



The Gambia Bureau of Statistics

National Accounts of The Gambia

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Sources and Methods for Annual GDP Estimates

(Base year: 2004)



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TABLE OF CONTENT

Introduction.....	page 2
Concept of GDP.....	page 3
Estimating GVA by activity	page 4-5
Annual sources and methods by activity-	page 6-8
Adjustments.....	page 9
Estimating GDP by Expenditure.....	page 10
Areas for improvements.....	page 10

Introduction

This document describes the main sources and the methods currently used to compile annual estimates of the level and the growth of the **Gross Domestic Product** (GDP) of The Gambia and of its components. It is designed to inform the users of the GDP statistics as well as to serve as reference documentation for the staff of the Gambia Bureau of Statistics (GBoS), in particular the National Accounts Directorate. The National Accounts Directorate is one of the six Directorates of the bureau and it forms the core of the Economics Statistics Division with its key function to provide monetary estimates of all economic activities undertaken by Gambians and non-Gambians within The Gambia. The National Accounts unit within the Directorate, collects, compiles and analyzes data on all branches of economic activities to produce annual GDP for the Gambia.

GDP and its components are evaluated annually at both **current prices** (for the levels/nominal) and **constant 2004 prices** (for measuring real growth rates). They provide key information on the structure and development of the economy. This document sets out all the assumptions that are currently made in order to make systematic estimates. The methods have been designed based only on data that are readily available quickly and as more data become available from time to time, more reliable estimates are made.

In 2004/05 The Gambia Bureau of Statistics (GBoS) conducted a census of the economy which provided the statistics necessary to compile a new benchmark to determine the level of GDP. In the same vein, an Integrated Household Survey (IHS) was also conducted in 2003/04 with the main objective of rebasing the Consumer Price Index (CPI).

The economic census therefore provided benchmark data for compiling annual GDP using the production approach and also made it possible for migrating from SNA68 to SNA93. The IHS which provided data for rebasing the CPI also provided the first opportunity for independently estimating GDP using the expenditure approach.

The old GDP series of 1976/77 benchmark (SNA68) has now therefore been replaced by an up to date base 2004 and is in line with the SNA93 while the old CPI series of 1974 base has also been revised to 2004 base.

GDP series are now compiled on calendar year basis and produced annually at both current and constant prices and is the excel file is presented on this web-page for the period 2004 to 2010. We release preliminary GDP projection estimates for the current year by November which are revised by March the following year. The final estimates are released six months after. The release dates for 2011 and 2012 estimates has also been provided to users.

I hope that planners and policy makers would find the information contained in this methodological guide very useful and that it will compliment other data sets in enhancing the required information for policy formulation so as to improve the socio-economic situation of The Gambia.

I wish to take this opportunity to extend gratitude to the IMF's Enhanced Data Dissemination Initiative project (EDDI) for providing Technical Assistance through Mr. David Hughes, Economic Statistics consultant based in the U.K.

It is my pleasure to express sincere appreciation and special thanks to Ms. Aminata Deen and Mr. Dembo Touray, Senior Statisticians in the National Accounts unit for their invaluable input in the preparation of this methodological guide. The contribution of Mr. Alieu Saho, Head of the National Accounts Directorate is also recognized.

Finally, I would like to take this opportunity to extend my gratitude to all those Institutions for their cooperation and support in providing the required data for the GDP compilation.

Statistician General

What is GDP?

Gross Domestic Product (GDP) at market prices is a measure of the total value added by resident producers in the production of goods and services. All taxes (less subsidies) paid on products, including imports, are included. “Gross” means “before deducting the consumption of fixed capital (depreciation)”.

In each period, GDP and its components are measured in two ways. At current prices, estimates are made based on the value of each transaction at the time it took place. At constant prices (“in real terms”) estimates are measured with inflation taken out. In other words, the estimates are made based on the value of each transaction as if it had taken place using the average price prevailing in a given base period (2004).

The conceptual framework

The conceptual framework for the national accounts is set out in the United Nations’ *System of National Accounts 1993* (SNA93). In addition to the main aggregates such as GDP, the SNA93 describes a full range of economic accounts and balance sheets suitable for the most highly developed economy including social accounting matrices, supply-use tables, satellite accounts etc. Given the resources and the data currently available in The Gambia, the focus has been on ensuring GDP and its main components are to be measured in the most appropriate way. As far as possible, the estimates of GDP are compiled in accordance with the principles and concepts of the SNA93.

There are differences between the SNA93 and the system used in The Gambia before the 2004 benchmark, which was largely based on the former SNA68. The main specific changes that have been made to bring the accounts into line with the SNA93 are as follows:

The **Gross Value Added (GVA)** generated by the **activity** of producers is evaluated at **basic prices**. Total GVA at basic prices differs from GDP by excluding taxes on products paid to government (mainly National sales tax and taxes on international trade), but including the value of subsidies received by producers. As in the former system, an adjustment for **FISIM**¹ is also necessary.

Economic Activities are classified throughout according to Revision III of the International Standard Industrial Classification (ISIC Rev3).

Approaches to measuring GDP

Traditionally, there are three main approaches to measuring GDP. These are the **output (or production) approach**, the **income approach** and the **expenditure approach**.

In the output approach, the value of **total output** is measured and the cost of inputs (**intermediate consumption**) is subtracted to obtain the **Gross Value Added (GVA)**.

The expenditure approach aims to measure GDP (at market prices) by aggregating **final consumption expenditures** (by households, NGOs and government), **capital formation**, and **exports less imports of goods and (non-factor) services**. In the Gambia no direct information is currently available on household expenditure year by year, so it is not possible to prepare regular direct estimates of GDP according to the expenditure approach. The best source of such information is a household expenditure survey such as the Integrated Household Survey (IHS) which was conducted in 2003/2004 and the 2010 that has recently been concluded. In this case therefore, annual estimates of GDP and the activity components are compiled using the production approach alone. Direct annual estimates are also available for all the expenditure components except the final consumption expenditure of households, which is calculated by subtraction as a balancing item.

¹ FISIM means “Financial Intermediation Services Indirectly Measured” formerly known as “Imputed bank service charges “in the 1968 SNA.

Estimating GVA by activity

Annual estimates of the activity components of GDP are compiled using the production approach. This involves estimating the GVA of each branch of activity in the economy, both in current prices and in constant (2004) prices. As a result of the benchmark exercise, (2004 *economic census*) estimates are available for every kind of activity on:

- Total output,
- Intermediate consumption, and
- Gross value added.

The annual estimates are made by extrapolating the benchmark estimates of production/output using two types of indicators. These indicators are **value indices** (for current price estimates) and **quantity indices** (for constant price estimates). In most cases, in order to calculate one or the other of these indices, an appropriate **price index** is needed. All these indices are equal to 100 in the base year, 2004.

There are two main ways of estimating the value indices, and three main ways of compiling quantity indices, as follows:

Value indices (for current prices)

1. If estimates of the turnover (or income tax) of all the producers in a sector are available directly, these can be used as an estimate of total output at current prices, or converted into an index to extrapolate the benchmark.
2. If turnover estimates are not available directly, a value index can be obtained by multiplying a quantity index by an appropriate price index.

Quantity indices (for constant prices)

1. If a value index is available directly (case 1 above), a quantity index can be derived by dividing the value index by an appropriate price index (this method should be used wherever possible, according to the SNA93).
2. If estimates of quantities produced are available, they can be converted into an index number (weighted together if necessary).
3. If neither values nor reliable quantities are available, proxy indicators of quantity may have to be used. For example in some cases the quantity indices are based on the estimated growth rate of the population of the country.

Appropriate price indices used

Ideally the price index used in these calculations will reflect the change in the basic price of the particular goods or services in question.

- For agriculture, the **Consumer Price Index** (CPI) is used as it reflects movements in basic “farm-gate” prices.
- For Industrial activities, specific components of the CPI are used.
- For service activities, specific components of the CPI are used and in some cases, the all items CPI is the most appropriate available index.

GVA by activity at current prices

Benchmark estimates of the value of output for each activity are based primarily on the information obtained from the Economic Census questionnaires that were designed for the various economic activities (except for crop production and public administration).

For most kinds of activity, the procedure used for estimating GVA at current prices is as follows: First, the benchmark total output figures are extrapolated using the appropriate **value index** to obtain estimates of total output at current prices (TOCP).

Next, the appropriate **input-output ratio** (*derived from the 2004 economic census*) is applied to the total output to estimate **intermediate consumption (IC)** at current prices. Finally, the IC is subtracted from TOCP to give the gross value added at current prices (GVA CP).

GVA by activity at constant 2004 prices

Estimating GVA at constant prices for most kinds of activity is done by a direct method. This method is simply to extrapolate the benchmark GVA using the appropriate **quantity index**. That is equivalent to extrapolating the benchmark total output by the quantity index and applying the benchmark input-output ratio in every year to derive the GVA.

GDP at market prices

Once the estimates of GVA by activity were computed, two adjustments were made in order to convert total GVA at basic prices into GDP at market prices, both current and constant. The first is for FISIM. The second is taxes (*less subsidies*) on products.

Financial Intermediation Services Indirectly Measured (FISIM)

FISIM was formerly known as imputed bank service charges in the SNA68. It is basically the difference between the total interest the banks receive and the total interest they pay. This amount is considered to be part of the banks' total output. Normally, output is explicitly paid for by the purchaser. However, in this case, no explicit charges are made to bank customers who would therefore not record them in their books.

In order to balance the national accounts, an equivalent amount must somehow be added to the expenditures (whether final or intermediate) of those customers. To avoid the difficulty of allocating such imputed amounts between customers, the 1968 SNA recommended a single overall adjustment having the effect of treating all of these amounts as intermediate consumption. While the SNA93 suggested that FISIM should be allocated to the various customers, it allowed countries to adopt their own solution, including retaining the former treatment.

Taxes (less subsidies) on products

What used to be called "Indirect taxes" is now known as "Taxes on production and imports". The SNA93 splits these taxes between "Taxes on products" and "Other taxes on production".

Taxes on products include the following items: non-deductible taxes, all types of import duties, excise duties, and other such taxes directly related to the value or quantity of the product. When total output and value added are measured at basic prices, all these taxes on products are excluded. When GDP is measured at market prices, taxes on products are included. This is why the adjustment is necessary.

A similar argument (in reverse) applies to subsidies.

"Other taxes on production" covers other types of taxes paid by producers such as business licenses or property taxes (but not taxes on profits). While forming part of producers' costs, this category, usually small, is not part of intermediate consumption. These taxes therefore contribute in principle to GVA at basic prices, along with the compensation of employees and gross operating surpluses.

Annual sources and methods by activity

Agriculture

Crop Production

- *Source:* Data on quantities of the main crops grown in the Gambia are obtained from the Ministry of Agriculture through their annual National Agricultural Sample Survey (NASS). Data on horticultural products were obtained from the Economic Census but for 2004 only.
- *Method: At current price:* To derive the current price estimates, the quantity of crops produced in each year (in metric tonnes) is multiplied by its' relevant unit price collected from the Consumer Price Index (CPI). This is summed, converted to a value index of which is applied to the total output for crops in the base year (2004).
At constant price: constant price estimates are derived by applying the 2004 prices to the quantity figures for each year. It is then summed, converted to a volume index of which is applied to the total output of the base year. Intermediate consumption (IC) at current and constant prices for all years are derived by applying the factors for the 2004 benchmark estimates.

Livestock

- *Sources:* Department of Livestock Services and the (National Agricultural Sample Survey report (NASS) provide figures on number of livestock by type.
Method: At constant price: The quantities for each type of animal are converted to a volume index with the year 2004 made equal to 100. An overall volume index is then derived as the simple average of the indices for each type of animal and is used to extrapolate the benchmark figure.
At current price: A similar approach is used to derive an overall price index for livestock. That is, a unit price for each type of meat is converted to a price index based on 2004. An overall price index is thus obtained as a simple average of the individual indices which is applied to the quantity index and used to extrapolate the benchmark. For both current and constant price, the intermediate consumption is subtracted from the total output to derive **value added** for livestock.

Forestry

- *Source:* The 2003/04 Integrated Household Survey (IHS) provided data on fuel wood and charcoal consumption; The Department of Forestry provides estimates on quantities as well as revenues collected for the various types of forestry products.
- *Method: At current price:* output of the forestry sub-sector for 2004 is based on household expenditure on forestry items derived from the 2003/04 IHS. Output for subsequent years' are based on indicative growth rates of revenue collected on forestry products in consultation with the Department of Forestry.
At constant price: average volume growth rates are applied.

Fishing

- *Source:* Department of Fisheries provides estimates on quantities of fish catches;
- *Method: At current price:* the output for fish in a current year is derived by applying the quantity index of fish catches to the CPI sub-index for fish.
At constant price: output is extrapolated by applying the quantity index to the output of the base year. Intermediate consumption at current and constant prices is derived using the ratio to gross output for 2004.

Industry

Mining and Quarrying

- *Source:* Department of Geology provides production data for sand, gravel and clay (in cubic meter), heavy mineral concentration was produced and included in 2009 (in metric tones).
- *Method: At current price:* total quantity for each of these products were multiplied by its' price prevailing in the market to derive the value of output. Value index were constructed and applied to the benchmark figure to derive total output for the current year.
At constant price: total output is extrapolated using the quantity index of the products; for both current and constant price, Intermediate consumption is derived using the ratio to gross output for 2004.

Manufacturing

- *Source:* Economic Census and annual data on production and sales are collected from few large establishments engaged in manufacturing of various products.
- *Method: At current price:* the Gross Output and intermediate consumption were obtained from the Economic Census benchmark year (2004). Subsequent year's estimates are based on annual turnover of these establishments and are converted to value index. Total output for each year at current price is then extrapolated using the value index.
At constant price: total output was derived for 2005 to 2009 by deflating with the CPI. For 2010 total output was derived using the average growth in total production.

Electricity and Water

- *Source:* The annual accounts and reports of the National Water and Electricity Company (NAWEC) supplies data on the production, generation and distribution of water and electricity.
Method: At constant price: total output is derived by applying the quantity index for both electricity & water to the benchmark output value.
At current price: total output is derived by multiplying the constant value estimates with the CPI sub-index for electricity & water.

Construction

- *Source:* Data is obtained for quantities and value of imports on construction materials from the external trade unit of GBoS.
- *Method: At current price:* total output for each year is extrapolated with the value index for imports of construction materials.
At constant price: the output of current price series is deflated with the all item CPI.

Services

Wholesale & Retail Trade

- *Source:* Data is extracted from the Ministry of Finance & Economic Affairs' fiscal tables on values for domestic taxes, taxes on international trade and excise duties; total imports is obtained from the external trade unit of GBoS.
- *Method: At current price:* for the years 2005-2009 estimates are based on the value index of domestic taxes, taxes on international trade and excise duties. The 2010 estimates are based on changes in the sum of imports of goods and gross output for the agriculture, fishing and manufacturing industries. The **constant price** estimates are derived by deflating the current price by the all item CPI.

Hotels & Restaurants

- *Source:* Data on the number of tourists visiting the Gambia annually is provided by The Gambia Tourism Authority.
- *Method: At constant price:* The quantity index of the total number (*for the total number of tourist visiting each year*) is applied to the benchmark. *At current price:* output is derived by applying the quantity index and the CPI sub-index for hotels & restaurants to the benchmark;

Transport & Storage

- *Source:* Economic Census, police headquarters, GBoS Transport Unit.
- *Method: At constant price:* output is derived by applying the quantity index (*of the total number of registered commercial vehicles*) to the benchmark; *At current price:* the CPI sub-index for transport is applied to the benchmark

Communication

- *Source:* The Gambia Telecommunications Company Limited (GAMTEL), GSM operators and the Public Utilities Regulatory Authority (PURA).
- *Method: At constant price:* output is derived for 2005-2008 by applying the volume index of fixed landlines to the benchmark. For 2009 and 2010 the volume of call minutes (*for GSM operators*) was applied. *At current price:* output is derived by applying the quantity index and the CPI for Communication to the benchmark.

Finance & Insurance

- *Source:* Data is provided by the Central Bank of the Gambia on the annual profit & loss statement of the commercial banks and Insurance companies.
- *Method: At current price:* Gross output is derived as net interest income plus fees and charges for specific services; *at constant price:* it is deflated by the overall CPI to derive output. For insurance industry, output at current price is equal to the gross premium; this is also deflated with the overall CPI to derive the **constant price**. Intermediate consumption at current and constant prices is calculated for the combined financial intermediation and insurance industry using the ratio for the year 2004.

Real Estate, Renting & Business Activities

- *Source:* Economic Census, the Integrated Household survey (IHS).
- *Method:* Gross output for this industry was obtained for the benchmark (2004) as follows: The **constant price** estimates for the real estate, renting and business activities industry is derived by applying growth in the size of the population to the 2004 benchmark estimate for gross output. The **current price** estimate for gross output is then obtained by applying the housing component of the CPI to the volume estimates. Intermediate consumption at current and constant prices is calculated using the ratio for the year

Public Administration

- *Source:* The main source of data is from the Ministry of Finance's Fiscal table and the Directorate of Treasury.
- *Method:* Output at **current prices** for the 2004 benchmark to date is derived from Government's fiscal table; it is equal to total government expenditure on wages and salaries. The **constant prices** estimates are derived by applying growth in the total number of employees in the civil service to the 2004 base year value (*excluding staff in the education and health sectors*).

Education

- *Source:* Economic census and budget document from the Ministry of Finance.
- *Method:* The **constant price** estimates for education is derived by applying growth in the number of employees in the education sector. The **current price** estimates is then derived by applying the CPI component for education to the corresponding volume estimates.

Health & Social Work

- *Source:* Economic census and budget document from the Ministry of Finance.
- *Method:* The **constant price** estimates for health is derived by applying growth in the number of employees in the health sector. The **current price** estimates is then derived by applying the CPI component for health to the corresponding volume estimates.

Other Community, Social & Personal Service

- *Source:* Economic census and the Population census.
- *Method:* The **constant estimates** for the other community, social and personal services industry is derived by applying growth in the size of the population to the 2004 benchmark estimate for gross output. The **current price** estimate for gross output is then obtained by applying the recreation component of the CPI to the volume estimates. Intermediate consumption at current and constant prices is calculated using the ratio for the year 2004.

Adjustments

After deriving the estimates of GVA for each economic activity, it is summed to derive total GVA at **basic prices** of which two adjustments were made to convert it to GDP at **market prices** for both current and constant. The first adjustment is *FISIM* which is subtracted from the total gross value added. The second adjustment is *taxes less subsidies on products*. When total output and value added were measured at basic prices, all taxes on products were excluded. Therefore to derive GDP at market prices, taxes on these products were added and subsidies (*received by producers*) subtracted.

Financial intermediation services indirectly measured (FISIM): The **current price** estimates for FISIM in all years are the actual figures reported by the Central Bank of The Gambia and taken to be the *net-interest income*. The **constant estimates** for FISIM is derived by deflation using the total CPI.

Taxes less subsidies on products: Taxes on products at **current prices** is obtained from the government figures for sales tax, excise duties and taxes on international trade. The **volume estimates** are derived by applying growth in total value added at constant prices to the 2004 benchmark estimate.

Estimating GDP and its expenditure components

Final consumption expenditure by households

In the benchmark year, the figures on household consumption expenditure were based largely on the 2003/2004 Integrated Household Survey (IHS) and has shown a statistical discrepancy of 7.6 per cent from the production approach; For the period 2005-2009 household final consumption is calculated as a residual, in other words, estimates for the other items of expenditure (government final consumption expenditure, capital formation and net exports) are summed and then subtracted from the total GDP at market prices. In 2010, another IHS was conducted and has shown a statistical discrepancy of 0.04 per cent.

Corresponding constant series for household final consumption were also derived by residual.

Final consumption expenditure by Government

Final consumption expenditure by government is derived from the central government accounts. It is defined as the total output of producers of government services *less* any receipts from the sales of goods and services. These were obtained from the Ministry of Finance's Fiscal tables/budget document for all the years.

Capital formation

Capital formation consists of gross *fixed capital formation (GFCF) and changes in inventories*. The 2004 economic census collected data on establishments' acquisitions of GFCF and these figures were grossed-up for all of the establishments for which production data were available. For the few establishments without any figures for GFCF, estimate of capital formation were assumed to follow rates of the responding establishments. In addition, GFCF figures for central government were extracted from the budget statement.

When no direct information is available from establishments, the method used to compute the value of gross capital formation rely on the estimates of production from the construction industry and on the imports of machinery and equipment goods as proxies.

Information on Changes in Inventories was available only for the 2004 benchmark as obtained from establishments that were surveyed. For subsequent years, inventories could not be calculated and therefore assumed to be part of household final consumption expenditure.

Net exports and imports

"Net exports" is equal to total exports of goods and services minus total imports of goods and services.

The imports and exports are obtained from GBoS's trade statistics unit, and data pertaining to two-way flow of services were obtained from the Central Bank of The Gambia.

Constant price estimates for exports and imports of goods have been derived by deflation. This has been done using the implicit price index for the goods producing industries, that is, agriculture and manufacturing.

Areas for improvement:

After the conduct of the economic census in 2005/2006, availability of data for compiling annual GDP estimates in most sectors of the economy are obtained by Indicators and as such might be insufficient in terms of frequency, detail and coverage. To fill the gaps in the framework for consistency, and subsequently, the dissemination of the estimates, one has to rely on various statistical techniques that best measure the required concepts. Therefore to strengthen the existing data compilation methods and sources, a number of factors stand out clearly requiring major improvements in the very near future as follows:

- 1). To put in place a comprehensive annual data collection exercise for the manufacturing and construction activities, wholesale & retail trade, hotels & restaurants, real estate and other business activities;
- 2). To put in place a comprehensive list of business establishments to be used as a frame for subsequent economic surveys which should be constantly updated; This could be sustained with a census carried out every five years to capture newly established businesses and to delete the non-existence or ceased ones;
- 3). The cost of tools and implements used in agricultural production as well as farm-gate prices for various crops should be collected requiring the expansion in the coverage of the Producer Price Index. This will enable GBoS to apply double-deflation method for compilation of Value Added for agriculture in conformity with international standards;
- 4). Efforts have to be made to also collect livestock figures directly from farmers, animal slaughters in the abattoirs as well as those exported - regular livestock surveys is to be carried out by the Department of Livestock Services;
- 5). Conduct an intensive data collection of indicators on Forestry products;
- 6). Conducting another phase of an economic census is very crucial to improving the data gaps as well as rebase the volume estimates for the production approach. Information could also be obtained from establishments' on gross capital formation and changes in inventories to compile the expenditure approach.
- 7). Household expenditure surveys should be conducted annually.