Implementation Guide for
The 2008 System of National Accounts
(2008 SNA)
In Africa

For review by the Group of Experts on National Accounts
# Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>Error! Bookmark not defined.</td>
</tr>
<tr>
<td>Chapter One: Setting up an implementation plan for 2008 SNA</td>
<td>6</td>
</tr>
<tr>
<td>1.1 Introduction</td>
<td>7</td>
</tr>
<tr>
<td>1.2 Component programme of the 2008 SNA implementation plan</td>
<td>7</td>
</tr>
<tr>
<td>1.3 The methodological application sub programme</td>
<td>9</td>
</tr>
<tr>
<td>1.4 The institutional framework sub programme</td>
<td>11</td>
</tr>
<tr>
<td>1.5 The computation sub-programme</td>
<td>12</td>
</tr>
<tr>
<td>1.6 Organizational structure</td>
<td>13</td>
</tr>
<tr>
<td>1.7 Resources for the Programme</td>
<td>16</td>
</tr>
<tr>
<td>1.8 Execution and Evaluation</td>
<td>19</td>
</tr>
<tr>
<td>Chapter Two: The Methodological Application Sub-program</td>
<td>21</td>
</tr>
<tr>
<td>2.1 Introduction</td>
<td>22</td>
</tr>
<tr>
<td>2.2 Review of main changes</td>
<td>22</td>
</tr>
<tr>
<td>2.3 Setting priorities</td>
<td>24</td>
</tr>
<tr>
<td>2.3 Research and Development</td>
<td>25</td>
</tr>
<tr>
<td>2.5 Military Weapons System</td>
<td>27</td>
</tr>
<tr>
<td>2.6 Software originals and copies, Data Bases and Cost of ownership Transfers</td>
<td>29</td>
</tr>
<tr>
<td>2.7 Outstanding 1993 SNA Subjects</td>
<td>30</td>
</tr>
<tr>
<td>2.7.1 Informal Sector</td>
<td>30</td>
</tr>
<tr>
<td>2.7.2 Imputed Rents</td>
<td>31</td>
</tr>
<tr>
<td>2.8 Adoption of the new classification</td>
<td>32</td>
</tr>
<tr>
<td>Chapter Three: Institutional Framework Sub programme</td>
<td>33</td>
</tr>
<tr>
<td>3.1 Introduction</td>
<td>34</td>
</tr>
<tr>
<td>3.2 Setting up the format of collaboration</td>
<td>35</td>
</tr>
<tr>
<td>3.3 Financial reports database</td>
<td>36</td>
</tr>
<tr>
<td>3.4 Business Register</td>
<td>38</td>
</tr>
<tr>
<td>3.5 Mainstreaming the 2008 SNA in NSDS</td>
<td>39</td>
</tr>
<tr>
<td>3.6. Financial innovation and FISIM</td>
<td>40</td>
</tr>
<tr>
<td>3.7 Globalization</td>
<td>42</td>
</tr>
<tr>
<td>3.8 Example: A suggested bridge tables from business accounting to national accounts</td>
<td>43</td>
</tr>
<tr>
<td>Chapter Four: Computation Sub Programme</td>
<td>44</td>
</tr>
<tr>
<td>4.1 Introduction</td>
<td>45</td>
</tr>
<tr>
<td>4.2 Computation strategy</td>
<td>46</td>
</tr>
<tr>
<td>4.3 Review of data sources</td>
<td>48</td>
</tr>
<tr>
<td>4.4 Develop the computer programs</td>
<td>50</td>
</tr>
<tr>
<td>4.5 Extrapolation of Results to National Economy</td>
<td>51</td>
</tr>
<tr>
<td>4.6 Upload Aggregated Data into the system of compilation</td>
<td>52</td>
</tr>
<tr>
<td>4.7 Use of the SNA and communication of changes</td>
<td>54</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>56</td>
</tr>
</tbody>
</table>
### Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACBF</td>
<td>African Capacity Building Foundation</td>
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<tr>
<td>ACS</td>
<td>African Centre for Statistics</td>
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<td>AfDB</td>
<td>African Development Bank</td>
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<td>AGNA</td>
<td>African Group on National Accounts</td>
</tr>
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<td>AFRISTAT</td>
<td>Economic and Statistical Observatory for Sub-Saharan Africa</td>
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<td>AUC</td>
<td>African Union Commission</td>
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<tr>
<td>CB</td>
<td>Central Bank</td>
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<td>CCSA</td>
<td>Committee for the Coordination of Statistical Activities</td>
</tr>
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<td>CPI</td>
<td>Consumer Price Index</td>
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<tr>
<td>COMESA</td>
<td>Common Market for Eastern and Southern Africa</td>
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<td>FASDEV</td>
<td>Forum on Statistical Development in Africa</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>IAEG</td>
<td>Inter-Agency and Expert Group</td>
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<td>ICLS</td>
<td>International Conference of Labour Statisticians</td>
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<td>ICP- Africa</td>
<td>International Comparison Programme for Africa</td>
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<td>ISI</td>
<td>International Statistical Institute</td>
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<td>MDG</td>
<td>Millennium Development Goal</td>
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<td>MF</td>
<td>Ministry of Finances</td>
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<td>NSDS</td>
<td>National Strategy for the Development of Statistics</td>
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<td>NSO</td>
<td>National Statistical Office</td>
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<td>NSS</td>
<td>National Statistical System</td>
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<tr>
<td>OCAM</td>
<td>Organisation Comptable Africaine et Malgache - Accounting System</td>
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<tr>
<td>OECD</td>
<td>Organisation of Economic Cooperation and Development</td>
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<tr>
<td>PARIS21</td>
<td>Partnership in Statistics for Development in the 21st Century</td>
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<tr>
<td>PRSP</td>
<td>Poverty Reduction Strategy Papers</td>
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<tr>
<td>REC</td>
<td>Regional Economic Community</td>
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<tr>
<td>RPHC</td>
<td>Round of Population and Housing Census</td>
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<td>RRSF</td>
<td>Reference Regional Strategic Framework</td>
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<td>SADC</td>
<td>Southern Africa Development Communities</td>
</tr>
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<td>SNA</td>
<td>System of National Accounts</td>
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<td>SYSGOA</td>
<td>Accounting System of West African States</td>
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<td>UNECA</td>
<td>United Nations Economic Commission for Africa</td>
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<td>UNSC</td>
<td>United Nations Statistical Commission</td>
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<td>UNSD</td>
<td>United Nations Statistics Division</td>
</tr>
</tbody>
</table>
Introduction

For an African country, the compilation of national accounts is a complex operation, especially with the choice to make use of the 2008 SNA framework. At the 40th session the United Nations Statistical Commission (UNSC) in 2009, the UNSC approved the 2008 SNA as the new international standard for economic accounting. The first volume was endorsed in 2008 and the complete 2008 SNA publication has subsequently been published in 2009. With the completion of the main volume of SNA in 2008, the focus is shifting towards the dissemination, training and implementation phase of the SNA. With the mandate from the 40th session of the UNSC, the UNSD/EUROSTAT jointly organized meeting on the strategic implementation plan for the 2008 SNA in Luxembourg, the plan outline the key elements of the strategy and call upon regional organization and commission to develop regional implementation plan. In the context of African countries, the AGNA, a working group reporting to the StatCom-Africa, developed strategy project document for a plan of action, under this African strategy, countries requested the developments of manuals and handbooks, including an implementation guide with tangible road map on how to implement the 2008 SNA. This guide is therefore intended to assist countries in adopting the improved SNA as fast as possible to provide a comprehensive national accounts and internationally comparable data. Since the 2008 SNA is already endorsed by member states as the new standard for economic accounting, the key issues are when to adopt the 2008 SNA and to what level it should be implemented, with due consideration to available resources. Because the resources are perhaps very limited compared to the requirement for the implementation

For the successful implementation of the revised SNA, significant workload has to be carried out to adopt the main changes, develop methodological applications, update correspondence tables and improve the data sources to approximate the SNA concepts, for instance to adopt significant changes at the level of related statistical operations and basic statistics, including financial statements, censuses, surveys, business registers, business accounting system and public accounting rule with the in-depth involvement of national accountants to facilitate the approximation of SNA concepts. The national statistical system will therefore face several major challenges, including:

- Set priority topics for implementation and adopt the most relevant concepts of the 2008 SNA, including subject affecting the current accounts and GDP, based on quality data available within the entire NSS, although implementing the 2008 SNA is not just embed part of topics to the existing series of SNA.
- Develop national methodology for the topics selected for adoption, for instance methodology for research and development, for orchard growth and methods for military expenditure;
- Update correspondence tables according to the new accounting rules and concepts, the processing, computer programs and tabulations for each data sources, will be revised accordingly;
- Compile a new series of accounts, with a new base year to fully adopt the 2008 SNA, however continue to compile series of accounts with both 1993 and 2008 SNA for an interim period five years;
- Simultaneous estimation and results assessment under both 1993 SNA and 2008 SNA;
- Revision of business accounting system and public accounting rule to facilitate the bridge tables, similar to the exercise to SYSCOA compatible with 1993SNA or the OCAM with the 1968SNA.

- Back casting of SNA series in terms of 2008 SNA.

This manual is designed to provide national statistical system (NSS), including the national statistical office, central bank and other line ministries that have the mandate for the implementing the 2008 SNA with road map, general instruction, scheme, and some methodological applications, widely country practices, assessment tools or “check lists” for planning and organizing in the major statistical operations of compiling series of accounts, with a new base year to implement the SNA 2008.

The manual is organized around four chapters:

- Chapter one: Setting up an implementation plan for 2008 ASNA
- Chapter two: The methodological application sub programme
- Chapter three: The institutional framework sub programme
- Chapter four: The computation sub programme

The chapters of the guidance are based on prevailing practices on statistical production process set up during the compilation of national accounts base year or “benchmarking” in African countries, some examples may refer to the national statistical office of Madagascar (INSTAT). Hence, the guide is comprehensive, because it refers to cases of developing countries, in which the entire compilation process may be reinvented and fully reviewed every five years during the compilation of base year of SNA. The experience demonstrates that after the completion of benchmarking of NA, the interest gradually decline, as well as the collaboration forged among user-producers and partners, resulting in high staff turnover or mobility within the NSS. Frequently, the entire production process of SNA collapses, due to undocumented methodology and departure of experts, the guidance will also be useful as for trainee and junior national accountants.

In developed statistical systems, well-equipped NSS without serious constraints on resources and collaboration, the major task required to adopt the 2008 SNA will normally focus on methodological application, which is described under chapter two, still isolated cases for many NSOs in Africa.

This manual is mainly based on set of methodology developed by the INSTAT; the work was carried out by Andry Andriantseheno (UNECA) and Samuel Randriambolamanitra from The National Institute of Statistics (INSTAT) of Madagascar. In addition, to reflect the various practices in African countries, the manual was reviewed and endorsed by the meeting of experts organized by ECA.
Chapter One: Setting up an implementation plan for 2008 SNA
1.1 Introduction

Since the full implementations of a revised system of national accounts with the benchmarking of SNA represent a complex and intensive resource requirement for NSS, therefore setting up a comprehensive implementation plan is required to ensure its successful execution. The implementation plan allows setting timelines and individual milestones in the implementation process, identifying resource requirements, partners with valuable collaboration within the national statistical office, as well as extensive collaboration with central banks, ministry of finance and other line ministries, which must be implicated at the earliest stage, design and during the course of action. Therefore, for country, setting up an implementation plan is considered to be the primary step toward implementing the 2008 SNA.

2 The present chapter of this guidance provides a general overview of an implementation plan. Individual components and issues will be discussed in more detail in the remaining chapters of the manual. Due to the specificity of African country and the nature of major changes in the 2008 SNA, a chapter is devoted to ensure an effective collaboration at country level, within the national statistical systems. The statistical office and the central bank have coordinating role, the implementation project should be owned by the National Statistical System (NSS), and not only by the NSO, because the project requires close coordination and monitoring and clear reporting mechanism between national agencies under the leadership of NSO and Central Bank. Recognizing that the main change between 2008 SNA and 1993 SNA have resulted from globalization, financial innovation, public sector and trends in economic analysis. Based on preliminary information, it is highlighted that several topics in the 2008 SNA may be implemented only from a high level of communication and institutional commitments.

1.2 Component programme of the 2008 SNA implementation plan

The implementation of 2008 SNA is a major statistical operation, due to the requirement to compile a news series of accounts with new base year, this involve cluster of activities and considerable resources required to carry them out. The best way to manage this complex operation is to break the complex program into smaller, more manageable sub-programs, which may be represented as a set of milestones or development phases, the smaller sub programs are closely connected and output of each sub-program will serve as inputs to the other sub-programs. The global implementation (or Luxembourg) plan indicate the use of strategic planning for SNA and therefore suggest to make use of existing framework, for instance NSDS, PRSP or the ICP program at country level, to be applied for increasing the capability of countries in the compilation of the 2008 SNA, the plan also stress the need for coordination, monitoring and reporting actions, including the following actions at national level: collaboration with bilateral, and regional partners, establish a governance structure to facilitate implementation plan and partnerships.

Hence, the implementation programme may not be necessarily a distinctive stand-alone project, but the summation of activities under frameworks and master plans, the concerns of 2008 SNA should therefore be mainstreamed in the existing master plan-for instance NSDS, PRSP - and related statistical operations such as the international comparison programme (ICP). However, in order to have a plain understanding of the implementation programme, we assume that this programme is a distinct project under these frameworks and projects.
The components of the programme will be divided roughly according to the statistical production process of SNA, according to African country practices, three sub-programs or division of works may be identified, a sub-programs may consists also of several components, there may be less than three sub-programs in country where the SNA is well established. The specific case refers to an African country where national accounts production should be reestablished. Generally, three sub-programs are recognized, each consist of its own distinct cluster of activities:

- **The Methodological application sub programme:** this programme covers the review of the methodology works related to the main changes from the 1993 System, the setting of list priority topics for implementation, according to data sources and statistical capabilities of the country, the interpretation of the concepts into practical compilation of the country and developments of national proxy towards the concepts SNA.

- **The Institutional framework sub-programme:** This programme covers the responsibility, reporting within the NSS including the most suitable format and level of collaboration between NSO, Central Bank, Ministry of Finance and line ministries, outlining clearly responsibilities and monitoring and reporting role between custodian of data, identify the lead agencies to carry out the activity on each specific topics, the issues of sharing information and access of information, to carry out joint surveys. This entails formal and informal agreement of collaboration, which will feed into the design of framework like NSDS and this project will ensure that 2008 SNA is mainstreamed in the next generation of NSDS. The effective use of framework such as NSDS to support the implementation is an instrumental tool for 2008 SNA.

- **The computation sub-programme:** this programme covers the review, the treatments of data sources, surveys, censuses and administrative data, and the computation issues, including upload data sources into the SNA in a coordinated manner and integration of the elements for the compilation of SNA. The project is basically the translation of the outputs from the application groups into computerized program.

Each sub programme is described separately in this document. This introduction outlines the description of each programme: goal, management, procedure, timetable, and resource. Finally, the system of continuous evaluation and communication plan will be covered, which describes the overall evaluation methods and provides guidance for the evaluation tools developed during assistance to countries.

Borderline issue will occurs and in some cases the phase of the sub-programme will overlap, the result of the application subprogram are required for starting the computer, in the same way, the outcome of the institutional subprogram will determine number of topics to be reviewed by the application subprogram, the responsibility of each stakeholders according to the topics. Data sources and other resources at disposal of NSOs and Central Bank and line ministries is a prerequisite for the application sub programme. Normally, the various groups will employ a wide range of groups of specialists including, IT specialist, and business accountant, public finance, trade statisticians, and surveys experts. Basically, the core of the application group will consists of national accountants, while the core of the computation group will consists of database experts and IT specialists. The institutional group is composed by legal experts, custodian of databases, user and producers of SNA.
8 To sustain an appropriate allotment of time for the overall success of the project, a realistic time scheduling is critical. The length of time for the completion of each sub programme will to a large degree depend on national circumstances, such as the effectiveness of NSOs, level of collaboration of NSS, the amount of priority topics of 2008 SNA to be adopted and the outstanding topics from the 1993 SNA and the inter dependence of statistical operations required before the changes, for instance implementation of revised classifications, completion of surveys and censuses and accessibility to key administrative data.

9 The diagram illustrates the different progression and intermediate results of each programme and their dependencies. This is an indication; countries may have different methods, statistical production process and managements of compilation.

1.3 The methodological application sub programme

10 Typically, countries have to develop national methodology, application which interprets the accounting rules on the new topics of 2008 SNA; they will also review their available data sources on the topics and recommend changes in the system of data collection, and from there update the correspondence tables from data sources toward a proxy to the SNA08 concepts. In case data sources are not consistent with the framework, additional surveys will be required to get detailed estimates of the SNA.

11 It is clear that the first major task of the application project is to have an in depth understanding of the revised SNA, before any development of national methodology, then select the most relevant topics for implementation and propose a methods of treatment of key topics selected, the application groups will also review quality of data sources on each proposed topics and make a decision on whether to retain the topics for implementation or to suggest supplementary data sources, eventually the group will refer some topics to the institutional groups and request assistance and expertise from the latter group, this is in case that the topic require accessing or treatment of administrative data at the custodian of other user-producers. Possible criteria to be used in this consideration will be further discussed in chapter two.

12 Therefore the main objectives of the application group are:

- Determining priority topics of the 2008 SNA for immediate implementation by the NSO
- Determining other priority topics of the 2008 SNA for immediate implementation through partners and user producers within the NSS
- Develop national methodology, practical applications to the SNA concepts of each topic selected
- Updating the business accounting and public accounting in conformity with the concepts of the 2008 SNA, this will facilitate the bridge tables.
- Determine the requirements of additional sources, surveys or censuses for the 2008 SNA
- Development of all necessary tools associated with the basic economic statistics, in other words, survey concepts, questionnaire and correspondence tables between the data sources and the 2008 SNA.
- Review and adopt the various national accounts classifications.
Sub Programme

Data Sources Changes

2008 SNA

Resources and other criteria for selection of topics

Selected 2008 Topics for Implementation

Topics require institutional Framework

Manuals, Methods and application

SNA Topics Implemented under Institutional program

Review of custodian, legislation, acts, NSDS.

Institutional Sub Program & groups

Review of administrative data sources

SNA Topics Implemented under Institutional program

Format of Collaboration, Coordination, reporting and implementation of tasks

Access to databases, financial statement

Cluster of topics, Lead agency A

Cluster of topics, agency B

Cluster of topics, agency C

Cluster of topics, agency D

Consolidated National Methodology for these topics

Correspondence tables in hard copy

Adoption of NA Classification

Application groups & sub programme

Institutional

Computation

Sub Programme

Assign Metadata & classification to Data

Process and Upload Data Sources into NA

Assign weight to units in sample surveys/ financial statements

Computer Programs in SQL, STATA…

National Accounts compilation process GDP and Tables

Iterative process of balancing the accounts

Business register
13 To achieve the above objectives, the application group has to carry out the following activities:

- Full review of documentation on the selected topics, which may entail study tours and visit to advanced NSO and international organizations
- Translate the 2008 SNA or some topics in current working language and probably in local languages
- Take a decision on the adaptation from business accounting rules and public accounting rules that needs to be developed, based on the compliance of the accounting systems against the concept of 2008 SNA, including increased detail or accounting rules may be required;
- Take a decision on improvements of the existing surveys, whether the existing statistical operations, surveys, censuses have to be redesigned to meet the requirements of the 2008 SNA;
- Adapt the classification in annex 1 of the 2008 SNA to the national circumstance and allocate units, operations to the sector or classification.

Practically, to initiate the process, the group should organize a training workshops on the 2008 SNA and its main changes, then review the necessary documentations on SNA, review the availability and quality of data sources, in addition to deskwork, they may review other country practices through study tours and missions and then within months, develop national methodology and finally bridge tables between sources

1.4 The institutional framework sub programme

15 The framework project primary task is to make an inventory of potential data sources first at NSO and outside the NSS; they will review policy and practices on access, use and processing of administrative data sources, these include statistical acts, companies acts on company mandatory reporting. Therefore, they may recommend and provide support in drafting agreement, memorandum, statistical acts, and decree and even contribute to the design of NSDS. These will improve coordination and reporting between the NSO, Central Bank, Ministry of Finance and other line ministries.

16 The group responsibility is to ensure smooth communication and collaboration to avoid duplication of efforts such conducting survey on data which may obtain through administrative sources, a waste of resources and heavy response burden and delay in the compilation. Accordingly the NSO, CB and MF have to set up a task force to foster collaboration in the use of administrative data and to design joint surveys and provides the frame for any subsequent data collection activities whose result will be presented in the 2008 SNA. The prerequisite for implementing the 2008 SNA is at least an informal arrangements, establishments of working groups with partners, and eventually a formal adaptation of various statistical acts and regulations, including the law on mandatory reporting of financial statements of companies to governments, these regulations and arrangements using the SNA. The nature and extent of the adaptations will depend on the special conditions in each country

17 The framework group will develop the tasks assignments, reporting mechanism and monitoring between the NSO, Central Bank and other line ministries. Once the format of collaboration is opted and the data is accessible, the framework group will collaborate with the application group
to finalize methodologies for the 2008 SNA topics, which require access and extensive collaboration between NSO and other user-producers, in many countries the SNA is used beyond statistical purposes but also for forecasting, modeling, finance, taxation and Therefore the main objectives of the institutional framework project are:

- For the short-term, development of working groups and modalities of working arrangements, reporting relationship and task assignments on the compilation of issues in the 2008 SNA related to public sector, financial innovation and globalization.
- The national agencies will identify priorities of issues, and working groups will assist the methodological groups for topics which require collaborative efforts;

- For the medium term, the groups will develop memorandum of agreements or service level agreements between NSO, CB and MF that contains access to financial statements, VAT database, public accounting and development of bridge tables to 2008 SNA

- To design surveys, methodology and tools for 2008 SNA

- To design and mainstream the requirements of the 2008 SNA into the second generation of NSDS.

- Identify the issues which will be implemented on later stage due to lack of data or further methodological work

18 To achieve this, the institutional group has to carry out the following activities:

- Review the capabilities of each national agencies and stakeholders in the process
- Design the different format of collaboration between agencies
- Develop reporting mechanism and assignment of responsibility
- Adapt data sources to SNA, including classifications, business accounting rules and public accounting rules, including increased detail or accounting rules may be required;
- Take a decision on adjustments on surveys and census questionnaire be consistent with the concepts the 2008 SNA;
- Update the correspondence tables between the old and new SNA.

### 1.5 The computation sub-programme

19 The final objective of the 2008 SNA projects is of course the compilation of set of accounts in compliance with the 2008 SNA. The computation project is the final project component in the implementation of the 2008 SNA and deals with the switchover of all affected individual economic managements and policies by the revised and the integration of the revised estimates of SNA in the various macroeconomic managements. For instance, the effect on modeling and forecasting on government budget, balance of payments and regional integration. Even the input/output tables will have considerable changes, due to globalization topics and the accounting rule. Typically, the computation of national accounts data is the last in the series of changes, as the national accounts data depends on the availability of most other types of economic statistics.
As such, the main objective of the compilation project is:

- Computerization of the intermediate results from application group and institutional group, including bridge tables, assign metadata and uploading and incorporation of data for progressive reconciliation of data from different approach.
- Coordination of the change over from the 1993 SNA to the 2008 SNA in the use of national accounts for economic analysis with as little impact as possible on the continuity of SNA that use the SNA, which includes the following elements:
  - Implementation of the 2008 SNA in forecasting, modeling and budget following a time table that is coordinated for macroeconomic modeling that are related and/or interdependent, including the base year and benchmark of NA according to the 2008 SNA
  - Determination of the period for which SNA data will be back cast, specified for each points of revision, including a study of possible methods to be employed

To achieve this, the computation project group has to carry out the following activities:

- Determine the set of accounts to be compiled according to the capabilities
- Adopt a computation strategy
- Setting up of procedures for implementing the 2008 SNA in adoption of the new NA for budgetary purposes, modeling and forecasting (definitions, survey forms, processing guidelines and programmes, IT infrastructure etc.)
- Determining a new base year and a period for double reporting on 1993 SNA and 2008 SNA
- Developing of a strategy on back casting

Since the availability of long time series is an important requirement for economic analysis and decision making, such as determination of growth rates, application of forecasting models etc., and the back casting activities are part of the work in the computation project to produce consistent historical data according to the 2008 SNA. However, back casting be carried out even after all other processes are completed and statistics are already compiled and published using the 2008 SNA. In addition, the length of the period for which data are back cast will depend on resources and user requirements in the country.

1.6 Organizational structure

As pointed out, to claim a correct implementation of the 2008 SNA, African countries-still between 1968 and 1993 SNA- have an obligation to compile a new series of accounts with a new base year. The implementation of the 2008 SNA is a therefore a major statistical operations covering several sub programmes on their own, usually large, resource requirements. As a result, a perfect administration of each sub programme and the overall implementation plays a key role in the implementation of 2008 SNA.
There is probably no general structure of management and organization that may fit the situation of all African countries, due to the fact that local structures and regulations differ and that local dependencies may impose additional requirements. However, the following are organizational elements that countries may consider as reference in their own organizational structure for this project.

The following graph shows a summary of different coordination entities concerned and their relationship, which are further explained below. As far as possible, the organization structure should be formal and official, the complexity of the overall implementation programme, connection between programme components, makes it suitable to preserve a formal approach to the management of the activities. The structure will facilitate the review of progress made and the permanent evaluation of the project, including assignments of tasks and expected results, the supervision of resources and deadlines.

The individual coordination bodies shown carry the following responsibilities:

The Committee on Statistical Coordination (CSC)

African countries have a statistical coordination committee or council, which may supervise the implementation projects during or before the benchmarking of SNA, the main issue is certainly the effectiveness of the committee, a dormant committee should be revamped through regular meetings to avoid the bizarre situation of lack of information and evaluation on the progress of the programme.
National agencies should be aware and fully involved in the implementation of 2008 SNA, in addition some activities rely heavily upon an effective collaboration between NSO, Central Bank Ministry of Finance and line ministries, the committee on statistics composed by managers of NSO, CB and MFB, is responsible for the incorporation of the updating program of the 2008 SNA in the strategic planning of the stakeholders and to mainstream the 2008 SNA in the design of NSDS and PRSP of the NSS and the connection with the overall objectives of each institutions.

The Programme Board

27 The programme Board is responsible for the overall management of the project, including advocacy to provide and mobilize resources to accomplish the objective, this group of pressure or lobbying group- with high profile members to champion the cause of SNA - will advocates at the highest level for the regular disbursements of funds. The proposals of budgets and expected results of the projects will be presented to the Programme Board for approval and for fund raising. The Programme Board reports to the management of the CSC. In some African countries, the programme board may be established from the subcommittee on macroeconomic statistics of the CSC, the sub committee should be complemented with extra members from partners and donors, users- producers of outputs of national accounts. A well functioning board will motivate the potential resource mobilization from its institutional members.

Programme Manager

28 The Programme Board appoints the programme manager; typically the three implementing agencies and potential partners and donors select the Director of SNA or the Director of Research at the Central Bank. The Programme Manager has the responsibility and competence to control the day-to-day management of the programme. The Programme Manager decides within the limits specified by the Programme Board and supervises the use of resources within the different programme elements. The two main duties of the Programme Manager are to ensure that resources are mobilized and to continually evaluate the progress and achievements of the programme, to guarantee the deadline and the quality of products.

Sub Programme groups

29 As outlined in the previous section, the overall programme is divided into three sub programme components. Each of these component programmes is carried out by a designated group, namely, the application project group, the institutional framework project group and computations project group, respectively. Each of these groups is managed by its own programme manager, since there are three main agencies involved in the project, each of them assign a group leader according to the intensity of responsibility of his agency in the tasks of the group. A typical example is to have the group leader on framework from the central bank, the leader of the application group from ministry of finance and the leader of computation group is from the NSO. The group leaders decide within the limits specified by the Programme Manager and oversee and allocate resources assigned to his programme component. They report to the Programme Manager.

30 The members of the sub programme groups work under the guidance of, and report to, their respective group leaders. The composition of each group will reflect the skill-mix required for the group, the application programme group will consists of national accountants, census and
survey specialists, and the institutional framework group will include custodians/users of administrative data, legal experts and experts on business accounting, public accounting and finance, while the computation groups will contain mostly IT specialists, database managers and programmers.

The work plan, objectives and responsibilities of sub programmes will be approved during a launching meeting, the task of each group will be assigned to individual members, and then the components programme should be resourced.

1.7 Resources for the Programme

Normally, the government has to commit funding for the compilation of series of accounts, including the rebasing of accounts every five years with the introduction of the new accounting system (2008 SNA), continuous commitment from governments is crucial over the years. Otherwise, the production process established during the benchmarking year may collapse, the experiences show that it take many years with a difficult process to restore the capability of statistical system of compilation, while a shortage of human or financial support will reduce its capability. However, to provide an adequate resource poses challenge for some countries, it is evident that a major statistical operation such as benchmarking of national accounts with the introduction of new version of SNA requires substantial resources from governments and donor partners. By breaking down the overall programme into sub programme, as described above, the estimation of resources requirements and the contribution from interested agencies and partners will be facilitated. A national programme with donor support will be crucial to establish the trust fund for the programme, the programme manager may organize meetings to mobilize resources where partners and donors may expresses their interest in supporting specific components or activities of the implementation programme. Attentive disbursement is required at each level of executing agencies and groups, some commitments may not materialize. The resources allocations should be considered to constraints and planning.

Resources to be considered for these processes include human, financial resource, equipment and information. Typically, due to resource constraints, according to experience of some countries, the opportunity or adequate time to introduce the revised SNA will be probably during the benchmarking of SNA with resources allotment from government and potential donors. The availability and schedule when resources are required based on set time line, the number of personnel with their special skill required for each groups to carry on their responsibility, and where in the process. For each programme component and task, the resources are required to ensure that qualified personnel are available at the right time in the right place and that the right information is exchanged. Some suggestion on acquiring competent workforce for the groups will be examined below.

Typically, based on programme of benchmarking of SNA in African countries, the provision for type of expenses may cover: honorarium or token fees for committee and groups, transportation, documentation and missions, national workshops, contractual services and printing and dissemination. Concerning equipment, the programme manager will work with the groups and submit requirements such as transportation, vehicles, software, IT equipment and other operating expenses. Different meetings will be organized, such as launching meeting, training course on 2008 SNA and restitution workshops to endorse methodology, correspondence tables, computer programs and the final SNA tables.
For information and documentation: one responsibility of the groups is to evaluate whether it is necessary to translate the SNA in an African language, in addition to review existing documentation and methodology and other resources. The programme will review the adequacy of the workforce in terms of skills and expertise required, other equipment such as computer capacity is necessary to store and process data and finally the requirement in terms of data sources and documentation. Subject to availability of resources, additional surveys or censuses will be recommended, but it is unlikely.

For the composition of the groups, depending on country circumstances, the working group on application requires national accountants, with expertise on real sector, financial accounts, business accounting. Due to high staff turnover in developing country, the project manager will necessarily recall former national accountants scattered across the NSS, even retired national accountants and statisticians with the purpose of getting the right expertise immediately to attain the critical mass for the group.

The working group on institutional framework collaboration requires representatives from custodian of administrative data user-producers and census and surveys specialists, legal experts, managers of business register in various agencies. Due to high staff turnover and the urgency of the tasks, the only option to get readily available workforce is to recall former or retired staff qualified on these issues, provided that they receive revision course on 2008 SNA.

The computation working group will require necessarily a pool of IT experts, database managers, census and survey processing specialist, junior national accounts from various agencies, since there is a high staff turnover and the computation is at the last stage of the program, the programme manager have options, including request for managers of NSO and Central Bank to redeploy IT experts within NSO and Central Bank to join the group, training and recruitment of economist and statistician. In addition to the basic course, the programme manager will request the experienced and retired national accountants to provide training to statistician and IT students from university and statistical training centers, the critical mass of the computation group will be reached accordingly.

The groups should be supportive and complementary to each other. Typically, the application group is composed by pool of qualified and senior national accountants, which are not familiar with the latest IT technology, database management and statistical software. While the computation group will be mainly composed by junior staff and IT experts, database and software. Finally, the difficult case where handful national accountants must perform three components of the programme at the same time must be avoided, due to the heavy workloads, the programme manager should ensure that situation will not occurs, because the programme will not be sustainable and this will result in the failure of the programme.

The expenditure has to be rational and correspond to the resources which may be mobilized from the government budget and donors. It is suggested to use systematically and effectively use administrative data sources, with focus on quality improvements of coverage and classification used. In many countries, the heavy response burden, low response rate and delays caused by surveys are a serious issue. As a result, the groups and the programme managers should not recommend additional surveys, because this will make the programme expensive and may drastically increase the resource requirements.
Depending on national circumstance, decision to develop surveys, purchase equipments, mission travels, vehicles or construction of building for the programme may occurs and less likely in some cases. Due to constraints and lack of data sources, some countries therefore are obliged to implement topics of the 2008 SNA, only within the constraints of existing data sources and available resources. Each groups and committee may have to submit their minimal resource requirements for a well functioning group; the overall budget may be submitted to stakeholders and bilateral partners. The following tables shown below are meant for illustrative purposes only, and the real budget of a group or committee will depend on the mobilized resource at the disposal of each national statistical system.

**Table 1: Suggested Budget for the programme implementation plan**

<table>
<thead>
<tr>
<th>Financing</th>
<th>Type Activities</th>
<th>Number</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Selection, appointments of members of the working groups and launching meetings</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of the groups board, approval of projects structure and budget for the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>implementation projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meeting on programme planning and resource mobilization</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Honorarium for: board members, project manager, sub program managers and</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>members</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>National workshops for developments of methods</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training of groups and board on 2008 SNA</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version of SNA in working languages / national languages</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>National workshops for restitution of outputs (session per groups)</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel, missions, documentation, mission and study tours</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transportation / vehicles for the component of the programmers</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Review of data sources and development of bridge tables proxy towards SNA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>concepts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating expenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restitution workshops, tabulation, computer program and other IT requirement</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.8 Execution and Evaluation

42 After completion of the resource plan, the next step is to execute the implementation plan, manager should be very decisive and willing to take risks during the execution, the assigned members of group will carry on their respective responsibility and hold accountable, because committee is mostly useful during the design and planning stages. To avoid unnecessary risks and the failure of the programme, manager will set milestones and continuously evaluate the progress at all times, potential problems should be identified immediately to adjust the plan according to the changing environment, group and individual members should be encouraged to provide feedback, evaluation and progress report; the group will develop a set of quality assurance including: monitoring of the activities and outputs of the programme. The full detailed set of quality assurance for 2008 SNA has been developed by UNSD\(^1\) for regional workshops including diagnostic tools, regional assessment and implementation phases. Quality assurance collects proof that evaluates the effectiveness or quality of activities that are being undertaken by the project groups. An assessment can then be made whether current quality levels are satisfying the "benchmarks" or quality requirements set out in the program plan. These quality assurance activities are undertaken independently of the Programme Manager.

43 Continuous and regular evaluations, including monthly and quarterly reports on activities and quality assurance will be submitted to the board, reports could contain quality assurance and evaluation on: new recruitments of staff for the working groups, disbursements and expenditure of funds, reports of workshops of the groups, mission reports and documentation and the intermediate compilation and products of the groups. The board will review the reports against the standard quality procedures, accuracy and the progress made toward the final results. For instance, a quality assurance activity could be whether the accessibility to financial reports, the translation of bridge tables into computer programs. The quality assurance group could review the memorandum of agreement to access the financial database. Another example of Quality assurance activities could be availability of the sound methodology for topics and correspondence tables compatible for a proxy of the 2008 SNA concepts.

With this function, the quality assurance reviews the work (within established guidelines) of all individual project component groups, as well as the Programme Manager. Quality assurance reports that are provided to the Programme Board may prompt the Project Board to implement changes in existing procedures or assignments and instruct the Programme Manager to act accordingly.

Communication

44 Since the compilation of SNA is organized under networks of groups, committees and meetings, to ensure a smooth operation of the overall implementation process, communication among all parties involved is a crucial requirement. This includes communication between the different entities involved in the direct work on carrying out the project, those shown and discussed in the diagram above, but may also involve communication with bodies outside of the immediate process (e.g. important users or data providers).

Proper management of all communication channels is one of the functions of the Programme Manager. While it sometimes may appear easier and simpler to have direct communication among individuals or groups in this process (e.g. the compilers group may raise additional questions to the institutional group), it is preferable that all such communication follows established procedures, which would involve the Programme Manager. This is due to the fact that some seemingly small questions may point to substantive problems that should be known to, and may require action by, the Programme Manager to ensure a successful completion of the programme and ensure that it meets the quality requirements.

The result of the implementation of 2008 SNA impacts agencies, legal system and the fiscal systems, negotiations and the future of the country are based on the SNA figures. They have to take measures in response to revised SNA figures, such as media and newspapers. These actions have to be prepared in time, so proactive communication is important on all aspects of the project. The Programme Manager must make sure that team members, customers and stakeholders have the information they need.

Communication is also a vital way to manage expectations about how the project is going and who needs to be doing what. It is advisable to set up a communications plan that includes categorizations of types of information that needs to be exchanged with stakeholders, who these stakeholders are and when the information needs to be provided. The stakeholders in this case may include statisticians of NSO, CB, and MF survey programmes, users of statistics and companies which provide reports.
Chapter Two: The Methodological Application Sub-program
2.1 Introduction

The main duties of the application groups are: to review the main changes from 2008 SNA, to select the priority topics for implementation according to criteria that they should endorse including quality of data sources, effect of the topics on GDP level or on the balance sheets and on their own capability to develop national methodology, correspondence tables and approximation, develop national methodology for the topics selected topics, including developing proxy of the topics from data sources to the concepts of SNA and finally to refer topics and its methodology to the institutional groups, in case the topics require extensive collaboration, in terms of data sources or developments of topics.

After identification of priority topics, the groups will assess whether the concepts of the SNA related to the main changes are clear enough and can be implemented immediately, in other words, a practical modified version, of the changes in the 2008 SNA should be undertaken for some topics, or whether the concepts of the 2008 SNA are similar to the concepts of prevailing practices in business accounting, public accounting, surveys and censuses. While a practical interpretation for some topics of SNA may be better suited for communication and future work, the benefits would need to weight the costs of adapting the SNA concept to national circumstances. Alternatively, simply using the concepts of 2008 SNA for some unproblematic topics without practical interpretations and methods would save resources that could be better spent in the other aspects of the implementation process.

According to experience, the SNA is very abstractive and attempt to encompass several cases and remain very broad; as a result, the SNA should be accompanied by handbooks, manuals, guidelines with practical definitions and examples to national context for the topics selected for implementation. Anyway, the implementation group will review methodology on each concept in order to determine whether these methodologies require national definition or practical compilation methods, the NSO should engage in a discussion with national users and producers of statistics. If users are requesting clear methodology instead of concepts or broad guidelines, they need to give clear justifications for their proposals. Alternatively, the capacity of the producers of statistics must be considered, since developments of methodological notes will impose burden on data collection process and might also generate confidentiality issues. In African countries, to have the 2008 SNA in French and main African languages are identified as a major requirements. In summary, the group has to develop specific methods of application for topics, including adaptation to national definition. Countries might also realize that their terminology of business accounting differs substantially from the economic accounting of the SNA and may require changes from the business accounting system, the SYSCOA and OCAM were highly influenced by the request from SNA.

2.2 Review of main changes

The application groups will have to review the main changes in the SNA resulted from globalization, financial innovation, public sector and trends in economic analysis that focused on balance sheets and some impacts on the other account. The full list main changes, with around fifty topics can be found under annex 3 of the 2008 SNA (pages 581 to 601). To summarize, the main changes from globalization and the efforts of harmonization with the BP 6 are on the subjects of predominant residence, internationally mobile individuals, and complex
corporate structures, such as holding companies and special purpose entities and multi-territory enterprises. The main changes from financial assets with were pension schemes, guarantees, repurchase agreements, arrears, nonperforming loans and index-linked instruments. **The main changes related to non financial assets** contains the treatment of land, water, mineral exploration, capital services, military assets, research and development, originals and copies, goodwill, data bases, mineral exploration and evaluation and costs of ownership transfer.

The proposed changes and clarifications on public sector data are covering the topics related to public enterprises dividends, taxes on an accrual basis, privatization, sector delineation, public-private partnerships, and restructuring agencies. The update of the SNA covers issues related to financial services and insurance at both current and constant prices, including non-life insurance. The major changes concern the capitalization of defense weapons systems, and the inclusion of data on capital services in the calculation of non-market output, because failure to take these into account caused biases in data.

**Graph 2: Review of main Changes**

This manual is intended to deal with the upper-level of the above graph, in other words, effect of main changes on the core set of accounts. The issues of statistical infrastructure and basic economic statistics are covered under separate publications and studies.
The first question is to set priorities in the list of candidate issues in the 2008 SNA, once the selection of issues is complete, the group will review existing data sources and approximation of the aggregates to the concept of SNA and develop a bridge tables. Depending on many parameters, including the importance of the changes in the contributions to GDP, the availability of data at the disposal of NSOs, some topics will require institutional collaboration framework with other custodians of databases and therefore require further methodological works and interpretations among stakeholders.

In the case of African statistical system, while the bulk of changes to 2008 SNA topics are primarily associated with balance sheets, the changes under non-financial assets and the capitalizations of defense weapons systems will have considerable implications on GDP, normally, the priority topics will therefore focus on these changes affecting GDP and on flow operation rather on stocks, the guide will provide some methods on the changes related to non-financial assets and capitalization: research and development (R&D), military weapons system, mineral exploration, software originals and copies, data bases, cost of ownership transfers (COT), land and water.
Moreover, outstanding subjects from 1993 SNA, with further clarifications in the 2008 SNA are very pertinent for African countries and should be parts of priority, this is a suggestive lists: informal sectors, agriculture under the items cultivated and uncultivated biological resources of the 2008 SNA, in other words, orchard growth. The informal sectors and imputed rent are relevant due to their large contributions in terms of employment and their substantial impacts on GDP in developing countries, an increase between 10-20% of GDP for each topic, meaning that should the two topics are implemented the GDP may increase by third, this may pose a serious problem in the communication of changes described in the last chapter of the manual.

The most urgent topics related to financial issues are probably the obligation to allocate FISIM by sector, in the 2008 SNA and the output of the central bank. The critical topics related to globalizations are require to ensure the harmonization of SNA and BP6 in developing countries, among other the concepts and topics related to centre of predominant centre of interest, residence, good send abroad for processing and merchanting.

According to the importance of these subjects, the methodology groups will develop manuals and practical calculation of these topics. In the next section, the chapter emphasize on application of methods related to the issues of non financial assets related to R&D, military expenditure, orchard growth, and informal sectors. The other issues will be briefly reviewed.

### 2.3 Research and Development

#### SNA Recommendation

The 2008 SNA recommend that R&D should be recognized as capital formation, with the inclusion of R&D expenditure as capital expenditure, patented entities no longer feature as assets in the SNA (10.104-5 SNA). The R&D consists of value of expenditure on creative work undertaken on a systematic basis in order to increase knowledge and the use of knowledge to devise new applications. The SNA recognize the difficulties in the valuation of the GFCF in R&D and even recommend that the issues related to derive measures of R&D, prices indices and services lives should be provided in specific guidelines, handbook methodology and practice. (10.104 SNA)

#### Proposed methods of treatment

The mostly widely used practical methods is probably the Frascati manual (FM), which indicated methodology to develop a proxy from surveys and administrative records on data compiled in the Frascati manual. The Frascati Manual (FM) identifies three principal components of R&D and defines them thus:

a) Basic research, defined to be experimental or theoretical work undertaken primarily to acquire new knowledge or the underlying foundation of phenomena and observable facts without any particular application or use in view.

b) Applied research, defined to be original investigation undertaken in order to acquire new knowledge… directed primarily towards a specific practical aim or objective.

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c) Experimental development, defined to be systematic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.

60 It will be necessary to provide a breakdown of expenditure by the three above categories; the SNA 2008 recommends that All R&D output should be treated as an asset, irrespective of its nature or whether it is made freely available. Given that most R&D is undertaken on its own account and the owner uses the services of the R&D internally, then, following the current recommendations in the 1993 SNA, the bulk of R&D capital formation in practice would be made by summing the cost of inputs. These should include estimates of capital services from non-financial assets owned by the producer that are being used to produce R&D output. This should certainly apply to market production and also non-market production if the Canberra II Group proposal to replace consumption of fixed capital with capital services when measuring non-market production by summing costs is incorporated in the updated SNA. Using input data to measure R&D output should produce acceptable estimates, overall. Most R&D output is produced over several years and the SNA recommendations concerning other produced assets should apply. Most R&D is produced on its own account, which, under the current recommendations, means that fixed capital formation should be recorded as the R&D is produced.

61 The most important source for R&D data is the R&D accounts prepared according to the FM. These accounts have been compiled by advanced countries for years, and they are well established. There is no other comparable existing source of data, hence it follows that we should look very closely at the FM data and assess their suitability for deriving estimates of capital formation of R&D and other R&D statistics. One of the main objectives of the FM is to measure the total expenditure on intramural R&D activities. It thus differs in several respects from what is required for deriving capital formation of R&D. First, the FM intramural measure of R&D expenditure needs to be augmented by a measure of extramural expenditures in order to get an estimate of total R&D capital formation by a unit. To avoid double counting, sales or transfers of R&D from the donor unit need to be subtracted from its intramural R&D expenditures to obtain its capital formation of R&D. Second, the FM's measure of ‘total expenditure’ comprises the following: Labor costs, other current costs, capital expenditures (including land), Subsidies less taxes on production.

62 The FM systematically describes the differences between GERD and the 1993 SNA measure of R&D output. In brief, the FM measure of labor costs is very similar to compensation of employees. Other current costs correspond to intermediate consumption, with the principal difference being that changes in inventories of inputs are not taken account of. Capital expenditures need to be replaced by estimates of capital services (principally consumption of fixed capital (CFC) and a return to capital) for market producers and CFC for non-market producers. This requires using the perpetual inventory method (PIM) to derive estimates of capital services and CFC using the capital expenditure data relating to fixed assets collected in FM surveys. Also, taxes on production should be included and subsidies excluded in GFCF. The institutional sectoring in the FM differs from that in the SNA.

63 It is concluded that it is feasible to construct bridge tables between the Frascati system and the national accounts and that most of the additional data are obtainable from R&D surveys. The task force also recommended that future revisions to the FM should include features to
overcome the few significant shortcomings. Making changes to the FM will address many of the problems, but national statistical offices will also need to play their part. First, they will need to undertake the additional work required to meet the revised recommendations in the FM. Second, they will need to ensure that their R&D surveys are adequately integrated with the business surveys used to support the national accounts, such as using the same business register and designing their R&D surveys to produce adequate estimates by sector and industry of activity at the required level of detail. The Frascati system provides the best means of deriving estimates of R&D GFCF. However, there are shortcomings in the Frascati data and the FM should be amended to better support the needs of the SNA. National statistical offices will need to integrate their R&D and business surveys.

Recommendations

The following recommendations are made:

- All R&D output should be treated as an asset, irrespective of its nature or whether it is made freely available. In the latter case, the asset should be recorded on the balance sheet of the owner of the original and be regarded as providing a free service until it becomes obsolete.
- The definition of an asset should be reviewed to ensure it covers the assets of non-market producers adequately.
- The Frascati system provides the best means of deriving estimates of R&D statistics, principally gross fixed capital formation (GFCF). However, there are shortcomings in the Frascati data and the FM should be amended to better support the needs of the SNA.
- Most R&D output is produced over several periods and the SNA recommendations for the production of other assets should apply. Most R&D production is on own account, which implies recording it as GFCF as it occurs under the current recommendations.
- Patented entities should no longer be recognized as assets in the system.

2.5 Military Weapons System

SNA Recommendation on (§10.87)

MWS include vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers. Military fixed assets meet the criteria of fixed assets because they continuously provide defense services to the nation, protecting their liberty and property, or service of deterrence. The notable difference between 1993 SNA is that GFCF of military expenditure is limited to civilian uses and purposes in the 1993 SNA. Repeated or continuous use of MWS are treated as fixed assets, and items that are essentially designed for use on a single occasion should be treated as materials and supplies inventories. Items such as bullets, bombs, grenades, and torpedoes are designed for a single use, and although durable, cannot generally be thought of as items that are used continuously in production. These items are analogous to coal, which the SNA uses as an example of a good that is durable but not used continuously in production. These items serve as materials and supplies for military forces, not as the equipment that they use on an on-going basis.
General government’s purchase of weapon systems is treated as gross fixed capital formation. The accounts will also record consumption of fixed capital which is charged on the existing stock of military assets, based on GFCF that occurred in earlier periods. In this example, we assume the value of consumption of fixed capital. The contribution of weapon systems to general government gross output and final consumption expenditure comes from consumption of fixed capital rather than from the purchases of military weapon systems. The major implications of the recommended treatment on the major balancing items are that general government value added and GDP would be higher by an amount equal to the consumption of fixed capital on weapon systems General government net saving would be higher (lower) by the difference between gross fixed capital formation and consumption of fixed capital.

There will be an impact on several accounts (the secondary distribution of income account and the capital account for general government and the total economy, and the corresponding accounts for the rest of the world) that has not been illustrated in the tables. The 1993 SNA currently recommends that grants in cash or kind relating to transfers of weapon systems should not be treated as investment grants (in other words, capital transfers), but rather as current transfers (10.138). This recommendation would need to change if the weapon systems were treated as fixed assets. Saving and the current account balance would be affected, but net lending/net borrowing would not be.

Proposed methods of treatment

The changes in classification affect international standards. For example, transfers of military equipment from one country to another would need to be reclassified as capital transfers rather than current transfers, a change that would affect the Balance of Payments Manual. The Government Finance Statistics manual would also clearly need to be changed to reflect this set of recommendations.

Regarding feasibility, important obstacles is probably the level of secrecy that surrounds military expenditures in many countries. While all countries operate their military budgets with some degree of secrecy, this issue may be especially problematic for countries with a high level of secrecy. For such countries, it may be necessary to use some rule of thumb to estimate defense equipment gross fixed capital formation. For example, perhaps the GFCF might be estimated as a fixed share of the total defense budget, based on the GFCF shares reported by similar countries that do have information on purchases of defense equipment. There may be more serious obstacles to implementation for the change in inventories, because many countries do not yet have source data available on inventories of munitions. Again, recent changes in accounting standards are leading many countries to develop these data, but this recommended change may take some time to accomplish.
### Table 3. Recommended Treatment of Transactions in Weapon Systems

<table>
<thead>
<tr>
<th>Uses</th>
<th>Resources</th>
<th>Transactions and balancing items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-financial corporations</td>
<td>General government</td>
</tr>
<tr>
<td>Rest of the world</td>
<td></td>
<td>P.6 External account</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exports of goods and services</td>
</tr>
<tr>
<td>Total economy</td>
<td></td>
<td>P.7 Imports of goods and services</td>
</tr>
<tr>
<td>General government</td>
<td></td>
<td>P.1 Production account</td>
</tr>
<tr>
<td>Non-financial corporations</td>
<td></td>
<td>Output</td>
</tr>
<tr>
<td></td>
<td></td>
<td>K.1 Consumption of fixed capital</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>P.3 Use of disposable income account</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>K.1</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>P.51 Capital account</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gross fixed capital formation</td>
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<tr>
<td>−8</td>
<td></td>
<td>K.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consumption of fixed capital</td>
</tr>
</tbody>
</table>

### Table 4. SNA93 Treatment of Transactions in Weapon Systems

<table>
<thead>
<tr>
<th>Uses</th>
<th>Resources</th>
<th>Transactions and balancing items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-financial corporations</td>
<td>General government</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P.6 External account</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exports of goods and services</td>
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<td></td>
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<td>P.7 Imports of goods and services</td>
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<tr>
<td></td>
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<td>P.1 Production account</td>
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<td>K.1</td>
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<td>P.2 Intermediate consumption</td>
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<td></td>
<td></td>
<td>P.3 Use of disposable income account</td>
</tr>
</tbody>
</table>

**2.6 Software originals and copies, Data Bases and Cost of ownership Transfers**

**SNA Recommendation on Databases (§10.110 to 114)**

The 2008 SNA recommend treating all database holding data with a useful life over a year as fixed assets, either for sale or produced for own accounts, in the 1993 SNA only large databases were recognized as assets. (10.110). The main difference between the two system is that 1993
SNA recommend that “large” databases should be treated as fixed capital, this was ambiguous because “large” was a subjective qualification, this has been dropped. As a result, the 1993 SNA asset category computer software has been modified to include a single category in the classification of assets for “software and databases” with further disaggregating into “software” and “databases”.

Proposed methods of treatment of Databases

2.7 Outstanding 1993 SNA Subjects

For African countries, major changes recommended by the SNA93 were not implemented, due to several reasons, including quality of data sources, human and financial constraints in terms of qualified personnel to process data sources and finally inadequate institutional collaboration. These impediments factors are identified and detailed during meetings of African statisticians. With the programs addressing these issues, outstanding key changes recommended by SNA93 will be implemented, especially three major topics: the inclusion of informal sectors which accounts around 15% of GDP if properly computed, the imputed rents which may also accounts over two digits % of GDP and orchard growth.

2.7.1 Informal Sector

Due to the importance of informal sector and economy, the 2008 SNA dedicated the full chapter 25 on this relevant topic for African countries. ECA also develop a handbook on the measurement of informal sector in Africa.

SNA Recommendation on (Chapter 25 §)

Due to rigorous methods conducted by OECD, ICLS, ILO and Delhi Group, the revised 2008 SNA attempt to reduce the difference between 1993 SNA and the other definitions, accordingly the revised SNA present the other definition and also very cautious on the application of some of the criteria used to define an informal sectors, the main clarifications and refinement compared to 1993 SNA on informal sector contains the following disclaimer:

- The 2008 SNA is cautious on the use (or exclude) the size criteria as part of the definition of informal units due to diverse national practices in applying the size (§25.22), although the Delhi Group and ICLS agreed on units under five employees.
- the 2008 SNA is cautious (or probably exclude) the registration criteria as part of the definition of informal units, due to several practices and type of registrations, different countries have different practices in registration, according to turnover or employees size, (§25.20).
- However, the revised 2008 SNA support some of the 15th ICLS definition of informal units, the criteria of market production is dropped, accordingly an informal units sell some or all its productions rather than most or all (§25.41, exclusion of units producing purely for own consumption)
- The 2008 SNA partly support the exclusion on grounds of activities, including agricultural activities and domestic employees (§25.46)
With these the ICLS definition is found in §25.45

**Proposed methods of treatment of Informal Sector**

The SNA provide detailed documentation and methodology to measure IS, including methods by ESCAP manual on informal sector, OECD/ECE handbook on measuring non observed economy and number of manuals developed by ILO. These methods are reviewed in ECA manual on measurement of informal sector, the main outline is (i) to extrapolate the result of surveys on informal sector to the national economy (ii) to use the existing data collection vehicles, the most regular is certainly the household surveys (§25.83) or 1.2 survey and not to recommend a separate informal sector surveys.

**2.7.2 Imputed Rents**
2.8 Adoption of the new classification

The classifications are an integral part of the SNA and an important component of the SNA: “The SNA is a set of recommendations, which are expressed in terms of concepts, classifications, and accounting rules” (SNA chap 1, §1). Classifications are the main tools to describe activities, operations from different sides and to reconcile information from various sources. Normally, the classification of activities ISIC-4 and products CPC-2 are the most compatible for the 2008 SNA. The 2008 SNA programme will use the classification from the business register and industrial statistics. Normally, the NSO tasked another teams to develop a national classifications derived from ISIC-4/CPC2 and then recode the units in the business registers accordingly, in addition surveys and censuses questionnaires and administrative data within the NSS are already adopting the revised classifications. Depending on national circumstances, this adoption of classifications of activities and products may be carried out in parallel or prior to the 2008 SNA implementation, in most cases, bridge tables and recoding of activities and products will be required to ensure that the new series of accounts will use the ISIC-4 and CPC-2. Beside activities and products, the other classifications in the SNA, including classifications for sectors and operations, national adaptations may not be necessary, and this will save time and resources for other pressing activities of the programme implementation.
Chapter Three: Institutional Framework Sub programme
3.1 Introduction

Due to specific circumstances of many African countries, this chapter of the guide is devoted to the institutional issues related to coordination and allocation of responsibilities within the NSS, among other, between National Statistical Offices (NSO), Central Bank, Ministry of Finance and other line ministries for the implementation of the 2008 SNA. The institutional framework project cover issues related to the access to administrative data at the custody of national agencies, central banks and line ministry.

Although the administrative data held by Central banks and Ministry of Finance have fundamental role for the SNA compilation, the group will not restrict their occupation on improving the access and use of databases held by these key agencies, but will review other database and sources at the custodian of line ministries, agencies or NGOs, for instance data sources on agriculture, tourism, transport and communication.

Without high level collaboration in terms of methodology, review of data sources and commitments at the highest levels of executing agencies, it is almost impossible to implement the bulk of topics of the 2008 SNA. Upon realization of an acceptable level of collaboration, the institutional group and the application will consider the key topics then propose methodological approach to implement the selected topics, the last section will provide guidelines and national methodology for approximation of those potential topics which usually are theoretically to be implemented under collaborative mechanism designed by the institutional framework group.

Graph 4: work flows of the framework group
3.2 Setting up the format of collaboration

The 2008 SNA represents a serious challenge for national statistical system (NSS) in some African countries, especially for countries partly adopting the 1993 SNA. However, this also provides an excellent opportunity to reinvent and reestablish the level and format of collaboration between National Statistical Offices, Central Bank, Ministry of Finance and other line ministry with a view to make improvements. The first task of the group is to work out an adequate mechanism of collaboration.

The weakness of the statistical system should not be a grounds for delay in the rebuilding of the series of SNA, although the quality of SNA rely upon the data that the statistical systems are able to generate, frequently, the pressure applied by the compilation of new series of SNA with a base year will improve the statistical systems such as data collection, surveys, censuses and the access to administrative data. One the other hand, the adoption of a revised system 2008 SNA is not just graft the concept of some topics to existing series, but should be through a new base year of SNA and series of SNA complying with the 2008 SNA. The choice of a benchmarking year will depend on the availability of structural database such as population censuses, household surveys and to avoid years with economic confusion such as high inflation rate.

The group will make an inventory of data sources and requirements, then for each data sources, the group will review the custodian of each database, including policy on how to access the data, the issues of confidentiality for information sharing such as legal, fiscal return and financial disclosure. The group will review the data and determine the policy and access of administrative data, surveys and censuses. Concerning administrative data, the group should review the policy on database with exhaustive coverage, sample of units and lists of units limited. Special attention should be given emphasize to -but not - two main administrative data sources of high interest for SNA, namely the business registers and the financial statements databases. The process described below may be applicable to others frame, lists and other database.

There are number of format of collaboration that the institutional group with its core members the NSO, Central bank and Central banks should explore on each data sources:

- Establishment or revamping of technical committees and organizations of regular training and meetings between the agencies;

- The need to develop a memorandum of understanding between agencies to access and to process financial database;

- Service level agreements, including provision of services to the CB and MFB in the treatment and processing of administrative data.

The institutional requirement concerns mainly the collaboration between custodian of administrative data, concerning national accounts. The main challenges are accessibility, quality and treatments of administrative data. Concerning accessibility, currently there are several options for accessing the financial statement database in the context of collaboration between the NSO, central bank and the Ministry of finance, each option has impacts on the involvements of agencies in the compilation of SNA. Another key responsibility of the group is to promote and to adopt the use of same classifications across the national statistical systems; the same
identification and classifications are required for improving the quality, for comparison and for merging the existing databases in the country.

### 3.3 Financial reports database

83 The rule and regulation on financial statement, especially the submission of financial reports depend on the law and process of creation of establishments and the financial reporting requirements. The laws and decree related to the obligation to submit financial statements for companies indicate the deadline for submissions, with the number of copies:

- Three copies of financial reports, one to the NSO as a destinataires of financial statements, one copy for the tax revenue authority, once copy for the central bank and one copy for the national statistical offices. In this case, each organization use the financial statements for their own purposes, the ministry for taxation purposes, the central banks for the approval of loans and other studies and the NSOs for statistical purposes.

- Place of submission: typically, the Ministry of finance is the recipients of the financial statements, therefore the Central Bank and Statistical Offices collected one copy each from the Ministry of Finance and Budget.

84 Typically, according to the country reports, the countries in the above category are some Francophone countries including Senegal and Togo. In a specific case of Cote d’Ivoire, the NSO receive copy of financial statements and maintained a financial statements database on behalf of Central Bank and Ministry of Finance.

85 Computerization of financial statements, typically the tax authority are responsible for the creation of databases on financial statements, the agreements between the NSOs and the Ministry will consent the NSOs to collect or access part of the databases with the variables of interest for the compilation of SNA and for companies over a threshold and therefore important for the economy. Typically, according to the country reports, the countries in this category are from the Anglophone countries, among other, South Africa. The memorandum of understanding or service level agreements were developed in such a way to ensure the confidentiality of financial statements for individual companies, for the use of tax returns, The NSOs have the obligation to provide trainings and to develop programs of tabulations to the Ministry of Finance, in these case the NSOs will not have access to the individual companies, but will received the aggregates SNA branch by sectors. Close collaboration and monitoring will be required in this case to ensure that qualified persons are conducting the processing of database and provide the calibrated weights on the sample financial statement on profit and loss, income and expenditures.

86 The central Bank is a destinataire of one copy of financial statements according to mandatory reporting and some on voluntary basis, because companies have to apply for financial loans to commercial banks which forward these reports to the central bank. In this case, the central bank maintains a financial statement databases. The NSO and the central bank agree on a format of collaboration, the NSOs provide trainings and qualified staff to work on the databases and the NSOs will receive the final products. Typically, according to country reports, the countries in the above category are from the French speaking countries in Africa including Madagascar.
As a last resort, the NSO is forced to conduct regular data collection on financial statements, relying on the collaboration with private companies and conduct surveys to collect financial statements from companies, this will entail a further resources requirements in terms of data collection, data processing, training of surveyors and additional operating costs such as transportations, mailing and salaries. However, the scope of this light survey is limited to major companies without a prior phase related to questionnaire design, however to obtain financial statements from major companies are imperative and if the NSO could not get their reports by the other means. Typically, according to country reports, many francophone countries are conducting these data collection.

At the end, the country practice is a combination of the above cases; the NSOs receive regularly from companies some fraction of financial statements, some portion from central banks and Ministry of Finance and finally some proportion through data collection. The exact proportion depends on national circumstances.

To conclude, the two main possibilities for NSOs to access financial statement are:

- The law on conducting business specify the requirements to submit copies of statements for each individual company to the Finance Ministry, Central bank and NSOs, the majority of cases in French speaking countries in Africa,

- Through amendment of statistical acts, with strong mandate not only to conduct surveys and censuses, but an acts which supersede over laws or confidentiality and giving access to any administrative databases (with due consideration to confidentiality) detained by custodians in the national territory.

Graph 5: the various collect process of financial reports
3.4 Business Register

90 The maintenance of Business register require an extensive collaboration between the three key agencies of the NSS, the business register has multiple purposes, for sampling frame and coordination of surveys. An effective business register is critical for reducing the response burden from surveys and for extrapolation of surveys results to national economy. Several sources beyond the NSO are important providers of information when maintain the Business register. They might provide business activity descriptions, product descriptions or other kinds of information about the units. Generally, when business activity descriptions are obtained from non-statistical sources, it is important to ascertain that they contain actual descriptions of the businesses’ activities, not just legal or statutory descriptions.

91 The main administrative source for maintenance of Business register include tax files, database, pension files, VAT database, payroll and social security databases. Additional sources to maintain business registers may include commercial nature like chambers of commerce, association of industrial companies or export processing zones. Due to the relationship between statistical register and other business such as tax files, VAT database, social security or association of companies or NGOs, and due to constraints of resources of the NSO to collect information, it is required to use and adapt information from the other register to maintain the statistical register. Incidentally, the reconciliation of databases, any update of business registers will required that the database and its custodians -NSO, Central Bank, Ministry of Finance, social security and others - to adopt the same classification and use a unique identification number for each company. NSO should provide the necessary support to generate link between various id numbers, tax files identification number, the statistics and the financial identifications number.

92 The national agencies will therefore undertake the following process:

- Develop explanatory notes, indexes and correspondence tables between identification numbers for instance NSO, CB and MF;
- Reconciliation and uploading of tax files and other files to maintain the statistical registers;
- Timely sharing of information and dissemination to the update, cease of activities of units to the NSOs.
- Linkages between statistical register and financial statement databases
- Submission of weights and sampling to the MF and CB, in extrapolation of results of financial statements and other surveys into national accounts.

93 The process will ensure that the CB and MFB are in a position to generate national accounts aggregate for the topics and sectors under their responsibilities. NSO update the statistical registers within the NSOs, including industrial surveys, profiling of activities and branch. The last resort is to conduct surveys using existing data collection mechanism or additional modules,
3.5 Mainstreaming the 2008 SNA in NSDS

94 The medium-term objective of the group is of course to maintain the momentum and improve the NSS; the products of the exercise should be integrated in design next generation of NSDS. According to option adopted for data collection of financial statements or other administrative data, the responsibility monitoring and reporting role for implementation of topic under the institutional framework will be a bit different: Practically, the group may align their activities with the NSDS process, alternatively the products of the group will be an input for the designer of NSDS during the integration of sectors or subject matters in the NSDS.

95 Concerning the treatment of administrative data, in some cases, the NSO receive individual financial statement from countries- the case in French speaking African countries- this assume that the NSO is the main compiler will apply the methodology described in the application phase on the priority topics of the 2008 SNA implementation project, still the NSO have to organize national workshop and training sessions with central bank and ministry of finance, before applying the methods; In other countries, the NSO receive aggregate data derived from financial statements, already processed by Central bank or Ministry of Finance, the typical cases in English speaking countries in Africa- the three agencies will be required to have training and working sessions on the impacts of the revised 2008 SNA, with updated bridge tables, then the Central Bank and Ministry of Finance will process financial statements, and submit the results for review and reconcile the data from other surveys conducted by NSOs, after iterative process, the final results will be uploaded in the system.

96 So far, the main issue is probably to access and to assemble critical mass of financial statements or other administrative data in general, once the confidentiality issues is addressed, there is limited concern over the issue of the format of processing of financial statements or any administrative data in general, provide that there are sufficient personnel in terms of IT that the programme manager with the support of director of national agencies may redeploy within NSO or CB. Some NSO in French speaking countries, have over two hundred IT experts, due to their duty to compute salaries of civil servants and electoral lists.

97 In fact, the experience of the many countries indicate that agreement may be reached only after many months or years of negotiations, due to changes to various pieces of legislation, including acts on financial statements laws, the statistical acts before incorporate the change in the design of 2nd generation of NSDS. Due to confidentiality some countries have even suggested the development and submission of two different financial reports for same companies, one type of report for fiscal purposes and the other for other users like Statistics. Due to possible delays in the negotiation when NSOs having difficulties to finalize formal agreements, the group may resort to temporary and informal arrangement, which should be considered by the program board, with its core members NSO, MFB and CB, this entails further meetings and deeper involvements of managers of the three organizations. Since the negotiations are lengthy and an iterative process, which require approval by bodies, experts and even parliaments, a realistic timetable is required. Below is an estimated timetable for a country, before the national parties could reach their collaboration for one database or data source on financial statements.
Year 1
- Review of legislation concerning financial statements, fiscal declaration and statistical acts
- Review of different approach to collect financial statements, formal and informal

Year 1 + 4 Months
- Amendments of laws and acts associated with financial statements
- Allocation of adequate resources, equipments and staffs and identifications of trainings
- Data collection of financial statement

Year 1 + Month 7
- Data entry and data processing
- Tabulations

Year N+1
- The formal agreements is completed with the amendments required in the legislation
- Incorporate into the NSDS

| Table 4: Suggested Timetable |

98 Normally, the topics related to financial innovations and globalizations are better handled as joint projects of central bank and NSO, while the issues related to public sector and military expenditure may jointly handled by the NSOs and the Ministry of Finance.

3.6. Financial innovation and FISIM

99 The financial innovation is a major changes from the 1993 SNA to the 2008 SNA, the extension of the financial sectors to other entities providing services and new financial products will have a major impacts on the outputs of the financial sector and in the increased valued of recalculated FISIM, these will imply considerable impact on the GDP level, the output of the central banks and outputs of new financial services, the priority topic in this class is probably the revised FISIM. The FISIM topic could be implemented under the sub-program and therefore require collaboration between NSO and CB and the implementation of these topics are different according to practices.

100 Typically, the Central Banks compile financial accounts, including FISIM, the NSO may receive the financial sector accounts derived from the accounts of different financial institution, already processed by Central bank. The NSO and the Central Bank may organize training and working sessions on compilation of accounts of financial sector with updated bridge tables, then the Central Bank will process the data, and submit the results for review and reconcile the data from the real sector obtained by NSO, after iterative process, the final results will be uploaded in the system.

101 The alternative is to provide the raw data on financial sector to NSO, which will process the data according to the agreed methods in line with the new concept, this case may happen but very rare, due to the confidentiality of financial operations. In any case, the application of methods developed for financial innovations, including reclassification of financials products, inclusion of financial intermediaries in phase one will be approved and delivered through national workshops, training and working sessions. The NSO may also provide technical support, such as secondment of staff and database specialists.

SNA Recommendation on financial sector and services

102 The 2008 SNA has introduced a slightly more detailed classification of the financial sectors, divided into nine sub sectors as opposed to five in the 1993 SNA. (4.102) The 2008 SNA extends the definition of financial services beyond the 1993 SNA definition, to ensure that the increasing financial services over financial intermediation, these new services includes monitoring services, convenience services, liquidity provision, risk assumption, underwriting and
trading schemes. **Financial corporations are all resident corporations or quasi-corporations principally engaged in providing financial services to other institutional units.** The production of non-insurance financial services is the result of risk management, liquidity transformation and/or auxiliary financial activities. Risk management and liquidity transformation are productive activities in which an institutional unit incurs financial liabilities for the purpose of acquiring mainly financial assets. Corporations engaged in these activities obtain funds, not only by taking deposits but also by issuing bills, bonds or other securities. They use these as well as own funds to acquire mainly financial assets by making advances or loans to others but also by purchasing bills, bonds, or other securities. Auxiliary financial activities facilitate risk management and liquidity transformation activities. Financial auxiliaries – the units that are primarily engaged in auxiliary financial activities – typically act on behalf of other units and do not put themselves at risk by incurring financial liabilities or by acquiring financial assets.

103 The 1993 SNA chooses an approach based on the analysis of institutional units and emphasizes the aspect of economic activity. Financial corporations are defined as “…all resident corporations or quasi-corporations principally engaged in financial intermediation or in auxiliary financial activities which are closely related to financial intermediation” (§ 4.77). According to 93 SNA, the involvement in the loan-deposit business is not a necessary condition for identification as a financial corporation and there is ambiguity about the role of ‘own funds’ as a source for the provision of financial services. (§6.125) of the 1993 SNA explicitly excludes own funds as a source for intermediation activity and the associated services. Furthermore, the SNA indicates that the exclusive use of a unit’s own funds as a source of lending and investment does not give rise to financial intermediation.

**Proposed methods of treatment of FISIM**

104 The old treatment calculate FISIM as the total property income receivable by financial intermediaries minus interest payable, excluding loan from own funds and FISIM apply only to loan and deposits provided by financial intermediaries. The new FISIM apply loan and deposits from own funds, and calculated according to the formula.

\[
\text{New FISIM} = (r_L - r_r)y_L + (r_r - r_D)y_D
\]

Where: \( r_r \) = reference rate \( L=\)Loan \( D= \) deposits

\( r_L = \) Rate on loans
\( y_L = \) Stock of loans
\( r_D = \) Rate on deposits
\( y_D = \) Stock of deposits

L= loans including from own funds, calculated as: FISIM = (rL-rr)yL form own funds.

\( r_r \) the most widely used reference rate is the inter-bank rate for borrowing and lending.

105 The 2008 SNA recommends the consumption of FISIM to be allocated between users as intermediate consumptions by enterprises or as final consumption. The 2008 SNA remove the possibility to allocate FISIM as an intermediate consumption of the national industry. With the extended definition of financial sector and its productions boundaries, including the refinement of FISIM, the adoption of the financial topic imply significant increase in the level of output and level of GDP. These highlights further and extensive collaboration between Central bank and NSO.
3.7 Globalization

2008 SNA Recommendation on Globalization and Good for Processing

106 With globalization, increasing number of units have connections to two or other economies, further harmonization and consistency between the 2008 SNA and BP6 has been introduced, the new SNA and BP6 use the concept of “centre of predominant economic interest” to determine the residency of an units in the national economy. These complex international processing arrangements include the outsourcing and virtual manufacturing. These situations occur before but the globalizations increase multi territory production process. The 2008 SNA recommends that imports and exports should be recorded on a *strict ownership basis*, as opposed to hybrid system of the 1993 SNA, in most case the *imputed change of ownership*. For instance, in the 1993 SNA, good for processing abroad and then return to the country of origin as undergoing an *imputed change of ownership*, the goods send were recorded in exports and the returning goods were recorded as imports, although the processor never paid for the value of the goods upon the entry, also the processing country was shown as producing goods which were valued at their full value.

**Proposed methods of treatment of good send abroad for processing**

107 The strict ownership basis imply that the goods for processing should be valued at net approach as opposed to gross approach, in other words, since there is no change of ownership, therefore only the processing fee will be recorded rather than the full value of exported and re-imported goods or further exports to other country. For African countries, the net approach will have considerable impact on the level of imports and exports, although the current external balance will remains the same, the level of exports and imports in some countries may be reduced by 30 to 40%. In addition, the effect on the production process and input-output tables will changes considerably, the coefficients no longer represent the technological structures but an economic structure.

**Numerical examples**

<table>
<thead>
<tr>
<th>Imports</th>
<th>Exports</th>
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<tr>
<td>Goods changing ownership</td>
<td>Goods changing ownership</td>
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<tr>
<td>Goods received for processing for a non-resident</td>
<td>Goods dispatched after processing for a non-resident</td>
</tr>
<tr>
<td>Goods received after processing by a non-resident</td>
<td>Goods dispatched for processing by a non-resident</td>
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<tr>
<td></td>
<td>Trade credit received by B</td>
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<td>Inventories held by B</td>
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Table 5: Gross Approach – imputed change of ownership

Note 30 % of the processing output (30% of 20 = 6) has not yet been undertaken Table
### Tables 6: Net Approach, strict change of ownership only

<table>
<thead>
<tr>
<th>Imports</th>
<th>Exports</th>
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<tbody>
<tr>
<td>Goods changing ownership</td>
<td>Goods changing ownership</td>
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<tr>
<td>Processing fee paid to a non-resident</td>
<td>Processing fee received from a non-</td>
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<tr>
<td></td>
<td>Resident</td>
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</tr>
<tr>
<td></td>
<td>Resident</td>
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</tbody>
</table>

Where 14=84+30-100 and 60=110-50.

### 3.8 Example: A suggested bridge tables from business accounting to national accounts

Below is a practical example to illustrate the changes in the correspondence tables should be undertaken during the move to the new between 2008 SNA.
Chapter Four: Computation Sub Programme
4.1 Introduction

The last step of the implementation programme is of course the IT project or the computation sub programme, the main tasks include developments of strategy for computation, translation of bridge tables into computer programs, extrapolation of surveys and database to extend coverage into the national economy, then uploading the macro data (SNA) data with their metadata and their classification into the compilation system. Due to increasing function of information technology in national accounts statistics, the progressive steps of activities may be subdivided into iterative computation processes towards the SNA. Although national accountants have basic expertise on information technology, it is highly recommended to have pool of experts specialized in database and statistical data processing to avoid the difficult situation when handful national accountants are required to perform immense responsibilities including computing and analyzing.

The computation group consists mainly of specialists and database managers, the computation group will review the data sources for each topic, their tasks are primarily to:

- Adopt a road map for the computation, including selection of set of accounts for compilation, with consideration to the available human, financial resources and data availability;

- Assign metadata for each data, in other words, the SNA classifications, including sectors, operations, and products. Without prior classification and characteristic of the meaning of data, it is impossible to carry out the reconciliation of data;

- Develop, test and run computer programs from the correspondence tables provided by national accountants from the application, in other words, translate the correspondence tables into computer program for the selected data sources into the SNA;

- Affect and calculate weight for units in surveys and financial statements database using sampling frame, survey lists, including business registers. To extrapolate survey results and financial statements results into national coverage;

- Upload and centralize the processed and aggregated data sources into the compilation of SNA system and conduct progressive consistency review and harmonization of accounts;

- Reconciliation of national accounts data from various sources and approaches to have balanced national accounts;

- Downloads SNA data and decentralize SNA data for further revision, give priority for data from more accurate data sources;

- Reiterate the process of progressive review through downloading and uploading revised SNA data from different side, including between accounts of section of activities and balance of supply and use of products.

- Finalization of reports and dissemination of results to users of SNA
4.2 Computation strategy

110 The activities of the framework group will generate a list of data sources that the computation group will have access to and process. According to these accessed data sources, including surveys, censuses, and administrative data, the computation group will develop a computation strategy. The task of the computation group is to assess what set of accounts may be produced from the available data sources and the methodology developed by the application group. This section describes that a summary of strategy of compilation of accounts tables according to data sources and available methodology. The SNA is a set of accounts and provide a list of options of accounts according to the availability of data and the resources available. Theoretically, there are several methods to compile SNA; however, some itineraries are inaccessible and very costly. For African countries still partly adopting the 1993 SNA, it is therefore recommended to compile a new series of SNA, in other words, with a new base year compiled in compliance with the concepts of the 2008 SNA, to claim a correct implementation of the 2008 SNA. The implementation of 2008 SNA should not be considered like graft some concepts of the 2008 SNA within an existing series of accounts compiled according to the 1993 SNA. Such viewpoint is restricting the 2008 SNA as an adjustment of concepts; instead of profound change of system on the measurements the economy, flows, assets, and operations. Therefore it is rather risky to adopt the revised SNA without at the same time computing a new series of SNA with a new reference year.

111 The task of the group is to decide the core set of accounts to be computed, typically for African countries, the accounts of institutional sectors are the main accounts computed annually; these set of accounts are the government accounts, the rest of the world accounts, and the financial sectors, some countries have difficulty to compute the non-financial sector accounts, while many countries have serious difficulty to compute the accounts of household sector, as a result, the household consumption turns into a residual item. Habitually, the sequence of sectors accounts is limited to the non-financial component or up to capital accounts, formally known as “milestone three” of implementation phases. This choice of just one option decreases the computation workloads, but also reduces the quality and the accuracy of the sector’s accounts because the net lending or borrowing from the financial accounts and the non-financial could not be reconciled.

112 For African countries, the main purpose of SNA is to compile sequence of current accounts towards an estimation of GDP, with few countries still compiling balance sheets on a regular basis. In general, there are three possible approaches to compute the GDP, from the production side, from the expenditure side, and from the income side, but practically, in many countries, the production side is the main preferred approach. However, with one approach only, the computation is narrowed to the data required for the production side, even though some data are available for the other approach. The appropriate approach is therefore to combine the various routes towards the GDP, the main issue is probably the dominance given to each method and how to articulate the various methods.

113 There is no particular method to an adequate estimation of GDP, the combination of itinerary depends on national circumstances; the guide intends to provide some directions. Due to data and resource requirements, the guide is also cautious over some option and approaches which may be very complicated and very costly.
From the production side of GDP, the most direct itinerary to compute an accurate estimates of GDP is through of the accounts of the institutional sectors, the main difficulty remain in the computation of the accounts of the household sectors, which should be surmounted with adequate methods and using the quality data sources on censuses, household surveys and informal sectors. This direct approach confers a central role to financial reports from companies as the main data sources, assuming that the reports are accurate or reasonable estimates of rate of fiscal evasion. To further develop a rough supply and use tables, the financial statements should be complemented by surveys and censuses to subdivide the sectors into sections and division.

Alternative direction is probably to initiate the compilation process from the supply and use of products with focus on commodity flows, and subsequently the accounts of section of activities in ISIC will be aggregated to the accounts of sectors. This itinerary is complex, because it will requires surveys for each detailed level of products from production side and detailed surveys of household consumption at very detailed level.

The other alternative route to derive the computation of GDP is from the accounts of section and group of activities. The main data sources required for this approach are primarily industrial surveys and establishments surveys with the detailed classifications requirements for compiling the accounts of division and secondly the financial statements.

Graph 6: Road map and itineraries towards an estimate of GDP

The various path described above assume the compilation according to two main approaches of GDP, from the production side and partly from the expenditure side. Typically, countries practices are the combination of these itineraries, the difference is the priority consideration given to financial statements and the statistical sources. Countries may choose to utilize only one main data sources with one itinerary towards GDP, with a fundamental effect: some data sources are not fully utilized for the computation and some SNA data or aggregates will be
obtained as residual items. The income approach of compilation of GDP is still impractical in many countries, due to predominance of agricultural activities, informal sectors and confidentiality on profits and salaries; furthermore, the data from income approach is less authoritative than the production approach and the expenditure approach. As a rule of thumb, the coherence between production and expenditure should be firstly established, and then the income approach “if any” should be, adjusted to the reconciled data. As a result, the income approach is costly, complex, and will not improve the quality of SNA data.

4.3 Review of data sources

The computation approach and strategy determine the amount of data sources required and the amount of workloads, for instance the number of tabulation and bridge tables may drastically increase to hundreds of computer programs. The graphic above describe the typical situation of computation starting from the institutional sector accounts which entail the central place to financial statements, the statistical data sources such as surveys and censuses are complementary for disaggregating of the data from the financial reports. The square indicated the data sources that are useful for the computation of SNA, one of the square occupy a privileged place, this correspond to the financial statements of companies or the VAT Database. Comparison of data from various data sources, such as the accounts of branch, and the equilibrium between supply and use of products. These tools provide opportunities to unite the various data sources into an intermediate accounts. The round represent the national accounts tables and the GDP, at this stage, the flows and stocks between sectors, branch should be ensured through further consistency between supply and uses.
The amount of data sources to be exploited for national accounts and the itinerary adopted for compilation of GDP also determine the task assignments of the members of the computation group. The SNA set of accounts and its system of classifications already provide an indication of the allocation of responsibilities, the sector approach establish tasks along the sectors line with the exception of three persons required for the computations of non financial sectors (primary, secondary and tertiary sectors) and two persons in charge of the household sectors to process censuses and surveys, the minimum required for the sector approach is around ten experts. The human resource requirement for an approach with supply and use or input-output tables, depending on the details of classification and the statistical production process, sometimes national accounts division reconcile the final processed data from other division, while in some cases, the national accounts are involved in data collection and processing. Finally, the approach of GDP from the division or groups of activities according to ISIC will require at least thirty experts, based on a computation of one section of activities for each expert. The rebasing of national accounts with the compilation of full series of set of accounts, sectors, supply-use and input-output will therefore requires the redoubling of staff.

It is clear that requesting for a small team of national accounts to produce several tables is irrational, for instance to compile quarterly national accounts, regional accounts, satellite accounts and GDP from expenditure with the basic headings of the ICP. Users and partners should firstly evaluate, especially the human resources, before engaging and providing funds for these extra set of accounts. Donors and managers of NSOs should ensure that the human resources correspond with the desired results of set of accounts for compilation. Often, due to lack of information on the severe situations of African countries, several partners engaged with NSOs to compile several tables, without realizing that the business very is risky. In the specific case of ICP, it is noted that during the last round of ICP, the price component was conducted, while there were limited activities undertaken for the national accounts component. Evaluation pointed out that for successful round of ICP, it is essential to scale up the activities pertaining to the compilation of the GDP at basic expenditure heading, this detailed expenditure with over hundreds items, will entail the availability of adequate data sources and national accountants in charge of products, section and group of activities. This is in addition to the existing staff compiling regularly the core set of accounts of institutional sectors. Manager of NSO may just consider redeploying staff within the NSO.

It is not sufficient to make an inventory of data sources; it is required to review their qualities which require an additional statistical work, including classification used in each data sources, coverage and variables in the data sources. Each responsible of sectors, section or products will review the classifications used in the data sources, in other words, financial statements, censuses and surveys on his section in the classification of activities, they will translate the data sources classification in to SNA classification. To develop a correspondence tables, the computation group should ensure that the nature and the meaning of variables, coverage and the objectives of each bridge tables and extrapolation of sample results to avoid misinterpretations. The next phase of the computation groups is the processing of data sources according to the correspondence tables developed by the application group.
4.4 Develop the computer programs

This section presents topics of importance to the updating of the bridge tables between data sources to 2008 SNA aggregates. It discusses the operations to be updated, the various data sources and their processing into SNA. The bridge tables from data sources to SNA will be transformed into tabulation or program in the statistical software or databases, for instance, some countries utilize database such as Microsoft Access for the financial reports, statements of loss and profit, income and expenditure, these reports will be entered in the database using forms, while bridge tables are developed as queries in the databases, and the various statements such as assets, liabilities will be stored in tables, while the various parameters and code in a separate tables, typically the usual function in database like Ms Access are sufficient, in few cases, the equation required in the bridge tables require programming in advanced languages such as SQL.

Graphic 7: Treatments of data sources

The IT and database experts in the compilation group will use the formula developed by the methods groups and they will be tasked to translate them into computer programs. The most convivial way to write program are probably using the statistical packages (SAS Sampler and STATA) and the database such as Ms Access, FoxPro and Progress. The bridge tables from business accounting to national accounting will be translated into programs for example SQL languages in databases. The data treated with databases are probably from the administrative records, including the financial reports, statements of gain and loss from company. The bridge tables to process the data from censuses and surveys are mostly translated into programs in SAS and STATA; the surveys data are entered and mostly available in this format of file. The national
accountant in the group will ensure that program developed reflect the methodological approximation, the group will therefore run and test the programs on the surveys and the sample financial reports to find out if the results are as expected.

Due to the large number of data sources, several programs are required to be developed and during the compilation process, the group needs to develop additional bridge tables as required. The programs are developed, the IT personnel at NSO (and the CB) and statistician will develop the calibrated weight of each units and company in the sample surveys or the financial databases. To this end, formula derived from sampling and from the business register will be used

4.5 Extrapolation of Results to National Economy

Once the programs are developed, the computation groups consisting of IT personnel from NSO and central bank will develop the calibrated weight of each units and company in the surveys and the financial reports in the databases. To this end, formula derived from sampling and from the business register will be used One major tasks of the computation group is to link the units in the sample surveys and sample financial statements in the database with the business registers, the business register and the sampling frame will provide calibrated weight for the statistical units. The business registers as the activity classification forms the basis for stratifying samples and analyzing outputs. Then the practical methods of approximation of SNA are completed with the bridge tables, the preliminary compilation will provide the impact from the change from 1993 SNA to 2008 SNA.

Typically, this extrapolation of surveys results will be conducted, before running the computer programs developed from correspondence tables. Once each unit receives their weights, the experts will test and run the computer programs with and without the calibrated weights. This task will generate the first estimate of SNA aggregate from each data sources or sectors and sub sectors: public administrations, financial sectors, non-financial, households and rest of the world.

The business register must be recoded to ISIC-4 or its national version before it is used as a basis for survey preparations and for weight. The 2008 SNA assumes that countries have adopted the ISIC-4. Since computations operations should be coordinated both internally in the NSO and central banks, it is useful aim for a single target date for completion of the computation process. The necessary work will be scheduled and arranged in a timetable based on this date. The table below presents an example of a timeline with milestones for the work to be done. The dates shown in the table are meant for illustrative purposes only, and the real schedule will depend on the situation for each NSS.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design the compilation Strategy</td>
<td>2010</td>
</tr>
<tr>
<td>Task assignments and developments of computer programs</td>
<td>Year + 2 months</td>
</tr>
<tr>
<td>Translation of bridge tables into computer program</td>
<td>Year + 5 Months</td>
</tr>
<tr>
<td>Review of data sources requirements, improvement and classification used</td>
<td>Year + 8 Months</td>
</tr>
</tbody>
</table>
Assign weights for units in data sources (extrapolation) | Year + 12 Months
---|---
Processing the data sources | (Year N+1) + 3 Months
Assign metadata, characteristics, attribute, classification to processed data (each of them) | (Year N+1) + 6 Months
Uploading data with metadata in the system of final compilation | (Year N+1) + 9 Months
Progressive review of consistency between side and approach of computation | (Year N+1) + 10 Months

**Tables 6: Suggested timetable for the IT sub program and work flows**

128 After the completion of this preliminary consideration, the data should be compiled and then the system will produce the supply and use for each product and the accounts of each section and groups of activities, the products experts and section experts will carry out further review of these accounts. The revised data will be uploaded in the system, and a final balancing based on the operations and classification of the SNA will be conducted. As a rule of thumb, intermediate consumption will be the balancing items, since this represents the common data from the production side and expenditure side. The compilation of accounts is not just an assemblage of data from various sources, but through internal and external coherence of economic information.

### 4.6 Upload Aggregated Data into the system of compilation

129 The various data sources with each units and their weight are processed and aggregated into a system of macroeconomic data (SNA figures), the progressive review for confrontation of data from various sources and consistency of accounts are centralized in this system of confrontation and compilation. To resolve divergence, the SNA data in the system will be downloaded for further revision and once revised, the SNA data will be uploaded in the system; this progressive consistency review will continue until the accounts are coherent.

130 The primary task is to convert the macroeconomic files processed from the microeconomic databases to the format of the national accounts system for progressive review of consistency, for instance the software used for data sources are database files, statistical packages such as STATA and SAS should be converted and exported into excel format, then the excel files are uploaded in the system of compilation.

131 The second task for final the computation will be to assign metadata for each data to be uploaded into the system, the application group having already agreed on a set of metadata, including SNA classifications, activities, sectors, products, operations and approach as detailed in the annex 1 of the main publications of 2008 SNA. The other metadata are the mode of valuation such as price or index or quantity. This preliminary tasks has been conducted by the application group, such as full review of the need to have a national version of each classification, recoding of some activities, products, classifications may be required. It is useful to remember the definitions of SNA, “a set of recommendations on how to compile measures of economic activity in accordance with strict accounting rules based on economic principles. The SNA are expressed in terms of concept, definitions, classifications and accounting rules” (2008 SNA 1. §1) in other words the classifications and metadata are an integral part of SNA.
The national classifications for the SNA and associate code purposes will be uploaded in the system to review the consistency of the national accounts, and each processed data should contain their characteristics in each rows and columns ,in other words,. Metadata in terms of national accounts classification. As an indication, the major classification are briefly described below, the full lists of metadata or classification used in SNA are available at the annex1 of the 2008 SNA (page 545 to 560)

- Classification of activities ISIC-4
- Central Products Classifications CPC-2
- Standard International trade classification (SITC) and Harmonized system (HS)
- Classification of functions of governments (COFOG), individual consumption according to purposes (COICOP)
- The sectors and sub sectors (S code)
- Classification of flows transactions
  - Products (P code )
  - Distributive transactions (D code )
  - Financial asset and liabilities (F codes)
  - Other Flows ( K)
- Balancing items and net worth (B)
- Transactions in stock of asset and liabilities
  - Balance sheets (L)
  - Non financial assets (AN) Produced and non produced
  - Financial assets (AF codes) Transactions

The classifications are aimed at reporting and dissemination of sequence of national accounts tables, but also intended to facilitate the reconciliation of data within and from other sources. Typically, each data in the SNA contains characteristics or metadata, the metadata on SNA data fully described the data, explaining that this data concern a given sector, a given product, on specific operation, valuations methods (price, quantity, indices, rates…), sources of data (from original sources censuses, extrapolated, adjusted from balancing of accounts, balancing items)

With the classification and metadata, it is possible to recognize the similarity of data concerning similar operations or set of accounts and reconciliation will be facilitated. For instance the consistency of the accounts of each activities (sectors, branch, category of ISIC), the coherence of operations on products between distribution and incomes (D), in particular the following consistency checks: Gross fixed Capital Formation and international trade, Flows and stocks, Taxes on products, taxes by sectors and the general government accounts, household consumption and population. The table below presents an example of metadata, attribute, characteristics, and classification of data. The attributes shown in the table are meant for illustrative purposes only, and the real metadata normally contains around fifteen characteristics which fully describe the processed data.
Table 7: Sample metadata to upload in the compilation system

<table>
<thead>
<tr>
<th>Value</th>
<th>source</th>
<th>Year</th>
<th>Operation</th>
<th>Value-mode</th>
<th>Products (CPC)</th>
<th>Section (ISIC)</th>
<th>sector</th>
<th>recipients</th>
<th>Date creation</th>
<th>update</th>
</tr>
</thead>
<tbody>
<tr>
<td>289</td>
<td>Taxes (D21)</td>
<td>2009</td>
<td></td>
<td>Currency (MGA)</td>
<td>0011</td>
<td>A</td>
<td>S11</td>
<td>S13</td>
<td>14/01/10</td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>Taxes</td>
<td>2010</td>
<td></td>
<td>Currency</td>
<td>0111</td>
<td>A</td>
<td>S11</td>
<td>S13</td>
<td>14/01/10</td>
<td></td>
</tr>
<tr>
<td>691</td>
<td>Taxes</td>
<td>2009</td>
<td></td>
<td>Currency</td>
<td>0015</td>
<td>B</td>
<td>S11</td>
<td>S13</td>
<td>14/01/10</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>Taxes</td>
<td>2010</td>
<td></td>
<td>Currency</td>
<td>0052</td>
<td>C</td>
<td>S12</td>
<td>S13</td>
<td>14/01/10</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Taxes</td>
<td>2010</td>
<td></td>
<td>Currency</td>
<td>0052</td>
<td>D</td>
<td>S12</td>
<td>S13</td>
<td>14/01/10</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Taxes</td>
<td>2010</td>
<td></td>
<td>Currency</td>
<td>0679</td>
<td>F</td>
<td>S12</td>
<td>S13</td>
<td>14/01/10</td>
<td></td>
</tr>
</tbody>
</table>

The next step is the uploading of the compiled data into the SNA and starts the progressive review of consistency in balancing the items and generates a consistent aggregate. Once the data sources are uploaded in the system of compilation, the different tables of the SNA will be produced, and discrepancy will be noticed for instance between supply and use of products or between assets and liabilities. Therefore, the computation group will therefore extracts the files from sources to be reviewed and further investigated about the reason of discrepancies, the review will concerns the weighting and sampling procedures, the review of initial data in the questionnaires and financial statements. The compilation groups will agree on the most reliable information and will make the necessary adjustments to other data, for instance the coherence between production and expenditure lies in the adjustments of intermediate consumption.

After the compilation of SNA data from data sources, the progressive consistency process (or final compilation) may be conducted through a national accounts software, the most widely utilized Francophone countries is probably ERE-TES, the various steps of uploading SNA data (processed data sources) and extracting data sources for decentralized review of consistency review by section, groups and products are among the functionalities of ERE-TES, the final compilation of SNA will involve at six main stages. However, for a country computing from the sector accounts and from a single approach, the progressive consistency review or the utilization of specific software is not required, as there are no different approaches to be confronted.

4.7 Use of the SNA and communication of changes

The national accounts tables are of high importance for many users and effort should be made to keep those users updated on the revised data SNA, resulting from change of system and not as a result of economic growth. The SNA is used for international reporting, the SNA is the main framework for macroeconomic analysis and modeling. The revised estimates of the SNA have profound impacts on government budgets, regional integration and international relations such as debt relief, debt services. The level of GDP may influence political and popular judgments about the success of economic programmes and poverty reduction. When comparing different countries, the expenditure of GDP should be converted into purchasing power parities (PPP), it is not sufficient to convert with the nominal exchange rates; the comparison across countries will therefore require further detailed products from the expenditure side of the GDP.

The GDP level will have substantial changes and communication strategy should be developed to avoid any misinterpretations which may hinder the use and dissemination of the revised SNA results.
- For domestic users within the NSS, government agencies, university and research: it is important to discuss the changes at national level. Some users-producers are deeply involved during the implementation process, changes in SNA aggregates must be analyzed, therefore countries has to compile their SNA with both 1993 SNA and 2008 SNA to highlight the changes from methodology and the changes due to economic growth.

- For international and regional users of SNA users, they may be informed through press briefings, website and specific help desk. Mailing lists may be composed. The methodology on SNA compilation should be made publicly available
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8. AUC (2010): ShaSa