

National Accounts for Malawi: The Effect on GDP of Integrating
Supply and Use Tables in the National Accounts and the Requirements
for Periodically Main Revisions

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The National Accounts for Malawi

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Of Integrating Supply and Use Tables in the National Accounts
And the Requirements for Periodically Main Revisions**

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Abbreviations

AES	Annual Economic Survey
BoP	Balance of Payments
BPM	Balance of Payments Manual
COFOG	Classification of Functions of Government
COICOP	Classification of Individual Consumption by Purpose
COPNI	Classification of the Purposes of the Non-profit Institutions
CPC	Central Product Classification
CPI	Consumer Price Index
GDP	Gross Domestic Product
HS	Harmonized System
IHS	Integrated Household Survey
IMF	International Monetary Fund
ISIC	International Standard of Industrial Classification
KAU	Kind of Activity Units
MGDS	Malawi Growth and Development Strategy
MDPC	Ministry of Development Planning and Cooperation
MK	Malawian Kwacha
MoF	Ministry of Finance
MRA	Malawi Revenue Authority
MTEF	Medium Term Expenditure Framework
NA	National Accounts
NABOP	National Accounts and Balance of Payments
NGO	Non Governmental Organization
NPISH	Non Profit Institutions Serving Households
NSO	National Statistical Office
RBM	Reserve Bank of Malawi
SN	Statistics Norway
SUT	Supply and Use Table
VAT	Value Added Tax
WMS	Welfare Monitoring Survey
1993 SNA	System of National Accounts, 1993
2008 SNA	System of National Accounts, 2008

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Abstract

The ongoing National Accounts project in Malawi is part of an Institutional Cooperation Project between National Statistics Office (NSO) of Malawi and Statistics Norway. The goal of the project is to contribute to improved poverty reduction by policy planning based on reliable National Accounts figures.

PART I. Establishing Annual Supply and Use Tables from the year 2002

During the first project period from 2004, the objective was to implement UN's 1993 SNA and an improved IT technique to strengthen the compilation of the National Accounts for Malawi. Annual Supply and Use Tables (SUT) have been compiled for Malawi from the year 2002 integrated in the annual compilation process of the National Accounts.

This paper will describe the experience from introducing SUT in Malawi and the importance of utilising all existing economic statistics and administrative data sources, such as Crop estimates, Annual Economic Surveys, detailed Government accounts, Import and Export statistics, Tax data by products, Household expenditure surveys and Consumer price indices. Balancing the different data sources in a systematic and well documented framework has provided important quality checks and has also given better estimates for the informal economy in the National Accounts for Malawi. The result of the revision of the National Accounts and GDP as published in 2007 will be presented.

The SUT compilation establishes a database which allows the calculation of Input-Output Tables in current and constant prices at different levels of aggregation. The use of the Input-Output Tables for economic planning in the Ministry of Development Planning and Cooperation in Malawi will be explained in this paper.

PART II: Main revision of the National Accounts for Malawi in 2011. Challenges phased.

Introduction of 2008 SNA, new nomenclature ISIC Rev.4 and Revised CPC from 2009 and several new statistical data sources call for a main revision of the National Accounts for Malawi.

The importance of the following different new or improved data sources will be analysed:

- *Revised previous Annual Economic Surveys and the new Annual Economic Survey 2008*
- *New survey for small and medium sized enterprises and for NPISHs*
- *National Census of Agriculture and Livestock (NACAL)*
- *Malawi third Integrated Household Survey (IHS3)*
- *Population census 2008*

There is also a plan to improve the coverage of the Non-observed economy to be recorded within the production boundary of the National Accounts

The National Accounts with detailed Supply and Use tables calculated from the year 2002 have to be revised with new industry and product codes in order to compile comparable time series from 2002.

The methodology for the revision and the main effect on the National Accounts of implementing SNA2008 and especially the new allocation of FISIM will be described.

PART I. Establishing Annual Supply and Use Tables from the year 2002

1.1. National Accounts, the core of a modern system of economic statistics.

The National Accounts should be the main instrument for observing the economy as a whole, the economic growth and the macroeconomic policy. International organisations, analysts and policy makers pay great attention to the evolution of GDP and to other National Accounts variables such as final consumption, capital investment, saving, etc. For international comparisons it is important to remember that the quality of National Accounts is not the same in all countries. The National Accounts figures are highly dependent on the quality of the statistical system that exists in a given country and the methodology used.

The compilation of National Accounts requires special knowledge about the country's economy, special training in the National Accounts compilation methodology and also knowledge about the coverage and quality of the different economic statistics available for the National Accounts compilation.

1.2. Malawi and the project of National Accounts

Malawi is bordered by Tanzania to the north, Zambia to the west and Mozambique to the east and south. Malawi's population in 2011 is 14.3 million, with almost half under 15 years. 85 per cent of Malawians are living in rural areas. Agriculture is the principal industry for the country, contributing about 30 per cent to GDP in 2007, whereas wholesale and retail trade contributed almost 20% to GDP and Manufacturing sector stood at 10%. 39 per cent of the population was below the poverty line in 2009 (WMS 2009).

Norway is supporting Malawi through an ongoing "Institutional Cooperation Project", a twinning project between Statistics Norway (SN) and the [National Statistical Office \(NSO\) of Malawi](#), the Ministry of Development Planning and Cooperation (MDPC) and the Ministry of Finance (MoF).

The objective of the National Accounts project is to give training to the National Accounts and Balance of Payments Branch (NA/BOP branch) in NSO and to introduce a sustainable methodology for the compilation of the National Accounts according to international recommendations. The staff of the NA/BOP branch is given theoretical and practical "hands-on training" by long- and short-term advisers from Statistics Norway. Some of the statisticians in the NA/BOP branch have also participated in IMF National Accounts training courses and SADC courses.

Statistics Norway also gives assistance to Ministry of Development Planning and Cooperation (MDPC) for developing a Macro Economic Model for medium term and long term planning. Reliable and more complete National Accounts with Input-Output Tables are important as a database for this model project.

1.3. National Accounts for Malawi - The old tradition

National Accounts for Malawi (called Nyasaland from 1891 to 1964) was first calculated by Miss Phyllis Deane for the year 1938 and published in "The Measurement of Colonial National Income", Cambridge University Press, 1948. During the Federal period, from 1954 to 1963 a set of national accounts were prepared for Malawi by CSO, Salisbury. Phyllis Deane writes later: "The difficulties in the way of measuring the national income in Africa spring from two main sources. First, the concepts and experience from which the national income estimator usually derives his definitions and methods have for the most part been developed in dealing with advanced industrial economies such as those of

the United Kingdom or the United States. How far they are applicable to less advanced economies must be deduced from a series of practical tests. Second, data on which to base estimates are scarce”.

Following Independence in 1964, the task of preparing National Accounts for Malawi fell on the newly established National Statistical Office (NSO) in Zomba. Mr. Derek W. Blades was from 1964 to 1972 the first Director of Census and Statistics for the NSO Office in Zomba. He prepared the “National Accounts Report for Malawi, 1964-1967” with explanatory notes and improved national accounts, published in 1968. The first National Accounts Publication for Malawi, covering the years 1964-1970 was released in November 1972 and was followed by five other National Accounts publications.

The last of these publications “Malawi National Accounts Report 1990-1994” was published by NSO, Zomba with series starting from 1990, using 1994 as base year. The National Accounts for the years up to 2006 were compiled in 1994 prices, with only GDP converted to current price by an aggregated price index composed of consumer price indices and price indices from external trade.

The National Accounts/Balance of Payments Branch (NA/BOP Branch) in NSO is responsible for both the National Accounts and Balance of Payments compilation. The National Accounts figures for Malawi have also been published by the Reserve Bank of Malawi in “Financial and Economic Review” and by the Ministry of Development Planning and Cooperation (MDPC) in the “Economic Report”. Traditionally, the national accounts work has been done twice a year. The NA/BOP Technical Committee which comprises the NSO, the MDPC, the MoF, Ministry of Agriculture and Food Security (MoAFS) and the Reserve Bank of Malawi (RBM) has been compiling the first version of the national accounts for a year. This preliminary version incorporates data from a range of sources and data from other stakeholders as MoAFS, MDPC, the RBM and the MoF.

1.4. National Accounts for Malawi with Supply and Use Tables (SUT).

When the National Accounts Cooperation project started in 2004, it was decided to start with Supply and Use Tables (SUT), in accordance with 1993 SNA. All economic statistics and also relevant data sources from different government ministries were used for the national accounts compilation. The Supply and Use Tables (SUT) are fully integrated in the National Accounts system and serve both statistical and analytical purposes

SUT compilation incorporates the components of the three approaches for measuring Gross Domestic Product (GDP): The production approach, the expenditure approach and the income approach. This enables a single estimate of GDP to be determined, both in current prices and in volume terms.

The SUT focus on the product balances i.e. shows how supply of products (goods and services) originate from domestic industries and imports, and how those supplies are allocated between various intermediate or final uses, including exports (from 1993 SNA, 1.16)

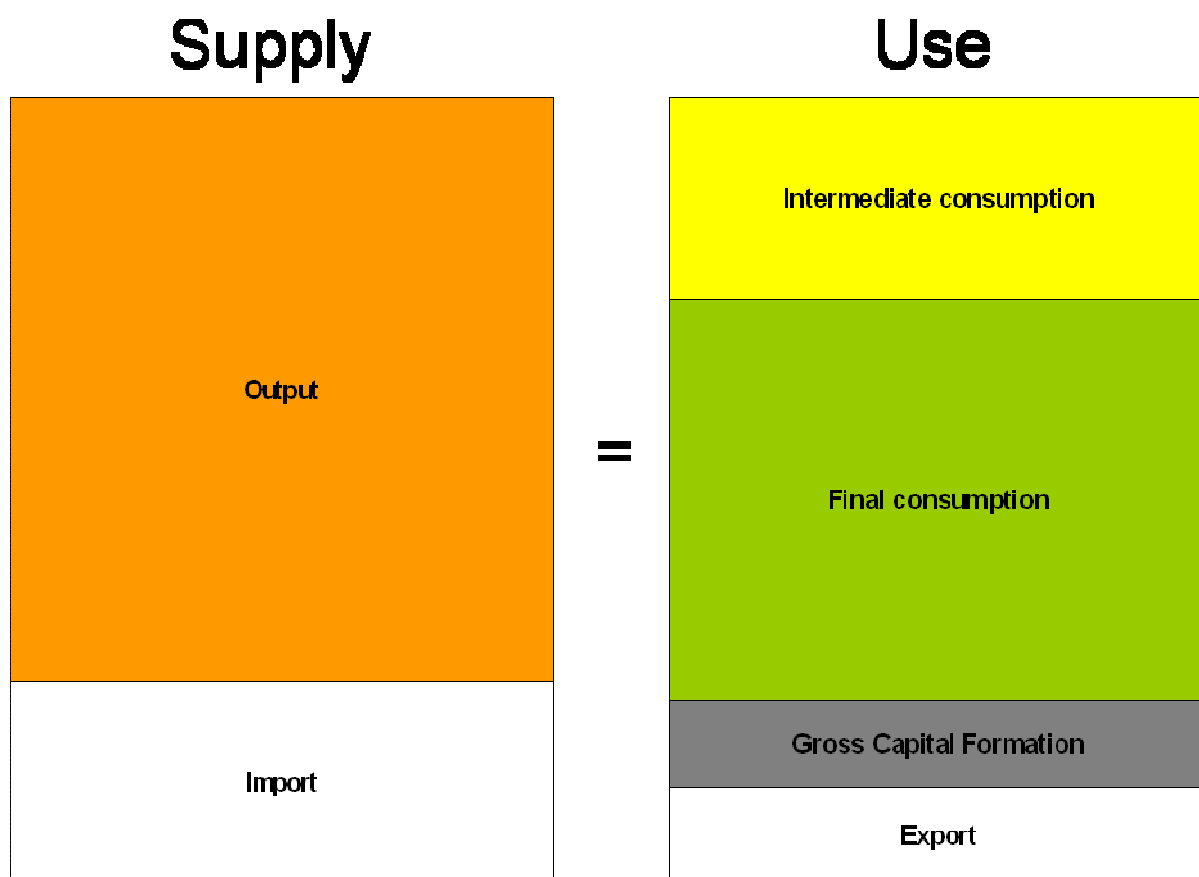


Figure 1. Illustration of the Supply Table and the Use Table for Malawi for 2007

Supply Table: Supply of products from Domestic production + Imports

Use Table: Use of products for Intermediate consumption + Final consumption + Gross capital formation including change in inventories + Exports

The Supply and Use Tables give:

- *An efficient system for reconciliation of data and for reviewing economic statistics and other data sources in a systematic way in order to check the consistency of various sources.*
- *An ideal framework for different value concepts (basic value, purchasers' value etc.)*
- *An important tool for constant price estimates (the double deflation technique) giving balanced SUT in both current and constant prices.*
- *Important for analysing the effect of imports and exports on the country's economy.*
- *Database for converting Supply and Use Tables to Industry format Input-Output tables (IOT) in current and constant prices*
- *IOT database for econometric models and economic planning purposes*

For a developing country as Malawi, the balancing of the Supply Table and the Use Tables is of particular importance for compiling National Accounts. The compiler can use judgement to reach a balance by adjusting the components as necessary.

1.5. Data sources for the National Accounts for Malawi.

The first milestone for the Norwegian National Accounts project in Malawi was to compile new national accounts figures with integrated annual Supply and Use Tables (SUT) in current and previous year's prices for the three years 2002, 2003 and 2004.

In 2004, important available data sources were:

- Crop production statistics,
- Annual Economic Surveys for large enterprises,
- Government accounts,
- External trade statistics, the [EUROTRACE application package](#) which gives detailed information with value and quantity data for imports and exports
- The Balance of Payments (BoP) figures, also compiled in the NA/BOP branch and covering import and export of services.
- Consumer price indices
- Estimates for medium and small-scale business had to be based on a survey from 1998. In 1998, 20 000 medium scale companies were identified and classified by 9 activity groups. 10 companies within each of the groups were visited and some aggregates from their accounts collected.

Information from the Integrated Household Survey for the year 2004 was also accessible before the revised National Accounts for the years 2002 to 2004 were released in March 2007

The frame for the first benchmark SUT was considered carefully regarding the level of detail. The following assessments were important:

- Establishing an aggregated National Accounts Industry Classification relevant for Malawi, specifying around 100 industries based on ISIC 3.1. In order to utilize the data sources that were split between large, medium and small sized industries, for technical reasons, the market producers were divided into the same two categories.
- Establishing a National Accounts Product Classification based on CPC, specifying around 400 products. Important food products in the Malawian economy were specified, also with a split between products sold to the market and products for own use. Products as food aid were given special product codes.

1.6. National Accounts with Supply and Use Tables (SUT) at prices of the previous year.

When the National Accounts with SUT was compiled for the first two years 2002 and 2003, the current year SUT was converted into the previous year's prices. The same procedure for compiling volume and price indicators are followed for the following years.

Advantages of calculating price and volume measures within the SUT framework:

- The use of a SUT calculation scheme supports the calculation of volume and price indices for transactions of goods and services in the National Accounts.
- When price and volume measures are established in a SUT accounting framework, they give volume indices and deflators of several variables and at different levels of aggregation, interrelated in a systematic way.

The main data sources for the constant price compilation for Malawi are price indices for agriculture products and consumer price indices. Unit value price indices are compiled for imports and exports based on value and quantity data from the EUROTRACE software. For government collective services, automatic compiled input price indices are used.

1.7. The first project results

During 2005 and 2006, the National Accounts/SUT team in NSO utilized all economic statistics and other available data sources to prepare input data for compiling the first Supply and Use Tables (SUT) for the years 2002, 2003 and 2004.

Excel work sheets are used for data input and the final tabulations. The NA/SUT data are stored in a database. The NA/BOP branch uses a software application provided by Statistics Norway. The software interacts with Excel work-sheets to perform balancing of the SUT and to calculate the complex formulas of the SUT in current and previous year's prices and the Input-Output Table.

Balancing the different data sources for Malawi in a systematic and well-documented SUT framework using the software application, means important quality checks on the statistical data. The data from the Annual Economic Surveys (AES) for the years 2002, 2003 and 2004 were revised and improved. Lack of data in several areas required estimation based on various indicators. To achieve acceptable National Accounts figures for Malawi, several rounds of corrections and balancing of the SUT were required. Different analytical tables, produced automatically by the software application, were analysed during the correction phase.

On the 27th of March 2007 new National Accounts numbers for the years 2002-2004 together with preliminary figures for the years 2005 and 2006 were launched to the public at a large workshop in Lilongwe, chaired by the Commissioner of Statistics, Charles Machinjili. At the launch of the new data, the then Finance Minister, Honourable Goodall Gondwe said that he had for a long time felt that the country's economy had been understated and that the new national accounts data gave a much better picture of the country's economy. He also said that the introduction of the new national accounts follows the decision to change the methodology of getting GDP estimates from the "production approach" to compile more comprehensive "Supply and Use Tables".

1.8. Summary of the new GDP results for Malawi compared with the old figures

Comparison between old and new estimates showed that the level of GDP in current prices was revised up by 38.0 per cent in 2004 and 32.6 and 35.1 per cent in the two following years.

Table 1: GDP Market prices, 2002-2006, Billion Kwacha, current prices

	2002	2003	2004	2005	2006
New estimates	204.4	236.2	285.9	326.2	423.9
Previous estimates	148.4	171.9	207.2	245.9	313.8
Revision, per cent	37.7	37.4	38.0	32.6	35.1

Source: National Statistical Office, Malawi

The main reasons for the upward revision were introduction of the SUT methodology and utilizing estimates for medium and small-scale businesses, and new estimates for production for own use and for NPISH.

The '[Malawi National Accounts Report 2002-2005](#)' explains the concepts, sources and methods used. National Accounts figures for Malawi are also published by the [Reserve Bank of Malawi](#) in its "Financial and Economic Review" and by the Ministry of Development Planning and Cooperation in the "Annual Economic Report, which is one of the budget documents".

Further development has been integration of the main parts of the Institutional Sector Accounts in the National Accounts System. An Excel workbook with the sequence of Institutional Sector Accounts from Production Account to Capital Account has been developed. The data sources are from the SUT,

from the Government Accounts and from Balance of Payments for the Rest of the World. The Non-financial corporations and Household sectors are combined and used as a residual.

The “National Accounts and Balance of Payments Technical Committee” in Malawi compile preliminary annual National Accounts estimates after conducting Business Interviews, which is an interview of a sample of the Business Community which is done twice a year.

1.9. The use of the Input-Output Tables for economic planning

Data from the national accounts is an essential source for The Ministry of Development Planning and Cooperation’s (MDPC). Among its core functions, the MDPC aims at carrying out analysis and formulation of the country’s social, economic and development policies, plans and strategies.

The Input output tables compiled within the NA-framework is an important source for the Malawian macro model. Input-output tables give a detailed overview of the supply and use of goods and services in the economy. In Malawi input-output tables are now integrated in the national accounts, as recommended by 1993 SNA. Comparable input-output data are now available for the years 2002-2007. For further technical details, please see annex 3.

PART II: Main revision of the National Accounts for Malawi in 2011. Challenges phased.

2.1. Why a main revision of the National Accounts time series?

The main revision is required to introduce new international standards:

- Change from 1993 SNA to 2008 SNA.
- Change from ISIC rev 3 to ISIC rev. 4 and from CPC to CPC Ver. 2.

The main revision is required to utilize new statistical information:

- Agriculture data for estates and small holders from NACAL, season 2006/2007.
- Revised and extended Annual Economic Survey for 2007 - 2009 with ISIC rev. 4.
- Data from the Population and Housing Census 2008.
- Improved foreign exchange forms from 2007 with data for imports and exports of services.
- Accounting data for almost 300 NPISH for the years 2008 and 2009.
- Microfinance providers are important in the Malawian economy. Some information has been collected for Microfinance providers, but important to find information about loans to households and interest rates.
- Household consumption estimate from IHS3. Preliminary data planned for September 2011

The main revision is required to improve the data for small and medium enterprises (SME) and for the “non-observed” economy.

BIR has included in the register 15 000 enterprises, large, medium and small enterprises with data for turnover and number of employees. The quality is not known, but information in the register for the enterprises not included in AES, have to be analysed and compared with the estimated data for medium and small-scale business included in the NA/SUT. A new survey for the SMEs will be conducted and finalised by December 2011.

2008 SNA - Important methodological changes relevant for Malawi’s economy.

- A revised value of FISIM will be recorded as output from banks and from imports. The use of FISIM will be recorded as intermediate and final consumption and as export.
- Improved estimates for non observed economy such as collection of firewood and water.
- Improved estimates for “work in progress” for cattle and cultivated forest.
- New data for repairs and installations of industrial machinery, classified as a separate industry

2.2. Different actions required for the main revision

- Actions for preparing the revised NA/SUT for the first base year 2007 and the new SUT for the years 2008 and 2009.
- Actions for estimating revised Supply and Use Tables for the previous years.
- Actions for preparing the revised Institutional Sector Accounts for the year 2007 and new Institutional Sector Accounts for the years 2008 and 2009.
- When need arises, revised Input-output Tables should be compiled automatically based on the revised SUT for the year 2007 and the new SUT for the years 2008 and 2009.

2.3. Compiling the revised NA/SUT for the first base year 2007 and the new SUT for the years 2008 and 2009.

2.3.1. Establish a new NA database with Malawian National Accounts version of ISIC Rev.4 and CPC Ver. 2

The classification of activities within the national accounts is an important issue. The activities should be designed to adequately reflect the Malawian economy. The new standards for International Standard Industrial Classification of All Economic Activities, ISIC rev. 4 and Central Product Classification, CPC rev 2, implied that the code lists for the national accounts / SUT compilation had to be revised in order to be in line with these new standards.

The previous NA/SUT classification was linked to the previous version of ISIC, ISIC rev 3.1. With the aim of revising and updating to ISIC rev 4, a link between the current and the revised NA code list, and the ISIC rev 4 was established. Correspondingly a revised correspondence between the revised CPC, CPC rev2, and the NA products was established. A re-evaluation of the code list was done during the compilation of the SUT 2008 and 2009, as the availability and the quality of data categorised according to ISIC rev4 was assessed.

The first step when revising the NA time series for 2002-2007 was to encode the current SUT in line with the revised classifications for activities and products. Each year’s SUT contains a range of catalogues i.e. output, intermediate consumption, prices, VAT, trade margins etc. We decided to go for an automatic method within the NA-software application. The chosen method reduced the required manual work, whereby manual errors were reduced. Checks have been included to verify that old and new figures are compatible. To sum up the process of revision:

- Changed input data for all industries according to new industry and product codes
- Changed input data for imports and exports according to new product codes
- Changed input data for all final use according to new product codes

The next step will then be to revise the reclassified time series in line with the SUT for 2008 and 2009 as soon as they are finalised. These two years, 2008 and 2009, will be taken as a **starting point** for the backward revision of the current NA time series. When new data and classifications for 2008 and 2009 are incorporated it might be necessary to revise the backward years in order to link the revised level with the current figures in order to maintain consistent time series

2.3.2. Utilise new or revised data for the Supply and Use Tables for 2007, 2008 and 2009

- Agriculture, using relevant new data from NACAL for the year 2006/2007.
- Improved quality data from Annual Economic Survey 2007 – 2009 used as absolute values.
- The coverage of the Business Information Register (BIR) has been improved and gives information about turnover and number of employees for 15000 companies. The information will be compared with the current estimates for small and medium sized enterprises.
- Complete data for NPISH based on a new detailed census for 2008 and 2009. Estimates based on a small sample for 2007 and previous years have to be revised.
- The 2008 Population and Housing Census should be used to improve the estimates for small industries. Data for dwellings should be analysed for improving the estimation of imputed rent.
- The Integrated Household Survey 3 (IHS 3) is important for evaluating and revising the estimated for household final consumption expenditure. Data from IHS 3 will be used directly or indirectly as a data source for estimating Household Final Consumption Expenditure, and will be evaluated, compared and balanced with other data sources used for supply of goods and services.
- Detailed data for imports and exports of goods and services are of great importance for the National Accounts and SUT compilation in Malawi. NSO uses the EUROTRACE software package to manage data for external trade statistics. The revised NA will be in line with HS 2007

2.3.3. Improved data for the small-scale business sector and the “non-observed” economy

The small-scale business sector and the informal sector are important in the Malawian economy, but not well covered in the statistics. The current estimates had to be based on the last Population and Housing Census 1997/98 where the total labour force and its distribution over the main activities were registered. Since 1997/1998, the population has grown from 9 million to 14.3 million and the labour force has been estimated by NSO by using the same rate of the total as in 1997/1998. The plan is to improve the coverage of the “Non-observed economy” (NOE) which should be recorded within the production boundary of the National Accounts. NOE refers to productive activities that may not be captured in the basic data sources used for compiling national accounts. Elements not observed will include estimates for informal enterprises not covered in statistical enquiries and corrections to some measures of informal enterprises that are captured in statistical enquiries.

The following activities should be recorded within the production boundary in the national accounts:

- Underground activities, informal activities, including production of households for their own final use,
- Illegal activities, but this is difficult in practice. Different way of measuring illegal economy also reduces the comparability between countries.
- Other activities omitted due to deficiencies in the basic data collection program.

Production of households for their own final use is defined as those productive activities that result in goods or services consumed or capitalized by the households that produced them. The following types of production by households should be included within the production boundary whether intended for own final consumption or not:

- Production of goods for own final consumption, e.g. of agricultural products and their subsequent storage, gathering of berries or other uncultivated crops, forestry and the collection of firewood, hunting and fishing.
- According to 2008 SNA also other kinds of processing such as dressmaking and production of pottery and furniture should be included within the production boundary for countries where this is important.
- Own-account production of housing services by owner-occupiers;

- Own-account construction, including that by households;
- Production of services by paid domestic staff;

Domestic and personal services provided by members of a household for their own consumption should not be included within the production boundary. This means that activities like cooking, house cleaning, and looking after children and elderly people are excluded from GDP. These services are only included if they are carried out by people paid for doing so.

A team of economic and environmental experts was in 2010 engaged by the Ministry of Development Planning and Cooperation, financed by the UNDP, to assess the contribution of natural resources to the Malawi economy. A conclusion was “the GDP figures understate the true contribution of forestry by not capturing the extensive use of wood for fuel”. The team had also other examples; The NSO defended the NA figures, answering “in any country in the world, some activities in the economy are not fully factored into the official GDP measurement

2.3.4. Calculation of FISIM according to 2008 SNA

Statistics for financial institutions are from the Country’s Central Bank or from the Financial Market Supervisory and Regulatory Agencies. Special rules are given for compiling and distributing the production from banks, based on interests received and paid, called “financial intermediation services indirectly measured from banks” (FISIM). A revised value for FISIM will be based on the monetary and banking statistics and information from the Balance of Payments (BOP) and the International Investment Position (IIP). The revised value of FISIM will be recorded as output from banks and from imports. The use of FISIM will be recorded as intermediate and final consumption and as export. Allocation between intermediate consumption and final consumption is not easy. The key for distribution of FISIM between industries in the SUT will be the output of the respective industries. Allocation of FISIM will change the figures for GDP.

Annex 1. Establishing the Current Price SUT and the SUT in Previous Year's Prices

1. The compilation process for SUT at current prices

1.1. The Supply Table at producers' value (net of refundable VAT)

The following input data are loaded into the SUT application in a fixed Excel format:

- Domestic production, specified by subgroups for Production for own use, Market production, Non market production and classified by NA-ISIC industries and by NA-CPC products.
- Imports specified by NA-CPC products.
- Custom duty specified by NA-CPC products.

1.2. The Use Table at purchasers' value

The following input data are loaded into the SUT application in a fixed Excel format:

- Domestic intermediate consumption specified by NA-CPC products and by NA-ISIC industries.
- Domestic final consumption specified by NA-CPC products and by COICOP, COFOG, and COPNI.
- Gross fixed capital formation specified by NA-CPC products, by capital type and by NA-ISIC industries.
- Exports specified by NA-CPC products.

1.3. The Use Table, trade margin matrix and tax matrices:

The following input data are loaded into the SUT application in a fixed Excel format:

- Matrices for trade margin rates and transport margin rates by products and users
- Matrices for VAT rates (or sales tax).
- Total figures for product taxes and product subsidies classified by product codes.

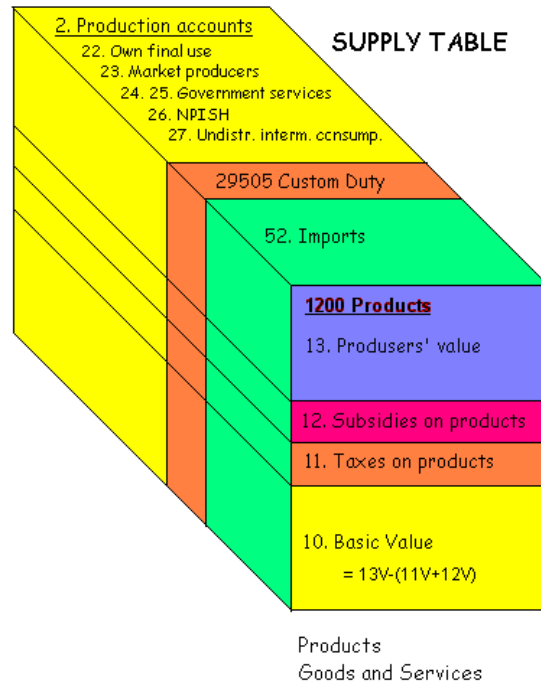
1.4. The Use Table in producers' value

After the Use Table has been established in purchasers' value, matrices for VAT or sales tax, trade margins, transport margins and producers' values are calculated for the Use Table to compile producers' value.

1.5. Balancing the Supply and Use Tables

The detailed SUT are balanced and corrected in producers' value. Preliminary residuals, recorded as Change in inventories are corrected, either manually or interactive. After the balancing of the Supply and Use Tables at producers' value, matrices for product taxes, product subsidies and basic values are calculated automatic both for the Supply Table and the Use Table. Finally both the Supply Table and the Use Table are calculated in basic value.

Overview of the Supply Table



The Supply Table has four layers, corresponding to different valuation matrices:

10 Basic value

11 Taxes on products (paid by producers)

12 Subsidies on products (paid to producers)

13 Producers' value

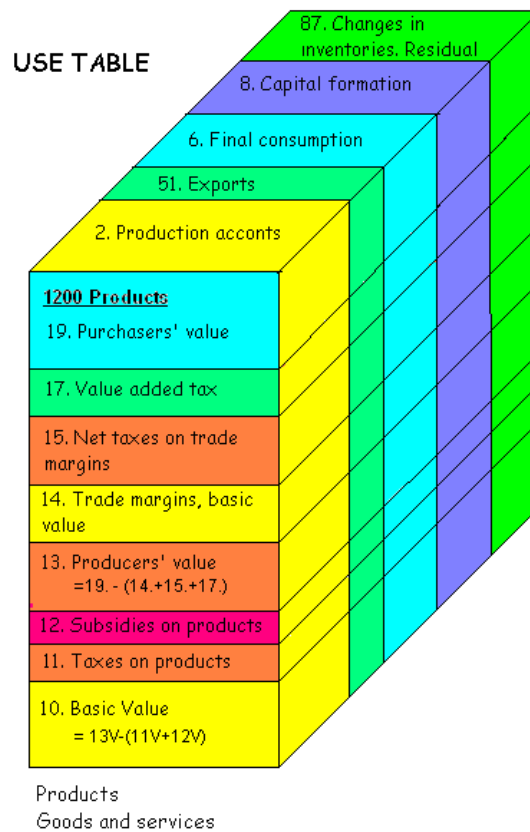
The Supply Table is first established and balanced in Producers' value (13 value).

By an automatic procedure:

- time adjusted taxes, allocated to products, are distributed between domestic suppliers and imports of the products.
- time adjusted subsidies, allocated to products, are distributed between domestic suppliers of the products.

Finally, the Supply Table is calculated in Basic value (10-value)

Overview of the Use Table



The Use table established in Purchasers' value is automatic decomposed into the relevant valuation matrices:

- Non-refundable VAT (Account type 17)
- Retail and wholesale margins, basic value (Account 14 R)
- Transport margins (Account type 14T)
- Producers' value (Account type 13)

After the balancing between the Supply and Use Table, the producers' value is further decomposed into:

- Subsidies on products (Account type 12)
- Taxes on products (Account type 11)
- Basic value (Account type 10)

Balancing and correcting changes in inventories:

In the first phase of the balancing of the supply and use of each product at producers' values, the change in inventories is residually determined. The residuals are corrected to an acceptable level by changing the Supply or Use of a product. The corrections are first made manually, based on an evaluation of data and statistical sources and finally by an automatic "RAS" method.

1.6. Corrections.

During the process of balancing and correcting the SUT-tables for Malawi, the statisticians in the SUT team, responsible for the various industries or types of final use, have to check and correct their data.

Corrections can take place in different ways, either by loading an Excel file with absolute figures, with value indices or by interactive corrections. When a variable is changed, all dependent variables are recalculated automatically and instantly. Each round of corrections that are carried out, is resulting in a new automatic total balancing of the Supply Table and the Use Table in all sets of valuation, giving new figures for change in inventories, specified by products.

2. Compiling SUT at prices of the previous year.

Methodology for compilation of SUT at previous year's prices

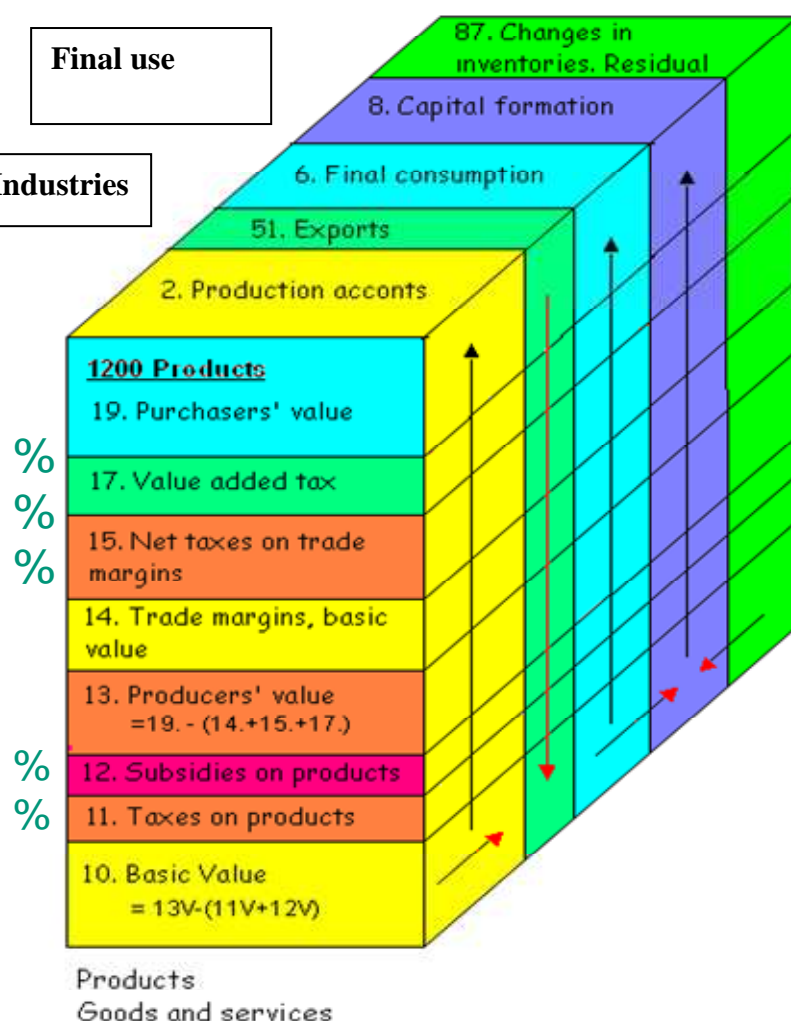
- The level of details in the balanced SUT at previous year's prices is similar to the level of details in current prices, and the definitional relationships inherent in the current price SUT are also maintained in the SUT at the previous year's prices.
- Value added for the different industries at previous year's prices, are calculated as balancing items (double deflation).
- An integrated set of value, price and volume measures are compiled within the framework of detailed, annual SUT at current and constant, previous year's prices.

For the compilation of the flows of products, 3 price indices (where relevant) are required for each NA-product to deflate corresponding current price figures:

- Price index for each NA-product supplied from domestic production (Basic value).
- Price index for each NA-product supplied from imports (Basic/CIF value).
- Price index for each NA-product delivered to Exports (Purchasers'/FOB value).

Methodology used for compiling trade and transport margin and tax rates in previous year's t prices: VAT, trade and transport margins and product taxes and product subsidies are compiled in previous year's prices for the detailed products by user categories, by applying tax rates and trade margins from the previous year.

Use Table at previous year's prices



SHORT OVERVIEW OF THE COMPILATION STAGES FOR THE USE TABLE

Stage 1. EXPORTS, fob /purchaser's value compiled at previous year's prices

Stage 2-4. From EXPORTS, trade margins and other valuation matrices are deducted; Exports are compiled in basic values, at previous year's prices.

Stage 5-6 The Supply table,

Domestic production and Imports at basic values are compiled at previous year's prices.

Stage 7. TOTAL USE BY PRODUCTS at basic values are fixed; identical with TOTAL SUPPLY BY PRODUCTS at basic values (Totals compiled in Supply Table are transferred to the Use Table).

Stage 8. For each product, the same price index used for domestic use of that product at basic value.

Stage 9. For domestic use by products, figures at the previous year's prices are compiled for the different valuation matrices and added up to domestic use by products at purchaser's value

Stage 13. Finally: Consumer price indices are used to compile revised figures for household final consumption of goods in purchaser's values at the previous year's prices.

Stage 14. After the figures for household consumption in purchaser's values have been revised, the valuation matrices and the figures at the previous year's prices for household consumption in basic values are revised.

Stage 15. Interactive connection between SUT at previous year's prices and current price SUT change the estimated trade margins so the current price figure for household consumption in purchaser's values is kept unchanged.

Stage 16. The change of the trade margin matrix in current prices for products to household consumption, leads to a new interactive balancing of the Supply and Use table in current prices.

Stage 17. Revision of Trade margins in current prices, results in revision of the production in Retail and Wholesale industries. SUT will be balanced with adjusted figures for change in inventories in current and previous year's prices.

Stage 18. Value added for all industries are calculated by double deflation,

18

Stage 19. Gross domestic product at previous year's prices is calculated by adding net product taxes to gross value added at basic values minus correction for product subsidies.

Annex 2. Transformation from SUT to IOT

The methodology for the transformation to IOT is based on the main assumption that each of the detailed products has its own specific sales structure, “*the fixed product sales structure*”. The Supply Table (Suppliers x Products) and the Use Table (Products x Users) at basic values are converted to an Input-Output Table (IOT) by distributing the supply and use of the detailed products. For *each product*, detailed tables will show domestic use of the product and exports linked directly to the domestic supplying industries for the product and to imports of the product.

The first assumption is that export of all the detailed products is primarily supplied by domestic industries. Distribution of exports of *a product* by supplying domestic industries at basic value is assumed ***proportional with the production of the product by the supplying industry (industries) at basic value.*** Exceptions are transactions between different Users as purchases/sales of fixed assets and products imported for re-export, which require special treatment.

The second assumption is that imports and the remaining part of domestic production of the product at basic value are distributed proportionally with the different domestic uses of the product (intermediate consumption, final consumption, capital formation, changes in inventories) at basic value.

The automatic split between use of products supplied from domestic production and from imports is carried out at the detailed product level assuming constant import ratios along the row for intermediate and final domestic use. This means that the same import share applies to all domestic use categories of *a product*, and that all industries that supply *a product*, have the same market share for all types of use of *that product*.

This methodology requires a detailed product classification. Special codes should be introduced for certain imported products which are used different from the similar domestic produced products.

The result is:

- ***“Industry by Industry Matrix” and “Industry by Final Use Matrix” with product information showing the domestic users and exports.***
- ***“Import Matrix” with product information showing domestic users and for some products re-exports.***

In the SUT, imports are specified by products. In the I-O Tables, imports are encoded from the NA-product classification to the NA-industry classification, the main producer as used for domestic production.

For analytical use, imports can also be split between competitive and complementary imports. For competitive imports, the NA-industry classification used for domestic production should be used. For complementary imports of special products as for direct purchases abroad by resident households, a special product classification might be used.

The next stage is aggregating over the product flows and constructing IOT (without product flows) at

Annex 3. Tables from Malawian National Accounts

Table 1, GDP by activity in current prices, in MK' million

Item Description	2002	2003	2004	2005	2006	2007
A Agriculture, forestry and fishing	70 535	77 939	90 581	96 941	121 771	147 966
01 Crop and animal production, hunting and related service activities	66 035	72 293	84 183	88 145	112 906	138 816
Estates	16 589	15 453	20 902	22 444	27 229	30 328
Smallholder	49 446	56 840	63 280	65 701	85 677	108 488
02 Forestry and logging	3 458	3 780	4 166	4 535	4 609	4 979
03 Fishing and aquaculture	1 043	1 866	2 233	4 262	4 256	4 171
B Mining and quarrying	1 704	2 686	3 225	4 039	4 680	5 804
C Manufacturing	20 340	25 857	26 146	27 264	41 312	53 006
D+E Electricity, gas and water supply	3 475	3 773	5 010	5 362	5 745	8 299
F Construction	8 673	9 947	11 214	13 901	14 487	16 044
G Wholesale and retail trade	27 121	27 741	38 152	48 253	75 327	99 577
H Transportation and storage	7 656	7 826	10 768	11 870	14 816	18 651
I Accommodation and food service activities	4 581	5 587	5 646	6 024	6 929	10 342
J Information and communication	5 854	8 297	7 825	8 128	12 413	13 970
K Financial and insurance activities	11 334	15 726	16 929	19 141	25 912	30 473
L Real estate activities	10 755	11 467	12 933	15 385	19 940	24 731
M+N Professional, scientific and technical activities, administrative and support service activities	5 278	3 105	3 833	5 439	6 733	7 791
O Public administration and defence	5 478	6 265	9 610	11 716	14 109	12 991
P Education	5 532	7 288	8 731	10 141	8 189	9 004
Q Human health and social work activities	5 435	7 855	8 243	12 513	18 272	18 199
R+S+T+U Other services, nec	9 351	11 161	14 916	15 816	17 020	18 979
Sum of all industries	203 101	232 520	273 761	311 933	407 652	495 826
Less: Financial intermediation services indirectly measured (FISIM)	-8 062	-11 053	-14 427	-19 159	-22 032	-27 580
Plus: Taxes less Subsidies on products	9 343	14 773	26 536	33 472	38 306	42 293
Total GDP	204 382	236 240	285 870	326 246	423 926	510 539

Table 2, GDP by Activity Chained in 2007 Prices, in MK million

Item Description	2002	2003	2004	2005	2006	2007	2008*	2009*	2010*
A Agriculture, forestry and fishing	135 739	140 985	144 979	133 685	133 096	147 966	154 157	174 304	177 732
01 Crop and animal production, hunting and related service activities	125 430	130 276	133 921	122 106	123 277	138 816	143 561	162 806	165 494
02 Forestry and logging	6 220	6 319	6 672	5 610	4 930	4 979	5 607	5 971	6 359
03 Fishing and aquaculture	3 710	4 135	4 077	5 966	4 953	4 171	4 989	5 527	5 878
B Mining and quarrying	1 246	1 684	2 002	2 933	5 345	5 804	7 883	8 268	14 903
C Manufacturing	33 417	39 071	40 249	41 971	45 264	53 006	63 328	66 347	69 169
D+E Electricity, gas and water supply	7 265	7 479	8 485	8 749	8 139	8 299	8 717	9 289	9 596
F Construction	10 692	10 809	11 129	12 484	14 090	16 044	16 475	17 697	20 621
G Wholesale and retail trade	60 343	62 288	71 239	81 024	83 014	99 577	118 742	126 584	133 985
H Transportation and storage	13 067	12 323	15 605	14 741	15 513	18 651	21 697	23 629	24 614
I Accommodation and food service activities	18 244	17 721	17 111	17 074	9 733	10 342	11 123	12 595	13 632
J Information and communication	10 476	13 440	11 969	10 706	13 095	13 970	22 087	24 409	26 652
K Financial and insurance activities	17 658	22 823	22 856	22 514	27 013	30 473	25 979	28 003	30 983
L Real estate activities	19 775	19 447	21 150	23 364	25 160	24 731	29 592	33 178	36 834
M+N Professional, scientific and technical activities, Administrative and support service activities	8 683	4 590	5 095	6 304	6 956	7 791	8 354	8 877	9 552
O Public administration and defence	11 123	11 059	12 412	13 010	13 528	12 991	13 953	14 637	15 488
P Education	10 461	12 382	11 973	12 851	8 872	9 004	9 967	10 384	11 156
Q Human health and social work activities	25 708	24 937	21 640	24 971	18 726	18 199	20 142	21 869	23 848
R+S+T+U Other services, nec	13 300	13 960	17 485	18 342	17 975	18 979	19 678	21 030	22 232
Sum of all industries	383 293	403 791	426 262	435 608	445 285	495 826	551 874	601 100	640 998
Less: Financial intermediation services indirectly measured (FISIM)	-12 700	-16 504	-19 512	-22 729	-23 443	-27 580	-29 983	-32 505	-37 233
Plus: Taxes less Subsidies on products	18 934	25 449	28 688	34 873	44 142	42 293	31 209	33 972	39 051
GDP chained in 2007 prices	386 672	408 735	430 890	444 975	465 740	510 539	553 100	602 567	642 816

Table 3, GDP by Expenditure in Current Prices

GDP by expenditure. Current prices. Mill MK	2002	2003	2004	2005	2006	2007
Final consumption of exp of household and NPISHs	181 181	208 128	256 154	308 719	380 724	441 430
Household final consumption expenditure	163 929	187 887	230 931	278 199	344 345	404 339
NPISH	17 252	20 241	25 223	30 520	36 379	37 091
Government final consumption expenditure	17 507	20 544	29 773	35 325	38 209	48 680
Gross fixed capital formation	27 637	33 403	46 376	65 840	96 355	102 153
Dwellings	3 112	3 181	3 343	4 457	4 883	5 759
Other buildings and construction	5 168	6 674	7 347	11 361	19 822	21 770
Transport Equipment	7 197	9 940	13 402	13 990	21 494	21 680
Machinery	12 160	13 608	22 284	36 032	50 156	52 944
Changes in Stocks	5 345	7 003	5 695	8 169	12 458	2 464
Exports of goods and services	42 517	63 068	71 353	78 452	95 890	128 601
Exports of goods	32 102	52 841	58 014	62 778	80 197	110 284
Exports of services	10 415	10 227	13 339	15 674	15 693	18 317
Imports of Goods and Services	69 805	95 904	123 480	170 258	199 711	212 787
Imports of Goods	58 901	84 164	111 148	152 378	181 737	194 172
Imports of Services	10 904	11 740	12 332	17 879	17 974	18 615
Gross Domestic Product by Expenditure	204 382	236 240	285 870	326 246	423 926	510 539

Table 4, GDP by Expenditure in Chained 2007 Prices. Mill MK

	2002	2003	2004	2005	2006	2007
Final consumption of exp of household and NPISHs	355 980	364 477	381 331	403 236	412 062	441 430
Household final consumption expenditure	316 980	326 112	339 039	358 917	373 337	404 339
NPISH	39 903	38 984	43 174	45 186	38 642	37 091
Government final consumption expenditure	27 174	28 801	35 197	36 648	35 466	48 680
Gross fixed capital formation	28 646	33 291	42 305	58 765	88 128	102 153
Dwellings	4 009	3 595	3 285	3 822	4 443	5 759
Other buildings and construction	6 882	7 472	7 072	9 912	19 149	21 770
Transport Equipment	9 998	13 322	15 601	16 673	25 045	21 680
Machinery	9 918	11 522	18 274	29 449	41 349	52 944
Changes in Stocks	2 050	2 454	1 720	2 391	3 855	2 464
Exports of goods and services	72 242	98 980	103 127	103 795	103 902	128 601
Exports of goods	53 686	82 115	83 598	84 093	86 837	110 284
Exports of services	18 906	16 613	19 355	19 527	17 075	18 317
Imports of Goods and Services	94 188	114 404	127 494	155 708	181 656	212 787
Imports of Goods	77 318	97 815	111 371	135 579	162 699	194 172
Imports of Services	19 975	18 815	17 709	22 255	19 632	18 615
Gross Domestic Product by Expenditure	386 672	408 735	430 890	444 975	465 740	510 539