EAST AFRICAN COMMUNITY

EAC GUIDELINES FOR COMPILATION OF NATIONAL ACCOUNTS STATISTICS

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EAC SECRETARIAT

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FOREWORD

The East African Community (EAC) is the regional inter-governmental organization of the Democratic Republic of the Congo, the Republics of Burundi, Kenya, Rwanda, South Sudan, Uganda, and the United Republic of Tanzania with its headquarters in Arusha, Tanzania. The EAC's objective is to widen and deepen co-operation among the Partner States in, among other fields, political, economic, cultural and social fields for their mutual benefit. One of the pillars of regional integration in East Africa is the Monetary Union. The East African Monetary Union (EAMU) Protocol was signed in Kampala, Uganda in November 2013. The revised timing for the EAC region to have a single currency is 2031.

The successful implementation of the EAMU Protocol places a high premium on close and effective monitoring of macroeconomic performance. The process requires quality, reliable, timely and comparable statistics. To this end, harmonization of methodologies and classifications of selected macroeconomic aggregates across the region becomes paramount. The EAMU Protocol requires that the Partner States' macroeconomics converge based on an agreed convergence criteria among which The Gross Domestic Product (GDP) plays the central role. GDP is used as an indicator to monitor adherence of the Partner States to the required threshold.

The Guidelines were developed by the EAC Secretariat with collaboration of Regional Technical Working Group (TWG) on NAS, reviewed senior compilers and adopted by the EAC organs[1]. The guidelines comprise the entire processes of compiling the NAS and its dissemination that includes: key concepts, sources of data and classifications, compilation methodologies for both production and expenditure optics and; NAS data transmission and dissemination. In addition, the guidelines comprise a framework that shall be used to ensure the compliance for all Partner States during the implementation of the guidelines.

Let me take this opportunity to thank the Regional Technical Working Group which draws membership from both the National Statistics Offices of each Partner State, who diligently participated in the development of the guidelines. We also express our thanks to the senior compilers of NSOs and the AUC who contributed greatly to the quality assurance of this guide.

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LIST OF ACRONYMS AND ABBREVIATIONS

2008 SNA	System of National Accounts, 2008
BoP	Balance of Payment
BPM	Balance of Payments Manual
CFC	Consumption of Fixed Capital
COFOG	Classification of the Functions of Government
COICOP	Classification of Individual Consumption by Purpose
COPNI	Classification Of the Purposes of Non-Profit Institutions
CPC	Central Product Classification
CPI	Consumer Price Index
DQAF	Data Quality Assessment Framework
EAC	East African Community
EAMU	East African Monetary Union
e-GDDS	Enhanced General Data Dissemination Standard
ERETES	Equilibres ressources emplois, Tableaux entrées Sortie
FISIM	Financial Intermediation Services Indirectly Measured
GDP	Gross Domestic Product
GFC	Gross Fixed Capital
GFCE	Government Final Consumption Expenditure
GFCF	Gross Fixed Capital Formation
GFSM	Government Finance Statistics Manual
GNI	Gross National Income
HBS	Household Budget Survey
HFCE	Household Final Consumption Expenditures
HMIS	Health Management Information System
I/O	Input Output
IC/GO	Intermediate Consumption/Gross Output
ICBT	Informal Cross Border Trade
ICT	Information and Communication Technology
IFMIS	Integrated Financial Management Information Systems
IIP	Index of Industrial production
IMF	International Monetary Fund
IMTS	International Merchandise Trade Statistics
IPPs	Intellectual Property Products
ISIC	International Standard Industrial Classification of All Economic Activities
ISWGNA	Inter-secretariat Working Group on National Accounts
LSMS	Living Standards Measurement Survey
M&E	Monitoring and Evaluation
NADABAS	National Accounts Database System
NAS	National Accounts Statistics
NCF	Net Capital Formation

GCF	Gross Capital Formation
GVA	Gross Value Added
NDP	Net Domestic Product
NGO	Non-Government Organization
NPI	Net Product Income
NPISH	Non-Profit Institutions Serving Households
NPS	National Panel Survey
NSDS	National Strategy for Development of Statistics
NSO	National Statistical Office
OECD	Organization of Economic Co-operation and Development
APPI	Agriculture Producer Price Index
PIM	Perpetual Inventory Method
PPI	Producer Price Index
PS	Partner States
QGDP	Quarterly Gross Domestic Product
R&D	Research and Development
RSDP	Regional Statistical Development Plan
SS	South Sudan
STATAFRIC	Africa Union Institute of Statistics
StatDHRP	Statistics Development and Harmonization Regional Project
SUT	Supply and Use Tables
TWG	Technical Working Group
UN	United Nations
UNFPOS	United Nations Fundamental Principles of Official Statistics
UNSC	United Nations Statistical Commission
US	United States
WIP	Work-In-Progress

CHAPTER 1: INTRODUCTION AND BACKGROUND INFORMATION

1.1 About the EAC-Protocols: convergence criteria

1. The East African Community (EAC) is a regional intergovernmental organization of seven Partner States (PSs), comprising Burundi, the Democratic Republic of Congo, Kenya, Rwanda, South Sudan, Uganda, and the United Republic of Tanzania with its headquarters in Arusha, Tanzania. It was formed under the "Treaty for the Establishment of the East African Community" which was signed on November 30, 1999, and effected on July 7, 2000. The Community performs activities towards the attainment of the four pillars: Customs Union, Common Market, Monetary Union, and Political Federation. The main objective is to widen and deepen East African countries' economic, political, social, and cultural integration. The establishment of the Monetary Union is guided by the following indicative and performance macroeconomic convergence criteria[2]:

✓ **Indicative convergence criteria:**

- Ceilings on core inflation **(5 percent)**;
- ceiling on fiscal deficit, excluding grants, of 6% of Gross Domestic Product; *floor on the tax-to-GDP ratio* ***(25 percent of GDP).***

✓ **Performance convergence criteria:**

- Ceilings on headline inflation **(8 percent);**
- Fiscal deficit including grants **(3 percent of GDP);**
- Ceiling on Gross public debt of 50% of GDP in net present value terms **(50 percent of GDP);**
- A reserve cover of 4.5 months of imports.

2. The operationalization of the convergence criteria serves as a justification for the harmonization of national account statistics. The Gross Domestic Product (GDP) is used as an indicator to monitor adherence of the Partner States to the required threshold. Among the four pillars, the East African Monetary Union (EAMU) requires the implementation of seven convergence criteria by at least three Partner States for a minimum of three consecutive years. The EAC statistics guidelines intend to harmonize, among other things, the compilation of national accounts statistics particularly gross domestic product for proper ratios of convergence criteria.

3. The availability of quality statistics is essential for planning and monitoring the transition to the Monetary Union Protocol and other pillars. The 5th EAC development strategy (2016/17-2020/21) emphasized on the importance of harmonization of statistics for a successful regional integration. National Accounts Statistics (NAS) are among the key statistics necessary for the EAC integration process. The latest NAS compilation international standard is the

[2] Articles 5 and 6 of protocol on the establishment of the East African Community Monetary Union

System of National Accounts, 2008 (2008 SNA). Given that national accounts statistics are complex and are handled using different approaches and compilation methods in EAC Partner States, the objective of these guidelines, therefore, is to ensure that the compilation practices are sound and comparable.

The rationale of the NAS guidelines

4. The guidelines set out the minimum standards with reference to the international best practice to be followed during the compilation and dissemination of NAS by the Partner States. They will serve as reference with regard to NAS source data, concepts, classifications, compilation methods, and dissemination.
5. The guidelines will also serve as a reference tool for Partner States to address pertinent issues including timeliness, level of disaggregation, and implementation of the latest internationally acceptable methodological aspects.

1.2. Scope of the EAC National Accounts Statistics Guidelines

6. For the harmonization of national accounts statistics in EAC, the PSs should ensure that the statistics are compiled in the same way all across the community. In light of this, an explicit scope of what will be included or excluded is necessary. The scope will include assessing the status of NAS compilation across EAC PS by focusing mainly on the source data and the methods applied.
7. The guidelines provide definitions of general concepts adapted in the EAC context, accounting rules and measurement approaches as well as sequence of accounts to name but a few. The guidelines also show what priority areas the EAC should focus on and how to align different compilation practices and approaches within the community.
8. The guidelines provide a NAS compilation monitoring and evaluation framework for the EAC Secretariat and should be aligned to global standards of compilation of national accounts statistics such as the 2008 SNA.

1.3. Past Experiences in Harmonization Efforts

9. Harmonization of NAS among EAC Partner States emerged from the need for the community to converge toward a monetary union. The protocol establishing the monetary union was signed in 2013 with a clear road map to establish a single currency by 2024. For this to be successful it had to rely on availability of accurate, reliable, timely, and comparable data across the region. The availability of regionally comparable and quality national accounts statistics is particularly critical for the monitoring of the Monetary Union. Article 17 of the Monetary Union Protocol compels Partner States to compile, analyze and disseminate statistics necessary for the proper functioning of the Monetary Union, while observing internationally accepted best practices, with common methods, concepts, definitions, and classifications.

10. Since 2011, efforts have been put in place to fast-track the harmonization of NA statistics within the PS. Through collaboration with IMF EAST AFRITAC, a number of developments in regard to harmonization of NA statistics have taken place. Below are some of the achievements between 2010 to 2015:

- Development of a matrix with critical harmonization issues and their specific timelines for each PS. The matrix included the agreed next base years (2015 and 2020) with timelines of publishing series by December 2017 and December 2022, respectively. It also specified the census, surveys and studies that were to be undertaken for each round of rebasing as well as the implementation of 2008 SNA.
- Referencing of the rebased GDP series to a common year and conversion of the series to US dollar for EAC comparison purposes;
- Compilation of the benchmarks using the SUT framework with the I/O matrix for the first time for all PS;
- Compilation and publication of QGDP by economic activity and compilation of the QGDP by expenditure experimental series by all PS;
- Improvement in methods in regard to use of appropriate classification for source data;
- Use of work-in-progress for crop growing, livestock rearing, and construction activities;
- Valuation of owner-occupied dwellings using imputed rentals;
- Splitting of central bank output;
- Estimation of FISIM for loans and deposits separately using a reference rate;
- Estimate deflated values of output and intermediate consumption independently (double deflation) using appropriate price indices at detailed level.

11. The EAC sought technical assistance from the World Bank to accelerate, further improve and strengthen the quality and comparability of National Accounts Statistics for the Partner States based on the 1993 SNA and 2008 SNA. In response, the World Bank provided technical assistance to assess; the progress of work as set out in the EAC harmonization matrix, comparability of source data and methods used in compilation of NAS in line with recommended guidelines, and then come up with an action plan for the 2015 rebasing cycle.

1.4. Adoption of the System of National Accounts, 2008

12. The 2008 SNA is designed for use by all countries, as it has been formatted to meet the needs of countries at different stages of their economic development. It is also a cornerstone for standards in other areas of economic statistics, facilitating the integration of these statistical systems to ensure their consistency with national accounts. The compilation of national accounts statistics in accordance with the 2008 SNA will make it possible to meet the requirements in terms of the quality of statistical products demanded by national and international users.

13. At the African level, an African strategy[3] for the implementation of the 2008 SNA was adopted in 2014. The strategy is broken down into seven strategic axes which aim to provide the continent with a confirmed endogenous capacity in terms of drawing up economic accounts that meet international standards and take into account the specific realities of Africa, a continent whose countries are at various levels of development

14. At the EAC level efforts have also been made to ensure that all Partner States adopt the 2008 SNA, an excellent tool for harmonizing methodologies for the production of macroeconomic statistics. Nevertheless, this international manual offers the opportunity for countries/regions to integrate their own concerns and specificities without prejudice to the appropriate requirements for compilation of national accounts statistics according to international standards. It is within this framework that this guideline was developed.

[3] African Strategy on the implementation of the 2008 System of National Accounts

CHAPTER 2: ASSESSMENT OF THE STATUS OF NAS COMPILATION IN EAC PARTNER STATES

15. In 2015, the EAC Partner States agreed to accelerate the process of harmonizing national account statistics in order to facilitate the monitoring of the convergence criteria for the monetary union protocol. Assessment missions were conducted to the NSOs by the EAC Secretariat in 2016 to take stock of the 2008 SNA milestone implementation. The missions made a number of recommendations for the subsequent five years[4].

16. In 2021, the EAC Secretariat conducted a scoping mission in Partner States to assess the progress made in the implementation of the 2008 SNA. It was noted that most of the Partner States had made significant progress in terms of implementation of the 2008 SNA. It was noted that significant progress had been made towards meeting milestones of the 2008 SNA but a lot remains to be done to ensure that the compilation practices in the region are comparable.

2.1. Source data

17. One of the main pillars of national accounts compilation is the availability of quality source data. Statistical data sources may directly provide the information required for compiling national accounts. Surveys and censuses are the most preferred data sources for improving the quality of national accounts statistics. An assessment made in the EAC Partner States in 2021, revealed that surveys and censuses are very irregular and population census, carried out every 10 years as per international standards recommendations (see annex 1).

18. On the other hand, the EAC Secretariat advised Rwanda, Kenya and Uganda to conduct intercensal surveys (Agriculture, HBS, Labour, manufacturing, construction, etc.) on quarterly, seasonal and annual basis. Similar was observed for the main indices used to deflate the GDP aggregates. However, the common challenge was the inadequacy of resources for implementation of useful surveys.

19. The surveys mentioned in annex 2 have greatly contributed to the quality of data useful for NAS compilation. However, administrative sources data have inherent weaknesses as they are not meant for national accounts purposes and often have insufficient details to support the measurement of GDP components.

20. Harmonization and comparability of national accounts statistics also require quality and comparable administrative source data. To cater for this shortcoming, some Partner States such as Kenya, Uganda and Rwanda have set up an institutional framework for cooperation with certain data providers, which aims to facilitate access to data that conforms to the standards required for the 2008 SNA. These are in particular the Central Banks for the balance of payment (all Partner States), the revenue administration authority (Burundi and Rwanda) for business data and taxes and the use of the central statistical business register (Kenya).

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[4] see EAC (2016) "Report of Technical assistance on *Improvement of the Quality and Comparability of National Accounts Statistics* within the East African Community", page 7

2.2. Revision and Rebasing of National Accounts Statistics

21. The EAC Partner States have continued to diversify and improve the quality of the source data for rebasing NAS. Most of the base years for the NAS in the Partner States ranged between 2015 and 2018 as of the end of 2021 (Table 1). The Partner States have made visible progress in revising national accounts except South Sudan which lagged behind due to major challenges. However, the countries have largely not been able to meet the five-year interval as recommended by the 2008 SNA due varied challenges.

Table 1: Base Years for the NAS in Partner States as of 2021

Partner States	Old base year	New base year
Burundi	2005	2016
Rwanda	2014	2017
Kenya	2009	2016
Tanzania, mainland	2007	2015
South Sudan	2008	2008
Uganda	2009/10	2016/17
Democratic Republic of Congo	2005	2018

Source: EAC Scoping Mission Report, 2021

22. The Partner States took the opportunity of the rebasing process to meet the requirements of harmonization and comparability of national accounts statistics, which included the improvement of sources data, the adoption of the main international statistical classifications and the GDP compilation methods by following the 2008 SNA recommendations. Partner States improved their source data by conducting surveys and censuses for the rebasing of the NAS.

2.3. Statistical Classifications and Statistical Business Register

23. Statistical classifications are a key requirement for the production of reliable, comparable, and methodologically sound statistics. The United Nations Statistics Division (UNSD) is the custodian of most international standard classifications, but countries or international organisations can adapt them to their specific economic and social context. All the EAC partner states are using international classification for compiling national accounts statistics, those include among others: ISIC Rev 4, CPC version 2.1/CPA, COICOP 1999, COFOG 2014, COPNI 1999, and HS17 (Table 2). In view of the domestication of some classifications, the EAC Partner States have adopted and customised those classifications. For instance, Rwanda domesticates the international classifications at the national level for the COICOP and the CPC. Burundi and DRC adopted two classifications inspired by the AFRISTAT[5] of which it is a member. In the perspective of compiling the comparable NAS within the EAC region, it is preferable to have harmonized statistical classifications at the regional level of the EAC and other organizations (AUC and UNECA).

[5] AFRISTAT is an international organization created by a treaty signed on 21 September 1993 in Abidjan by the following 14 African countries, members of the Franc Zone: Benin, Burkina Faso, Cameroon, Central African Republic, Comoros, Congo, Ivory Coast, Gabon, Equatorial Guinea, Mali, Niger, Senegal, Chad and Togo. Burundi joined the organization later in June 2007.

Table 2: Status of Implementation of Main Classifications, 2020/21

Main classifications	Burundi	Rwanda	Kenya	Tanzania	South Sudan	Uganda	Republic Democratic of Congo
ISIC Rev 4	Achieved	Achieved	Achieved	Achieved	Not yet Achieved	Achieved	Achieved
CPC, version 2.1/CPA	Achieved	Achieved	Achieved	Achieved	Not yet Achieved	Achieved	Achieved
COICOP 1999	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
COFOG 2014	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
COPNI 1999	Achieved	Not yet Achieved	Achieved	Achieved	Achieved	Achieved	Not yet Achieved
HS17	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved

Source: EAC Scoping Mission Report, 2021

The Challenges of Statistical Business Registers in EAC Partner States

24. With the scoping mission done in Partner States, some challenges have been identified and must be mitigated:

- The Statistical Business Register (SBR) in principle is supposed to cover all establishments operating in the economy. The SBRs coverage for Uganda, Tanzania, Burundi, and Kenya was not comprehensive. The SBR for Rwanda was comprehensive and covered all establishments with fixed locations while South Sudan did not have an SBR. Most PS SBRs were outdated, for instance Uganda was for 2001/2002 and Tanzania 2014/15.
- Rwanda, Uganda, Burundi and Tanzania had disseminated SBR through the official statistics website.
- The classifications and variables collected to compile the SBR are not uniform across Partner States.

2.4. NAS Compilation methods

25. The scoping mission undertaken in 2020/2021, revealed that most of the Partner States had made efforts in implementing international standards in terms of national accounts statistics compilation methods. The following paragraphs highlight some main points of harmonization of the methods of compilation of national account statistics.

26. ***GDP by Economic Activity:*** this is the starting point for calculating GDP through the production approach. The main elements are the calculation of the output and intermediate consumption. Output and intermediate consumption for all activities is estimated separately in all PS except South Sudan which was not compiling GDP by production approach. Fixed ratios are commonly used to derive intermediate consumption in all PS that compile GDP by activity and are revised during rebasing.

27. Estimation of output for crop growing and livestock and construction activities is based on the Work-In-Progress (WIP) approach for all Partner States. This is one of the main achievements in the harmonization of NAS methods and

implementation of the recommended approaches. Nevertheless, the WIP approach suffers from persistent absence of the required information due to inconsistencies in the available source data.

28. ***Some specific industries:*** the output of mineral exploration and evaluation activities was integrated in the GDP calculation for most of the Partner States. Estimation of output for manufacturing activities in Burundi is based on manufacturing surveys while Uganda and Tanzania estimations are based on the manufacturing index (PPI). In Kenya, estimates of manufacturing activities are based on monthly surveys of industrial production and the VAT turnover. Output for electricity is estimated by extrapolating the benchmarks estimates with the volume of electricity distributed for Uganda, Tanzania, Burundi and Rwanda. Kenya uses data from the annual financial statements of the power generators and distributors as well as the sales by the independent power producers to estimate output and intermediate consumption of electricity supply. Output for water is also estimated by extrapolating the benchmarks using quantities of water produced for Tanzania, Uganda, Rwanda and Burundi. However, Kenya uses data on industrial production for market producers. Estimation of output of informal water supply is done by extrapolating the benchmark from the HBS data practically in all Partner States that produce GDP by activity.

29. **Some specific services:** all Partner States that were compiling GDP by activity were splitting the output of the central banks and computing FISIM for loans and deposits separately using a reference rate. Uganda and Tanzania are the only PS allocating FISIM by activity while Kenya and Rwanda do not allocate FISIM by activity because their Central Banks do not classify the loans. Estimation of output for system and standard applications software and databases was included in the GDP compilation in all PS except South Sudan.

30. **Taxes and subsidies on products at constant prices:** Kenya and Uganda were the only countries that were applying the base year tax rates to the volume of transactions as recommended by *2008 SNA.* The rest of Partner States needed to improve the consistency of taxes/subsidies estimation approach as recommended by the 2008 SNA. Volume measures of taxes/subsidies on products should be estimated by applying base-year-tax rates to the volume of transactions subject to a specific tax/subsidy or by extrapolating the base-year tax/subsidy using a volume extrapolator of transactions subject to a specific tax/subsidy.

31. **GDP by expenditure,** all Partner States estimate independently the components of expenditure as best practice recommended by 2008 SNA. For exports and imports estimation, trade data is compiled using the BOP as the main source for all PS. Reconciliations are done to improve the consistency with the SNA recommendations (Central Banks, Customs and NSOs). For compiling GDP and other indicators for EAC at large, the reconciliation with the customs and the BOP of the central banks is crucial as, from the perspective of EAC, the flows of goods and services between its member states are to be consolidated (which means that such flows are neither imports nor exports anymore and thus become "domestic" output or IC, respectively).

32. Although the majority of EAC Partner States had made significant progress in compiling national accounts statistics, certain constraints were still in existence,

in particular the availability of quality basic data, that inhibited full migration to 2008 SNA. The Republic of South Sudan is facing some gaps to be filled (Box 1).

Box 1: *South Sudan became an independent state in July 2011. With extensive support from donors and as part of the National Strategy for the Development of Statistics, the National Bureau of Statistics (NBS) of South Sudan developed a method for GDP calculation, which used an expenditure approach mainly based on household surveys and with the benchmark year 2009. Exports and imports data have been taken from the balance of payments produced by the central bank. Given the scarcity of source data for the production side of GDP, the NBS made extensive use of estimates and fixed ratios. In addition, in the absence of relevant price indexes, the constant price estimates are almost fully based on CPI data.*

In 2013, the NBS published GDP by expenditure for the years 2008–12 at current prices and, for the first time, at constant prices in October 2012. In May 2013, the estimates were extended to include 2012 for the purposes of the government budget. For 2010, a Swedish expert developed a SUT.

Since the reference year 2017, the GDP calculation from the expenditure side is the only approach to GDP calculation. Due to a lack of reliable data, the GDP calculation from the production side stopped after releasing 2016 because the figures for both independent approaches to GDP had evidenced a huge and widening gap between them.

In 2019 and for the reference year 2018, the NBS conducted a Business Establishment Survey by economic activity (private non-agricultural), allowing the new country to have an evidence-based picture of the structure of its economy, which goes beyond the production of oil. The list frame for the survey captured roughly 13,000 establishments, the sample being roughly 5,000 out of them.

Source: AU, national Account methodology, 2020

CHAPTER 3: GENERAL CONCEPTS AND DEFINITIONS, METHODS AND CLASSIFICATIONS

33. National account statistics measure what takes place in the economy, between which agents, and for what purpose. One of the main roles of National accounts statistics is to provide information on transactions of institutional units in the activities they are engaged in; i.e., production, consumption, and accumulation of assets. The way in which National accounts capture this pattern of economic flows is to identify the activities concerned by recognizing the institutional units in the economy and by specifying the structure of accounts capturing the transactions relevant to one stage or another of the process by which goods and services are produced and ultimately consumed. This chapter provides a summary definition of the main concepts used in compiling national accounts such as stock and flows, accounting rules, valuation time of recording institutional units/sectors and approaches of GDP compilation among others as per 2008 SNA.

3.1. Concepts and Definitions

3.1.1. Flows and Stocks

34. There are two ways to record economic information: by flows which measure changes in economic value over a period of time and by stocks/inventories which measure the economic value at a given point in time. Stocks appear in the balance sheets and related tables while flows appear in all other SNA accounts and tables.

Flows

35. Economic flows reflect the creation, transformation, exchange, transfer or disappearance of economic value; they involve changes in the volume, composition or value of the assets and liabilities of an institutional unit. Reflecting the diversity of the economy, economic flows have particular features-wages, taxes, interest, capital flows, etc. which record the different ways in which the assets and liabilities of a unit vary. Economic flows are of two kinds. Firstly, most flows are transactions. Secondly, other flows included in the SNA that do not meet the characteristics of transactions (for example: catastrophes, environmental issues, holding gain).

36. A transaction is an economic flow that is an interaction between institutional units by mutual agreement or an action within an institutional unit that it is analytically useful to treat like a transaction often because the unit is operating in two different capacities. Transactions and flows that take place in an economic circuit are diverse and, for this reason, the SNA classifies them into four groups:

- transactions involving goods and services (products) describe the supply source (domestic output or imports) and use (intermediate consumption, final consumption, capital formation or exports) of goods and services;
- distributive transactions consist of transactions by which the value-added generated by production is distributed to labor, capital and government and

transactions involving the redistribution of income and wealth (taxes on income and wealth and other transfers);

- transactions involving financial instruments (or financial transactions) refer to the net acquisition of financial assets or the net incurrence of liabilities for each type of financial instrument;
- Other accumulation entries cover transactions and other economic flows not previously taken into account that alter the quantity or value of assets and liabilities.

Stocks

37. Stocks are a position in, or holdings of, non-financial (produced or non-produced) assets and the financial assets and liabilities at a point in time. They must be subject to ownership rights (economic ownership prevailing over legal ownership) and must also be used in some kind of economic activity. Consumer durables are excluded, as are natural resources that are not owned.

3.1.2. Accounting Rules

38. This section is about valuation, time of recording, aggregation, gross or net value, and consolidation of flows and stocks.

Quadruple-entry Accounting

39. The simultaneous application of both the vertical and horizontal double-entry bookkeeping results in a quadruple-entry bookkeeping, which is the accounting system underlying the recording in the 2008 SNA. It deals in a coherent way with multiple transactors or groups of transactors, each of which satisfies vertical double-entry bookkeeping requirements. A single transaction between two counterparties thus gives rise to four entries. In contrast to business bookkeeping, national accounts deal with interactions among a multitude of units in parallel, and thus require special care from a consistency point of view. As a liability of one unit is mirrored in a financial asset of another unit, for instance, they should be identically valued, allocated in time, and classified to avoid inconsistencies in aggregating balance sheets of units by sectors or for the total economy. The same is also true for all transactions and other flows that affect the balance sheets of two counterparties.

3.1.3. Valuation

40. The transaction value refers to a specific financial transaction and its counterpart transaction. In concept, the transaction value is to be clearly distinguished from a value based on a price quoted in the market, a fair market price, or any price that is intended to express the generality of prices for a class of similar or even identical financial assets and/or liabilities. However, in cases where the counterpart transaction of a financial transaction is, for example, a transfer and therefore the financial transaction is undertaken other than for purely commercial considerations, the transaction value is identified with the current market value of the financial assets and/or liabilities involved.

41. The transaction value does not include service charges, fees, commissions, and similar payments for services provided in carrying out the transactions; these are to be recorded as payments for services.

3.1.4. Time of Recording

42. When discussing timing in the SNA, an essential distinction should be made between stock data as recorded in balance sheets, on the one hand, and flow data as recorded in the accounts, on the other. The SNA recommends recording on an accrual basis. Accrual accounting records flow at the time economic value is created, transformed, exchanged, transferred or extinguished. This means that flows that imply a change of ownership are entered when the change occurs, services are recorded when provided, output is recorded at the time products are created and intermediate consumption is keyed in when materials and supplies are being used. The 2008 SNA favors accrual accounting because:

    - the timing of accrual accounting is in full agreement with the way economic activities and other flows are defined in the SNA and;
    - Accrual accounting can be applied to non-monetary flows.

43. The stocks of a given product can be input stocks at the user, output at the producer or merchandise at the merchant. The entry into stock is recorded at the time when the good is purchased, produced or otherwise acquired. The exit from stocks is recorded at the time the good is used, sold, or otherwise transferred.

3.1.5. Aggregation, Netting and Consolidation

44. The economy is made up of a very large number of individual events. It is therefore necessary to describe all these events by aggregating them. Those aggregation are made through classifications of: economic agents, operations, products, etc. The classifications have several levels which correspond to various possibilities of aggregation. Individual units or sectors may have the same kind of transaction both as a use and as a resource (for example, they both pay and receive interest) and the same kind of financial instrument both as an asset and as a liability. Combinations in which all elementary items are shown for their full values are called *gross recordings*. Combinations whereby the values of some elementary items are offset against items on the other side of the account or which have an opposite sign are called *net recordings*. The SNA recommends gross recording.

45. Consolidation is a special kind of canceling out of flows and stocks that should be distinguished from other kinds of netting. It involves elimination of those transactions or debtor or creditor relationships that occur between two transactors belonging to the same institutional sector or subsector. Consolidation should not be seen as a sheer loss of information; rather, it entails an elementary specification by the transaction partner. As a rule, however, the entries in the SNA are not consolidated. In construction, for example, the delivery of a sub-contractor to its main contractor is recorded as output of the sub-contractor as well as input of the main contractor.

3.2. Institutional Units and Sectors

3.2.1. Institutional Units

46. An institutional unit is an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities. The SNA distinguishes two types of units that can be qualified as institutional units: persons or groups of persons in the form of households and legal or social entities.

- A household is a group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food. Just like individual households, there are units described as institutional households that comprise groups of persons staying in hospitals, retirement homes, convents, prisons, etc. for long periods of time. The individual members of militia person households are not treated as separate institutional units.
- A legal or social institutional unit is one whose existence is recognized by law or society independent of the persons, or other entities, that may own or control it. Such units are responsible and accountable for the economic decisions or actions they take, although their autonomy may be constrained to some extent by other institutional units

3.2.2. Institutional Sectors

47. To facilitate the organization of economic information of institutional units, the SNA recommends grouping them to make up sectors and sub-sectors. The grouping's criterions of institutional units to make up sectors or sub sectors is based on their economic behavior or the economic function. All resident institutional units are allocated to one and only one of the following five institutional sectors:

- non-financial corporation;
- financial corporation;
- general government;
- non-profit institutions serving households;
- households.

Non-Financial Corporations

48. Non-financial corporations are institutional units that are principally engaged in the production of market goods and non-financial services. It consists of institutional units which are independent legal entities and market producers. It is divided into three sub sectors covering: public non-financial corporations; private non-financial corporations; foreign controlled non-financial corporations.

Financial Corporations

49. The financial corporations sector consists of institutional units which are independent legal entities and market producers whose principal activity is the production of financial services. Such institutional units comprise all corporations and quasi-corporations which are principally engaged in financial intermediation (financial intermediaries) and/or auxiliary financial activities (financial

auxiliaries). Also included are institutional units providing financial services, where most of either their assets or their liabilities are not transacted on open markets.

General Government

50. The general government sector includes legal entities which have legislative, judicial or executive authority over other institutional units (usually a country). It includes central government, state governments, local governments, social security funds and NPIs controlled by the government. It produces mainly non-market services that are provided free or at economically insignificant prices. Services could be collective, such as defense, public order and safety or individual, such as health and education. The main functions of general government units are:
    - to organize or redirect the flows of money, goods and services or other assets among corporations, among households, and between corporations and households for the purpose of social justice, increased efficiency or other aims legitimized by the citizens- examples are the redistribution of national income and wealth, the corporate income tax paid by companies to finance unemployment benefits, the social contributions paid by employees to finance the pension systems;
    - to produce goods and services to satisfy household needs (e.g., health care) or to collectively meet the needs of the whole community (e.g., defense, public order and safety).

Non-profit Institutions Serving Households

51. Non-profit institutions serving households, abbreviated as NPISH, are legal or social entities created to provide goods and services to households for free or at prices that are not economically significant. Examples include churches and religious societies, sports and other clubs, trade unions and political parties. NPISH are private, non-market producers which are separate legal entities. Their main resources, apart from those derived from occasional sales, are sourced from voluntary contributions in cash or in kind from households in their capacity as consumers, from payments made by general governments, from transfers received from non-resident units, and from property income. NPISHs include only non-profit institutions (NPIs) that serve households and produce non-market goods and services without charges or whose prices are economically insignificant. If NPIs are controlled or if 50 per cent of their costs are paid for by the corporations or general government sectors, they should be classified to those sectors respectively, not to the NPISHs sector.

Households

52. The household sector consists of individuals or groups of individuals as consumers and as entrepreneurs producing market goods and non-financial and financial services (market producers), provided that the production of goods and services is not by separate entities treated as quasi-corporations. It also includes individuals or groups of individuals as producers of goods and nonfinancial services for exclusively own final use. The sector includes resident household units as consumers and also all their economic activities that are

unincorporated. Household unincorporated enterprises may be subdivided by main sources of income into:

a) Employers;
b) Own-account workers;
c) Employees;
d) Recipients of property and transfer incomes.

The Rest of the World

53. The rest of the world refers to non-resident households or corporations as units that are outside a country's economic boundaries. This includes all institutions or individuals not resident in economic territories that have interactions with the resident institutions. It consists of all non-resident institutional units that enter into transactions with resident units, or have other economic links with resident units. The rest of the world includes certain institutional units that may be physically located within the geographic boundary of a country; such as foreign enclaves, embassies, consulates or military bases, and also international organizations.

3.2.3. Residence and Economic Territory

54. Residence is important in national accounts because the residency status of producers determines the limits of domestic production and affects the measurements of gross domestic product (GDP) and many important flows. The concept of residence is based on a sectoral transactor's center of economic interest. It is necessary to recognize the economic territory of a country as the relevant geographical area to which the concept of residence is applied. An institutional unit is a resident unit when it has a center of economic interest in the economic territory of a country.

The economic territory consists of the geographical territory administered by a government. Within this area, people, goods and capital may circulate freely. Economic territory includes the land and also the national air space, territorial waters, natural deposits of oil and gas in international waters (if worked by resident units), and territorial enclaves abroad, such as diplomatic representations and military bases. It excludes extra-territorial enclaves that are the parts of a country's own geographic territory used by, for example, diplomatic representations of foreign countries. The concepts of economic territory and residence are designed to ensure that each institutional unit is a resident of a single economic territory. In general, an institutional unit is resident in one and only one economic territory determined by the unit's center of predominant economic interest.

3.3. Approaches to GDP Compilation

55. There are three approaches for GDP compilation: production, expenditure and income.

56. **The production approach,** treats Gross Domestic Product as a measure of aggregated production, is the sum of the gross value added of all resident producers at basic prices plus any taxes (less subsidies) on products. The basic price is the amount a producer receives for a unit of good and service produced. As such, it includes any subsidies that are received on products but excludes

any taxes that are payable. According to the 2008 SNA, market prices for transactions are defined as amounts of money that willing buyers pay to acquire something from willing sellers. In short, GDP represents the results of the production activity of resident producer units. It measures the contribution to output made by each producer.

Gross Value added (GVA) = Output - intermediation consumption

GDP=Sum of GVA *plus* taxes less subsidies on products

57. **The expenditure approach:** GDP is equal to the market value of all final uses of goods and services during a measurement period. This approach sums up the final consumption expenditures of: households, non-profit institutions serving households (NPISH), and the general government; capital formation; and net exports (exports minus imports).

    GDP = Household final consumption expenditure + Government final consumption expenditure + NPISH final consumption expenditure + Gross capital formation + (Exports - Imports).

58. **The income approach:** GDP is equal to the sum of primary incomes payables out of the value-added created by production.

    GDP = Compensation of employees + Other taxes less subsidies on production + Taxes less subsidies on products + Gross operating surplus/mixed income.

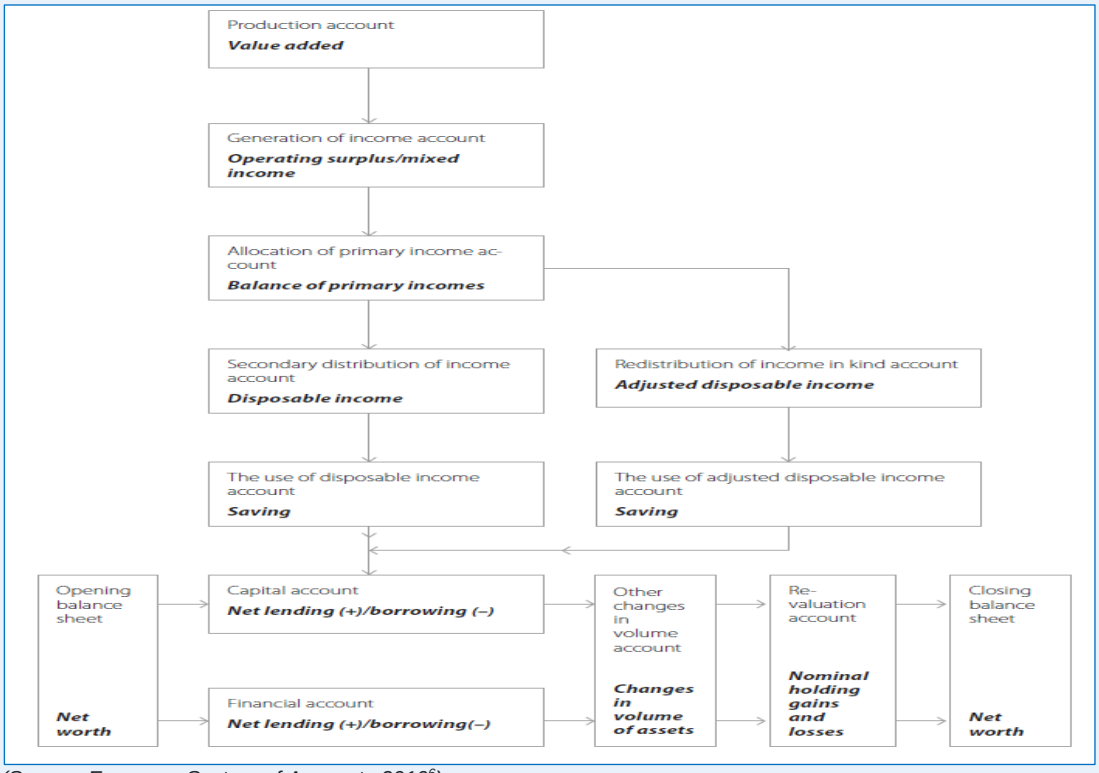
59. Theoretically, these three approaches are identical; however, in practice, the measure of GDP derived from these approaches may differ, owing to the use of different data sources for the measurement of the economic activities undertaken in an economy. For any given period, when all requisite data are available, any of the three approaches is equally good. However, when financial resources made available to National Statistical Offices are limited, a choice has to be made regarding the kind of data to be collected and the method to be used to measure GDP.

60. The reviews of the literature from the 2008 SNA and other NAS handbooks show that the production approach is easier to implement (to a lesser extent) than the approach based on final expenditure. If resources and data permit, it is best to combine all of these data together within the framework of the supply and use tables. This method is the best because it avoids discrepancies between the three GDP values that would result from applying the three methods separately.

3.4. Sequence of Accounts

61. The SNA records flows and stocks in an ordered set of accounts describing the economic cycle from production and generation of income, through to its distribution, and its final user capital formation and exports (current accounts). Then it records the use of what is left in the form of savings to provide for accumulation of assets (accumulation accounts), both non-financial and financial while the balance sheets present stocks of assets and liabilities and net worth. The full sequence of accounts describes how the current accounts, accumulation accounts and balance sheets are interconnected. The following diagram shows the sequence of accounts in flow form

Chart on sequence of accounts



(Source: European System of Accounts 2010[6]).

3..5. Classifications

62. The main purpose of this section is to acquaint compilers with the various classifications used in national accounting and identify any specific aspects of the codes that need to be taken into consideration in the generation of the national accounts estimates. This guide introduces the user to the various classifications used in compilation of NA by highlighting the broad categories of the various classification codes. The detailed versions of the classifications codes are available on the United Nations Statistics Division (UNSD) website and compilers should make reference to them at all times. Details of the main classifications used in compilation of national accounts are presented in Annex 3. To facilitate harmonisation of the compilation practices, below are the key recommendations with respect to adoption of classifications.

Recommendations

- *Partner States should adopt ISIC Rev. 4 as the classification for all economic activities;*
- *Partner States should prevail upon providers of data that feed into the compilation to adhere to the latest versions of internationally acclaimed classification standards. These include COICOP 2018, CPC version 2.1./CPA, COFOG 2014, etc.*
- *Partner States should adopt CPC/CPA as the main product classifications for the construction of the SUT;*

[6] For more explanation see SNA 2008, Chapter 2, D, point 2)

- *The EAC Secretariat should coordinate a comprehensive program for harmonisation of statistical classifications at regional level to the extent possible, especially for ISIC Rev 4 and CPA which are key classifications for NAS;*
- *Partner States should adopt and customise the correspondence tables developed by UNSD that align the HS classification with the EAC CPA or CPC.*

CHAPTER 4: PRIORITY AREAS OF HARMONIZATION

Overview

63. This chapter outlines the priority areas of harmonization of national accounts statistics in the EAC region taking into consideration the macroeconomic convergence criteria for the establishment of the East African Community Monetary Union (EAMU). The GDP features prominently in the criteria and therefore the need to ensure that Partner States follow comparable compilation and dissemination practices. Globally, the 2008 SNA was adopted as the guide for compilation of national accounts and therefore this chapter borrows heavily from the framework but identifies salient issues that apply to the region and that are necessary for the harmonization of the region's compilation practices in line with the continental and global recommendations.

64. It is imperative to note that Partner States are at different stages of implementation of the 2008 SNA. Therefore, the harmonization process should be robust enough so as to accommodate all Partner States irrespective of their levels. The priority areas identified as critical in the harmonization of NAS compilation in EAC include; source data, valuation rules, prices, classifications, GDP compilation methods, statistical business registers, compilation software's, and dissemination.

65. The compilation of NAS requires comprehensive data on all aspects of production, income, and expenditures of all economic activities and institutional sectors. These guidelines will focus on the achievement of milestone 1 of the 2008 SNA. The data collected from censuses, surveys and administrative records for purposes of national accounts compilation should be confronted with one another to arrive at the most accurate set of national accounts statistics.

4.1. Source data

66. The SNA requires the use of extensive information from different data sources. The information obtained is used directly, or is translated into national accounts concepts. Some information can be used indirectly to check the plausibility of estimates and to verify some assumptions made in the process of compiling national accounts. These sources include; surveys, censuses, special studies, administrative sources and in recent times, data that emanates from data science initiatives (Big data, data campus, etc.) and Citizen Generated Data (CGD). The veracity of these data significantly determines the quality of estimates and by extension the extent to which the data accurately informs policy formulation, thereby impacting on the socio-economic development of a country. There is relative semblance in the source data used in the compilation of national accounts in the EAC region in the sense that most statistics offices rely heavily on surveys and censuses to establish benchmarks and mostly use administrative sources for extrapolation and direct estimation of NAS. This section presents the various source data commonly used in NAS compilation, provides information on the attributes of these sources and proposes recommendations that can be adopted to enhance compilation of NAS in the EAC region.

67. Data collection requires structured and organized activities which affect the quality of estimates. The main activities that should be organized and carried out include;

- Agreements on data delivery: what data will be delivered, in what detail and with what frequency, when and in what format among others;
- Collaborate with the relevant data providers throughout the cycle of data production from the compilers through development of memorandum of understandings on data sharing;
- Checks on the data delivered: timeliness, detail and completeness;
- Data storage in automated systems including spreadsheets and databases for compiling national accounts statistics;
- Searches for other relevant quantitative and qualitative information, e.g., by reading specialized journals, newspaper articles, other media, and annual reports of various large companies, organizations, foundations, or by asking corporations, institutions and experts directly.

4.6.1. . Census Data

68. A census is the complete enumeration of a population or groups at a point in time with respect to well defined characteristics. Typical examples of censuses common in statistical production include population and housing census, census of industrial production, census of establishments/ enterprises/ businesses, census of agriculture etc. Censuses are a rich source of statistical information and are conducted mainly to provide baseline socio-economic data that informs planning as well as benchmarks for revision and rebasing of national accounts. In addition, data from censuses are used to update statistical registers that are fundamental in the implementation of scientific household and establishments-based surveys. The three principal types of censuses are:

- Agricultural census: the observation unit is the agricultural holding, which is the economic unit of agricultural production. Agricultural censuses provide detailed statistical information, such as location, acreage (cultivated/under crop and uncultivated), types of crops, crop production, acreage irrigated/rain-fed, number and type of animals, animal production, expenditures, number of persons engaged, etc.
- Economic census for non-agricultural units: the observation unit is the non-agricultural establishment with a fixed structure (size) and location characterized by a unique economic activity. Specific information on individual establishments, such as location, name, address, type of economic activity, legal and ownership status, turnover, expenditure, number of employees, etc. are collected through economic censuses.
- Population and housing census: the observation unit is the household and individuals. The population census provides in great detail an inventory of the nation's human resources geographical, demographic and socio-economic.

69. Due to cost implications, censuses are conducted intermittently in the EAC region, usually every five (5) years for businesses and agriculture related censuses and ten (10) years for population and housing censuses. For effective

harmonization of compilation practices, the regularity and timing of these censuses, the type and content of the tools/questionnaires used, data collection mechanisms need to be at the bare minimum comparable but not necessarily the same. Ideally, information for all the items of the area under consideration should be collected in a census, but this is not always the case especially for economic censuses. Since the census data is deemed to cover the entire scope of the area of interest, it is important that any imputation methodology employed to bridge the gap for missing information is clearly spelt out. This helps avert potential misrepresentation of the data when they are used in the estimation.

4.1.2. Survey Data

70. A survey is an inquiry about the characteristics of a given population by means of collecting data from a sample of that population and estimating their characteristics through the systematic use of statistical methodology. Surveys solicit responses about specific phenomena from a few representative units scientifically selected from a population. Population data is obtained by grossing up the sample data. Surveys take shorter time to conduct and are less costly than censuses. Therefore, surveys are carried out at higher frequencies (monthly, quarterly or annually) compared to censuses.

71. The use of survey data in compilation of national accounts statistics is a common phenomenon all over the world, particularly in economies that have significant components of informal activities. Informal activities account for a large proportion of most economies in Africa and the EAC region is not an exception. For economies with almost purely formal sectors, generation of data for statistical purposes is less laborious as they are readily available from administrative sources. In contrast, for economies with a large informal sector compilers of national accounts statistics are faced with the difficulty of gathering the requisite data for compilation of comprehensive GDP. Survey data are therefore extensively used to bridge this gap by providing benchmark estimates as well as indicators for extrapolation when data are available on a higher frequency.

72. Often, national accounts benchmarks are derived from intermittent sample surveys that require substantial human and financial resources due to their scope and level of detail. These include household budget surveys, large agricultural production surveys, surveys of enterprises/establishments. National accounts data are also obtained from regular surveys that are smaller in scope, conducted monthly, quarterly and annually, and are mainly used for extrapolation of benchmarks derived from better sources that may not be available regularly. These include surveys on prices, manufacturing, construction, accommodation and food services, labour force, crop and livestock.

73. The quality of survey data heavily depends on the methodological soundness employed. Specifically, the type and content of tools used in data collection, the sampling method, the questionnaire design and competencies of the personnel involved in survey activities determine the quality of data emanating from sample surveys.

74. Statistical surveys may be classified into the following categories: agricultural surveys, enterprise surveys, household surveys, mixed household-enterprise surveys which entails establishing whether households are involved in unincorporated household activities to ensure inclusion of small enterprises that are not part of formal enterprises sampling frames, thus facilitating the measurement of the non-observed economy; Surveys also include: Price surveys: used to obtain data on prices, which may involve collection from enterprises or households, or direct observation of prices in the market and Indirect enterprise surveys: are those in which the enterprises managing local markets provide data in form of aggregates about the holders of their market stalls.

75. The main sources of data for estimating agricultural production include crop estimation surveys, studies on farm management and cost of cultivation studies, agricultural household surveys and various returns collected by administrative agencies concerned with prices and production relating to agriculture. Additional data can also be obtained from uses of agricultural products including industrial inputs, traded goods, exported quantities etc. Reports prepared by specialized agencies or boards dealing with other agricultural activities (marketing of specific crops, fertilizer or pesticides, veterinary activity, agricultural activity finances etc.) can also be used in estimation of agricultural output.

76. Household budget surveys are integrated sample surveys that provide data that are used to derive estimates for which is one of the main components of aggregate demand in most economies. Data obtained from these surveys include consumption of food and non-food items, acquisition of durables, housing variables such as cooking fuels, lighting, access to water, dwellings etc. In some cases, a module on un-incorporated household enterprises is included to help compile estimates for the household sector which is commonly missed out in the main economic census and surveys that focus on formal enterprises. These surveys sometimes include a module on the labour force that contains variables on employment and earnings that could be used to estimate compensation of employees. International best practice recommends that these surveys be conducted with a regularity of at most five (5) years to ensure that the benchmarks don't become outdated and bring about misrepresentation in the estimates.

77. The 2008 SNA recommends that output be broken down into market, nonmarket and output for own final use. Consumption from own production, especially subsistence farming is a very common phenomenon in African economies. It is therefore imperative that compilers devise mechanisms for estimating output for own final use which is difficult to get from administrative data sources. Household budget surveys come in handy in this endeavor as credible source data for output for own final use. In addition, this output should be distinguishable in the product flow approach that leads to estimation of expenditure on GDP.

78. It is common practice to undertake more regular surveys that inform compilation of national accounts statistics such as quarterly and annual national accounts statistics estimates. Such data include data on annual agricultural surveys and industry surveys (mining and quarrying, manufacturing, electricity and water supply), Prices (consumer prices (CPI), producer price indices (farmgate prices, manufacturing, electricity, water) construction prices, etc.) and regular economic

statistics such hotel statistics, transportation, government finance statistics, balance of payments statistics, monetary and finance statistics etc.

4.1.3. Special Studies

79. It is worth noting that it is not possible to obtain all the data required in national accounts from surveys and censuses. Sometimes, national accountants conduct special studies on some specific areas in order to collect information that may be necessary to estimate output of some activities in the economy. For example, when developing the supply and use tables it might be difficult to get all the input structures from the conventional data sources. In such situations, compilers can design short studies to collect the necessary information. Similarly, to get some estimates on illegal activities such as drug trafficking and prostitution, one may need to carry out a targeted study to obtain necessary information on the activities. Information from such studies supplement data from other sources.

4.1.4. Administrative data

80. Enhanced use of administrative data has been found to significantly improve the quality of national statistics, thus contributing to better policy formulation and decision making. Data disseminated in a timely manner and with sufficient detail allow for expedited and targeted responses to distortions in the economy, thereby averting crises like the global financial crisis experienced in 2008.

81. National Statistics offices all over the world are increasingly embracing new data sources, including administrative data, to improve compilation of official statistics. Administrative data can significantly enhance the quality of national accounts statistics and at the same time create synergies among producers such as tax authorities and other government agencies in order to support better decision making and policy advice. Administrative records form a crucial part of the source data for compilation of national accounts. Unlike census and survey data, administrative sources contain information that is not primarily collected for statistical purposes, but generally produced in the course of operations of entities that produce them.

82. Compared to economic censuses and business surveys, in most cases administrative data are less burdensome to collect and produce on a timely basis. In addition, administrative data is more detailed, accurate and with better coverage. The use of administrative data sources is advantageous in the sense that the cost implication is low, guarantees better coverage, timeliness of the data is greatly improved, reduces respondent's burden and at the same time enhances the quality of the business register.

83. Despite having many advantages over the other sources, compilers face challenges in accessibility and usability of available administrative data and therefore opt to use other sources. The main bottleneck in the use of administrative sources is access to such data as it sometimes requires that legal frameworks be established. Statistics offices all over the world enter into Memoranda of Understanding (MoU's) with administrative data producers to facilitate seamless transmission of the data for statistical production. In addition, valuation and classifications used in administrative data sources often differ from

that of statistical purposes. This is easily circumvented by the use of bridge tables that link the data to known classification.

84. Administrative data mainly obtained from government ministries, and regulators such as monetary and financial data from the central banks, turnover data from tax authorities, business registration records, revenue and expenditure data from government records, data on crop and livestock production from government ministries and departments.

85. Statistics for the various economic activities sometimes require inputs from diverse administrative sources to compile depending on the nature of the activity. The table below shows some of possible sources that Partner States can adopt for estimating GVA by activity.

Activity	Data	Source
Agriculture, Forestry and Fishing	a) Crop Production (Area under crop, cost, Volumes and Values) b) Livestock data (population, volumes and values of livestock products) c) Data on forestry resources (forest cover, logging, area harvested, firewood collected d) Fish landed from all water bodies i.e., fresh and marine. Data on aquaculture (fish farming) can also be included if this activity is important e) Government expenditure on support services to agriculture e.g., extension services, animal husbandry f) Export and import data quantities and values	Ministries/departments/Agencies in charge of agriculture Ministry/department/Agencies responsible for livestock Ministry or department in charge of management of forests.
Mining and Quarrying	a) Volumes, values and input costs of minerals b) Export of minerals including crude oil and natural gas- volumes and value c) Mirror statistics	Ministry in charge of Mining activities Central Bank Custom Statistics Private companies Regulators of mining activities
Electricity Supply and Gas Supply	a) Generation - volume of electricity generated b) Distribution - data on sale of electricity c) Transmission data d) Input costs	Ministry in charge of Energy activities Energy generating companies/agencies External Sector Statistics Regulators of energy activities

Activity	Data	Source
	e) Gas supply	
Water Supply, Sewerage and Remediation activities	a) Volume of water abstracted b) Volume of waste collected c) Number of registered water trucks d) Number of abstractions permits.	Ministry in charge of Water activities Water generating companies/agencies/Authorities Regulators of Water activities
Manufacturing	a) Sales/turnover data b) Number of employees c) Production data	Ministry in charge of Industry activities Manufacturing enterprises Revenue authorities Umbrella bodies/associations
Construction	a) Value of work done b) Buildings - number and value c) Civil works d) Number of employees e) Customs and VAT/Income statistics f) Government expenditure on buildings, roads and bridges g) Building permits/completion certificates	Enterprises involved in construction activities Regulators of construction activities Government agencies that manage construction of buildings and civil works Ministries in charge of public works and other construction related activities
Wholesale and Retail Trade	Turnover data Value of Goods purchased for resale	Revenue authorities Enterprises involved in distributive trade activities
Transportation and Storage	a) Transportation-New registration of vehicles by type, consumption of light diesel, port/border throughput (tonnage and values), Pipeline throughput, Passenger kilometers, Number of passengers, tonnage kilometers. b) Storage-Sales/Turnover data c) Number of Licensed vehicles by type	Ministries in charge of transportation activities Revenue authorities Regulators of transportation Umbrella bodies/associations enterprises involved in transportation and storage business

Activity	Data	Source
Accommodation and Food Service activities	a) Sales/Turnover data and income tax data. b) Tourist arrivals	Agencies of government in charge of tourism and related activities Revenue authorities Ministries responsible for tourism activities Enterprises in hospitality activities-Hotels and restaurants Umbrella bodies/associations
Information and Communication	a) ICT indicators (Call traffic, SMS traffic, broadband, mobile money, e-commerce etc.); b) Sales/Turnover data	Telecommunication companies Revenue authorities Regulator of ICT activities Central banks Ministry in charge of ICT
Financial and Insurance	a) Income and expenditure statement b) Loans and deposits data c) Premiums, Claims and input costs from data d) Turnover data	Central banks Regulators in the insurance activities Capital/securities' markets Regulators of cooperative societies (SACCOs) Revenue authorities
Real Estate	a) Sales/Turnover data	Revenue authorities ministries in charge of housing Umbrella bodies/associations Realtors and registered real estate agents
Professional, Scientific and Technical activities	a) Sales/Turnover data b) Employment numbers	Revenue authorities umbrella bodies/associations Non-financial corporations
Administrative and Support Service activities	Sales/Turnover data	Revenue authorities umbrella bodies/associations
Public Administration Social Security and Defense	a. Revenue and expenditure	Ministry responsible for finance Government agencies/extrabudgetary local/regional government authority Institutions in charge of social security- NHIF, NSSF etc.
Education	a. Revenue and expenditure for public schools	Ministry of Finance Ministry of education Local/regional governments Revenue authorities

Activity	Data	Source
	b. Enrolment numbers in public institutions Enrolment numbers in private institutions c. Turnover and income tax for private education	
Health	a. Revenue and expenditure for health facilities b. Number of health facilities available c. Turnover data from tax records of private health providers	Ministry of finance Ministry of health local/regional governments Revenue authorities Regulators of health activities NPI's providing health care services
Arts & Entertainments	a. Museums/parks/historical sites statistics (number of visitors etc.) b. Turnover data from tax records	Ministries in charge of arts, culture a sports and related activities Revenue authorities Government agencies Umbrella bodies/associations
Other services	a. Turnover data from tax records b. Trade unions report c. Sport club information from federations and associations d. number of licensed businesses/values of licenses paid	Government ministries Local/regional governments Registrar of businesses/companies Revenue authorities Umbrella bodies/associations
Taxes on Product	Government records	Ministry of finance Revenue authorities

4.1.5. Non-Conventional Data Sources

86. The use of non-conventional data sources such as big data and Citizen Generated Data (CGD) in compilation of official statistics especially in developed economies has become common. In the developing world, these are fairly new phenomena but a number of countries have expressed desire to move towards that direction, e.g., Rwanda that has adopted data campus as a source of data for production of statistics

87. Big data are extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions. The CGD is data that people or their organizations produce to directly monitor, demand or drive change on issues that affect them. This can be produced through crowdsourcing mechanisms or citizen reporting initiatives, often organized and managed by civil society groups.

88. As the user needs keep evolving, there will be a need for compilers of national accounts to gradually embrace the use of big data and CGD. Big data, especially those emanating from telecommunication companies can be used to enhance the compilation of national accounts. Expenditure data for Non-Profit Institutions (NPI) are used in the compilation of estimates for the Non-Profit Institutions Serving Households (NPISH) sector, but they are mainly obtained centrally from government regulatory bodies. Non-Governmental Organizations generate more detailed data in the course of their operations, which could be useful in the enhancement of computation of national accounts estimates. National accountants should seek to establish the data that is available and assess their suitability in the compilation of national accounts.

89. Data generated by international organizations such as Food and Agriculture Organization (FAO), the world bank, International Labor Organization (ILO) may also be used in the compilation of national accounts once the users are satisfied that the methodology employed was sound.

Recommendations

- *Partner States should conduct censuses for agricultural, industrial and business establishments every five years to serve as a basis for derivation of benchmarks and updating of sampling frames for quarterly and annual surveys;*
- *Partner States need to maintain up-to-date survey instruments and methodologies to facilitate national accounts compilation;*
- *EAC Secretariat should facilitate the harmonization of the tools used for data collection for comparable statistics;*
- *Partner States should conduct household budget surveys at least every five (5) years;*
- *Partner states should conduct Labor Force Surveys at least once every five years;*
- *Partner States should conduct annual agriculture surveys;*
- *Partner States should conduct regular (quarterly/annually) surveys on land transportation and accommodation and food service activities;*
- *Partner States should conduct surveys on industrial production including construction regularly (monthly, quarterly, annually);*
- *Partner States should establish mechanisms for collection of monthly/quarterly/annual data, either through business surveys or from administrative sources;*
- *Partner States should take advantage of available systems such as IFMIS to derive government finance statistics data that is necessary for estimation of non-market output from the general government;*
- *Partner States should ensure exhaustiveness measure of government output by utilizing all available GFS statistics from central government, Extra-Budgetary Units (EBUs) and local government authorities;*
- *Partner States should expand the use of administrative data sources;*
- *Partner States should the use of mirror statistics to bridge data gaps;*

- *Partner States should embrace the use of emerging data sources such as big data and CGD to supplement the readily available data sources.*

4.2. Valuation rules

90. The compilation of national accounts statistics in the EAC should follow the recommendations of the 2008 SNA on valuation of transactions. The SNA framework recommends accrual basis for recording transactions, valuation of output at basic or producers' prices, the distinction between market and non-market output, monetary and non-monetary transactions and valuation of own account production. Special attention must be paid to the valuation of inventories.

4.2.1. Accrual basis of recording

91. In the accrual basis, transactions/flows are recorded at the time economic value is created, transformed, exchanged, transferred or extinguished. The concept has been recommended by SNA to be used for recording economic transactions for the purpose of national accounts statistics compilation. However, some transactions like taxes on government accounts are recorded on cash basis and therefore deviate from the accrual concept necessitating the need for adjustment before consideration for national account use. In the accrual basis, the tax amount recorded is the amount due for payment when evidenced by tax assessments, declarations or other instruments, such as sales invoices or customs declarations, that create liabilities in the form of clear obligations to pay on the part of taxpayers. To determine the SNA taxes, care should be taken to ensure only that amount of tax fall in the due time is recorded, not to include payments made for previous year or paid for the future obligations.

4.2.2. Market and non-market output valuation

Market Output valuation

92. Market output is the value of goods and services that are sold or otherwise disposed of on the market or intended for sale or disposal on the market at economically significant prices. The significant price will result when the producer has an incentive to adjust supply either with the goal of making a profit in the long run or, at a minimum, covering capital and other costs; and consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged. The 2008 SNA para 6.99 indicates that market output is determined as the sum of the following items:

    - The value of goods and services sold at economically significant prices;
    - The value of goods or services bartered in exchange for other goods, services or assets;
    - The value of goods or services used for payments in kind, including compensation in kind;
    - The value of goods or services supplied by one establishment to another belonging to the same market enterprise to be used as intermediate inputs where the risk associated with continuing the production process is transferred along with the goods;

- The value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses;
- The margins charged on the supply of goods and services, transport margins, margins on the acquisition and disposal of financial assets, etc.

Non-Market output valuation

93. The SNA 2008 para 6.128 defines non-market output as consisting of goods and individual or collective services produced by non-profit institutions serving households (NPISHs) or government that are supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole. The underlying assumption is that the expenditure of goods and services incurred by Government and NPISH while the use of individual goods and services is by households, and the use of collective services by households or other resident institutional units. Non-market output is produced by the Government and NPISH as a result of market failure or a need to intervene in the behavior of other economic units. The non-market output includes those collective services by Government such as public administrations and defense, education and health and other services provided to individual households. Due to difficulties of valuation of non-market output, the SNA 2008 recommends the use of the sum of cost approach. Therefore, value of the non-market output provided without charge to households is estimated by summing the following items:

    - Intermediate consumption;
    - Compensation of employees;
    - Consumption of fixed capital;
    - Other taxes (less subsidies) on production.

94. It is important that estimates on Consumption of Fixed Capital (CFC) are included as part of the non-market output. Some of the approaches that can be used to estimate CFC include; Perpetual Inventory Method (PIM) where a long series of data on the Gross Fixed Capital Formation (GFCF) is available, as a percentage of compensation of employees and adoption of ratios of countries with similar economic circumstances.

95. The distinction between market and non-market output is pertinent as it indicates the size of the economy of each partner state controlled by government and private sectors.

4.2.3. Valuation of own account production

96. The own account production covers all goods and services produced by any enterprises (corporate or unincorporated) for their own use as final consumption or capital formation. However, production of services by members of a household for own final consumptions within the household are excluded in the valuation of own account production (SNA 6.28), except for housing services and activities of households as employers of domestic personnel. SNA para 6.124 recommends the valuation of own account productions of goods and services to be valued at a price that could be sold if offered for sale on the market.

97. The SNA recommends the use of second-best option in valuation of own account production if market price for such goods or services does not exist. The own account production should be estimated based on the cost of inputs used in the production. That is the sum of; intermediate consumption, compensation of employees, consumption of fixed capital, net returns to fixed capital and other taxes (less subsidies) on production.

4.2.4. Valuation of Output

98. Output of goods and services can be valued at basic or producer prices. Basic prices are prices for goods and services at the point where they are produced. On the other hand, producer prices are 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. Output of an industry is obtained by summing up outputs of the various primary and secondary products/services produced by that particular industry.

The output at basic prices of a production unit:
Equals
Revenues (or equivalent market value if not sold) on goods and services produced by the production unit,
Less all taxes on product, net of subsidies on products

4.2.5. Monetary and non-monetary transactions

99. Moneary transactions cover goods and services produced and sold in the market while non-monetary transactions include all goods and services not actually sold. The measurement of all monetary and non-monetary transactions is essential for obtaining the totality of flow of goods and services in the economy. The non-monetary transactions are measured through prices of similar products supplied in the market. Some of the none transactions entail harvesting natural resources such as fetching firewood, water, and sourcing for materials for own account construction. Subsistence agriculture accounts for a significant proportion of total agricultural production in the EAC partner states. In addition, owner-occupier dwellings are a common phenomenon in the region. In essence, this necessitates the disaggregation of GDP in terms of monetary and non-monetary. The 2008 SNA para 18.59 recommends that countries with a large subsistence agriculture disaggregate the GDP into monetary and non-monetary categories.

100. Given the existence of non - monetary transactions in the EAC Partner States, the table 18.2 in 2008 SNA should be used for disseminating national accounts statistics.

4.2.6. Valuation of inventories

101. The SNA defines Inventories as produced assets that consist of goods and services, which came into existence in the current period or in an earlier period,

and that are held for sale, use in production or other use at a later date. Changes in inventories are included in the estimation of the aggregate demand, and therefore the need to ensure that the valuation is done right. The valuation of inventories is done for additions and withdrawals. Inventories should be recorded for countries with significant mining activities. The SNA recommends inventories to be valued at the price prevailing at the time of their entry and withdrawals from inventories.

Recommendations.

- *Partner States should ensure accrual concepts are adhered to, to ensure compliance to 2008 SNA*
- *Partner States should ensure compilation of comprehensive non-market output by the government and NPISHs.*
- *Partner States should use readily available Government Finance Statistics rather than extrapolating*
- *Partner States should use readily available Government Finance Statistics rather than extrapolating;*
- *Partner States should use the input cost approach and include a return to capital as part of the sum of costs to measure non-market output.*
- *Partner States should produce GDP series in monetary and non-monetary terms*

4.3. Price Indices

102. Price Indices are economic metrics that account for inflation and are used for reflating/deflating output. The GDP deflator shows how much a change in the base year's GDP relies upon changes in the price level. Because it isn't based on a fixed basket of goods and services.

103. As may be the common practice of using a fixed base to compute the indices, chain index method can be adopted in instances where the structure of the economy changes rapidly in terms of new products and those that become obsolete. It should be noted that the chain index method can only be applicable where data for all periods under consideration are readily available. To harmonize price valuations, it is paramount that price adjustment indices are the same and harmonized in their timing, rationale of creation of the basket, collection tools, methodology, classifications and frequency of rebasing and revision. (If the changes are to be made, it should be during the revisions).

104. It is recommended that the weights are revised regularly and the rebasing exercises are also done with the same periodicity where it is possible. It is desirable to rebase the price indices because the economy is dynamic as well as aligning the indices with international best practices.

4.3.1. Consumer Price Index

105. Consumer Price Indices (CPIs) are the most basic of the price indices compiled and are commonly used for deflation in national accounts. They are

most suited for the deflation of household final consumption expenditure, but are however used to deflate output and intermediate consumption in some cases due to absence of the appropriate price indices.

4.3.2. Producer Price Index

106. Producer Price Indices (PPI) measure the average changes in prices received by domestic producers for their output. The PPI provides suitable indices for deflating output as it leaves the point of production. Producer Price Indices can be produced for almost all the economic activities if the required input data are available. Producer price indices are commonly compiled for; agriculture, manufacturing, electricity, water supply, mining and quarrying activities. The PPI for services includes; accommodation and food services, and retail and wholesale trade activities.

107. The PPI benchmark estimates/weights are derived from the censuses of agriculture, business establishments and services that provide structures for the Supply and Use Table framework.

4.3.3. Export and Import Price Indices

108. Export and Import Price Indices measure the overall change in the prices of transacted goods and services between the residents of an economic territory and residents of the rest of the world or other economic territories. Because the different goods and services prices do not change at the same rate, the price index summarizes their movement by averaging over the time.

109. Export Price Indices measure changes in average prices of a group of goods and services exported by a country. Export Price Indices are relatively easier to compile due to the limited varieties of exports and the primary nature of countries exports that do not change in quality from time to time unlike import indices. Because of the limited variety of exportable goods, computation of the Export Price Index can entirely depend on customs data (Exports). Among the Partner States, the exports basket varies tremendously and therefore the structure of the indices may not have a commonality like other indices at lower levels of the Harmonized System classification. At higher levels however, a harmonized position of export price indices for the Partner States is possible.

110. Import Price Indices measure changes in average prices of a group of goods and services imported by a partner state. Import Price Indices are relatively more complex.

111. to compile due to the variety of products, entry and exit of products in the market as well as changing products especially in regard to quality, technology and product description. Additionally, similar imports originate from different countries which brings about variability in their prices due to variance in quality (for instance when some products are original while others are generic). Due to the diversity of imports into Partner States, a hybrid computation method is ideal for the computation of the index. Similar imports originate from different countries and thus quality and price vary greatly, for example pharmaceutical products. As thus, customs data can be supplemented by routine surveys of the different importers.

112. Valuation of Export and Import Price Indices is done differently, that is, the export price index is valued at F.O.B. prices while the import price index is valued at C.I.F prices. These two indices are an integral part of the GDP compilation process when deriving GDP by expenditure approach. The indices are used in the deflation of the imports and exports.

4.3.4. Construction Cost Index

113. The Construction Cost Index takes many forms but general consideration is on cost of construction inputs. Partner States recognize the inputs approach as the most appropriate for constructing the index. The inputs may be the only materials or a combination of materials and services. Construction activities are a significant sector of the Partner States economies and it would therefore be prudent that they are compiled with the same standards within the EAC. Construction Cost Index provides the recommended price index for deflating construction output and intermediate consumption. The development of the weights for the construction cost index should be informed by the SUT supplemented by specific surveys/studies and expert opinions.

4.3.5. Wage index (WI)

114. The wage index measures changes in the price of labor (basic wages). These changes are unaffected by changes in the quality or quantity of work performed. Changes in the price of labour as a result of changes in the composition of the labour market are excluded from the wage index. If statistics of wages are compiled at regular intervals monthly, quarterly, half-yearly or annually the comparison of data thus currently computed yields information which can be used to study the movement of wages over time.

115. To show genuine changes in the price of labour, it would be necessary for wages of specific workers at specific establishments to be measured over time. The next best adopted approach is to follow changes in the wages of groups of employees performing the same jobs. This gives a measure of changes in wage rates of specific occupations. The index is commonly used in the cost approach method of estimation of output where salaries and wages are used. The wage index is, therefore, used for deflation when deriving constant price estimates.

4.3.6. Index of Industrial Production (IIP)

116. The Index of Industrial Production measures monthly trends in the volume of goods produced by the manufacturing sector. The index can be compiled monthly or quarterly depending on data frequency and availability. The IIP is a weighted index derived based on output/input. The weights obtained from the SUT reflect the importance of the different activities within the Manufacturing Sector.

117. Development of the IIP uses administrative data from sales (Turnover), which is used to derive a value index. The value index is deflated using an appropriate PPI to obtain a volume index. The different IIP categories should have appropriate corresponding PPI deflators for the value index deflation process to take place.

4.3.7. Distributive Trade Index (DTI)

118. Distributive trade is an economic activity that comprises wholesale and retail trade. This is trade without any kind of transformation and excludes such kinds of services incidental to sales such as repair, installation and delivery. Distributive Trade Index is a volume index that is derived from deflated values of sales. The index can be compiled quarterly/monthly depending on data availability and used for extrapolating benchmark output of wholesale and retail trade.

Recommendations

- *Partner States should consider using the wage indices to deflate wages and salaries;*
- *Partner States should revise and rebase indices at least every 5 years.*
- *Partner States should produce indices at levels of detail that are needed for compilation of national accounts;*
- *Partner States should derive price indices benchmark weights from the Supply and Use Tables (SUT)*
- *EAC Secretariat should facilitate to harmonize the methodology for computation of key price indices in the region;*
- *Partner States should identify gaps in the deflators and purposely endeavor to produce price indices needed for deflation of economic activities;*
- *Partner States should use export/import price indices (if available) to deflate external trade data as opposed to the use of unit value indices, which is commonly used in the region.*
- *Partner States should adopt a hybrid method for the computation of the import price index because of the heterogeneity of the imports.*
- *EAC Secretariat should facilitate to harmonize the methodology for computation of the Import price index in order to overcome the heterogeneity challenges related to the origin and quality of imported merchandise.*
- *Partner States should develop appropriate indices to enable them to deflate GO and IC separately (double deflation) in the absence of IC deflators.*

4.4. Statistical Registers

119. The Statistical register is a particular set of information collected and updated on a regular/specific period for a given population or establishment. The registers are used as frames for drawing samples for conducting surveys. A Statistical register can be categorized into two types, namely; business and household register. The household register normally obtained from housing and population census, is used to draw samples for conducting household-based surveys such as household budget surveys and contains key information necessary for sampling such as geographical location and other household characteristics. The business register normally serves an administrative function in keeping track of the existing businesses in the economy but also serves as

the basic sampling frame for surveys directed at businesses. The Statistical business register contains information about the size of the business, location, employees, contact etc.

4.4.1. Statistical Business Register

120. Statistical business registers (SBR) are repositories of legal and statistical units to be used for producing business and macroeconomic statistics. They include information on the active population of; enterprises carrying out economic activities; legal units of which those enterprises consist; local units and the kind of economic activity engaged in. Statistical business registers act as the 'backbone' in the production of economic statistics for resident enterprises. The detailed-on the type of variables to be collected, classifications and level of coverage required refer to the following annex 4.

Status of Statistical Business Registers in EAC

121. In the EAC, some countries have already developed SBRs, which serve as models in the region particularly for developing sampling frames for data collection for national accounts. The level of detail in terms of coverage, classification and timing of updating differ among Partner States. The SBR provides detailed tabulations about the establishments characteristics such as geographical location, number of employees, registration status, legal status, ownership, sector of activity and gender of the owner or business manager, turnover, enumeration paid, employment status. The detailed status of the SBR for Partner States is available in annex 5.

4.4.2. Household Master Sampling Frame

122. A household master sampling frame is a comprehensive list from which samples are drawn for purposes of conducting surveys. The master sample is recommended to be used in countries with large intercensal household survey programs. A household master sample is usually developed from recent census and can be used during the entire intercensal period; however, it requires periodic and regular updating.

123. The details on sampling frame and master sample designs can be sought from the Designing household survey samples, practical Guidelines (United Nation, New York 2008). The objectives of using a master sampling frame are to provide a common sample of units down to a certain stage, from which further sampling can be carried out to serve household surveys. The specific objectives of the household master sampling frame include:

- To facilitate, restrict and organize necessary controls in the drawing of multiple samples for various surveys from the same frame.
- To reduce the cost of carrying out surveys where listing of observations requires a significant amount of resources.
- To simplify the technical process of drawing individual samples. To economize, by sharing between different surveys, on costs of developing and maintaining sampling frames and materials;
- The frame provides a mechanism for weighting of household surveys.

Recommendations

- *Partner States should produce their SBRs in compliance with EAC national accounts statistics guidelines;*
- *Partner States should conduct comprehensive census of business establishment which covers both formal and informal business activities at least once every five years;*
- *Partner States should update their SBRs on an annual basis;*
- *EAC Secretariat should facilitate Partner States to develop harmonized guidelines on statistical registers (Business and Households);*
- *Partner States should conduct population and housing census every ten years;*
- *Partner States should maintain up to date household master samples to reduce cost and time for conducting surveys.*

4.5. Accounting for the Non-Observed Economy

Overview

124. The main purpose of this part of the guidelines is to prevail upon the compilers to employ every available skill to enhance the exhaustiveness of national accounts by progressively expanding the coverage of the NOE. This section will cover the following areas of NOE and to the extent possible guide on what is practical in the region; Informal sector production, household production for own final use, underground production and Illegal production in that order.

125. The Non-Observed Economy (NOE) entails the extent of economic activity inadvertently omitted from censuses and surveys, and from existing administrative sources. The exhaustiveness of national accounts is sometimes difficult to achieve due to the wide range of economic activities that should be covered, some of which are hidden from observation. Some of the economic activities may be illegal, informal, household production for own final use, or missed because of deficiencies in the data collection systems. The NOE overlaps with the informal sector but they are not the same. Establishing the size of the non-observed economy provides a better understanding of the exhaustiveness of national accounts.

126. Inadequate coverage of the economy poses serious challenges in the estimation of national accounts statistics, resulting in downward biases in the levels of gross domestic product (GDP). The undercoverage may lead to a false impression of the size of the economy and be an impediment to international comparability. The GDP is used in the derivation of a number of socio-economic indicators, ranging from debt and revenue ratios and GDP per capita etc. Misrepresentation of GDP estimates amounts to distorted ratios that can in turn mislead the users. Biases can also arise when the non-observed part of the economy and the part that is included in national accounts grow at different rates. In the absence of mechanisms to adequately capture the magnitude of the hidden/underground activities, compilers assume these activities follow the same trend as the official economy, which may not necessarily be the case.

127. Often, the underground economy has been observed to flourish when the official economy is contracting, which underscores the need for establishing viable structures for including underground activities in the estimation. Failure to adequately cover the non-observed economy in the estimation of GDP brings about inconsistencies of the accounts since not all economic transactions are taken into consideration in the estimation. For example, consumption attributed to underground production if not included cannot be accounted for in the supply side in terms of resources generated by the economy. Though a balanced set of supply and use tables in effect estimates some part of the NOE and is therefore unlikely to omit any significant activity. Nevertheless, the act of balancing SUT alone cannot ensure sufficient capturing of NOE. The bigger the size of the unmeasured non-observed economy, the more the harm on national accounts.

4.5.1. Informal Sector

128. The informal sector may be broadly characterized as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes for the owners. These units typically operate at a low level of organization, with little or no division between labor and capital as factors of production and on a small scale **(**ILO**).**

129. Determination of enterprises in the informal sector can be done in two different ways. The first approach recognizes not having a legal and administrative framework as the main attribute of informal enterprises. This approach points to the existence of a relationship between non-registration and informality of the enterprises. The second approach is centered on engagement in productive activities and the focus is on the way enterprises are structured and how they carry out their activities. In essence, the classification of enterprises as an informal sector should not be based on registration only since using it as a sole criterion ignores other pertinent considerations. Lack of registration is an attribute of an informal enterprise and not a prerequisite for classifying it as one. In addition, obtaining data on registration comes with difficulties of non-responsiveness and in some cases the enterprises are not in a position to provide the information.

130. Activities of informal sector enterprises must be within the 2008 SNA production boundary and they should exclude domestic and personal services provided by unpaid household members, as well as volunteer services rendered to the community. Illegal and underground production activities are included if they are undertaken by units meeting the criteria of the informal sector definition, but data collection for such activities is always difficult. Household unincorporated enterprises that are exclusively engaged in the production of goods or services for own final consumption or own fixed capital formation (e.g., construction of own houses) are excluded from the informal sector mainly because their objectives are not to generate wealth for sale or for use by others, and further the difficulty that comes with determining the value of goods produced for own final use.

131. Production units of the informal sector have the characteristic features of household enterprises namely; assets used belong to the owners and not the production units; the units cannot enter into contracts with other units, nor incur

liabilities, on their own behalf; owners are solely responsible for raising capital and bear the risk and any liabilities incurred during the production process; the business is not easily distinguishable from the household in terms of both the intangible assets and other business related expenditure. Examples include household unincorporated enterprises, boda boda businesses, illegal activities etc.

132. To obtain credible data for estimation of output of the informal sector, several approaches can be explored. The first approach and the most plausible is to collect the information from the households. The main shortcoming of this approach is that the data is weighted using household weights which may in some way misrepresent the potential output from informal enterprises since these weights are based on the population census. The second approach would be to conduct a census/large sample survey of informal activities. This approach, in most cases, may suffer from lack of registers for informal businesses from which samples can be drawn from.

Household Production of Goods for Own Final Use

133. Production of goods and services for own final use by households constitutes a significant part of total production in many developing countries. Examples of household production of goods for own final use include subsistence agriculture, production of other goods for own consumption, and own-account construction.

134. The basic criterion for inclusion of household production for own final use is the quantitative significance of such goods in relation to the total supply of the goods in the country. Some of the activities with significant household production for own final use include: growing of crops; gathering of fruits or other uncultivated crops; firewood collection; hunting and gathering; fishing; water collection; flour by milling; production and preservation of meat and fish products; brewing of tradition liquor; production of baskets and mats; dressmaking and tailoring; production of footwear, making furniture or furnishings, etc.

135. In the event that obtaining data from all data sources is not feasible, the estimates may be derived indirectly from the compilation of supply-use tables. Own account construction should be valued by summing up the labor costs and the imputed cost of construction materials (building poles, sun-dried bricks, thatch or leaves etc.). The value of materials can be estimated using time spent in gathering and processing them (e.g., based on Time Use Surveys).

Household Production of Services for Own Final Use

136. Household production of services for own final use is outside the SNA production boundary with two exceptions: paid domestic services and owner-occupied dwelling services. In developing countries, domestic servants usually work full-time in a single household, although in some cases such workers do not receive cash payments, they are fed and housed by their employers and should be treated the same way as domestic servants who are paid cash wages. Estimates for owner-occupied dwelling services in the urban areas can be done since the markets are well defined. This is not the case for rural areas where such markets are rare to find. Valuation of such dwellings for compilation of national accounts can be achieved through household survey data, (imputed

rents and tenureship) which can be supplemented by census data. (Types of construction materials).

Agricultural production for own consumption

137. Subsistence agriculture accounts for a considerable portion of the non-market household production in Africa, Asia and Latin America. Subsistence agriculture is easily omitted from the scope of informal sector surveys mainly because the focus is the enterprises involved in market activities. As countries industrialize and start recognizing agriculture as a commercial venture, pure subsistence agriculture is gradually becoming scarce. In recent times, farmers keep and store a part of their production for their own final consumption and seeds, and sell the rest. In case farmers sell part of their produce, the retained part for household consumption can be estimated using appropriate ratios. The valuation of primary production for own consumption can be done using market prices in the production areas or rural markets in the absence of the farm gate prices.

Estimation issues on Output of Household Production for Own Final Use

138. There are specific issues to do with derivation of output for its own final use that compilers should take note of to ensure that the estimates are as robust as possible. To derive output from subsistence farming, one of the possible approaches is to use household surveys to collect benchmark data, and derive the current year estimates by extrapolating base year per capita consumption using an index of rural population growth. Derivation of livestock estimates has a common weakness arising from the use of fixed ratios for estimating growth rates and livestock slaughters which fail to consider short-term variations, which can sometimes be significant. Some of the short-term variations may be occasioned by deaths of livestock or destocking through sale to cushion households after poor harvests of food crops. To circumvent this drawback, adjustments to reproduction and take off rates can be done for year-to-year changes based on administrative information such as on licensed abattoirs and data from international trade in livestock animals, and products such as hides and skins. In addition, information on livestock headcounts can be sourced from ministries and departments in charge of livestock where possible.

139. Basic processing of staple food crops such as husking and polishing rice, drying and pounding cassava, or milling maize and wheat is common practice in many developing countries. Quantities emanating from such processing could be obtained from estimates of consumption for a particular crop, but how to value the volumes poses challenges to the compilers. Cost data can be obtained directly from grain milling outlets or use producer or retail market prices for crops before and after processing taking into consideration possible trade and transport margins.

140. Most countries calculate physical output of construction of houses of owner occupiers by applying crude population growth rates to the estimated stock of houses in a base year, though in some cases not much is known about the stock of houses. In such cases, the growth of the stock of dwellings can be assumed to be some function of the growth of the population or that of households. In countries with high population growth rates, it is reasonable to suppose that the

average size of households is increasing, thus creating the need to construct new dwellings. This implies that the housing stock is growing slower than total population, and half as fast is not a far-fetched guess in the absence of more specific information. Alternatively, the intercensal growth rate can be used to estimate the stock of dwelling, necessary for compilation of own account construction by households. In practice, the assumption of growth rate is usually much less important than the assumption made about the rate of replacement. In times of natural disasters such as earthquakes, typhoons, floods, etc., these assumptions should be reviewed accordingly as employing the same rates may lead to misrepresentation.

Underground Production

141. The underground economy refers to all productive activities that are deliberately concealed from public authorities so as to avoid payment of income, value-added or other taxes, and other statutory deductions; to avoid having to meet certain legal standards such as minimum wages, maximum hours, safety or health standards, etc.; to avoid complying with certain administrative procedures. Underground production should be distinguished from household production for its own final use to avoid double counting.

142. The main tools for measuring underground production are special surveys of, labor, expenditure, income, business and household opinion surveys, and audit reports and special studies from tax authorities. Caution should be exercised when interpreting data from surveys of underground activities, especially those related to tax evasion due to potential non-response and under declaration from persons involved in these activities. A balance between the completeness of the survey results and the accuracy should be established as both are crucial in the realization of credible estimates. Household consumption expenditures reported in surveys are very likely to include consumption on underground production but may fall short of differentiating them from other expenditures. Some of the possible ways of identifying expenditures on underground production include asking respondents to freely provide answers on purchases from underground sources or provide a description of outlets/sellers e.g., street traders that can help decipher if the reported activities are in the category of underground economy.

143. Time use and opinion surveys may also provide supplementary data for estimating the size of the underground economy. Time use provides a framework for allocating all available time between productive and other activities. A distinction must be made between time spent working in enterprises and time spent working as an own account worker. Subsequently, based on the kind of work carried out on one's own account, the amount of income likely to have been earned can be imputed. Similarly, opinion surveys are also valuable sources of information that may be useful in estimation of underground production since they are largely qualitative and based on expert judgements and knowledge of the respondents.

Illegal Production

144. Productive illegal activities should be included in the national accounts, failure to which discrepancies will arise in the accounts. This is so because the incomes

earned from engagement in illegal activities are used to purchase legal goods and services or acquisition of fixed and financial assets. In addition to the consistency of the overall system, comparability of national accounts among countries and over time can also be hampered if such activities are excluded from the compilation. For example, activities such as the production and distribution of illicit alcohol, or prostitution, may be illegal in one country and legal in another, or if some activities switch from being illegal to be legal and vice versa. To attempt to estimate the output of illegal activities should be informed by the quantitative significance to the economy, otherwise, it would certainly amount to poor utilization of resources. Production processes for illegal activities are not different from legal activities and therefore the measurement should be the same. The challenges are in generating data necessary for the estimation. Some countries use special and targeted studies to collect data on economic variables, which are then supplemented by other suitable administrative sources to facilitate the estimation. Box 2 shows some of the illegal activities which have been identified and found to be of significance to a number of economies across the world.

Box 2: Selected Types of Illegal Activities

1. *Production and distribution of illegal goods, such as banned drugs or pornographic material;*
2. *Production of illegal services, such as prostitution (in countries where this is illegal);*
3. *Production activities which are usually legal but become illegal when carried out by unauthorized producers, such as unlicensed medical practices, unlicensed gambling activities, unlicensed production of alcohol; poaching, e.g., illegal fishing, hunting, tree cutting;*
4. *Production and sale of counterfeited products, such as watches and other products with false trade-marks and unauthorized copies of artistic originals, e.g., software, CDs and videos;*
5. *Smuggling, in particular of tobacco, weapons, alcohol, food, people, both wholesale and retail;*
6. *Fencing (resale) of stolen goods;*
7. *Bribery; and*
8. *Money laundering*

Recommendations

5. *EAC Secretariat should facilitate the development of a harmonized regional methodology for estimating the output of non-observed economy*
6. *EAC Secretariat should facilitate the development of a harmonized regional methodology for estimating Partner States for illegal activities whose data is less laborious to collect. E.g., commercial sex work and expenditure on narcotics following, etc.*
7. *Partner States should conduct time-use surveys and opinion surveys once at least every five years to bridge the gap in data on the non-observed economy.*
8. *EAC Secretariat should facilitate the development of a common criterion based on the region's circumstances for classifying and measuring informal sector activities.*
9. *Partner States should account for the informal sector activities in NA*
10. *Partner States should account for the underground (hidden) activities in NA*

4.6. Supply and Use Tables and Measurement of GDP

145. This section introduces the concept of Supply and Use Tables (SUT) as a framework for GDP calculation especially for the base year. The SUT provides a basis for reconciling GDP from the three approaches, that is production, expenditure and income. The SUT framework gives a detailed flow of goods and services within an economy and thus needs to be regularly updated to better capture economic changes.

4.6.1. Supply and Use Tables

146. The SUTs are a key framework in national accounting that show how goods and services are made available in the economy and how they are used. The amount of a product available for use within the economy must have been supplied either by domestic production or by imports.

147. The same amount of the product entering an economy in an accounting period must be used for intermediate consumption, final consumption, capital formation or exports. The SUT, therefore, provides a key accounting mechanism to ensure that there is coherence between the various sources of data and approaches countries use to estimate GDP by production, expenditure and income approach. As a system of balancing the supply and use of every product in the economy, SUT is a tool for compiling the production account. It helps improve the quality of the GDP estimation by evaluating and confronting data from different sources. This chapter begins with an explanation of supply and use

tables and then moves on to describe the steps to be taken in compiling GDP using SUT based on the following identity:

Output + imports = intermediate consumption + final consumption + capital formation + exports[7].

Basically, two tables are identified within this framework:

- the Supply table, showing domestic production and imports,
- the Use table, showing intermediate consumption, final consumption, capital formation, and exports.

148. Supply and use tables show how the total amount of goods and services available in the economy from domestic production and imports are used within the domestic economy for intermediate consumption, final consumption, capital formation, and exports. Through the SUT accounting framework, the amount of goods and services supplied in an economy must be equal to the amount of goods and services used during the same accounting period.

Importance of Supply and Use Tables

149. It is recommended that SUT should be an integral part of the compilation of national accounts. The following are the benefits.

- Supply and use tables are a powerful tool with which to compare and contrast data from various sources and improve the coherence of the economic information system.
- They provide a framework guaranteeing the consistency of supply and use in the system at current and constant prices and the overall quality of the national accounts.
- As a key feature of the national accounts, supply and use tables provide the ideal concept for balancing supply and use of goods and services in an economy/sector. Supply and use tables constitute the centerpiece of the internationally compatible accounting framework for a systematic and detailed description of an economy, its various components on the supply and demand side, and its relations to other economies.
- The SUT facilitates the integration of GDP estimation approaches by production, expenditure, and income.
- The SUT forms a basis for the development of input/output tables and the social accounting matrix.
- They provide a weighting scheme/basket for price indices, be it output or IC or the International Comparison Program (ICP).
- The SUT acts as tools for economic analysis and forecasting.

The Supply Table

150. The main part of the supply table is a matrix of products by industry showing which industry supplies which product and the import of the same product. The SNA handbook gives an extensive description of the rules of accounting and some examples (para 14.20. to 14.80).

[7] 2008 SNA, para 14.4.

151. The supply table shows, along each row, the kind of product produced by domestic industries and supplied by the rest of the world. Domestic production is measured at basic prices and imports are valued c.i.f. The total supply of each product in purchasers' prices is obtained by adding in *trade and transport margins*, and *taxes* **less** *subsidies on products*.

Simplified structure of the Supply table

Industries / Products	Industries				Imports	Total
	Agriculture, forestry, etc.	Mining and quarrying	...	Services		
Agriculture, forestry, etc. Ores and minerals, etc. ... Services	Output by product by industry				Imports by product	Total supply by product
Total	Total output by industry				Total imports	Total supply

Source: Handbook on Supply and Use Tables and Input Output-Tables with Extensions and Applications

The Use Table

152. The use table is a matrix that presents the purpose for which goods and services available in an economy are used. The structure of the use table is a rectangular table with four quadrants including, use of products for: intermediate consumption; final consumption; capital formation; and export.

153. The use table shows, in each industry column, the uses of goods and services (i.e., the cost structure) and the value-added generated by it. Along each row of the same table are the uses of each product, either for intermediate consumption, exports, final consumption, or gross capital formation. They are all in purchasers' prices, i.e., the prices that users actually pay.

Simplified structure of the Use table

Industries / Products	Industries				Final uses			Total
	Agriculture, forestry, etc.	Mining and quarrying	...	Services	Final consumption	Gross capital formation	Exports	
Agriculture, forestry, etc. Ores and minerals, etc. ... Services	Intermediate consumption by product and by industry				Final uses by product and by category			Total use by product
Value added	Value added by component and by industry							Value added
Total	Total output by industry				Total final uses by category			

Source: Handbook on Supply and Use Tables and Input Output-Tables with Extensions and Applications.

SUT Compilation

154. The SUT compilation data is obtained from a wide range of sources including but not limited to surveys, censuses, and administrative data sources. Primary data sources for SUT compilation include census of business establishments and economic surveys, household budget surveys, and census of agriculture, population and housing census. Administrative source data include; external trade statistics, Government Finance Statistics, Value Added Tax (VAT) and

income tax data, corporate financial statements, and Ministries, Department and Agencies (MDAs) annual and quarterly reports. The respective benchmark data feeds into the Supply and Use Tables construction process. Since GDP benchmark estimates should be available every 5 years (recommended practice) it thus follows that the benchmark data sets should be available for national accounts use every 5 years.

Table 3: Supply and Use Table for Partner States

Partner States	Base year for Previous SUT	Base Year for Current SUT
Burundi	2005	2016
Rwanda	2014	2017
Kenya	2009	2016
Tanzania	2007	2015
South Sudan	-	-
Uganda	2009/10	2016/17

Source: EAC Scoping Mission Report, 2021

With the exception of Rwanda which compiled SUT within three years after the previous SUT, the other PSs have SUT lag periods exceeding five-year. However, South Sudan was yet to compile its first SUT by 2021[8].

Recommendations

- *Partner States should use SUT as a benchmark framework for compilation of their NAS*
- *Partner States should compile SUTs at least once every five years to allow for a more up to date measurement of the level of economic activity.*
- *Partner States should comply with EAC national accounts statistics guidelines in SUT compilation and analysis.*
- *The EAC Secretariat should strive at having a harmonized base year for the SUT for comparable national accounts across the Partner States.*
- *Partner States should employ manual SUT balancing methods before applying the automated SUT balancing tools such as RAS and MATLAB.*

4.6.2. Compilation of Gross Domestic Product

155. This section focuses on how to compile national accounts in the PSs using production and expenditure approaches. It provides the measurement of output and intermediate consumption as well as GDP expenditure components and identifies areas of harmonisation that PSs should consider. Specifically, areas of scope, coverage, source data, and methodology will be of interest in the harmonisation process.

[8] As mentioned in the box1, South Sudan, had *developed* the SUT in *2010, with Swedish cooperation but, the tables were not published.*

156. The compilation of the GDP includes; identification of appropriate datasets, production of the initial estimates, validation of the estimates, balancing, reconciling and adjustments of the estimates to ensure consistency. During the compilation process, causes of any statistical discrepancies identified should be determined and appropriate revisions made.

Gross Domestic Product by Production approach

157. This section highlights the methods of estimating GDP from the production perspective in accordance with the 2008 SNA while ISIC Rev 4 is used for classification of economic activities. According to the SNA, production is an activity carried out under the responsibility, control, and management of an institutional unit that uses inputs of labor, capital, goods, and services to produce outputs of goods and services. Producers engaged in production can be either institutional unit classified by institutional sectors. The concepts of output, intermediate consumption, gross value added and taxes on products are key elements for the compilation of national accounts by production approach. In the measurement of some activities, fixed input/Output ratios may be used for the estimation of intermediate consumption. This is majorly attributed to absence of specific data on inputs in some economic activities. However, it is desirable that the ratios are regularly reviewed and revised and progressively replace them with the requisite data.

158. The box below summarizes the derivation of the GDP by the production approach.

Box 3: GDP by Production Approach

equals

sum of gross value added (GVA) at basic prices

plus,

taxes ***(less*** subsidies) on products

where

Gross value added (GVA)

equals

Gross output

less intermediate consumption (IC)

159. Gross output is defined as the value of goods and services produced by an institutional unit. Intermediate consumption is the value of all goods and services used up in the production process within a given accounting period. Gross Value Added is derived as the difference between gross output and the intermediate consumption.

160. Gross output, intermediate consumption and gross value added are measured at both current and constant price. The GDP at current (or “nominal”) prices for

each year are measured in the prices for that particular year. For example, current price estimates for 1990 are based on 1990 prices, for 2000 are based on 2000 prices. On the other hand, GDP at constant prices shows the data for each year in the prices of a chosen reference year (base year). For example, data reported in constant 2010 prices show data for 1990, 2000, and all other years in 2010 prices. The 2008 SNA recommends output and IC be deflated separately (Double deflation) using appropriate deflators.

161. Production account should wherever possible be disaggregated according to:

- Formal/informal,
- Monetary/non-monetary,
- Market/non-market,
- Own account production and
- Institutional sectors

Measurement of Gross Value Added by economic activity

162. The Gross Value Added can be presented in 3 broad categories namely; Agriculture, Forestry & Fishing; Industry; and the services. Taxes on products less subsidies are used to derive GDP at market price.

A. Agriculture, Forestry and Fishing

163. The agriculture sector accounts for a significant proportion of the GDP in all the PSs and provides livelihood to a sizable part of the population. In terms of classification, agriculture refers to section A of the ISIC Rev. 4 and includes the following divisions: crop and animal production, hunting and related service activities; forestry and logging and fishing and aquaculture.

Growing of crops

164. This activity includes growing non-perennial crops (majorly food crops), perennial crops (Including beverage crops such as tea and coffee), and plant propagation for food and cash crops. Crop output is divided into market output and output for own-final use. The most appropriate methodology for estimating output is by multiplying quantities produced with farm gate price when data on production is comprehensive and readily available. In the absence of such data, product flow approach can be adopted, where output is derived from the uses of the crop. ie. the sum of what is exported, used as seeds, intermediate consumption in other industries, acquisitions, and consumption from own production less imports. In case benchmarks for the base year can be established using data from censuses and surveys. To extrapolate the benchmarks, it is recommended that volume indices for the respective crops be derived from information on quantities produced. The recommended deflator for crop output is producer price index for agriculture based on farm gate prices.

165. Intermediate consumption for growing of crops is obtained from the cost structure of the different inputs used up in the production process. The cost structures for the different crops can be obtained from crop-specific studies carried out on a regular basis. The different inputs used up in the growing of crops include; fertilizers, herbicides, seeds, transport, fuels, etc. In the absence of data from specific studies, Partner States can make use of input structures

from neighboring countries with similar production processes. These are valued using prevailing market prices to obtain current price estimates of IC and then deflated using appropriate indices to obtain constant price estimates.

166. Source data for benchmarking and routine GDP estimation include; agricultural censuses and surveys, household budget surveys, administrative sources such as annual reports preferably audited financial statements from MDA's and companies, and custom statistics. Deflators include agricultural producer price Indices and consumer price indices.

167. Support services to agriculture include activities incidental to agricultural production and activities similar to agriculture but not undertaken for production purposes (such as agricultural extension services and harvesting agricultural products), done on a fee or contract basis. The main source data for this activity is the Government Finance Statistics (GFS) expenditure on support services.

Recommendations

- *Partner States should conduct agriculture censuses or large agriculture surveys at least once every five years for the construction of benchmarks and annual surveys for routine estimates (quarterly and annual);*
- *Partner States should compile Agriculture Producer Price Index (APPI) based on farm gate prices and input price indices. In the absence of APPI, PSs should use the rural CPI;*
- *Partner States that are not able to conduct regular agricultural surveys should obtain administrative data from the ministries, departments and agencies in charge of agriculture;*
- *Partner States should validate crop production data from the line MDAs using benchmark yield rates from censuses and surveys;*
- *Partner States should revise input/output ratios at least once every five years by conducting crop studies.*

a. Animal Production

168. This activity includes rearing indigenous and improved varieties of; cattle, goats, sheep, rabbits, pigs, donkeys, horses, poultry, etc. Estimation of output at current and constant prices for livestock is based on the work-in-progress model, in which the output of different types of livestock are derived by summing up the value of inventory, animals sold for slaughter and other farm outputs and aligned to benchmark value. The benchmark estimates are obtained from the population and housing census and livestock censuses. These are regularly updated using surveys. Information collected from the censuses and surveys includes; animal population, birth and death rate of animals, slaughter rate as well as other animal products such as milk, eggs, hides, and skins, etc. It should

be noted that animals that die of natural causes are not counted as part of output.

169. Estimation of the output of livestock activities is based on the following relationship;

Output of live animals plus imports is equal to animals slaughtered plus exported plus changes in animal stocks (GFCF and change in inventories).

Note: adjustment is made for animal deaths and births when computing changes in inventory of animal production.
Estimates of intermediate consumption for animal production are obtained from the same surveys and censuses mentioned above. Information collected includes expenditure on animal treatment and vaccinations, transport, purchase of feeds, etc.

170. Source data from livestock censuses provide benchmark estimates and these can be supplemented with data from livestock surveys, routine abattoir/slaughter studies, and other administrative data. The most appropriate deflator for the activity is the agriculture PPI (for livestock) for output and a relevant deflator for intermediate consumption such as CPI for inputs if available.

Recommendations

- *Partner States should treat differently, animal off-take ratios for indigenous and improved varieties, in the work-in-progress model.*
- *Partner States should include slaughter on farm and other products consumed on farm during the estimation of off-take.*
- *Partner States should capitalize the additions to stock, in animal husbandry activities.*
- *Partner States should include the livestock module in the annual agriculture survey. This should be supplemented with regular abattoir/slaughter studies/surveys.*
- *Partner States should include an elaborate module on livestock production in the integrated household budget survey, where annual surveys are not carried out.*
- *Partner States should estimate output from animal production projection of livestock population which is a key ingredient to the work-in-progress framework.*
- *Partner States should collect farm gate prices from farmers through HBS*

b. Forestry and Logging

171. Forestry, logging, and related output include the planting and harvesting of trees and wood, the production of charcoal as well as the collection and gathering of forest products such as bamboo, herbs, wild foods, honey, etc. Benchmark estimates for output are obtained using the value/quantity of the harvested forestry products. In addition, output of this activity also includes the value of tree planting and forestry support services. Valuation of output should be done at prices prevailing at source or at the forest point of harvest while deflation can be done using a farm gate price index.

172. Intermediate consumption is estimated using the value of the different inputs used up in the production of forestry activities. These include expenditures on fuel, forest management, fire-fighting and protection, pest control, and transportation of logs. In the absence of source data, we should use IO ratios obtained from the Supply Use Table.

173. Work-in-progress approach should be considered in cases of plantation. Trees take many years to mature before felling and it would not be appropriate to record the whole value of the felled timber at the time it is felled.

174. Source data on forestry are obtainable from the forestry authorities and other administrative records. Data on output of charcoal and firewood collection activities are obtained from the HBS.

Recommendations

- *Partner States should measure the output for forestry activities for natural and planted trees.*
- *Partner States should value commercial and subsistence production, by including firewood harvested while estimating output of the forestry activity.*
- *Partner States should include the tree planting/silviculture and forestry support activities in the estimation of forestry output valued at farm gate prices.*
- *The PSs should ensure that NSOs have MoUs with forestry authority to ensure that administrative data on forestry and forestry products is available for national accounts.*
- *Partner States should deflate forestry activities by using the rural CPI to avoid the complexity in computation of the farm gate price index.*

c. Fishing and aquaculture

175. This activity includes fishing from fresh and marine water bodies and aquaculture. Water bodies include lakes, rivers, oceans/seas (where applicable) and other water bodies. Aquaculture is the process of rearing, breeding and harvesting of aquatic species in controlled aquatic environments such as ponds, tanks, valley dams, oceans, lakes, rivers and streams.

176. Output of fishing is measured by valuing fish caught from the various water bodies using the prevailing prices at landing sites. Fish harvested from aquaculture is valued using prices at which the fish is sold to the retail/wholesale traders by the farmer. In the absence of information on fish catch, a commodity flow approach can be used to estimate the output of fishing and aquaculture activities, where households report on their expenditure on fresh fish. Expenses on processed fish should be adjusted for the value addition as well as adjusting for fish exported. Appropriate deflators (PPI being the best option) should be used to obtain constant price estimates.

177. Intermediate consumption into the fishing activity should be obtained from specific studies. The inputs are valued at farm gate prices and deflated using the appropriate component of CPI.

178. The main source data for fishing activities for both benchmark and annual estimates include; administrative data from responsible authorities, HBS, customs data, annual reports preferably audited financial statements for the corporate players and specific studies. The deflators include appropriate Producer Price Indices and CPI.

Recommendations

- *Partner States should develop Producer Price Indices for fishing activities.*
- *Partner States should use the CPI for fresh fish to deflate the output, in the absence of the PPI.*
- *Partner States should avail the administrative data on fish catch from all landing sites for exhaustive measurement of the activity.*
- *Partner States should carry out special studies on fish output and inputs every five (5) years to supplement existing data.*

B. Mining & Quarrying

179. Measurement of the mining and quarrying activities covers the formal and informal activities as well as mining support service activities. More details on the estimation measurement of the mining and quarrying sector/industry have been developed by the IMF on specific tools for data collection as a model of integration in the national accounts framework and GDP calculation.

180. Based on ISIC Rev 4, mining and quarrying include the activities of extraction of minerals occurring naturally as solids (coal and ores), liquids (petroleum) or gases (natural gas). Extraction can be achieved by different methods such as underground or surface mining, well operation, seabed mining etc. It also includes supplementary activities aimed at preparing the crude materials for marketing, for example, crushing, and grinding, cleaning, drying, sorting, concentrating ores, liquefaction of natural gas and agglomeration of solid fuels. Mining activities are classified on the basis of the principal mineral produced[9].

[9] See the main handbook of ISIC, Rev4 for more details.

181. Output of mining activities can be obtained from administrative data of the responsible authorities, exports of minerals and financial statements of mining companies. These provide information on the volume of minerals on a quarterly/annual basis. Expenditure on mineral exploration forms part of the output of support services of mining activities and are valued at market prices if purchased or at the sum of costs plus an appropriate mark-up if undertaken on own accounts. Whether successful or not, they are needed to acquire new reserves and so are all classified as gross fixed capital formation. Derivation of constant prices can be achieved by deflating current price estimates using PPI for mining and quarrying. Alternatively, output at current prices can be compiled by reflating output at constant prices generated by valuing the quantities of the mineral produced using base-year prices.

182. Output of quarrying activities can be obtained from the different inputs that go into construction activities such as sand, aggregates and gravel. Data from surveys/studies on quarrying and sand harvesting should be used to derive benchmarks on output and intermediate consumption. Volume of cement consumed should be used to move the benchmarks given that cement is used in tandem with most quarrying materials. PPI for mining and quarrying is the appropriate deflator for obtaining constant price estimates of IC.

183. Intermediate consumption can be estimated from the financial statements of the key players in the mining and quarrying activity. Special surveys also provide information on the cost structure of the activity. Constant price estimates can be obtained using the appropriate price index.

Recommendations

- *Partner States should ensure that support services to mining activities are allocated to either IC or capital formation.*
- *Partner States should use PPI for mining and quarrying to deflate output.*
- *Partner States should identify appropriate deflators for IC of mining and quarrying activities.*
- *Partner States should include informal mining and quarrying activities to ensure exhaustive coverage.*

C. Manufacturing

184. This includes the physical or chemical transformation of materials, substances, or components into new products. The materials, substances, or components transformed are raw materials that are products of agriculture, forestry, fishing, mining or quarrying as well as products of other manufacturing activities. Substantial alteration, renovation or reconstruction of goods is generally considered to be manufacturing. The ideal data for computing the output for manufacturing activities is sales of manufactured products, available in financial statements of corporations. However, the sales reported may not accurately reflect what was produced during the accounting period, as they may include

goods purchased for resale and inventories carried forward from the previous time period. Coverage includes formal and informal manufacturing activities.

185. Benchmarks for manufacturing output are majorly derived from censuses/surveys on industrial production which are conducted intermittently. In the event that the robustness of the census/survey data is not satisfactory, other administrative sources such as tax records should be used as supplement upon inspection for their suitability for the benchmarks. The output of manufacturing is derived from the quantities produced and/or the revenue generated from the sale. The benchmark estimates can be extrapolated using either a quantum index based on quantities or the Index of Industrial production (IIP). An appropriate factory gate price, preferably a detailed producer price index for manufacturing should be used to derive the nominal output. Output should be valued at basic prices. Caution should be exercised when estimating output of heterogeneous products to avoid misrepresentation. In such cases, using the quantum index would not be ideal and therefore both the benchmarks and the extrapolation indicators should be value based. Where value-based indices needed for extrapolation of output are not available, alternative data such as turnover from tax administration records may be used in the derivation of output for activities where products are significantly heterogeneous. The PPI for manufacturing is the ideal deflator for manufacturing output.

186. Intermediate Consumption (IC) consists of the value of goods and services consumed as inputs in the process of production. The IC consists of goods or services that are either transformed or used up in the production process. Data for compilation of the IC can be obtained from censuses/surveys or special studies on manufacturing or detailed financial statements of manufacturers. Intermediate consumption is normally valued at the purchaser's price prevailing at the time goods and services enter the process of production. The IC should be deflated using the relevant price index.

The formulae for deriving output and intermediate consumption are as follows.

a) Output at basic prices =Sales or revenues + Change in inventories of goods manufactured (including finished and semi-finished goods).

b) Intermediate consumption at purchasers' prices = Cost of materials purchased – Change in inventories of raw materials + Cost of services purchased.

187. Major data sources for manufacturing include; economic surveys, surveys of industrial establishments and VAT and Income Tax data.

Recommendations

- *Partner States should use detailed PPI for manufacturing to deflate output;*
- *Partner States should use the index of production (manufacturing) as extrapolator of the constant price estimates;*

- *Partner States should conduct economic/industrial census and surveys every five years for the purpose of updating benchmarks for output and input structures;*
- *Partner States should conduct informal sector economic surveys to enable comprehensive estimation of manufacturing activities.*

D. Electricity, Gas, Steam and Air Conditioning Supply

188. This activity entails providing electric power, natural gas, steam, hot water and the like through a permanent infrastructure (network) of lines, mains and pipes. This includes; generation, transmission and distribution of electricity, distribution of gas and steam. The activity therefore includes the operation of electric and gas utilities, which generate, control and distribute electric power or gas. Also included is the provision of steam and air-conditioning supply.

189. To the extent possible, output for each of the activities should be derived separately, since the activities are different. Where buying and selling of electricity is involved, the compilers should take into consideration the potential double counting that could emanate from using sales as the output without adjusting for the cost of the electricity. For PSs where generation, transmission and distribution is carried out by different entities, output of distribution should be derived the same way output of wholesale and retail trade is done i.e. revenue from sales of electricity less purchases of electricity for resale. The value of both output and intermediate consumption at current price is derived from annual reports and financial statements of enterprises and companies active in this sector. Constant price estimates of output are obtained by deflating the current price estimates using PPI for electricity. Intermediate consumption is deflated using the appropriate CPI.

190. The main source data for this activity is; financial statements of the players in the sector, economic and household surveys, tax authorities and electricity regulatory authorities.

Recommendations

- *Partner States should compile estimates of electricity generation, transmission and distribution separately, where applicable.*
- *Partner States should use the PPI for electricity to deflate the output of electricity while a relevant CPI component should be used to deflate IC.*
- *Partner States should obtain IC estimation from the financial statements of the different players in the activity.*
- *Partner States should estimate electricity generated through generators, bagasse and solar power except for household own final consumption.*

E. Water Supply, Sewerage, Waste Management and Remediation Activities

191. This section includes activities related to the management (including collection, treatment and disposal) of various forms of waste, such as solid or non-solid industrial or household waste, as well as contaminated sites. The output of the waste or sewage treatment process can either be disposed of or become an input into other production processes. Activities of water supply are also grouped in this section, since they are often carried out in connection with, or by units also engaged in, the treatment of sewage. The activity entails estimation of output of formal and informal water supply activities. The output and IC of formal Water Supply should be derived from the financial statements of public/private/authorities in charge of water supply activities. Constant price estimates of output are obtained by deflating the current price estimates using the PPI for water. IC is deflated using the appropriate CPI component.

192. Benchmark output for the informal water supply activities is obtained from the HBS. This should exclude water that is obtained through water authorities. Informal water channels include; boreholes, protected and unprotected springs, lakes, rivers, swamps etc. Gross output and IC at current prices can be deflated using the same indices as formal water supply activities.

193. Water supply activities cover; public water supply companies, private water sales, water retailers and household own account water supply activities. Major data sources for water supply activities include; financial statements for the corporations and the HBS.

Recommendations

- *Partner States should compile both formal and informal water supply activities separately.*
- *Partner States should use HBS data source to estimate informal water supply activities.*
- *Partner States should appoint national accounts compilers to be part of the HBS design team and other relevant surveys to cater for the interest of the national accounts.*
- *Partner States should produce PPI for water for the appropriate deflation of output.*

F. Construction

194. This activity includes general and specialized construction activities for buildings and civil engineering works. It includes new work, repair, additions and alterations, the erection of prefabricated buildings or structures on the site and construction of a temporary nature. General construction is the construction of entire dwellings, office buildings, stores and other public and utility buildings, farm buildings etc. It also includes construction in civil engineering works such

as motorways, streets, bridges, tunnels, railways, airfields, harbors and water projects, irrigation systems, sewerage systems, industrial facilities, pipelines and electric lines, sports facilities etc.

195. Construction activities include projects which may take several months or years to complete. The output from such production is measured by work-in-progress (WIP) and cannot, therefore, be recorded simply at the moment in time when the process of production is completed. The WIP method is a measure of output of construction activities that extend beyond an accounting period. This method uses the cost of construction inputs such as cement, iron and steel, bricks, gravel and sand among others in each period which form part of output. It is necessary to have comprehensive benchmarks on which the WIP model is based. The WIP estimation is informed by surveys/censuses, and administrative sources, the bill of quantities, special studies and other administrative sources. Supply of construction inputs is informed by the net domestic production and imports. The output of construction activities is deflated using the construction input price index based on prices of inputs while IC can be deflated using CPI of key construction materials to obtain constant price estimates.

196. It is important to lag some of the construction materials since their utilisation may not be immediate. It takes time between the production of construction material (e.g. by manufacturers and imports) to be distributed for input into construction. For construction that is completed within a given accounting period, the output produced each period is treated as being sold to the purchaser at the end of that period, that is, as a sale rather than work-in-progress. In effect, the output produced by the construction contractor is treated as being sold to the purchaser in stages as the latter takes legal possession of the output.

197. The output of construction is a measure of the amount that has been charged to customers for building and civil engineering work carried out by contractors in a given accounting period. The benchmark year estimates are extrapolated using volume/value indices to obtain constant/current price estimates. The volume indices are developed using material flows to the construction activities such as cement, iron bars, sand, bricks and paint etc. The indicators selected for the volume/value indices should be available on: monthly, quarterly or annual basis.

198. The output of traditional construction estimated using data from population and housing censuses and HBS. Traditional housing construction activities depend on local materials such as mud, grass and forestry products. Output of specialized construction activities such as electrical work and plumbing services in the modern sector should be included as part of the benchmarks from tax administration records and from HBS for traditional construction (expenses on such services).

199. Major data sources for the estimation of the construction activities include; establishment surveys on construction activities, HBS for own-account construction by households, population and housing censuses, surveys of household unincorporated enterprises that should capture the construction that is part of household activities but not captured in the construction establishment surveys. Administrative data sources include data on domestic production (less exports) and import of construction related inputs such as cement, iron bars, paint, iron sheets, ceramics etc.

Recommendations

- *Partner States should adopt the WIP model for estimation of construction activities.*
- *Partner States should use the construction input index to deflate output, which is a more representative index as opposed to the CPI.*
- *Partner States should include own-account traditional dwellings in the construction activities estimates.*
- *Partner States should ensure the coverage of key construction materials as part of the CPI computation for proper deflation of IC.*

G. Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles

200. This section includes wholesale and retail trade (i.e., sale without transformation) of any type of goods and the rendering of services incidental to the sale of these goods. Repair of motor vehicles and motorcycles is also included in the estimation of output of this activity. The main activity of wholesalers is resale of new and used goods to retailers, to industrial, commercial, institutional or professional users, or to other wholesalers, or involves acting as an agent or broker in buying goods for, or selling goods to, such persons or companies without transformation. Retailers' resale new and used goods, without transformation, mainly to the general public for consumption.

201. Measurement of the activity covers; wholesale and retail trade, repairs of motor vehicles and motorcycles for both formal and informal activities. The output of wholesale and retail trade is measured by the total value of the trade margins realized on the goods purchased for resale. The trade margins are computed as the difference between the value of sales (turnover) and the value of the goods purchased for resale. The estimation of output of wholesale and retail trade activities can be estimated using the commodity/product flow approach. The first step entails conducting surveys/studies to ascertain the margins for all tradable goods. These margins are utilized until new data become available, mostly during the rebasing and revision of the national accounts exercise. The margins are integrated in the commodity/product flow framework and thereafter aggregated to derive the total output of these activities.

202. Output derived from trade margins may be checked for plausibility using administrative records such as business profits. However, caution should be exercised to avoid equating profits with margins, which may not necessarily be the same. Alternatively, benchmark estimates of output should be extrapolated using the commodity/product flow of tradable goods including imports. On the other hand, benchmark estimates of the informal retail and wholesale trade activities should be obtained from the HBS that covers household unincorporated enterprises and the economic/business surveys which have a module on the informal sector.

203. Benchmark estimates can alternatively be extrapolated using the Distributive Trade Index (DTI). The DTI is a volume index that is computed using volume of sales of tradable products. It should be noted that recurrent losses due to normal rates of wastage can be large for some products (e.g., fruits and vegetables among others). Such losses should be taken into account when margins are calculated based on the quantity/value of traded products. Below is the general formula for computing output.

Box 3

Gross output for retail and wholesale trade

equals the value of sales,

plus, the value of goods purchased for resale and used for intermediate consumption, compensation of employees, etc.,

minus the value of goods purchased for resale,

plus, the value of additions to inventories of goods for resale,

minus the value of goods withdrawn from inventories of goods for resale,

minus the value of recurrent losses due to normal rates of wastage, theft or accidental damage.

204. Intermediate consumption can be obtained from financial statements of the businesses. This information is used to derive annual I/O ratios necessary to compute IC. These ratios are then used to estimate IC for informal trade activities. In absence of such administrative records, fixed IC/GO ratios are used for the constant price estimates which are then reflated using an appropriate PPI to obtain current price estimates.

205. The sale of motor vehicles and motorcycles is majorly a formal activity and thus its output can be computed from the financial statements of enterprises engaged in this trade. Output is measured by the margins realized after sales. In the absence of regular data from the financial statements, benchmarks can be obtained from survey data, which can be extrapolated using suitable volume indicators such as motor vehicle/motorcycle registration. Output of repair of motor vehicles and motorcycles is measured as a sum of receipts receivable by those that provide the service. This data is obtained from economic surveys of businesses or special surveys of motor vehicle and motorcycle service points (garages). The corresponding outputs should be deflated using the appropriate CPI in case a suitable PPI is not available. IC estimates can be obtained in a manner similar to wholesale and retail trade activities.

Recommendations

- *Partner States should include a module on the informal sector in the economic/business surveys for benchmark estimates.*

- *Partner States should comprehensively cover the formal and informal activities in the measurement of wholesale and retail trade.*
- *Partner States should compile a distributive trade index for the deflation of output of wholesale and retail activity.*
- *Partner States should establish robust mechanisms for obtaining detailed data on financial statements from tax administration records.*

H. Transportation and Storage

206. Measurement of this activity includes; the provision of passenger or freight transport, whether scheduled or not, by rail, pipeline, road, water or air and associated activities such as terminal and parking facilities, cargo handling, storage etc. Included in this section is the renting of transport equipment with a driver or operator. Also included is the output of warehousing and support activities for transportation and postal and courier activities. The output of transportation is measured by the value of the amount's receivable for transporting goods or persons from one place to another. Alternatively, household and business expenditure on transportation activities can be used to estimate output from all transportation channels.

207. Output of road transport for formal activities is derived from the financial statements of the different players in the activity. Benchmark estimates for the activities are obtained from the economic/business survey. In cases where informal activities are not included in the economic/business surveys, benchmark estimates may be derived from informal sector surveys. Output of the informal activities are extrapolated using relevant indicators e.g., licensed/registered vehicle data for passenger and freight vehicles. Output of land transport via pipeline is computed using the fees collected by the pipeline owners for use of the service. Output of water transportation activities for both formal and informal is derived in the same way as road transport.

208. Rail and air transport are majorly formal activities whose output is derived from financial statements of the relevant industry players. In instances where an activity is operated at prices that are not economically significant, output is derived as a sum of costs. The appropriate deflator for this activity is the PPI for transport activities while the turnover index may be used for extrapolation of current price estimates. For railway transport, the tonne-kilometer for freight and passenger-Kilometer can be used to extrapolate output of railway transport. In the absence of the PPI for transport activities, an appropriate CPI can be used to deflate output though it is not a best practice.

209. Intermediate consumption for air and railway transport can be obtained from the respective financial statements. The same applies to formal road and water transport activities. Intermediate consumption for informal activities is obtained from the economic/business survey or special surveys/studies. In the absence of annual data on IC, fixed IC/GO ratios may be applied. The appropriate CPI can be adopted to deflate IC.

210. Postal and courier are majorly formal activities whose output and IC can be computed directly from the financial statements.

211. Storage services are basically for the inventory of goods that have to be properly stored before they are transported or made available to the final user. Goods in storage are valued at prevailing prices at the time they leave the storage facilities. The increase in price of a product because it has been in storage and storage costs have been incurred is a production process. However, this increase in price due to storage should be clearly distinguished from holding gains and losses, which must be excluded from the value of production in the case of storage as in other activities. When collecting such data, an extra mile should be made to obtain storage capacity (sqr meters) and average charges. The storage capacities can be used to derive output for formal storage services when the totality of the area available for warehousing is known or can be estimated. Output can then be obtained as a product of the area and the average charges. For informal storage, the estimates may be derived from storage receipts, expenditures incurred by households for the storage of goods. Benchmark estimates can be extrapolated using turnover from financial statements.

212. The output of support services to transportation activities is computed as a sum of costs where the service is provided at prices not economically significant, otherwise output for such services is computed from the receipts for the provision of the service. Such services include air transport support services, cargo handling, operation of terminal facilities among others. In instances where output is derived as a sum of costs, it is desirable to use a suitable wage index for deflation of output.

213. Data for estimation of the service can be obtained from censuses and surveys on transport business for passenger and freight across water, land, air, rail and pipeline. Other data sources include establishments surveys, Household budget surveys, VAT and Income Tax data, corporation annual financial reports and postal and aviation statistics.

214. Due to the significance of other non-conventional modes of transport in the EAC economies such as donkeys, hand-carts, camels, motorcycles, tri-cycles, canoes and bicycles, it is prudent to exhaustively capture these activities when measuring output.

Recommendations

- *Partner States should exhaustivity include warehousing support activities and courier services in the measurement of the transportation and storage activities*
- *Partner States should use the PPI for services (transport and storage) to deflate the output of transport and storage activities.*
- *Partner States should produce exhaustive CPI that can be used to deflate IC for the activity.*
- *Partner States should measure the pipeline transport output and add it to the overall output of the activity.*

- *Partner States should carry out surveys and special studies in informal transportation and storage activities.*

I. Accommodation and Food Service activities

215. This activity includes the provision of short-stay accommodation for visitors and other travelers and the provision of complete meals and drinks fit for immediate consumption.

216. Accommodation services also include the provision of longer-term accommodation for students and workers. Food services include food and beverage serving activities providing complete meals or drinks fit for immediate consumption, whether in traditional restaurants, self-service, or take-away restaurants, whether as permanent or temporary stands with or without seating.

217. Benchmark estimates for accommodation services can be obtained as a product of bed occupancy rates and the average charges per room. The ideal method for extrapolating output is to use the bed occupancy rates and the available rooms. From this method, accommodation output will be separated from food services in instances where revenue is not disaggregated. The output of food services activities, which can easily be distinguished from accommodation services, can be derived from turnover data. In addition, measurement of the output of accommodation and food service activities for the formal activities can be obtained from the financial statements of hotels and restaurants. This allows for the calculation of intermediate consumption and output at current prices. The current prices output is deflated using PPI-Hotels and restaurants while intermediate consumption can be deflated using an appropriate CPI.

218. In the event that the financial statements are not readily available on a timely basis, indicators should be sought and used to estimate the output of the accommodation and food services. Benchmark output and IC for the informal sector can be computed from economic/business surveys and special studies of hotels and restaurants that do not file tax returns with the revenue authorities. These supplement existing administrative data of enterprises offering food and accommodation services. It is recommended to compile separate accounts for accommodation and food services.

219. The most common indicator for extrapolating the activity is the use of VAT/turnover. This gives an indication on the movement of the activity and can be universally used for both formal and informal activities. Besides VAT/turnover, tourist arrivals would also provide an ideal volume indicator for the output of accommodation and food services, with the assumption that the non-resident arrivals into the country sleep in hotels and eat in restaurants.

220. All the activities in accommodation and food services should be covered but completeness and accuracy should be well achieved for the big players in the accommodation and food services. The smaller entities can have the estimates based on samples. Source data for computing output and IC can be obtained from the economic survey of hotels and restaurants. Additional data can be obtained from administrative records such as financial statements, VAT/Income Tax data.

Recommendations

- *Partner States should produce PPI for accommodation and food services since they are the ideal deflator for output.*
- *Partner States should measure the contribution of the informal sector by conducting specific surveys/censuses on accommodation and food services businesses across the country.*
- *Partner States should compile bed occupancy rates as the structure of the activity is dynamic.*
- *Partner States should update at least on quarterly basis the accommodation and food service sampling frame to better capture entry and attrition*
- *Partner States should compile separate accounts for accommodation and food services.*

J. Information and Communication activities

221. The activity includes the production and distribution of information and cultural products, the provision of the means to transmit or distribute these products, as well as data or communications, information technology activities, and the processing of data and other information service activities. The main components of this section are publishing activities, including software publishing, motion picture and sound recording activities, radio and TV broadcasting and programming activities, telecommunications activities and information technology activities, and other information service activities.

222. Generally, output of information and communication is computed directly from the financial statements of the various operators in the sector, from which output and IC at current prices can be obtained. Alternatively, the output is obtained by using data on volumes such as data on talk time, bandwidth, and SMSs valued using average prices for each category. Benchmark output is extrapolated using indicators such as talk time, bandwidth, and SMS's, which is deflated using PPI for information and communication. In the absence of such indicators, turnover can be used to extrapolate output. In the absence of sufficient information on IC, benchmark IC/GO ratios can be used. These are reflated using an appropriate CPI to obtain constant price estimates.

223. Data sources for the information and communication activities; VAT, income tax, and financial statements for the different players in the sector. For an activity such as telecommunication, which usually constitutes the biggest percentage of output of the information and communication industry, information on output and IC can be obtained from the telecom regulators within the PS. The PPI for information and communication provides an ideal deflator for output while the appropriate CPI component can be used to deflate IC to obtain constant price

estimates. It should be noted that telecom companies engage in secondary activities such as money transfer and lending which need to be addressed when computing output. In addition, there is a need to include new digital products/activities e.g. digital media, social media, online platforms etc.

Recommendations

- *Partner States should produce PPI for information and communication activities since it provides an ideal deflator for the activity.*
- *Partner States should include in economic/business surveys and censuses, a module concerning informal aspects on the information and communication activities;*
- *Partner States should work closely with regulators since they have detailed information regarding the activity (for instance through service charter or MOU).*

K. Financial and Insurance Activities

224. This activity includes financial service activities, including insurance, reinsurance, and pension funding activities and activities to support financial services. The measurement of the activity also includes the activities of holding assets, such as activities of holding companies and the activities of trusts, funds, and similar financial entities. Financial services are regulated by the central bank while insurance services are spearheaded by the insurance regulatory authorities across the Partner States.

225. The central bank performs majorly 3 functions; monetary policy services, financial intermediation, and borderline cases. Monetary policy services are collective in nature, serving the community as a whole and thus represent the non-market output. Financial intermediation services are individual in nature and in the absence of policy intervention in the interest rates charged by the central banks would be treated as market production. The borderline cases such as supervisory services may be classified as market or non-market services depending on whether explicit fees that are sufficient to cover the costs of providing the services are charged. The total output of the central bank is measured using the cost approach and should be treated as non-market production. This output constitutes the final consumption of the general government.

226. Output of commercial banks is calculated as a sum of Financial Intermediation Services Indirectly Measured (FISIM) and the explicit service charges. FISIM is applicable to loans and deposits and these loans and deposits should be provided by, or deposited with, financial institutions. The FISIM should be allocated to its uses using data on sectoral credit provided by the commercial bank.

The output of FISIM on loans (yL) and deposits (yD) is calculated using a reference rate (rr). Assuming that these loans and deposits attract interest rates of rL and rD respectively, the output of FISIM should be calculated as:

$$FISIM = (rL - rr)\ yL + (rr - rD)\ yD.$$

The loans and deposits used to compute FISIM should exclude government securities from the stock of loans because such loans do not bear any risk. Extrapolation of FISIM at constant prices is done using deflated stock of loans and deposits in each period. Output of financial services provided by entities other than the commercial banks is computed in the same way as that of commercial banks. Such entities include SACCO's and other sources of credit.

227. The reference rate should contain no service element and reflect the risk and maturity structure of deposits and loans. The rate prevailing for inter-bank borrowing and lending may be a suitable choice as a reference rate. Different reference rates may be needed for each currency in which loans and deposits are denominated, especially when a non-resident financial institution(s) is/are involved. Consumption of FISIM should be allocated between users (lenders as well as borrowers), treating the allocated amounts either as intermediate consumption by enterprises or as final consumption or exports.

228. Output of other financial services like forex bureaus, investment banks and securities dealers are measured by trade margins/commissions, that is, the difference between the purchasers' price for the dealer less the purchasers' price for the buyer. However, holding gains due to price fluctuations must be excluded. Similarly, outputs of other financial intermediation services like security, loan and insurance brokers and investment advisors are measured by fees or commissions charged to customers.

229. On the side of insurance services, the activity covers; non-life insurance, life insurance and annuities, reinsurance, social insurance schemes and standardized guarantee schemes. An insurance policy is an agreement between an insurance corporation and another institutional unit, called the policyholder. Under the agreement, the policyholder makes a payment (a premium) to the insurance corporation and, if or when a specified event occurs, the insurance corporation makes a payment (claim) to the policyholder. In this way, the policyholder protects itself against certain forms of risk; by pooling the risks the insurance corporation aims to receive more from the receipt of premiums than it has to pay out as claims. The output of insurance services is computed as follows;

Output of life insurance services

Output of life insurance services	
Output equals	Actual premiums earned (excluding prepayments of premiums)
Plus	Premium supplements (equal to the income gained from the investment of the insurance technical reserves, which also include prepayments, and reserves for pending and unexpected claims)
Minus	Benefits due (including outstanding claims that are not yet paid)

Minus	Increases (plus decreases) in life insurance technical reserves
Output of non-life insurance services	
Output equals	Actual premiums earned (excluding prepayments of premiums).
Plus	Premium supplements (equal to the income gained from the investment of the insurance technical reserves (which also include prepayments and reserves for pending and unexpected claims).
less	Adjusted claims incurred (including outstanding claims that are not yet paid).
Output of Pension Services	
Output equals	Actual pension contributions
plus	Supplementary contributions (equal to the income from the investment of the pension funds technical reserves)
less	Benefits due
Less	Increases (plus decreases) in pension entitlements (also called actuarial reserves).
Output of Reinsurance	
Output equals	Total actual premiums earned
less	Commissions payable
Plus	Premium supplements
minus	Adjusted claims incurred and profit sharing.

230. There are life insurance policies (annuities) that yield a lump sum at a given date rather than a stream of payments. The lump sum may be used to purchase an annuity that itself converts into a stream of payments. Annuities are organized by insurance corporations and are a means of risk management.

The output associated with an annuity is computed using the formula below:

Output equals	Investment income attributable to the annuitants.
Minus	The amount payable to the annuitants (or surviving beneficiaries) under the terms of the annuity

Minus	Change in the annuity reserves but excluding the initial payments for new annuities.

231. Output of social insurance schemes which may be unfunded schemes operated by employers can be provided either by the government under a social security scheme or by an employer for his employees. Outputs of these schemes are measured by costs, if costs can be singled out. In the case of the government, the social insurance scheme or fund is treated as part of the output of the general government. Other secondary activities to financial and insurance should be included in the measurement of output.

232. The main data source for financial and insurance activities is the Central Bank and insurance regulatory authorities. Central banks provide quarterly incomes and expenditures regarding its operations and incomes and liabilities of the commercial banks and insurance companies. They provide data regarding operations of micro-deposit-taking institutions and credit institutions. Central Banks also provide data on the monthly depository corporations surveys, administrative data such as credit to the private sector, forex bureau transaction, and interest rates. Data on operations of insurance companies can be obtained from financial statements and annual reports of insurance regulators.

Recommendations

- *Partner States should use all items CPI for the deflation of output and IC where an appropriate index is not available.*
- *Partner States should estimate the contribution of informal financial services to GDP.*

L. Real Estate

233. The activities of real estate include acting as lessors, agents, and/or brokers in one or more of the following: selling or buying real estate, renting real estate, providing other real estate services such as appraising real estate or acting as real estate escrow agents. These activities may be carried out on own or leased property and may be done on a fee or contract basis. Also included is the building of structures, combined with maintaining ownership or leasing of such structures.

234. Renting services can be broadly distinguished depending on the user: (i) Renting of residential real estate which deals with houses, flats, and apartments used by households for dwelling purposes. (ii) Renting of non-residential real estate which incorporates industrial, commercial, or other non-residential buildings etc. The production and use of dwelling services are recorded as a transaction between the producer of a dwelling service and the consumer (tenant). Production of owner-occupied dwelling service is part of the output of the real estate activity. The value of owner-occupied dwelling service is imputed by estimating the rental fees the owner would pay assuming it was a rented house. For owner-occupied real estate, the value of benchmark estimates for output can be derived from stock of houses/dwellings (mostly from the

population and housing census) and rent data (mostly from household surveys and specific surveys on real estate businesses). For instance HBS provides information on households expenditure on rent and intermediate consumption. In addition, output of non-residential real estate can be derived from economic/business surveys.

235. Benchmark output estimates can be extrapolated using the number of households, population trends, and VAT/Income tax data for the different real estate players. The process involves the development of value/volume indices which are then applied to the base year values. Constant price estimates are obtained by deflating the current price estimates using the PPI for real estate activities/real estate price index. Output of leasing of property can be obtained from the survey of business and HBS on the amounts paid for the use of the leased property. The intermediate consumption can be derived using the base year I/O ratio in the absence of complete data on IC composition.

Recommendations

- *Partner States should estimate the component of own-account output of real estate through special studies and surveys or any other relevant sources;*
- *Partner States should cover the real estate informal players given the sector's share to the economies;*
- *Partner States should conduct relevant censuses and surveys for the real estate on a regular basis (census at most 10 years and surveys at most 5 years);*
- *Partner States should compile a real estate index for the deflation of output other than CPI.*

M. Professional, Scientific and Technical Activities

236. These activities include specialized professional, scientific and technical services. These activities require a high degree of training, as well as making specialized knowledge and skills available to users. They include; legal and accounting activities, activities of head offices; management consultancy activities, architectural and engineering activities; technical testing and analysis, scientific research and development, advertising and market research, other professional, scientific, and technical activities, and veterinary activities.

237. Outputs of these activities are computed as the sum of revenues receivable for the services rendered under each sub-activity. The revenues (normally referred as fees) should exclude interest receivable on financial assets investment. They should also exclude taxes on products assessed on the revenues. Benchmark estimates of output may be derived using VAT/income tax data for the different categories supplemented by economic/business surveys and the HBS where part of the activity is informal. The same VAT/turnover can be used to extrapolate the output. Current price estimates can

be deflated using the services PPI to obtain constant price estimates. Benchmark I/O ratios can be used to derive IC for subsequent periods (e.g. years on quarters) in absence of detailed IC data.

Recommendations

- *Partner States should classify the VAT data by ISIC Rev. 4 (or the latest ISIC version);*
- *Partner States should collect detailed data on IC by activities in the economic/business surveys;*
- *Partner States should compile and use PPI to deflate the output.*

N. Administrative and Support Service Activities

238. This activity includes a variety of activities that support general business operations. They differ from the professional and scientific activities because their primary purpose is not the transfer of specialized knowledge. These services include; rental and leasing, employment, travel agency, tour operator, reservation service and related activities, security and investigation, services to buildings and landscape, and office support and administrative services.

239. The output of the activities is measured by the amount paid for the services provided. To the extent, possible separate accounts should be prepared for the various activities in this section taking into consideration any uniqueness in these activities. Benchmark estimates can be obtained from various sources including; economic surveys, VAT and Income tax data, and financial statements. Financial statements and specialised surveys on such services provide benchmark estimates for output as well as the IC. The VAT and Income tax data can be used to extrapolate the benchmark to obtain the current price estimates. Constant price estimates of output are obtained by deflating the current price estimates using PPI for administrative and support services. In absence of IC data, base-year I/O ratios can be used.

240. The benchmark output of travel agencies and tour operators can alternatively be extrapolated with the number of visitors as a proxy to obtain estimates at a constant price. Similarly, the benchmark output of security and investigation activities can be extrapolated using a volume index based on the number of employees.

241. In the EAC region, some of the activities such as security services and renting and leasing of vehicles have a significant informal component and therefore are not well covered by the usual/regular data sources. In this case, benchmark estimates should be derived from HBS and business surveys, then an appropriate extrapolator can be applied. Whenever IC indicators are not available on a regular basis, the base year I/O ratios can be used.

Recommendations

- *Partner States should conduct regular surveys and special studies where necessary to obtain data for input/output structure for use in the derivation of the Benchmark estimates;*
- *Partner States should compile separate accounts for all the divisions in this section.*

O. Public Administration and Defense and Compulsory Social Security

242. These are activities of a governmental nature, normally carried out by the public administration. The activities include the enactment and judicial interpretation of laws, legislative activities, taxation, national defense, public order and safety, immigration services, foreign affairs, and the administration of government programs. Compulsory social security activities are also included here.

243. Estimates for this section should include the entire general government in accordance with the SNA 2008 and the Government Finance Statistics Manual (GFSM) 2014. These are; the budgetary central government, social security funds, extra-budgetary units, regional/county governments, and local authorities. As per the recommendations of the SNA 2008, all transactions should be recorded on an accrual basis. In the region, this is not always the case and therefore there should be a deliberate effort to adjust cash basis transactions to accrual basis. Accounts for various components of the general government should be prepared separately.

244. The output consists of individual goods and services delivered to households and collective services provided to the community as a whole for free or sold at economically insignificant prices. The source data for this activity is the local, regional, and central government accounts, mostly the Integrated Financial Management Information Systems (IFMIS). The output of the general government should be disaggregated into collective and individual services. The value added for this activity is obtained by netting out intermediate consumption from the total output. The IC may also include the FISIM emanating from government borrowing and any charges accruing to the central bank.

245. Estimation of the value of government output follows the cost approach method. Output is estimated as the sum of costs; intermediate consumption, compensation of employees, and consumption of fixed capital. Any sales made by general government units should be deducted from the output. The current value of the output of non-market goods and services produced by government units is estimated on the basis of the sum of costs incurred in their production. Goods and services that are included in intermediate consumption are actual goods and services used in the accounting period. Therefore, purchases of goods should be adjusted for changes in inventories. This is particularly important for military small weapons such as bullets that can be used only once. The 2008 SNA treats them as intermediate consumption only when they are used up.

246. Both the compensation of employees and intermediate consumption are derived from the IFMIS data. The wage rate index for the general government is used for the computation of constant price estimates of GVA while appropriate CPI can be used to derive constant price estimates of IC.

247. Derivation of estimates of the Consumption of Fixed Capital (CFC) requires estimates of capital stock excluding the effects of price changes. The levels of capital stock are typically derived by accumulating capital formation in successive periods and deducting the amount that has been exhausted. Across the Partner States, the capital stock may not be readily available. The next best method for estimating CFC is the Perpetual Inventory Method (PIM) provided necessary data are available which uses the constant price estimates of gross fixed capital formation from the expenditure side of GDP.

Recommendations

- *Partner States' government accounts should be harmonized within the framework of the EAC Government Finance Statistics (GFS) harmonization guidelines;*
- *Partner States should expand their compensation of employees to include any individual payment in kind and imputed social security contributions;*
- *Partner States should ensure comprehensive coverage of the general government in their Integrated Financial Management Information Systems (IFMIS);*
- *Partner States should use the wage rate index as the appropriate deflator for government output;*
- *Partner States should compile CFC to accurately reflect the output of the general government.*

P. Education activities

248. This activity includes education at any level or for any profession, oral or written, as well as by radio and television or other means of communication. It includes education by the different institutions in the regular school system at its different levels as well as adult education, literacy programs, etc. Also included are military schools and academies, prison schools, etc. at their respective levels. The measurement of the activity includes an output for public and private education. For each level of initial education, the classes include special education for physically or mentally handicapped pupils.

249. Separate accounts should be produced for various levels of education for example pre-primary and primary education, secondary education, higher education, and other education not definable by level, including education support services. The measurement of the output of public education (including NPISHs funded schools) is estimated as a sum of costs (compensation of employees *plus* intermediate consumption *plus* consumption of fixed capital).

The IC is equivalent to use of goods and services that go into provision of the education service. The data for estimating public education is obtained from government expenditure on education. The compensation of employees is deflated using an appropriate wage index, preferably that is based on teachers' salaries while the use of goods and services (intermediate consumption) is deflated using an appropriate Consumer Price Index (CPI) for education services.

250. Private education is estimated based on financial statements, and turnover from tax administration records. Additional information is obtained through the Household Budget Survey (HBS), where households declare how much they spend on various aspects of school fees. Benchmark estimates can be extrapolated using administrative data e.g. turnover, enrolment or any other relevant indicator. Input structures for benchmark estimates can be obtained from income statements or surveys/special studies. In the absence of regular data on input, the I/O ratio from the benchmark should be used, though this is not ideal. The output of other education not definable by level can be estimated by sum of cost if the service is provided by government or the same way as private education i.e. using turnover data and household expenditure on such education services from HBS.

251. The main data sources for the estimation of public and private education services include; central, local, and regional government accounts, tax administration records, financial statements for education institutions, censuses and surveys of education institutions, and HBS.

Recommendations

- *Partner States should ensure that data on education activities is correctly classified in the chart of the accounts to facilitate mapping to the various education levels;*
- *Partner States should conduct censuses of education institutions at least once every five years;*
- *The Partner States should ensure government accounts are harmonized within the framework of the EAC Government Finance Statistics (GFS) harmonization guidelines.*
- *Partner States should use the wage index derived from teachers' salaries as the appropriate deflator for education output.*
- *Partner States should compile education satellite accounts.*

Q. Human Health and Social Work Activities

252. These activities include the provision of human health and social work services. The activities range from health care provided by trained medical professionals in hospitals and other facilities, over residential care activities that still involve a degree of health care activities to social work activities without any

involvement of health care professionals. Across the Partner States, human health is provided by the government, NPISH, and the private sector.

253. The output of public human health provided by the government is obtained as a sum of costs; compensation of employees, intermediate consumption, and consumption of fixed capital. Intermediate consumption for human health include drugs/medicines, electricity, rent and water among others. Output and IC for health services are obtained from government expenditure records from the Integrated Financial Management Information System (IFMIS). The wage index derived from salaries of health workers is used to deflate compensation of employees to obtain constant price estimates while the health CPI can be used to deflate intermediate consumption.

254. The output and IC of human health provided by private practitioners is obtained from the financial statements of the enterprises that provide health services. Additional information for estimation of output and IC can be obtained from the tax administration records. Information on health services reported by households through household based surveys (e.g. HBS) may also provide additional data for estimation of the output of health. The benchmark estimates can be extrapolated using administrative data such as tax turnover or volume measures such as the number of inpatient and/or outpatient in health facilities.

255. The output of social work activities without accommodation includes extension of such services to the elderly and the disabled. The output can be estimated through the sum of costs if it is provided by non-profit institutions serving households. Otherwise, the estimation should be similar to the one adopted for market providers of such services.

256. The main data sources for the measurement of the activity include; local, regional, and central government accounts, financial statements, VAT and Income tax data, Health Management Information System (HMIS), and the HBS. Specific studies on the activity can also be carried out to supplement the available data.

Recommendations

- *Partner States should ensure data on health activities are correctly classified in the IFMIS using the GFS guidelines;*
- *The Partner States should conduct a census of enterprises/institutions providing health services at least once every five years;*
- *The Partner States should ensure that government accounts are harmonized within the framework of the EAC Government Finance Statistics (GFS) harmonization guidelines;*
- *The Partner States should produce the wage index based on the salaries of health workers for deflating output;*
- *Partner States should carry out economic/business surveys at least every five years to collect data on private health services.*

R. Arts, Entertainment and Recreation

257. This activity 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. These include; creative, arts and entertainment activities, libraries, archives, museums and other cultural activities, operation of gambling facilities and sports, amusement and recreation activities.

258. The measurement of output of the activity is computed as the sum of revenues receivable for the services rendered. These revenues are normally called fees and should exclude interest receivable on investing financial assets. They should also exclude taxes on products assessed on these revenues. Benchmark output estimates are obtained from financial statements, economic surveys, tax records and household based surveys (e.g. HBS). Benchmark IC estimates are obtained from financial statements, economic surveys, and tax records. For services provided by the government at prices that are not economically significant, such as museums and other recreational facilities, the sum of costs should be used to estimate output. Extrapolation of the output of these activities can be done using tax administration records obtainable from the revenue authorities. Other ideal extrapolation indicators include urban population, number of visitors to arts and recreational facilities. The IC can be computed using a fixed I/O ratio in the absence of regular data on inputs for the services.

Recommendations

- *Partner States should produce comprehensive service PPIs for better deflation of output;*
- *Partner States should carry out specific surveys/studies on Arts, Entertainment and Recreation to complement existing data for exhaustive coverage.*

S. Other Service Activities

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

260. The benchmark output of other services should include both formal and informal activities, particularly because of the informal nature of most activities in this category. The benchmark output and IC can be derived from specific surveys and studies. For activities like those of political organisations, output can be derived as a sum of costs. Data from specific surveys and studies for compilation of the output of formal activities, such as activities of membership organisations, trade unions, funeral homes can be supplemented by VAT and income tax data. Data from specific economic surveys/studies can also provide information on output and detailed structure of the IC. Current price estimates of output can be derived using a turnover indicator and deflated using an appropriate PPI to get the constant price estimates. The IC data can also be obtained from the financial statement otherwise fixed I/O ratio from benchmark

year can be used in the absence of regular input data. Informal output can be extrapolated using urban population while a fixed I/O ratio from the benchmark can be applied to calculate IC. Constant price estimates for IC can be obtained by deflating current prices IC using an appropriate CPI component or other appropriate deflator.

Recommendations

- *Partner States should carry out surveys/studies on a maximum of five-year basis to provide benchmark output and IC.*

T. Activities of Households as employers

261. The activities of households as employers include domestic personnel such as maids, cooks, waiters, valets, butlers, laundresses, gardeners, gatekeepers, chauffeurs, caretakers, governesses, babysitters, tutors, secretaries etc. The activity allows the domestic personnel employed to state the activity of their employer in censuses or studies, even though the employer is an individual. The product made by this activity is produced and consumed by the employing household. This activity also includes the undifferentiated subsistence goods-producing and services producing activities of households.

262. The main source of data for the measurement of the activity is the household-based surveys (e.g. HBS). In such surveys, households provide information on how much they spend on homecare service providers such as maids, gardeners, and caretakers. Own-use production of undifferentiated goods and services by households such as hunting and gathering, farming, shelter, clothing and other goods is also captured as part of output.

263. The production of goods for own use is part of the production boundary and their output and contribution to GDP must be measured. The following goods and services for own use should be included in the estimation of the activity; goods produced by households for their own consumption (either for final or intermediate use), owner-occupied dwelling services by house-holds, own-account construction and own-account research and development. Valuation of output of own-account construction and own-account research and development is measured by production costs.

264. The data sources include household-based surveys, HBS and labor force surveys etc, where households provide information on how much they spend on their employees on a monthly basis. Population estimates can be used as a proxy indicator for extrapolating the activity in volume terms.

Recommendations

- *Partner States should carry out specific surveys/studies to better inform the estimation of the activities of households as employers;*

Taxes Less Subsidies on Products

265. The final step of measurement of GDP by production approach is the computation of the taxes less subsidies on products. A tax on a product is

payable per unit of some good or service produced. The tax may be a specific amount of money per unit of quantity of a good or service or it may be calculated ad valorem as a specified percentage of the price per unit or value of the goods or services transacted. As recommended in the 2008 SNA, output is measured at basic prices, so it is necessary to add all taxes on products and deduct all subsidies on products[10] for valuation of GDP at market prices.

266. Taxes on products include; Value Added Tax, taxes and duties on imports excluding VAT, export taxes, and other taxes on products. On the other hand, subsidies on products consist of import subsidies, export subsidies and other subsidies on products. Subsidies are not common in the PSs but should not be left out in the computations.

267. In the computation of taxes less subsidies on products**,** current price estimates are obtained directly as a sum of the above taxes collected by the revenue authorities. Estimates of taxes on products, for both current and constant prices, can also be derived from the product flow using the stipulated rates as per the law of the country. Alternatively, constant price estimates can be obtained by extrapolation of benchmark estimates using deflated values of goods. The deflated values are used to generate a volume index of products subject to the different taxes. However, caution must be exercised to ensure that the estimates are comparable with what is reported by the government. Subsidies on products are less common than taxes but if they exist, volume measures should be calculated using the same approach as that of derivation of taxes on products. Tax data is available from the revenue authorities and the Ministry of finance.

Recommendations

- *Partner States should compare NA estimates of taxes on products with those obtained from the tax authorities/ministry of finance and provide possible reasons for any discrepancies.*

4.6.3. Gross domestic product by expenditure approach

268. Goods and services are fundamental in the perspective of GDP estimation in three distinct ways. The first relates to understanding how goods and services are produced, the second is focused on how income is generated in the production process and the third is based on how the goods and services available in the economy are purchased. The first of these is the production approach to GDP, discussed in chapter 4. The second is the income approach while the third is the expenditure approach to GDP. This section expounds on the methodology of measuring GDP based on a summation of all final goods and services produced and used in an economy less imports over a given period of time.

269. The general equation of expenditure GDP approach is designed as below:

[10] For more details on how to define and calculate the taxes and subsidies, refer to 2008 SNA para 7.87 to 7.106

GDP by expenditure

equals

final consumption

plus, capital formation

plus, exports of goods and services

less imports of goods and services

Estimation of GDP Expenditure Components

270. As mentioned above, the expenditure components of GDP include; Final Consumption Expenditure (FCE), capital formation and net export of goods and services. The final consumption includes households, government and Non-Profit Institutions Serving Households (NPISH) while capital formation includes Gross Fixed Capital Formation (GFCF), changes in inventories and acquisition less disposal of valuables.

Final Consumption

271. Final consumption expenditure consists of expenditure incurred by resident institutional units on goods or services that are used for the direct satisfaction of individual needs or wants or the collective needs of members of the community. Final consumption consists of expenditures incurred by household, government and Non-Profit Institutions Serving Households (NPISH). Final consumption consists of expenditure on a wide range of goods and services by households on their own behalf, NPISH on behalf of households, and by government on behalf of individual households and for the community at large. Household final consumption expenditure consists of expenditure incurred by resident households on consumption of goods and services. Whereas government expenditures are financed in large part out of taxation, those of NPISHs are financed principally out of subscriptions, contributions or donations or property income. Government and NPISH FCE are considered as final consumption because no returns are expected once such expenses are incurred.

A. Government Final Consumption Expenditure

272. The Government Final Consumption Expenditure (GFCE) includes all final consumption expenditure incurred by the general government. The general government sector conceptually consists of the central government (Budgetary central Government and extra budgetary units), social security funds, state government, and local government (provinces/ regions/counties/districts). Those expenditures cover all resources spent on goods and services (except Gross Fixed Capital Formation) and market goods and services provided as social transfers in kind. This also includes non-market output of the Central Bank plus goods and services purchased and provided for free to households such as food items and health and education expenses. The final consumption expenditures of the general government can be classified in several ways. They may be classified according to whether the goods or services have been produced by market or non-market producers, according to whether the

expenditures are on collective services or individual goods or services, classified by function or purpose according to the Classification of the Functions of Government (COFOG), or by type of good or service according to the Central Product Classification.

273. Government units may produce output for their own final use and some market output but most production by units of the general government is non-market in nature. Although the government delivers goods and services to individual households and collectively at the community level, the related costs are shown as final consumption expenditure by the government. Expenditures of government are classified according to the COFOG which is designed to apply to the general government and its sub-sectors. It breaks government expenditure into ten Divisions (2-digits), and further into Groups (3-digits). The GFCE is equivalent to government output, less the value of government sales of non-capital goods and services, plus social transfers in kind. The data for computing output for the government is obtained from government accounts on both a quarterly and annual basis. This comprises accounts of the local, regional and central governments.

The GFCE in current prices

is equal to

compensation of employees

plus, intermediate consumption

plus, consumption of fixed capital.

274. In order to convert production by government to final consumption expenditure by government, two adjustments are necessary. The first is to deduct any production that is not treated as final consumption expenditure by the government. This includes own-account capital formation by the government, capital expenditure on roads and infrastructure, and production that is paid for by other units. Examples are part payments by households for education or health services, where the payments do not represent economically significant prices. The second is to add any expenditures by the government on goods and services for current users that are not included in production. Examples are payments made to households to reimburse them for the costs of medicines or other medical aids such as spectacles.

Allocation of Government Expenditure to Government Final Consumption[11]

Expenditures on current goods and services	Government final expenditure
1. As non-market output of government less sales and capitalized expenditures	
Expenditures on the production of non-market individual goods and services **less** sales for delivery free of charge or at insignificant prices to households, such as education, health services, sports and recreation, culture, provision of housing services, collection of household refuse, operation of public transport, etc.	Government individual final consumption expenditure
Expenditures on production of non-market collective goods and services for general administration, national defense, security and other common benefits to the community as a whole	Government collective final consumption expenditure
2. As a social benefit in kind	
Reimbursements from government's social security funds to households on specified goods and services bought by households on the market; Other social security benefits in kind except reimbursements: these include goods and services that are not produced by the government sector but are bought and distributed free or almost free to households under the social security funds (any payment by households must be deducted); Social assistance benefits in kind: these include goods and services similar to other social security benefits but not under social security schemes.	Part of government final consumption expenditure
3. Expenditures on capital goods	Government capital formation
4. Other expenditures	Uses in income and capital accounts

[11] see AfDB (2017) "GDP Compilation in African Countries: A step-by-step manual", page 74

• Payment for social security, foreign assistance for current expenditures, etc. • Interest payments on debts Repayment of principal on debts	• Current transfers • Property income • Financial transactions

Volume measures of Government Final Consumption Expenditure

275. General government final consumption expenditure in constant prices is calculated separately for each of its components. Constant price estimates can be derived directly using the product flow approach which can as well be used to derive current price estimates. The constant price derived by deflating goods and services bought by the Government using appropriate price indices. When using the cost approach, output and IC should be deflated independently using appropriate deflators (double deflation).

B. Household Final Consumption Expenditures

276. Household final consumption expenditure consists of expenditure incurred by resident households on consumption of goods or services. They include purchases of consumer goods and services, estimated value of barter transactions, goods and services received in kind, and goods and services produced and consumed by the same household.

277. The estimation of final consumption expenditure excludes expenditure on fixed assets in the form of dwellings or on valuables. Expenditures on major improvements of the dwellings in the form of reconstructions, renovations, enlargements are also excluded from household consumption expenditure and are treated as gross fixed capital formation on the part of the owners of those dwellings. Expenditures of households with one or more persons who own an unincorporated enterprise incurred for business purposes are also excluded from household consumption expenditure.

278. Household final consumption expenditure includes: goods and services bought for final consumption by households, goods produced for own final consumption by households, goods and services produced by household enterprises and retained for final consumption, domestic services produced for own final consumption by employing staff, services of owner-occupied dwellings (whose imputed values are equivalent market rentals). It also includes: goods and services acquired by households in barter transactions for final consumption; goods and services received by households as payment in kind from producers; expenditure incurred by households in “do-it-yourself” decoration, maintenance, and routine repairs of own dwellings and personal goods; households’ payment to government units to obtain various kinds of licenses, permits, certificates, passports, etc.

279. Benchmark estimates of household final consumption expenditure are derived from the Household Budget Survey. Given that some households underestimate their expenditure, other data sources should be used to verify estimates of household expenditures from the HBS/household-based survey. The choice of extrapolation indicators determines the accuracy of the estimates of HFCE for non-HBS years. The compilation of HFCE series uses the product flow approach

to compute current and constant price estimates. The accuracy of these estimates can be validated using results from HBS findings once another survey is carried out. The HBS is conducted in line with the Classification of Individual Consumption by Purpose (COICOP 2018). It breaks down household expenditure into thirteen (13) broad groups. Grouping by purpose means that goods and services with common properties (repair, fuel, food, and drink) are recorded across the classification (and grouped together). Other classifications take into consideration input materials, and the production process (see chapter 3 on classifications). Constant price HFCE estimates are obtained by deflating current price estimates using the consumer price index.

C. Non-Profit Institutions Serving Households

280. These are entities engaged mainly in providing goods and services to households or the community at large either free of charge or at prices that are not economically significant. The consumption expenditure incurred by NPISH is very similar to that of the government. The services provided by NPISHs are often confined to the members of the associations that own them although they may also provide individual goods or services to third parties. Although NPISHs may provide services to their members in groups, the services are essentially individual rather than collective. NPISH can be classified by function or purpose according to the Classification Of the Purposes of Non-Profit Institutions serving households (COPNI). However, this is not standard practice for many countries as NPISH is normally bundled with HFCE. The deflation of NPISHs is similar to that of the general government FCE where output, IC and CFC are deflated separately. Data sources for estimation of NPISH FCE include NPI survey and data from the Non-Government Organisation (NGO) regulators such as NGO Board/forum.

Recommendations

- *Partner States should carry out surveys on NPIs to better capture NPISH FCE.*
- *Partner States should compile HFCE independently e.g. based on household based surveys rather than deriving it as a residual.*
- *Partner States should compile GDP expenditure independently.*
- *Partner States should align surveys such as HBS with the most recent COICOP for easier bridging with the national accounts;*
- *Partner States should capture complete government statistics and ensure proper coding in the IFMIS for exhaustive measures;*
- *Partner States should strengthen collaboration between NSO and the relevant institutions such as revenue authorities, central bank and ministry of finance;*
- *Partner States should ensure the final consumption expenditure by the government is classified by the most recent COFOG.*

- *Partner States should compile final consumption expenditure by non-profit institutions serving households (NPISH).*

Capital Formation

281. Gross capital formation shows the acquisition of less disposal of produced assets for purposes of fixed capital formation, inventories or valuables. Capital formation has three main components, Gross Fixed Capital Formation (GFCF), changes in inventories and acquisition of less disposal of valuables.

A. Gross fixed capital formation (GFCF)

282. Gross fixed capital formation is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period plus certain specified expenditure on services that add to the value of non-produced assets. Gross fixed capital formation covers items bought because they increase the value of output over the periods recognizing that the combination of capital and labor can be more cost-effective and efficient than using labor alone. Information on fixed capital formation should be collected at the same time as information for the production account.

283. Fixed capital can be itemized by the main product as follows; dwellings, other buildings and structures, machinery and equipment including vehicles, cultivated biological resources, weapon system, intellectual property products (IPPs) and cost of ownership transfer on non-produced assets. The value of dwellings should include estimates for traditional dwellings and shanty dwellings constructed by the occupiers. Cultivated biological resources include herds of dairy animals, sheep, goat, and other animals kept for their fleece as well perennial crops. The IPPs comprise of: research and development; mineral exploration and evaluation; computer software and databases; entertainment, literary and artistic originals; and other IPPs. Machinery and equipment include; transport equipment; ICT equipment and other machinery and equipment. Information on some fixed assets such as dwellings can be obtained from the production side of GDP while information on acquisition of items such as machinery and equipment are obtained from imports and surveys/specific studies on establishments.

284. Constant price estimates of dwellings, other buildings and structures and machinery and equipment can be obtained by extrapolation the base year value using the quantity indices. Current price estimates can then be derived by reflating constant price values using an appropriate price index. Machinery and equipment components at current prices can also be derived by extrapolation using the value index of imported machinery and equipment while the constant price estimates are then derived by deflating by an appropriate deflator.

285. Research and development consist of the value of expenditures on creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and use of this stock of knowledge to devise new applications. This does not extend to including human capital as assets within the SNA. Unless the market value of the R&D is

observed directly, it may, by convention, be valued at the sum of costs, including the cost of unsuccessful R&D. Own-produced R&D should be valued at market prices or at cost and recorded as own capital formation. Research and development undertaken by government units, universities, non-profit research institutes, etc. is non-market production and is valued on the basis of the total costs incurred. Extrapolation of current/constant price estimates can be done using an appropriate value/volume indicator preferably one that is related to the activity of research and development in the absence of detailed expenditure data.

B. Changes in inventories

286. Changes in inventories fall under the heading of capital formation. Changes in inventories represent an increase or reduction of stock of goods. The 2008 SNA identifies materials and supplies, work-in-progress, finished goods, and goods for resale for inclusion in compilation of the changes in inventories. Inventories are built when goods produced/acquired for use, sale or resale in an accounting period remain available at the end of the period and carried over as stock in the subsequent accounting period. On the other hand, inventories can be reduced when withdrawals are made. Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the accounting period. In the absence of complete data on stocks, changes in inventory are mostly computed using the product flow approach.

Computation of changes in inventories

Changes in inventories

equals

value of entries into inventories

***less** the value of withdrawal*

***less** the value of any recurrent losses held in inventories during the accounting period*

C. Acquisition less disposal of valuables

287. This part of capital formation includes precious metals and stones, antiques and other art objects and other valuables. These are valuables which act as a store of value and whose price is not expected to decline over time. The main data source is administrative records and data on imports of such valuables from which benchmark estimates and current price series can be computed. Supplementary surveys/censuses and specific studies can be conducted for detailed data. Constant price estimates can be extrapolated using quantity/value index to obtain series in the absence of detailed data on valuables. Net exports can also be used to obtain current prices and appropriate deflators applied to obtain estimates at constant prices.

Estimation of Consumption of Fixed Capital

288. The most commonly used aggregates of the SNA are GDP and GNI. In both cases the "G" stands for gross, meaning the value before a deducting consumption of fixed capital. The 2008 SNA, like earlier versions, stresses that, ideally, net measures of domestic product, national income and other balancing items should be preferred to gross measures. The rationale for this is that consumption of fixed capital (CFC) is needed to derive net capital formation (NCF = GCF – CFC), net domestic product (NDP) equals the difference between GDP – CFC.

289. By definition, consumption of fixed capital is the decline in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage during a given accounting period. Consumption of fixed capital can be measured directly or indirectly.

- The direct method is through a survey on the market value of produced fixed assets for two consecutive periods and then calculating the decline in the market values of the stock of fixed assets. From such surveys, an inventory of all items that are categorized as capital is compiled. Major data sources include audited company accounts, enterprise surveys, and administrative records on the stocks of particular types of assets.
- The indirect method, also recommended by the SNA, is the perpetual inventory method (PIM). This is an approximation of market valuation and is less costly to implement. The PIM involves estimation of the gross capital stock and application of a depreciation and a mortality function to obtain annual depreciation and, finally, estimation of the net capital stock by subtracting accumulated depreciation from the gross capital stock.

Recommendations

- *Partner States should capitalize R&D in line with the EAC NAS guidelines;*
- *Partner States should compile CFC as part of NA;*
- *Partner States should conduct surveys and census for establishing benchmark estimates for valuables;*
- *Partner States should compile appropriate price indices for reflation/deflation of capital formation components;*
- *Partner States should compile different components of changes in inventories in accordance with EAC NAS guidelines;*
- *Partner States should explore the possibility of accessing detailed information on military expenditure for estimation of GFCF.*

Exports and imports of goods and services

290. Exports and imports are transactions between residents and non-residents of the economic territory. Within the SNA, the rest of the world is treated in much

the same way as a sector. This means that transactions between government, corporations, households and NPISHs with units in the rest of the world are identified and grouped together.

291. When a unit within the domestic economy transacts with another unit in the rest of the world (e.g. by exporting goods), the SNA regards this as the use of domestic resources by the rest of the world (an outflow of products) while imports of goods are resources coming from the rest of the world. Within the balance of payments, exports represent a credit item indicating an inflow to the domestic economy while imports reflect a debit or an outflow. In other words, the BOP and the rest of the world account in the SNA are exact mirror images of one another. Apart from that, all accounting conventions, rules on time of recording, valuation and so on are identical between the two systems.

292. Estimates of exports and imports values at current prices are compiled using custom statistics from revenue authorities, balance of payments central banks/NSOs and special studies on cross border trade. Other data sources can include the International Trade in Services (ITS) survey, Extended Balance of Payments for Services (EBoPS), administrative records and the Informal Cross Border Trade (ICBT) survey. The volume estimates of exports and imports for both goods and services use export/import price indices as the deflator. It is important to ensure that national accounts estimate on exports and imports are consistent with external trade statistics and BoP.

Recommendations

- *Partner States should conduct the ICBT survey at least on a quarterly basis to supplement other data sources;*
- *Partner States should compile and use import and export price indices for relevant deflation;*
- *Partner States should reconcile their customs data across the region through the use of mirror statistics. This should be done after netting the transport and insurance cost for importer countries statistics;*
- *Partner States should pay keen attention to the classification of the customs data since it serves for different purposes in the compilation of national accounts.*

4.7. Revision and Rebasing of National Accounts

293. One of the common features of the compilation of national accounts statistics is the revision and rebasing of the estimates. The process aims to reflect the structural changes that have taken place in an economy to; implement updates of the System of National Accounts (SNA); adopt new classification (ISIC, CPC etc.); update the production structure; update the changes in relative prices of various products; incorporate product changes due to innovations and

inventions; update consumption patterns, and utilizations and acquisition of capital goods. Revision also entails correction of inadvertent errors inherent in the compilation and utilization of new data from censuses, surveys, administrative records and special studies.

294. Two kinds of revisions are normally done: routine revision and comprehensive revision. Routine revisions are done to incorporate the latest information from respondents or administrative sources. Comprehensive revisions are done to incorporate more and better data that becomes available for use in the compilation of the accounts as well as the methodological changes in the principles of national accounting. Comprehensive revisions entail coming up with more accurate estimates that better reflect the current economic realities. This process also involves use of comprehensive data and most recent methodologies to derive benchmark estimates.

295. Rebasing refers to the process by which constant price aggregates are updated using the prices of a more recent period – the base year. The base year refers to the year of the weights that are used to measure GDP at constant prices. National accountants often undertake a comprehensive revision of the compilation practices including review of source data and then subsequently use the benchmark estimates for the base year to derive estimates for the outer years. The UN Statistical Commission (UNSC) in particular recommends rebasing of national accounts every five years.

296. In order to conduct a successful rebasing of the national accounts, there is need for comprehensive data to inform the base year estimates (benchmarks). Although some of the required data are available on an annual basis, other major data are only available intermittently due to among other things their cost implications. For example, data sources for household consumption are not frequent and are normally available after three to ten years. Furthermore, a full set of data on corporations covering their revenues, expenses and accumulations (through economic surveys/censuses) are also available in a period of between three to ten years.

297. The revision and rebasing of the national accounts statistics requires execution of a number of activities sequentially or concurrently and iteratively. It is imperative that there is clarity in every process, and the necessary human and financial resources required to achieve the desired objectives. Some of the activities that are key to the revision and rebasing process are as provided below.

- Development of national accounts revision plan (activities, budgets, resource mobilization roadmap, implementation matrix etc.) for the revision process.
- Review of the current NA
    - Compilation methods (compliance and deviations to the 2008 SNA)
    - Institutional arrangements (number of staff, qualifications etc.)
    - Source data (availability, gaps etc.)
- Determination of the expected output and recommendations for the revision and rebasing
- Determination of the base year
- Peer review of the process and the revised and rebased estimates

- Dissemination

4.7.1. Review of current set of national accounts statistics

298. In order to have comprehensive national accounts statistics, the review of existing national accounts statistics is very pertinent. The review of the compilation practices should focus on among other things;

    - Current institutional arrangements for national accounts compilers;
    - Scope and coverage;
    - Concepts and definitions;
    - Classifications;
    - Source data.

299. Review of current national accounts will involve an assessment of the; current compilation status, compliance with 2008 SNA and other international standards. Thereafter, make recommendations for the improvement of the national accounts and the implementation plan. The IMF Data Quality Assessment Framework (DQAF) shall be used for comprehensive review. The framework provides a structure for assessing the current national accounts statistics against best practices including international accepted methodologies.

300. The review will be carried out to assess to what extent the current national accounts conform or deviate with/from the 2008 SNA recommendations. The compliance to the 2008 SNA by Partner States will be key in the harmonization of national accounts in the EAC. The review should also involve an assessment of a country's GDP exhaustivity, for instance, the inclusion of the informal sector and illegal activities. The assessment and recommendation should include a plan for achieving the 2008 SNA milestones in the long-run depending on the resources and data availability.

301. The review of classifications used in the national accounts will assess the current classifications and compliance with latest international classifications and recommendations for their implementation in the rebasing exercise. It will also focus on the timing for revising and release of new estimates.

302. The revision and rebasing of national accounts are normally done when comprehensive data requirements are made available, preferably once every 5 years. The base year should be free from economic shocks that may affect the normality of the year. The base year should preferably be not more than five years old.

303. Institutional arrangements play a key role in the quality of national accounts statistics produced. The capability of the institution will simplify the process of collection and compilation of data used in the rebasing process. Adequate institution support is key for ensuring that quality data is produced by statistics offices. The review will include the current institutional set up of the national accounts compiling agency, financial and human resources available and data sharing arrangement with source data agencies. During the process, it is necessary to formulate a co-ordination committee with data supplying agencies and key users for smooth revision and rebasing of national accounts. The committee should meet frequently and ensure timely data availability and also collect any additional data as may be required.

304. The construction of the supply and use table uses a large set of data from different sources which include census and surveys, administrative statistics held by government and private sectors and other special surveys (trade and transport margins). The SUT is a recommended framework for integrating different data sources and compiling a set of harmonized and consistent national accounts statistics. The completeness of national accounts statistics depends among other things the coverage of source data. The United Economic commission for Africa (UNECA) has indicated the complete sets of data required for national accounts statistics compilations in the handbook of Supply and Use Table Compilation, Application, and Practice Relevant to Africa.

305. The compilation of supply and use tables require compliance with 2008 SNA for comparable statistics. The construction of SUT will start by reviewing the set of industries to be included according to ISIC Rev 4. Further, it should strictly follow SNA recommendations for methodology to be used for compilation of each economic activity and the valuation procedures to be used. Given the existence of informality of economic activities of the EAC Partner States, efforts can be made in the compilation of SUT to exhaustively measure all economic activities as recommended in the 2008 SNA. The benchmarks should include data on the following areas:

- Informal sectors
- Illegal activities
- Non observed economy
- Production for own final use

Failure to accurately measure the above economic activities will lead to under/over estimation of GDP in the EAC region.

306. Some of the expected output should include the following; Supply and Use Tables, routine compilation system, revised series linked to the previous base year, sources and methods/metadata, dissemination materials. As part of the revision of national accounts exercise, the compilers should document limitations on the data and processes used in the derivation of the estimates.

4.7.2. Revision policy

307. Revision policy informs users on the general rules for the revisions of released statistics as well as types and causes of revisions. The policy informs users in advance when revision will be done, what are the main causes and frequency for the revision. There are mainly two causes for revision namely; availability of new data and changes in classifications and methodology.

308. The national accounts revision policy should focus on routine revisions and major revisions due to among others changes in methodology and classifications. The revision policy should guide PS on harmonisation of major revisions. In conducting major revision, the Supply and use table framework will be used for all EAC states as recommended by SNA.

309. The EAC shall facilitate the development of a harmonized national accounts revision policy and disseminate to the stakeholders. Regional discussions will precede the implementation of the NA revision policy to enable harmonisation

as the EAC integration process advances. The policy will be reviewed regularly or whenever need arises. The frequency of production and dissemination of EAC Partner States' national accounts statistics will be indicated in the harmonized revision policy. This will guide the users of national accounts in the following areas

- Time for release of revised estimates
- Frequency for conducting revisions
- The causes of revisions
- Classification and methodological improvements
- Major changes in the revised estimates

Recommendations

- *Partner States should develop and disseminate national accounts revision policy.*
- *The EAC Secretariat should develop a revision policy template to be adopted and used by all Partner States;*
- *Partner States should revise and rebase their national accounts at least once every five (5) years;*
- *Partner States should mobilize sufficient resources for the revision of national accounts;*
- *Partner States should ensure that the base years for the various indices used for deflation are same as the national account's base year or not far off, preferably less than 3 years;*
- *The Partner States should prepare national accounts metadata based on the template designed by the EAC Secretariat.*

4.8. National Accounts Compilation Software

310. Computer softwares are important tools that facilitate compilation of national accounts by reducing manual effort that goes into the compilation, minimizes computational errors, speeds up the time taken to have the results out and acts as repositories of time series data. There is no single software for compilation of national accounts that has been internationally agreed since circumstances differ from country to country. Nevertheless, any computer application used in the compilation of the national accounts must be user friendly and comply with the recommendations of the 2008 SNA. The costs of the software use should be sustainable in the long run. In addition, the compilers should have a clear understanding of the workings of the software and be able to troubleshoot whenever there is a need.

311. A number of softwares for compilation of national accounts are available freely and others at a cost. This includes the National Accounts Database System

(NADABAS) currently in use in Kenya, ERETES (used in Burundi and DRC) and MS Excel spreadsheets used in Uganda, Tanzania, Rwanda and South Sudan.

4.8.1. National Accounts Database System

312. The NADABAS consists of a set of Excel Workbooks connected to an underlying database where data is stored. In essence, the system is a generic software that combines Excel with a database. The system is designed as an Add-In to MS Excel for which Visual Basic for Applications has been used to design the various features of the system. It includes a user interface, with a tab on the Excel ribbon, from which several tasks can be executed such as opening workbooks, loading and saving data from and to the database and many others related to the day-to-day operation and administration of the system. The set-up and design of NADABAS is managed from the ribbon. Version 2013 or later of versions of MS Excel is required to run the system.

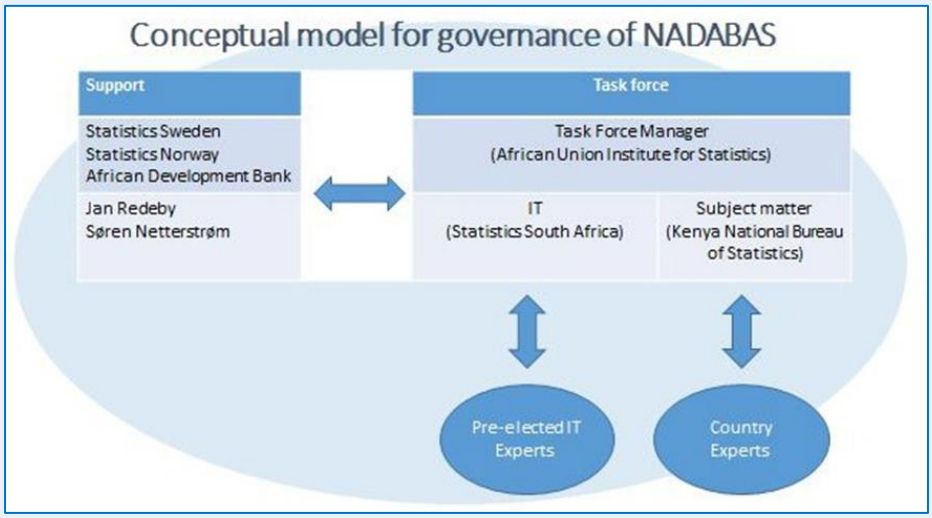
313. The ideal time to introduce the software fully is during the revision and rebasing of national accounts, but in the meantime, PS could run pilot systems for a number of activities in order to build the necessary capacities. The adoption of the same software in the region will be a significant milestone in the harmonization process. Using the same applications within the region will ease the comparability of compilation practices and the eventual estimates generated from these systems. The rest of this section is devoted to providing the user with more information about the NADABAS.

314. The main Features of NADABAS are:

- Links between Excel files are replaced by links between Excel and a database. An Excel workbook in the system may save data in a database, which can be Microsoft Access or SQL Server Express. Those data can then be loaded to other workbooks. Thus, a workbook may save (upload) data to the database, download data from the database or both.
- Classifications are an integral part of the system and are related to a set of so-called Key Families, which are tables in the database. The Key Families are based on the logic of the 2008 SNA – e.g., products, industries and sectors – and on the structure of various sets of source data – e.g., foreign trade data and data on price indices. Classifications can be assigned to dimensions, e.g., industries, in order to prevent erroneous codes to be keyed in.
- Each cell connected to the database must have a unique identifier. This identifier is based on a number of classifications. For instance, national accounts estimates may refer to a transaction by a specific industry for a certain year and indicating the concept, e.g., current or constant prices.

315. To ensure sustainability of the use of NADABAS, a structure with a well-defined project lead for the governance of the network and the system has been agreed upon. The structure is as shown in figure 4.10a. To implement NADABAS, the Kenya National Bureau of Statistics was chosen to be the subject matter specialist in Africa as far as NADABAS is concerned, while statistics South Africa will take the lead in IT matters.

Figure 4.8a: Conceptual Model for Governance of NADABAS



Source : http://www.nadabas.net

4.8.2. ERETES : « Equilibre Ressources Emplois Tableaux Entrée Sorties »

316. ERETES is a national accounts compilation tool developed by Eurostat. It supports the production of consistent national accounts statistics across countries and is flexible in terms of adaptation to compilers and users' needs. Currently, the ERETES software tool is supported by Eurostat, National Institute of Statistics and Economic Studies (INSEE) and the users' community who discuss its developments during the bi-annual steering committee meetings. ERETES is a package that includes a software tool, a methodology to build national accounts but also an assistance process and a users' community.

Recommendations

- *Partner States should use professional[12] software for the compilation of national accounts.*
- *The EAC Secretariat should facilitate the transition and sustainability of such systems in the compilation of national accounts.*

[12] Professional software in National Accounts Statistics (NAS) should be defined as a tool which facilitating the compilation of National Accounts in accordance with SNA framework. The same software could play the role of storage and dissemination of the data in a time series format according the same logic. Those software constitute toolkits, which are frameworks to facilitate the compilation of the whole national accounts.
(https://unstats.un.org/unsd/nationalaccount/capdev/resources/?resourceType=compilation&FromFlag=link)

CHAPTER 5: DISSEMINATION OF NATIONAL ACCOUNTS STATISTICS

317. Statistical information should be provided to users at a detailed level and must be relevant, timely, accurate, reliable, consistent, comparable in space and time, and comprehensive in line with the Data Quality Assessment Framework (DQAF) and the United Nations Fundamental Principles of Official Statistics (UNFPOS). The confidentiality of disseminated data must be observed at all times to ensure that the information is published in a way that the data providers remain anonymous.

318. National accounts statistics are produced to satisfy the needs of various data users that include; government, learning institutions, researchers, international organisations, and the general public. In order to meet these needs, it is imperative that the compilers of NAS understand their user needs to the extent possible. This will partly help in the production of data that will ultimately be useful to the intended users. Given the local and international demand for NAS, dissemination will be aligned with international best practices such as the UNFPOS and the Enhanced General Data Dissemination Standard (e-GDDS) among others. Most African Countries (40 out of 55) subscribe to adhere to the IMF's Enhanced General Data Dissemination Standard (e-GDDS).[13]

319. The dissemination of national accounts should be in the form of reports uploaded on official websites, through conferences, seminars and the media among others. The release of national accounts statistics should be accompanied by documentation as explanatory notes, press releases and metadata in line with national and regional statistical policies such as African Charter on Statistics[14] and the EAC statistical policy.

5.1. Advance release calendar

320. The statistical agencies should establish and publicize an advance release calendar with a schedule that meets the timeliness requirements. Effort should be made to adhere to the advance release calendar's pre-announced schedule. Reference should be made to the existing data dissemination systems such as IMF`s eGDDS, the EAC PS to establish comparable release calendars within the EAC. Best practices require that provisional annual national accounts estimates should be released within a period not exceeding nine months.

5.2. Scope and format

321. Users require data at varying levels of disaggregation depending on their ultimate objectives. To meet national accounts user's needs the dissemination should be premised on the need to make available information that adds value to decision making and further analytical work. The formats used to disseminate

[13] The e-GDDS supersedes the former General Data Dissemination System. It aims to encourage member countries of the IMF to improve data quality; provide a framework for evaluating needs for data improvement and setting priorities in this respect. Moreover, e-GDDS guides the countries in the dissemination to the public of comprehensive, timely, accessible, and reliable economic, financial, and socio-demographic statistics. Source: http://datastandardshelp.imf.org/knowledgebase/articles/816624-egdds-online-help-with-open-data-platform-odp

[14] African Union, African Charter on Statistics, https://au.int/en/treaties/african-charter-statistics

national accounts data should be as per broad categories of users. Various modes of dissemination such as; spreadsheets, infographics, PDF and online data visualization platforms should be used to accommodate different types of users.

5.3. Tables recommended for dissemination

322. National accounts data can be disseminated using a number of dimensions depending on the purpose for which the data is required. The national account statistics should be published at current and constant prices. Tables for dissemination should include the following;

- Value added by industry;
- Output and IC by industry;
- Output by industry disaggregated by monetary, non-monetary and own account production;
- Output by industry disaggregated by market and non-market production;
- GDP by industry desegregated by formal and informal;
- GDP expenditure components;
- GFCF by type of assets;
- Supply and use table at an aggregate level.

5.4. Stakeholders engagement

323. Stakeholders' engagement is crucial in the production and dissemination of national accounts. The national accounts compilers will present to the stakeholders an overview of the sources and methods employed in the derivation of the estimates. The engagement should provide the compilers with an opportunity to improve on their future estimates.

5.5. Metadata

324. Metadata is an essential basis for assessing the quality of data. It describes practices on data production and dissemination, and comprehensive plans for improvement of these practices. For better understanding and use of national accounts, data users require more detailed explanatory notes pertaining to their production. It is therefore imperative to disseminate the numeric results with proper explanations of the definitions, concepts, methods, and data sources. The metadata should be disseminated at the time estimates are made public or upon request and should be updated regularly to accommodate any changes thereof. The following list contains some of the items that may be covered in a metadata of national accounts:

- Indicator name;
- Indicator definition;
- Standard classifications and manuals used;
- Unit of measure;
- Disaggregation;
- Sources of data;
- Computation method;

- Accessibility and availability of data;
- Periodicity of production.

Recommendation

- *The EAC Secretariat should develop a template for an Advanced Release Calendar (ARC) to be adopted by the Partner States.*
- *The Partner States should prepare Advanced Release Calendar (ARC) based on the template developed by the EAC Secretariat*
- *Partner States should engage users in the dissemination processes to enhance awareness and trust among users of national accounts statistics*
- *The EAC Secretariat should design a metadata template to be adopted by the Partner States*
- *The Partner States should prepare national accounts metadata based on the template designed by the EAC Secretariat*

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ANNEXES

Annex 1. The framework for monitoring compliance with the guidelines

Annex 2. Manuals for National Accounts

SN	Area	Manuals	Links
1	Central framework of NA	2008 SNA	https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf
2	Measurement of the Informal Economy	Measurement of the Informal Economy	https://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_policy/documents/publication/wcms_210443.pdf
3	Supply and Use Tables	Handbook on Supply and Use Tables and Input Output-Tables with Extensions and Applications - Department of Economic and Social Affairs Statistics Division	https://unstats.un.org/unsd/nationalaccount/docs/SUT_IOT_HB_Final_Cover.pdf
4	Government Finance Statistics (GFS)	GFS Manual	https://www.imf.org/external/pubs/ft/gfs/manual/2014/gfsfinal.pdf
5	Input Out Table (IOT)	Handbook of Input-Output Table Compilation and Analysis	https://unstats.un.org/unsd/publication/SeriesF/SeriesF_74E.pdf

Annex 3: Classifications for National Accounts

SN	Area	Classification	Links
1	Activities	ISIC Rev 4	https://unstats.un.org/unsd/demographic-social/census/documents/isic_rev4.pdf
		COICOP	https://unstats.un.org/unsd/classifications/unsdclassifications/COICOP_2018_-_pre-edited_white_cover_version_-_2018-12-26.pdf
		SITC	https://unstats.un.org/unsd/publication/SeriesM/SeriesM_34rev4E.pdf
		COFOG	https://unstats.un.org/unsd/classifications/Econ/Structure
		eBOPs	https://unstats.un.org/unsd/classifications/Econ/Download/In%20Text/EBOPS2010_english.pdf
		COPNI	https://unstats.un.org/unsd/classifications/Econ/Structure
3	Products	CPC	https://unstats.un.org/unsd/classifications/Econ/Download/In%20Text/CPCv2.1_complete(PDF)_English.pdf
		CPA	https://showvoc.op.europa.eu/#/datasets/ESTAT_Statistical_classification_of_products_by_activity,_2.1_%28CPA_2.1%29/data
		HS	https://unstats.un.org/unsd/classifications/Econ/Structure
		BEC	https://unstats.un.org/unsd/trade/classifications/SeriesM_53_Rev.5_17-01722-E-Classification-by-Broad-Economic-Categories_PRINT.pdf

Annex 4: Summary Information on National Accounts Compilation Practices of EAC PSs

PS	ANA base year	SNA version used	ISIC version used	ANA compilation sides			ANA released on the Internet
				Production	Expenditure	Income	
Burundi	2005	2008 SNA	ISIC rev4	Yes	Yes	no	Yes
Kenya	2016	2008 SNA	ISIC rev4	Yes	Yes	no	Yes
Rwanda	2017	2008 SNA	ISIC rev 4	Yes	Yes	no	Yes
South Sudan	2008	2008 SNA	ISIC rev 4	no	Yes	no	Yes
Tanzania	2015	2008 SNA	ISIC rev 4	Yes	Yes	no	Yes
Uganda	2016/17	2008 SNA	ISIC rev4	Yes	Yes	no	Yes