2	1.2	1.1	1.0	1.0	1.0
Administrative and support service activities	1.8	1.8	1.5	1.5	1.5	1.3	1.3	1.2
Public administration and defence	4.5	4.5	4.6	4.5	4.4	4.3	4.5	4.8
Education	6.4	6.1	6.6	6.2	5.5	5.3	5.4	5.4
Primary education	3.0	2.9	3.3	3.0	2.5	2.5	2.5	2.5
General sec education	2.1	2.0	2.2	2.0	1.8	1.8	1.9	1.9
Higher and other education	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0
Human health and social work activities	2.1	2.1	2.0	2.0	2.1	1.8	1.6	1.6
Arts, entertainment and recreation	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1
Other service activities	0.9	0.8	0.7	0.7	0.7	0.6	0.6	0.6
Activities of households as employers;	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.5
FISIM	-1.6	-1.6	-1.8	-2.1	-2.3	-2.4	-2.6	-2.6
All economic activities	88.6	88.5	89.1	89.4	89.2	89.9	89.6	89.0
Taxes on products	11.4	11.5	10.9	10.6	10.8	10.1	10.4	11.0
GDP at market prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 3: Gross Domestic Product by Activity

Industry	Constant 2009, Ksh million							
	2006	2007	2008	2009	2010	2011	2012	2013
Agriculture, forestry and fishing	685,710	720,612	684,702	668,969	736,195	753,598	775,799	815,087
Growing of crops	486,676	503,439	474,869	451,647	505,740	516,147	527,382	562,318
Animal production	138,951	154,100	146,853	150,045	159,037	159,684	163,251	163,793
Support activities to agriculture	10,888	12,359	13,656	16,933	18,794	21,703	25,147	26,116
Forestry & logging	30,071	31,217	32,508	34,216	35,080	36,696	39,656	41,526
Fishing & aquaculture	19,123	19,497	16,815	16,128	17,543	19,367	20,364	21,333
Mining and quarrying	13,849	16,289	16,296	18,134	23,884	28,428	33,830	30,795
Manufacturing	327,918	342,267	346,177	342,532	357,958	383,891	381,942	404,502
Manufacture of food, beverages and tobacco	115,137	115,602	115,472	112,918	120,384	129,484	137,020	152,816
Other manufacturing and repair and installation	212,782	226,666	230,705	229,614	237,574	254,407	244,922	251,686
Electricity supply	34,035	39,792	36,947	39,162	40,545	45,949	52,187	56,045
Water supply; sewerage, waste management	22,769	22,558	22,885	24,869	27,493	28,489	29,390	30,270
Construction	89,513	97,119	95,474	112,219	133,647	139,033	154,621	163,075
Wholesale and retail trade; repairs	172,625	186,328	189,326	200,032	219,221	237,516	254,231	277,699
Transport and storage	173,502	185,955	191,536	205,774	215,970	231,340	237,734	240,764
Land transport	122,971	129,345	131,555	134,896	146,192	153,259	157,320	164,799
Air transport including support services	14,717	16,235	16,300	17,077	17,590	19,974	20,460	21,094
All other transport including postal and courier activities	35,814	40,374	43,681	53,800	52,188	58,107	59,954	54,872
Accommodation and food service activities	50,040	57,300	39,471	51,510	51,238	53,333	54,972	52,441
Information and communication	51,720	61,952	67,574	73,691	86,492	105,483	107,773	122,310
Telecommunications	32,332	39,712	43,014	47,516	57,397	74,040	77,514	90,744
Publishing, broadcasting, other IT and information activities	19,388	22,240	24,560	26,175	29,095	31,443	30,258	31,567
Financial and insurance activities	133,353	139,918	146,815	150,411	176,968	185,206	196,265	214,497
Financial activities	107,349	116,754	120,367	126,810	155,540	159,196	167,186	180,588
Insurance activities	26,004	23,164	26,448	23,601	21,428	26,010	29,079	33,909
Real estate	214,219	224,439	235,102	246,546	258,953	272,055	283,061	294,747
Professional, scientific and technical activities	26,509	29,836	31,343	33,085	34,092	34,628	36,440	38,553
Administrative and support service activities	40,829	43,849	39,645	44,151	45,422	46,546	47,619	48,303
Public administration and defence	109,013	111,635	119,363	127,807	129,710	132,986	140,851	141,198
Education	145,223	154,720	168,955	177,993	196,171	210,958	235,476	251,650
Pre-primary and Primary education	81,809	82,763	83,070	85,679	92,320	97,736	109,964	111,666
General sec education	37,122	42,006	53,927	57,936	65,877	73,149	84,676	96,580
Higher and other education	26,291	29,950	31,958	34,377	37,974	40,073	40,836	43,404
Human health and social work activities	50,447	53,561	56,076	58,686	62,345	60,723	58,761	62,752
Arts, entertainment and recreation	3,887	3,951	3,945	4,326	4,853	5,026	4,892	5,076
Other service activities	20,144	20,703	21,004	20,885	21,618	21,853	22,732	24,294
Activities of households as employers;	16,623	16,873	17,126	17,383	17,643	17,908	18,177	18,449
FISIM	-49,597	-51,383	-53,675	-59,373	-68,827	-75,076	-82,648	-87,358
All economic activities	2,332,335	2,478,274	2,476,088	2,558,791	2,771,591	2,919,872	3,044,104	3,205,148
Taxes on products	255,944	287,322	295,931	304,896	332,810	374,582	397,028	433,613
GDP at market prices	2,588,279	2,765,595	2,772,019	2,863,688	3,104,401	3,294,454	3,441,132	3,638,761

Table 4: Gross Domestic Product by Activity

Industry	Percentage Changes (growth)						
	2007	2008	2009	2010	2011	2012	2013
Agriculture, forestry and fishing	5.1	-5.0	-2.3	10.0	2.4	2.9	5.1
Growing of crops	3.4	-5.7	-4.9	12.0	2.1	2.2	6.6
Animal production	10.9	-4.7	2.2	6.0	0.4	2.2	0.3
Support activities to agriculture	13.5	10.5	24.0	11.0	15.5	15.9	3.9
Forestry & logging	3.8	4.1	5.3	2.5	4.6	8.1	4.7
Fishing & aquaculture	2.0	-13.8	-4.1	8.8	10.4	5.1	4.8
Mining and quarrying	17.6	0.0	11.3	31.7	19.0	19.0	-9.0
Manufacturing	4.4	1.1	-1.1	4.5	7.2	-0.5	5.9
Manufacture of food, beverages and tobacco	0.4	-0.1	-2.2	6.6	7.6	5.8	11.5
Other manufacturing and repair and installation	6.5	1.8	-0.5	3.5	7.1	-3.7	2.8
Electricity supply	16.9	-7.2	6.0	3.5	13.3	13.6	7.4
Water supply; sewerage, waste management	-0.9	1.4	8.7	10.5	3.6	3.2	3.0
Construction	8.5	-1.7	17.5	19.1	4.0	11.2	5.5
Wholesale and retail trade; repairs	7.9	1.6	5.7	9.6	8.3	7.0	9.2
Transport and storage	7.2	3.0	7.4	5.0	7.1	2.8	1.3
Land transport	5.2	1.7	2.5	8.4	4.8	2.6	4.8
Air transport including support services	10.3	0.4	4.8	3.0	13.6	2.4	3.1
All other transport including postal and courier activities	12.7	8.2	23.2	-3.0	11.3	3.2	-8.5
Hotels and restaurants	14.5	-31.1	30.5	-0.5	4.1	3.1	-4.6
Information and communication	19.8	9.1	9.1	17.4	22.0	2.2	13.5
Telecommunications	22.8	8.3	10.5	20.8	29.0	4.7	17.1
Publishing, broadcasting, other IT and information activities	14.7	10.4	6.6	11.2	8.1	-3.8	4.3
Financial and insurance activities	4.9	4.9	2.4	17.7	4.7	6.0	9.3
Financial activities	8.8	3.1	5.4	22.7	2.4	5.0	8.0
Insurance activities	-10.9	14.2	-10.8	-9.2	21.4	11.8	16.6
Real estate	4.8	4.8	4.9	5.0	5.1	4.0	4.1
Professional, scientific and technical activities	12.5	5.1	5.6	3.0	1.6	5.2	5.8
Administrative and support service activities	7.4	-9.6	11.4	2.9	2.5	2.3	1.4
Public administration and defence	2.4	6.9	7.1	1.5	2.5	5.9	0.2
Education	6.5	9.2	5.3	10.2	7.5	11.6	6.9
Primary education	1.2	0.4	3.1	7.8	5.9	12.5	1.5
General sec education	13.2	28.4	7.4	13.7	11.0	15.8	14.1
Higher and other education	13.9	6.7	7.6	10.5	5.5	1.9	6.3
Human health and social work activities	6.2	4.7	4.7	6.2	-2.6	-3.2	6.8
Arts, entertainment and recreation	1.7	-0.2	9.7	12.2	3.6	-2.7	3.8
Other service activities	2.8	1.5	-0.6	3.5	1.1	4.0	6.9
Activities of households as employers;	1.5	1.5	1.5	1.5	1.5	1.5	1.5
FISIM	3.6	4.5	10.6	15.9	9.1	10.1	5.7
All economic activities	6.3	-0.1	3.3	8.3	5.4	4.3	5.3
Taxes on products	12.3	3.0	3.0	9.2	12.6	6.0	9.2
GDP at market prices	6.9	0.2	3.3	8.4	6.1	4.5	5.7

Table 5: Expenditure on the Gross Domestic Product

Current prices - KSh million								
Expenditure category	2006	2007	2008	2009	2010	2011	2012	2013
Government final consumption expenditure	267,147	314,734	389,194	435,695	449,064	522,062	596,065	668,246
Private final consumption expenditure	1,396,992	1,585,835	1,842,901	2,153,399	2,415,456	2,903,300	3,306,912	3,762,049
Final consumption expenditure by NPISH	22,475	24,550	27,526	30,200	29,838	33,051	37,496	45,136
Gross fixed capital formation	361,691	429,511	468,427	529,927	645,647	759,746	903,740	971,203
Changes in inventories	-14,726	10,590	18,568	23,699	14,871	48,881	14,166	-23,414
Gross domestic expenditure	2,033,580	2,365,220	2,746,616	3,172,920	3,554,877	4,267,040	4,858,379	5,423,219
Exports of goods and services	427,989	471,554	563,010	573,672	654,689	805,766	844,425	843,490
Imports of goods and services	600,537	687,911	866,700	882,904	1,063,942	1,446,502	1,508,672	1,577,905
Discrepancy ¹	1,008	2,486	40,131	0	23,711	99,748	60,639	68,729
Gross domestic product at market prices	1,862,041	2,151,349	2,483,058	2,863,688	3,169,335	3,726,052	4,254,772	4,757,532
¹ Difference between GDP production approach and GDP expenditure approach								
Per cent contributions to GDP								
Expenditure category	2006	2007	2008	2009	2010	2011	2012	2013
Government final consumption expenditure	14.3	14.6	15.7	15.2	14.2	14.0	14.0	14.0
Private final consumption expenditure	75.0	73.7	74.2	75.2	76.2	77.9	77.7	79.1
Final consumption expenditure by NPISH	1.2	1.1	1.1	1.1	0.9	0.9	0.9	0.9
Gross fixed capital formation	19.4	20.0	18.9	18.5	20.4	20.4	21.2	20.4
Changes in inventories	-0.8	0.5	0.7	0.8	0.5	1.3	0.3	-0.5
Gross domestic expenditure	109.2	109.9	110.6	110.8	112.2	114.5	114.2	114.0
Exports of goods and services	23.0	21.9	22.7	20.0	20.7	21.6	19.8	17.7
Imports of goods and services	32.3	32.0	34.9	30.8	33.6	38.8	35.5	33.2
Discrepancy ¹	0.1	0.1	1.6	0.0	0.7	2.7	1.4	1.4
Gross domestic product at market prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Discrepancy expressed as a percentage of GDP

Table 6: Expenditure on the Gross Domestic Product

Constant 2009 prices - Ksh million								
Expenditure category	2006	2007	2008	2009	2010	2011	2012	2013
Government final consumption expenditure	341,551	369,375	400,957	435,695	451,598	470,188	504,667	510,295
Private final consumption expenditure	1,984,736	2,090,439	2,057,547	2,153,399	2,316,503	2,463,475	2,604,583	2,819,541
Final consumption expenditure by NPISH	28,632	29,553	30,242	30,200	30,621	31,011	32,025	33,282
Gross fixed capital formation	417,820	427,003	481,888	529,927	604,547	632,010	712,002	722,142
Changes in inventories	-14,132	9,620	16,457	23,699	12,037	25,063	8,968	-9,561
Gross domestic expenditure	2,758,606	2,925,990	2,987,091	3,172,920	3,415,307	3,621,748	3,862,246	4,075,698
Exports of goods and services	556,944	591,238	605,261	573,672	623,836	681,289	679,828	674,266
Imports of goods and services	692,272	722,771	814,880	882,904	954,537	1,080,897	1,138,899	1,141,758
Discrepancy ¹	-35,000	-28,862	-5,453	0	19,795	72,314	37,958	30,554
Gross domestic product at market prices	2,588,279	2,765,595	2,772,019	2,863,688	3,104,401	3,294,454	3,441,132	3,638,761
¹ Difference between GDP production approach and GDP expenditure approach								
Percentage Changes (growth)								
Expenditure category	2006	2007	2008	2009	2010	2011	2012	2013
Government final consumption expenditure		8.1	8.6	8.7	3.6	4.1	7.3	1.1
Private final consumption expenditure		5.3	-1.6	4.7	7.6	6.3	5.7	8.3
Final consumption expenditure by NPISH		3.2	2.3	-0.1	1.4	1.3	3.3	3.9
Gross fixed capital formation		2.2	12.9	10.0	14.1	4.5	12.7	1.4
Changes in inventories		-168.1	71.1	44.0	-49.2	108.2	-64.2	-206.6
Gross domestic expenditure		6.1	2.1	6.2	7.6	6.0	6.6	5.5
Exports of goods and services		6.2	2.4	-5.2	8.7	9.2	-0.2	-0.8
Imports of goods and services		4.4	12.7	8.3	8	13.2	5.4	0.3
Discrepancy ¹								
Gross domestic product at market prices		6.9	0.2	3.3	8.4	6.1	4.5	5.7

¹ Discrepancy expressed as a percentage of GDP

Table 7: Gross Fixed Capital Formation

Current prices - Ksh million								
Type of Asset	2006	2007	2008	2009	2010	2011	2012	2013
Dwellings	71,011	81,162	87,895	101,380	127,682	147,057	172,272	197,336
Buildings other than dwellings	66,026	76,866	83,417	96,831	121,869	146,497	172,057	198,821
Other structures	32,598	39,444	47,484	61,554	69,000	89,068	105,729	110,794
Transport equipment	102,358	108,572	94,910	108,473	124,040	141,482	180,071	179,734
ICT equipment	24,584	30,942	37,451	42,633	58,231	56,209	64,014	63,247
Other machinery and equipment	57,525	76,528	103,363	102,414	121,677	150,515	172,641	190,000
Animal resources yielding repeat products	151	6,751	3,255	3,076	5,866	5,478	6,841	5,351
Tree, crop and plant resources yielding repeat products	3,990	4,235	4,689	5,060	5,315	5,841	6,414	6,838
Intellectual property products	3,448	5,011	5,962	8,506	11,966	17,598	23,700	19,083
Total	361,691	429,511	468,427	529,927	645,647	759,746	903,740	971,203
Per cent contributions to GDP								
Type of Asset	2006	2007	2008	2009	2010	2011	2012	2013
Dwellings	19.6	18.9	18.8	19.1	19.8	19.4	19.1	20.3
Buildings other than dwellings	18.3	17.9	17.8	18.3	18.9	19.3	19.0	20.5
Other structures	9.0	9.2	10.1	11.6	10.7	11.7	11.7	11.4
Transport equipment	28.3	25.3	20.3	20.5	19.2	18.6	19.9	18.5
ICT equipment	6.8	7.2	8.0	8.0	9.0	7.4	7.1	6.5
Other machinery and equipment	15.9	17.8	22.1	19.3	18.8	19.8	19.1	19.6
Animal resources yielding repeat products	0.0	1.6	0.7	0.6	0.9	0.7	0.8	0.6
Tree, crop and plant resources yielding repeat products	1.1	1.0	1.0	1.0	0.8	0.8	0.7	0.7
Intellectual property products	1.0	1.2	1.3	1.6	1.9	2.3	2.6	2.0
Total	100	100	100	100	100	100	100	100

Table 8: Gross Fixed Capital Formation

Constant 2009 prices - Ksh million								
Type of Asset	2006	2007	2008	2009	2010	2011	2012	2013
Dwellings	85,460	91,292	87,992	101,380	119,552	123,763	141,911	156,776
Buildings other than dwellings	79,313	86,591	84,052	96,831	114,472	124,670	142,575	159,043
Other structures	39,158	44,434	47,845	61,554	64,812	75,798	87,613	88,628
Transport equipment	116,273	91,262	128,329	108,473	122,619	134,784	135,005	138,962
ICT equipment	16,042	17,482	24,048	42,633	51,881	46,935	50,760	47,791
Other machinery and equipment	70,681	80,194	92,887	102,414	109,771	101,048	124,948	106,167
Animal resources yielding repeat products	2,092	5,203	5,580	3,076	4,987	4,346	4,712	3,532
Tree, crop and plant resources yielding repeat products	4,706	4,809	4,953	5,060	5,191	5,341	5,472	5,612
Intellectual property products	4,095	5,735	6,202	8,506	11,261	15,325	19,007	15,630
Total	417,820	427,003	481,888	529,927	604,547	632,010	712,002	722,142
Percentage Changes (growth)								
Type of Asset	2006	2007	2008	2009	2010	2011	2012	2013
Dwellings		6.8	-3.6	15.2	17.9	3.5	14.7	10.5
Buildings other than dwellings		9.2	-2.9	15.2	18.2	8.9	14.4	11.6
Other structures		13.5	7.7	28.7	5.3	16.9	15.6	1.2
Transport equipment		-21.5	40.6	-15.5	13.0	9.9	0.2	2.9
ICT equipment		9.0	37.6	77.3	21.7	-9.5	8.1	-5.8
Other machinery and equipment		13.5	15.8	10.3	7.2	-7.9	23.7	-15.0
Animal resources yielding repeat products		148.8	7.2	-44.9	62.2	-12.9	8.4	-25.0
Tree, crop and plant resources yielding repeat products		2.2	3.0	2.2	2.6	2.9	2.4	2.6
Intellectual property products		40.1	8.1	37.2	32.4	36.1	24.0	-17.8
Total		2.2	12.9	10.0	14.1	4.5	12.7	1.4

Table 9: Gross Domestic Product and Gross National Income

Gross Domestic Product and Gross National Income						Current prices - KShs million		
	2006	2007	2008	2009	2010	2011	2012	2013
CURRENT PRICES, KShs million								
Compensation of employees	665,048	752,482	854,877	925,268	1,006,579	1,122,007	1,251,093	1,446,310
Consumption of fixed capital	255,710	289,321	295,533	332,728	364,682	422,432	489,852	576,280
Net operating surplus	729,238	861,669	1,061,037	1,300,796	1,456,210	1,803,703	2,070,819	2,211,729
Taxes on products	212,044	247,878	271,611	304,896	341,865	377,910	443,008	523,214
Gross domestic product at market prices	1,862,041	2,151,350	2,483,058	2,863,688	3,169,335	3,726,052	4,254,772	4,757,533
Primary incomes								
Receivable from the rest of the world	7,168	10,812	12,190	12,972	11,428	25,710	17,163	17,605
Payable to rest of the world	-12,221	-20,518	-14,380	-16,426	-23,125	-25,091	-29,619	-44,160
Gross national income at market prices	1,856,988	2,141,643	2,480,868	2,860,234	3,157,638	3,726,671	4,242,316	4,730,978
Current transfers								
Receivable from the rest of the world	132,145	144,653	167,356	181,107	187,816	279,617	240,850	274,152
Payable to rest of the world	-3,452	-2,722	-6,092	-3,254	-3,423	-4,121	-3,352	-4,020
Gross national disposable income	1,985,681	2,283,574	2,642,133	3,038,087	3,342,031	4,002,168	4,479,814	5,001,109
Per capita, Kshs								
Gross domestic product at market prices	53,857	60,051	67,568	75,910	82,376	94,223	104,663	116,037
Gross national income at market prices	53,711	59,780	67,508	75,818	82,072	94,238	104,357	115,390
Constant prices								
GDP at market prices, KShs million	2,588,279	2,765,595	2,772,019	2,863,688	3,104,401	3,294,454	3,441,132	3,638,761
Per capita	74,862	77,197	75,431	75,910	80,689	83,309	84,649	88,750
- Annual percentage change		3.1	-2.3	0.6	6.3	3.2	1.6	4.8
National Disposable Income and Saving						Current prices - KShs million		
	2006	2007	2008	2009	2010	2011	2012	2013
Gross national disposable income	1,856,988	2,141,643	2,480,868	2,860,234	3,157,638	3,726,671	4,242,316	4,730,978
Consumption of fixed capital	-255,710	-289,321	-295,533	-332,728	-364,682	-422,432	-489,852	-576,280
Net national disposable income	1,601,278	1,852,322	2,185,335	2,527,506	2,792,956	3,304,240	3,752,464	4,154,698
Final consumption expenditure	1,686,615	1,925,119	2,259,621	2,619,294	2,894,359	3,458,413	3,940,473	4,475,430
Discrepancy on GDP								
Saving, net	-85,337	-72,797	-74,286	-91,789	-101,402	-154,173	-188,010	-320,732
Financing of capital formation								
Saving, net	-85,337	-72,797	-74,286	-91,789	-101,402	-154,173	-188,010	-320,732
Capital transfers from abroad, net	12,142	10,558	6,535	20,178	19,030	20,861	19,890	8,417
Total	-73,195	-62,239	-67,751	-71,611	-82,372	-133,312	-168,120	-312,315
Gross fixed capital formation	361,691	429,511	468,427	529,927	645,647	759,746	903,740	971,203
Consumption of fixed capital	-255,710	-289,321	-295,533	-332,728	-364,682	-422,432	-489,852	-576,280
Changes in inventories	-14,726	10,590	18,568	23,699	14,871	48,881	14,166	-23,414
Net lending (+) / Net borrowing(-)	-164,450	-213,019	-259,212	-292,509	-378,208	-519,508	-596,174	-683,824
Total	-73,195	-62,239	-67,751	-71,611	-82,372	-133,312	-168,120	-312,315

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