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COMMON REGIONAL METHODOLOGICAL GUIDE FOR THE DEVELOPMENT OF A SOCIAL ACCOUNTING MATRIX (SAM) IN THE MEMBER STATES OF THE ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS)

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ACRONYMS AND ABBREVIATIONS

BP	:	Balance of Payments
CBWAS	:	Central Bank of West African States
CFC	:	Consumption of Fixed Capital
CGE	:	Computable General Equilibrium
CGEM	:	Computable General Equilibrium Model
CIF	:	Cost Insurance and Freight
CIRPEE	:	Centre interuniversitaire sur le risque, les politiques économiques, l'emploi
CL	:	Community Levies
CoE	:	Compensation of Employees
CSL	:	Community Solidarity Levies
DIAL	:	Development, Institutions and Long-Term Analysis
ECOWAS	:	Economic Community of West African States
FC	:	Final consumption
FSO	:	Federal Statistical Office
GDP	:	Gross Domestic Product
GFCE	:	Government Final Consumption Expenditure
GFCF	:	Gross Fixed Capital Formation
GFOT	:	Government Finances Operations Table
GOS	:	Gross Operating Surplus
GOSMI	:	Gross Operating Surplus - Mixed Income
HISWACA	:	Harmonisation and Improvement of Statistics in West and Central Africa
IC	:	Intermediate consumption
IEAT	:	Integrated Economic Accounts Tables
HFC	:	Household Final consumption
IIT	:	Intermediate Input Tables
NAM	:	National Accounting Matrix
NPI	:	Non-Profit Institution
NPISH	:	Non-Profit Institution Serving Households
NSO	:	National Statistic Office
PA	:	Public Administration
PIP	:	Public Investment Program
PPP	:	Purchasing Power Parity
RAS	:	Racking-Ratio or Iterative Proportional Fitting
RoW	:	Rest of the World
SAM	:	Social Accounting Matrix
SIB	:	State Investment Budget
SNA	:	System of National Accounts
SUB	:	Supply and Use Balance
SUT	:	Supply and Use Table
TII	:	Table of Intermediate Inputs
VAT	:	Value Added Tax
WAEMU	:	West African Economic and Monetary Union
WB	:	World Bank

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SUMMARY

The first work on the development of a social accounting matrix dates back to the 1930s. . Defined as a form of matrix presentation of the income and expenditure of the various agents of an economy, it is based on the principle of balance between use (by convention in columns) and supply (in rows) at each account that comprises it.

As a macroeconomic coherence instrument, the main objective of a SAM is to capture the interrelationships between economic agents. Thus, it constitutes an accounting instrument mainly used for general equilibrium modelling purposes (Computable General Equilibrium Model - CGEM).

There are multiple formats of a SAM. The most common cases in Africa are the Development, Institutions and Long-Term Analysis (DIAL) presentation, the World Bank's SAM, and the PARADI II Modelling School Model.

The degree of disaggregation in a Social Accounting Matrix (SAM) may vary depending on the analytical needs and the availability of data. While a SAM is typically constructed for an individual country, it can also be developed for a regional grouping of countries..

Although the practice of a regional SAM is not widespread within the Regional Economic Communities, it is possible, from a harmonised structure adopted by the Member States of this community, to build such a matrix to assess the effects of economic policies at the community level or analyse the behaviour of households in the same community in terms of consumption.

It is in this context that the ECOWAS Commission initiated the work of developing a methodological guide that will serve both the Member States and the Commission itself, in particular for modelling issues relating to the analysis of the impacts of public policies and household behaviour in terms of income distribution and household consumption expenditure.

This document, entitled "Common Regional Methodological Guide for the Development of a Social Accounting Matrix in ECOWAS Member States", proposes both a practical and common methodology to produce a Social Accounting Matrix (SAM) for countries and a regional SAM. It indicates all the steps to follow to produce the Macro-SAM and Micro-SAM, and the relevant data sources for their construction.

INTRODUCTION

0.1. The first Social Accounting Matrices (SAMs) were developed in line with the work of W. Leontief in the 1930s (Leontief, 1936) and R. Stone on Industrial Economic Tables (IET) (Stone, 1961). Then G. Pyatt and E. Thorbeke in 1976 extended IETs to economic flows including households and the State.

0.2. This notion of the Anglo-Saxon origin of Social Accounting Matrix (SAM) follows what was described at the time as the rigidity of the 1968 System of National Accounts (SNA 68). The need had become more pressing to provide in a greater detail the behaviour of households on the basis of a number of criteria, showing in particular, for each type of household, the link between income generation and consumption.

0.3. A SAM is defined as a form of matrix presentation of the income and expenditure of the various agents of an economy. It is, therefore, a square matrix based on the principle of balance between use (by convention appearing in columns) and supply (appearing in rows) at the level of each account that composes it. Each type of agent has a double-entry accounting, facilitating the presentation of budgetary balances and market balances: all the resources it receives from other agents of the economy will constitute its uses (expenses) which will be broken down to other agents.

0.4. The SAM aggregates information relating to national accounts, the balance of payments, public accounting, taxation, and business accounting. It also includes survey data on household budgets, as well as data on socio-economic and demographic data and financial markets. The SAM, therefore, first presents a snapshot of all the economic flows, recorded in monetary value, existing between the different categories of agents and industries of activity of a given economy.

0.5. There are multiple formats of a SAM. The most common cases in Africa are the Development, Institutions and Long-Term Analysis (DIAL) presentation, the World Bank's SAM, the PARADI II Modelling School model, etc.

0.6. The level of disaggregation of the accounts of a SAM may vary according to the needs of the analysis and/or the availability of data.

0.7. As suggested by the System of National Accounts (SNA), a SAM has the advantage of allowing the choice of the breakdown formula of the estimates that is best suited to the study of the topic of interest. While the SAM is characterised by its flexibility of application, it can also incorporate, for the purposes of specific analyses, more substantial adjustments like satellite accounting.

0.8. The SAM is also an instrument of macroeconomic coherence that presents the structure of an economy in terms of payments and income at a given time. As an instrument of macroeconomic coherence, the main objective of a SAM is to capture the interrelationships between economic agents. For example, it makes it possible to assess the

role of the State in infrastructure, the importance of irrigation for agricultural purposes. It reproduces all the flows made in an economic system over a period. Each category of non-factor goods or services, factor services, and economic agents (or institutional sectors) corresponds to an entry in a row and a column. Each row lists the source of the supply of each agent, and each column the use (employment) of these resources.

0.9. This system of double-entry accounts guarantees that every use of an industry, a production factor, or an economic agent corresponds to a supply for another industry, factor, or agent. For each entity, as well as for the national economy as a whole, the total supply is equal to the total uses.

0.10. The SAM thus highlights the relationships between production and income distribution structures, as well as capital flows and financial transactions internally. It also details the origin of the income of the different categories of households according to whether this income comes from the sale of "factor services" to producers or from transfers.

0.11. Chapter 20 of the SNA93 highlights that SAMs and the national accounting system share the same fundamental principles. Because of this close tie, some analysts create a SAM using only national accounts data. Others, on the other hand, go further by incorporating additional statistical information that is not part of the national accounts. This extra data often emphasises the role of individuals in a national economy, providing a richer picture of how resources and income flow through society. It emerges from these reflections that the role of individuals in the national economy is the central element of the SAM.

0.12. In Chapter 28 of the 2008 SNA, clarifications and improvements have been made, particularly regarding the disaggregation of households, employment accounts, and balance sheets.

0.13. Through a practical approach, the focus is on creating a simplified SAM to integrate it into economic models to assess the impact of public policies or to deepen the analysis of the sectoral effects and consumption of economic agents.

0.14. Although the practice of a regional SAM is not widespread within the Regional Economic Communities, it is possible, from a harmonised structure adopted by the Member States of this community, to build such a matrix to assess the effects of economic policies at the community level or analyse the behaviour of households in the same community in terms of consumption.

0.15. This Guide is a technical document intended for ECOWAS Member States, and all other practitioners and researchers interested in modelling issues related to the analysis of the impact of public policies and household behaviour in terms of consumer spending using SAM.

0.16. Thus, after presenting the context, defining and explaining the concept, usefulness, and structure of a SAM, the document proceeds to discuss the methodologies for constructing and balancing both a national SAM and a regional matrix. It is organised around the following issues:

1. Presentation of a Social Accounting Matrix.
2. Usefulness of a Social Accounting Matrix.
3. Structure of a Social Accounting Matrix.
4. Construction of a country Social Accounting Matrix.
5. Disaggregation of a country's Social Accounting Matrix.
6. Construction and Balancing of a Regional Social Accounting Matrix.

CHAPTER 1 : PRESENTATION OF A SOCIAL ACCOUNTING MATRIX (SAM)

1.1. A Social Accounting Matrix (SAM) is a template, prescribed in the SNA, that allows analysts to combine additional details of interest into national accounts. Simply put, a SAM can be presented in an aggregate form —often called a (Macro-SAM)—which is built from the data in the Supply and Use Table (SUT) and the Integrated Economic Accounts Table (IEAT). A SAM can, however, be expanded into more detailed versions, known as Micro-SAMs, by breaking down existing flows into finer categories. These flows remain balanced in the same way as in standard accounts: every use corresponds to a supply. Because such expansions are common, the usual definition of a SAM often goes beyond merely being a matrix of the standard sequence of accounts. Typically, it includes extensions, such as detailed breakdowns of the household sector, which help amplify the role of individuals and families in the economy. This way, SAMs serve as a bridge between highly aggregated national accounts and more specified, socially focused economic analysis.

1.2. Thus, a SAM seeks to identify, among other things, the income and consumption levels of the different social categories, to define their purchasing power, poverty or wealth, and to identify their savings capacity. The content of this matrix may vary depending on the availability of data, analyses, and studies to be carried out.

1.3. The SAM also contributes, to making national accounts more consistent and more harmonised, and facilitates the development of economic and social policies.

1.4. The SAM has the uniqueness of aligning the SUT, the IEAT, and the survey data on household income and expenditure.

1.5. The main objectives of a SAM are to show:

a. The circular flow of income, especially the breakdown of labour income by occupational category, enables a detailed analysis of the relationship between industry value added and the primary income of household sub-groups.
b. The mutually dependent relationship between income distribution and production structure, as distinct household groups exhibit unique demand patterns.
c. The distribution of savings by sub-sector, including a breakdown of fixed capital formation by industry. It is thus possible to carry out a more detailed analysis of the links between the formation of fixed capital sub-sectors and the formation of fixed capital by product group.

1.6. The SAM is an accounting tool used for the purpose of general equilibrium modelling CGEM. At this level, it should be noted that its structure depends on the objectives to be achieved. Since a SAM integrates both the income and expenditure flows and the input-output tables at a microeconomic level, it can serve as a model for estimating a wide variety of accounts.

1.7. The SAM lends itself to the teaching of macro-economics, because of its concise and well-presented description of the interrelationships between economic processes, its systematic database function for the simultaneous calculation of monetary and non-monetary indicators, and its close relationship with overall economic models that are flexible and of varying degrees of complexity.

1.8. A SAM is a matrix presentation of the sequence of accounts of the institutional sectors attached to the supply and use table. Each account is presented in a row and column. Supply is presented by convention, in the row and use in the column. The totals by row and column for each account are introduced to ensure that the total supply is the same as the total uses. Thus, the SAM is based on the principle of balance between uses (in columns) and supply (in rows) at the level of each account.

1.9. The classifications used at the level of each account are specific to the objectives of the analysis and studies recommended. These classifications must first be properly studied and established before the development of any SAM.

1.10. If the matrix presentation is limited to national accounts data, the matrix is called the National Accounting Matrix (NAM). There are many ways to present a NAM. The structure of the NAM depends, of course, on the availability of the accounts and the information that the NAM must deliver.

1.11. Macroeconomic equilibrium imposes two fundamental principles:

- Macroeconomic equilibrium : All goods and services that are produced in the national economy are matched with the expenditure on them. There is, therefore, equality between national expenditure and national production on the goods and services market.
- National production is broken down into income, with the business sector at the centre of this second principle. Households provide labour and the funds necessary to purchase productive equipment. In return, businesses distribute most of the income to households.

1.12. To produce, a company needs inputs (intermediate consumption), labour, and physical capital (machines, buildings, computers, etc.). Given these factors, the enterprise produces an output that it can sell on the market, which generates a turnover. Inputs are goods produced by other companies. The real contribution of the firm to national production is not the turnover but the value added, which is the difference between the turnover and the intermediate consumption.

CHAPTER 2 : USE OF A SOCIAL ACCOUNTING MATRIX

2.1 The advantages that a SAM offers over the traditional presentation of the sequence of accounts are as follows:

- The SAM is a coherent and comprehensive framework for processing economic data.
- The SAM is an analytical framework for measuring the impact of economic policies and for simulating economic policies to reduce poverty.
- The SAM is an instrument used in the calibration of CGEM.

2.2 The SAM presents the national accounts data for a reference year in a schematic and synoptic manner. Important economic aggregates, such as Gross Domestic Product (GDP) or Gross National Disposable Income (GNDI), can be understood immediately. The matrix provides an overview of the national economy. In addition, it highlights existing relationships, since each entry is both an amount paid into one account and an amount received in another. Double entries, which are mandatory in the sequence of accounts, are no longer necessary. The income circuit is presented in a comprehensive and clearer way than in traditional "T" accounts.

2.3 The SAM constitutes a coherent and comprehensive framework for processing economic data at the national and regional levels.

2.4 A SAM makes it possible to create an analytical framework for examining the impact of economic policy measures. In addition, it is not only a statistical tool, but also an instrument of both a microeconomic and macroeconomic nature, which is used in the calibration of CGEM and which also gives the reference situation to which the results of the simulations carried out using these models will be compared. The use of a standard CGE model for the simulation of economic policies to reduce poverty generally requires a SAM for the calibration of the model to the economy in question.

2.5 The construction and calibration of such a model involve establishing, for a given year, all the macroeconomic interrelationships between the various components of the economy (production, demand, foreign trade, taxation, etc.) and their intensity. It must also be based on statistical knowledge of the behaviour (consumption, savings, investment) and resources (income, costs of production factors) that characterise the main agents involved in the economic system (companies, households, governments, local communities, Non-profit institutions serving households, and the rest of the world). This knowledge is usually synthesised within a SAM.

2.6 In short, the SAM is a summary of the accounting transactions that took place within an economy during a given period, usually a year. This information is essential for the analysis of the impacts of macroeconomic shocks and policies on growth and poverty reduction in developing countries with the goal of informing policy decisions. Therefore, having a reliable and consistent SAM is an essential step that deserves special attention,

both in terms of primary data sources and their compilation for its development . The construction of a standard SAM mainly uses two types of national accounts tables: the SUT and the IEAT.

CHAPTER 3 : STRUCTURE OF A SOCIAL ACCOUNTING MATRIX (SAM)

3.1 Although the SAM can take various configurations, its presentation in the form of an Input-Output Table (IOT) is a common feature. It traces the accounting flows taking place in an economy over a given period, usually a year. These flows are in the form of revenue in rows and expenditure in columns.

3.2 Thus, a value at the intersection of a given row and column indicates the payments from the account corresponding to the column to the account representing the row. The accounting consistency of a SAM is guaranteed by the equality between the total revenue (row) and the total expenditure (column) for each account. The level of disaggregation of the accounts of a SAM may vary according to the needs of the study and the availability of the data.

1-Types of Social Accounting Matrices

3.3 Several types of SAMs containing the six (06) accounts can be developed from the national accounts tables (SUT, IEAT). Two (02) types of SAM are the most commonly used:

i) the primary SAM used for simulations through the Leontief multiplier method;
ii) the standard SAM used for calibrating CGEMs.

3.4 The fundamental difference between these two types of matrices comes from the Domestic Sales / Production variables depending on the intended use.

Table 1: Aggregate structure of primary SAM

	Productive factors	Institutional sectors	Business sectors	Products	Savings – Investment	Rest of the world
Productive factors			Payments to postmen			
Institutional sectors	Factor income	Transfers	Taxes and subsidies on production	Taxes and subsidies on products		Transfers
Business sectors				Production		
Products		Consumption Final	Intermediate consumption		Investment expenditures	Exports
Savings – Investment		Domestic savings				External savings
Rest of the world		Transfers		Imports		

3.5 The primary SAM directly reflects industry accounts and the resource-use balances of products (Table 1). It is used for simulations using the Leontief multiplier method. Exports in this SAM are located in the "Product" row of the "RDM" column. Production (including trade margins) is found in the "Product" column of the "Activity" row. The standard SAM is used to calibrate CGEM (Common General Economic Model) according to international standards. It is the database for CGEM (Table 2). Unlike the primary SAM, exports are located

in the "Activity" row of the "RDM" column. Domestic sales, instead of production, are found in the "Product" column of the "Activity" row. Domestic sales = production + margins – exports (according to the 2007 article by Ismaël Fofana) [1].

3.6 In general, a standard SAM is in the form of six (6) aggregate accounts:

1. Current account of factors of production (labour and capital).
2. Current account of resident institutional units (households, businesses, and government).
3. Production activities account.
4. Product account (goods and services).
5. Capital account (savings and investment).
6. The rest of the world account.

Table 2: Aggregate structure of the standard country's SAM

	Production factors (C1)	Institutional Sectors (C2)	Industries of activity	Products (C4)	Savings - Investment (C5)	Rest of the World (C6)
Productive factors(R1)			Payments to factors			
Institutional sectors(R2)	Income from factors	Transfers	Taxes and subsidies on production	Taxes and subsidies on products		Transfers
Industries of activity R3)				Domestic production		Exports
Products (R4)		Final consumption	Intermediate consumption		Investment expenditure	
Savings - Investment (RL5)		Domestic savings				External savings
Rest of the world (R6)		Transfers		Imports		

Source: CIRPEE/PEP; Université Laval, Québec, Canada

1. The Production Factors Account

3.7 It formalises the source and the flows of income from production activities. The supply consists mainly of the remuneration of employees and the capital resulting from the industry account. They are then distributed to the various institutional sectors.

3.8 The production factor account is represented by labour and capital, each of which can be broken down into several sub-accounts according to the objectives of the study and the availability of data. The factors receive income from the sale of their services to production activities (row 1) in the form of wages and rent on capital and are then distributed to institutional units (column 1) in the form of labour and capital income.

3.9 The balance in terms of supply-use is reflected in the following equation:

Compensation of employees + Remuneration of capital = Factor income ***[1]***

[1] *Domestic sales = production – exports; allows for a micro MCS without imbalance*

2. The account of resident institutional units

3.10 It relates the flows of income and expenditure belonging to the institutional sectors. Generally, there are three categories of institutional sectors whose transactions are recorded in the sub-accounts of households, businesses, and governments, each of which can in turn be disaggregated into several sub-accounts.

- The household sub-account receives factor income (labour and capital), and transfers income from businesses, the governments, NPISHs, households, and the rest of the world (row 2). It pays taxes and social security contributions, acquires final consumption of goods and services, and makes transfers to other institutional units; the residual income is invested/divested by the household via the capital account (column 2).
- The business sub-account receives a share of the profits generated by productive activities, and transfers income from other resident institutional units and the rest of the world (row 2). This income is partially transferred - in the form of interest, dividends, rent, taxes, and compulsory social security contributions - to the owners of financial assets, shareholders, and the government; the remainder of the business sub-account is charged to the capital account (column 2).
- The sub-account of the government retains a share of the income generated by agents and economic transactions in the form of compulsory levies (income and wealth taxes, taxes on production and products, and taxes and duties on imports and exports) and transfers income from other resident institutions and the rest of the world (row 2).
- The income from the government account is used to buy government services, and provide transfers and subsidies to households, businesses, and the rest of the world. Any surplus or deficit is transferred to the capital account.

3.11 The supply-use balance of the institutional sector accounts can be stated by the equation below:

T + Factor income + Tr (inter-sector) + Tr received from the RoW = FC + Savings + Tr paid to the RoW [2]

Where, T represents taxes less subsidy, Tr represents transfers, FC represents final consumption.

3. The Production Activity Accounts

3.12 This account outlines the production process and summarizes both output value and related expenses. The main resources come from domestic production, while uses include intermediate consumption, factors' remuneration, and net taxes on production.

3.13 The account thus generates revenue from the sale of products (row 3). The expenses of these activities (column 3) include the purchase of raw materials and intermediate products, the payment of rental services of the factors (labour - compensation of employees - and capital - remuneration of capital), and the payment of taxes on production less subsidy.

3.14 In terms of the supply and use balance, this third account is given by the following equation:

Production = Intermediate Consumption + Compensation of employees + Compensation of capital + Taxes less subsidies on production [3]

4. The Product Account

3.15 The product account traces the accounting transactions relating to the supply and use of products. While the supply consists of domestic production, taxes on products less subsidies and imports (M), the use consists of intermediate consumption of industries (IC), final consumption of households and government (FC), gross fixed capital formation (GFCF), changes in inventories, and exports (X).

3.16 It shows the purchases of goods and services (column 4) from local and foreign producers (imports), to be transferred to households, government and companies in the production industries, in the form of final consumption, productive inputs and investment (row 4).

3.17 In terms of supply and use balance, this fourth account is given by the following equation:

IC+FC + I + X = Domestic production + Taxes less subsidies on products + Imports [4]

Where, I (investment)= GFCF + Changes in inventories

5. The Savings/Investment Account

3.18 This account lists the investments made by the various institutional sectors as well as the various sources of these investments, consisting mainly of the savings of companies, households, government, and the rest of the world.

3.19 It combines the gross fixed capital formation and changes in inventories. It collects the savings of resident and non-resident institutional units (row 5) for investment (column 5).

3.20 In terms of the supply and use balance, the equation is as follows:

Domestic Savings + External Savings = Investment [5]

Whereas external savings come from the current account balance, Domestic savings come from businesses, households, and governments.

6. The Rest of the World Account

3.21 This account relates the transactions carried out by the national economy and the rest of the world. Transactions between resident and non-resident agents are recorded in the rest of the world account, which receives income from the sale of goods and services to the national economy (imports) and transfers from resident agents (row 6). In turn, the rest of the world buys goods and services from the national economy (exports) and transfers income to resident institutional units, with either a surplus balance or net investment of non-resident agents in the national economy, or a deficit balance or net investment of nationals abroad (column 6).

3.22 In terms of supply and use balance, the equation is expressed as follows:

M + Transfers paid = X + Remittances received + External savings [6]

Where, M and X represent imports and exports, respectively

CHAPTER 4 : CONSTRUCTION OF A COUNTRY SOCIAL ACCOUNTING MATRIX

4.1 The development of a standard SAM uses two main sources of information: the SUT and the IEAT. Information on the production, transaction, and consumption of goods and services in the SAM comes mainly from the SUT (Table 3). The distribution of factor income, inter-institutional transfers, and savings is recorded in the IEAT (Table 4).

4.2 However, it should be noted that the SAM, developed from the national accounts (SUT and IEAT), is in an aggregate form, not very appropriate for the analysis of the impact of economic policies on income distribution and poverty reduction. Thus, an additional breakdown of the single household account and, sometimes, of the indirect tax accounts, and a detailed representation of the labour market is essential for the development of a standard SAM.

A. Data Sources from National Accounts

4.3 The main data sources needed to build a SAM are the SUT and the IEAT. These two summary tables show the accounting flows of an economy at a given period. The SUT provides an overview of accounting transactions according to the logic of industries and products, with a focus on sectoral interrelationships. The IEAT aggregates the accounting information of the economy according to the institutional sectors and provides a more detailed analysis of the inter-institutional distribution of income. These different views of the economy together provide more information to the analyst, hence the interest in compiling them into the SAM.

4.4 When it comes to a regional matrix, inter-regional trade flows are a key element; they are treated as exports and imports from the region under consideration to or from other regions.

4.5 Estimating a SAM requires substantial statistical data, primarily based on the input-output relationships among productive sectors. These connections can be derived from the symmetric intermediate consumption matrix with homogeneous industries (Input-Output Table), or from detailed frameworks like SUT, IEAT, and household consumption expenditure surveys.

A1.Supply and Use Table (SUT)

4.6 The goods and services available in the economy (supply matrix) are produced at the national level or imported from abroad. Production is generally valued at basic prices, imports at cost, insurance, and freight (CIF) prices, and use at the purchaser's prices. Therefore, the balance of supply and use requires considering the marketing costs: taxes less subsidies on products, import duties and other taxes, transport and trade margins.

4.7 The supply matrix includes a sub-matrix of "transfer of domestic production" which presents the industries of activity in columns and the products in rows. In general, the production of an industry consists of a main product and one or more ancillary products. The domestic supply of a product could come from one or more industries. The total supply of a product is equal to the domestic supply valued at the basic prices plus Import valued at CIF prices. The total supply of products at the purchaser's prices is equal to the sum of the total production at the basic prices, trade and transport margins, taxes/duties, and subsidies.

4.8 The use matrix traces the use of the total supply of a product recorded in the supply matrix. It is used for the intermediate consumption of industries, exports, final consumption of households, NPISHs, and general government, gross fixed capital formation, and changes in inventories. The use matrix is mainly focused on the production sub-matrix, retracing the production structure of the different industries, in this case, the intermediate demands or input-output matrix, and the value added distributed in wages paid to employees, net taxes, and gross operating surplus and mixed income.

4.9 The production sub-matrix presents the product accounts (in row) and production accounts (in column). The two were previously recorded for the import account. From Table 3 below, the use (E7) must be quasi-equivalent to the supply or availability (R7). The sectoral productions in (R8) and (E9) must also be equivalent.

Table 3: Structure of the SUT

<table>
<tr><th colspan="8">Supply Matrix</th></tr>
<tr><td rowspan="3">Categories of goods and services</td><td rowspan="3">Total supply at basic at prices R7</td><td rowspan="3">Taxes and subsidies On products R6</td><td rowspan="3">Trade and transport Margins R5</td><td rowspan="3">Total purchases at basic prices R4</td><td>Industries of activity</td><td rowspan="3">Total domesti c purchas e at Basic prices R2</td><td rowspan="3">Import R3</td></tr>
<tr><td>Domestic purchase at basic prices R1</td></tr>
<tr><td>Total industry at basic prices R8</td></tr>
<tr><th colspan="8">Use Matrix</th></tr>
<tr><td rowspan="4">Categories of goods and services</td><td rowspan="4">Total use at acquisi-tion Price E7</td><td>Industries of activity</td><td rowspan="4">Exports E2</td><td rowspan="4">Household consumption expenditure E3</td><td rowspan="4">Government consumption expenditure E4</td><td rowspan="4">Gross of fixed capital E5</td><td rowspan="4">Changes inventories E6</td></tr>
<tr><td>IC E1</td></tr>
<tr><td>VA E8</td></tr>
<tr><td>Total production at basic prices E9</td></tr>
</table>

Source: CIRPEE/PEP; Laval University Laval, Québec, Canada

A2.Integrated Economic Accounts Table (IEAT)

4.10 The IEAT is in the form of a table which presents the institutional units in columns and the accounting flows in rows. In general, it has eight accounts.

4.11 The production and external trade account for Goods and Services includes, in aggregate form, information on the productive activities of the SUT by institutional sector and highlights the current Gross Domestic Product (GDP) and the current balance of external trade in goods and services.

4.12 The operating account shows the distribution of the production of the institutional sectors between compensation of employees, compulsory taxes and duties, operating subsidies, gross operating surplus, and mixed income.

4.13 The formation of primary income or factor income is recorded in the primary income allocation account. It includes the balance of the operating account or gross operating surplus and mixed income, which includes the income and expenses relating to the rental of productive factors (salary compensation, dividends, interest, and rents) and compulsory levies (taxes and duties). It also presents a balance of the primary income allocation account.

4.14 The secondary income distribution account takes this balance and traces the transfers of income between institutional units, except for transfers in kind recorded in the redistribution of income in kind account, and loans and investments presented in the Capital and Financial Accounts.

4.15 The use of the income account shows the allocation of the balance of primary and secondary income to final consumption expenditure and the savings account.

4.16 Investment transactions, namely gross fixed capital formation and changes in inventories, of institutional sectors are listed in the capital account, which, ultimately, presents their financing needs.

4.17 Finally, by taking up the liquid assets (savings) and the financing needs of the institutional units, the financial account presents the method of financing their investments below.

Table 4: Structure of the IEAT

Accounts	Goods and services	Rest of the world	Institutional sectors	Operations and Accounting balances	Sectors institutional	Rest of the world	Goods and services	Accounts
Account From Production				Imports Exports Production Added value				Account of Production
Account From Capital		Opposite sign value	Value of the balance	GFCF Stocks Capacity (+) (-) of Financing				Account of Capital

Source: Author's construction

Table 5: Standard SAM Information Source

		Factors	Institutional sectors	Margins	Activities	Products	Savings Investment	Rest of the World
		1	2	2	3	4	5	6
Factors	1				Payment to factors (SUT - E8)			
Institutional sectors	2	Income from IEAT factors	Transfers (IEAT)		Taxes and subsidies on production (SUT - E8)	Taxes and subsidies on products (SUT - R6)		Transfers (IEAT)
Margins	2					Trade and transport margins (SUT - R5)		
Activities	3					Domestic production (SUT - R1)		
Products	4		Final consumption (SUT - E3 & E4)		Intermediate Consumption (SUT – E1)		SUT Investment Consumption (E5 & E6)	Export (SUT - E2)
Investment savings	5		Domestic savings (IEAT)					External savings (IEAT)
Rest of the world	6		Transfers (IEAT)			Import (SUT - R3)		

Source: CIRPEE/PEP; Laval University Laval, Québec, Canada

4.18 In short, the SAM is a summary of the accounting transactions that have taken place within an economy over a given period, usually a year. This information is essential for the analysis of the impacts of macroeconomic shocks and policies on economic growth and poverty reduction in developing countries with the goal of informing policy decisions.

4.19 Therefore, having a reliable and consistent SAM is an essential step that deserves special attention, both in terms of primary data sources and their compilation for the development of the SAM.

4.20 Information on the production, exchange, and consumption of goods and services of the SAM comes mainly from the SUT. The distribution of factor income, inter-institutional transfers, and savings are recorded in the IEAT (Table 3).

4.21 However, it should be noted that the SAM, developed from the national accounts (SUT and IEAT), is in an aggregated form, which is not very appropriate for the analysis of the impact of economic policies on income distribution and poverty reduction in developing countries. Thus, an additional breakdown of the single household account and, sometimes, of the indirect tax accounts, and a detailed representation of the labour market seems to be essential for the development of a standard SAM.

A3. Other data sources

4.22 The other data sources consist of: (i) Government Finances Operations Table (GFOT); (ii) Foreign Trade (FT) data; (iii) Balance of Payments (BoP); (iv) Household survey data; (v) any other data sources necessary for the construction of a SAM.

i) The Government Financial Operations Table (GFOT):

4.23 The Government Finances Operations Table (GFOT) presents all the operations of the government from the generation to the distribution of its income. In the SAM, we are only interested in the current account of the GFOT, the creation of financing needs or capacities, as well as flows. Government savings are the difference between the government's current revenue and current expenditure. It should be noted that, in some countries, the GFOT is not sufficient to comprehensively trace the revenues and expenditures of general governments, as its scope is often limited to the central government. Other sources will then be needed to complete it.

ii) Foreign trade data:

4.24 Foreign trade data consist mainly of customs statistics supplemented by other administrative sources such as studies and surveys (survey on international trade in services, survey on international trade in unregistered goods, etc.).

iii) Balance of Payments (BoP):

4.25 The balance of payments (Bop) evaluates flows with subsidies and taxes, while the SAM evaluates exports and imports at market prices, i.e., including taxes less subsidies.

4.26 It consists of the following accounts:

- The current account: This includes the sub-accounts of goods and services; primary income (labour and capital) and secondary income (current transfers).

- The capital account: It includes capital transfers and transactions on non-produced non-financial assets.
- The financial transactions account: This relates to all transactions relating to financial elements: direct investment, portfolio investment, other investments, reserve assets.

iv) Household survey data:

4.27 These are from various sources: mainly from socio-economic and demographic surveys, and household databases.

v) Other data sources not mentioned:

4.28 Any available database that can be used to calculate the ratios of sub-accounts (database of companies, tax authorities, administrative data, etc.).

B. Steps for Developing the Social Accounting Matrix

4.29 This is the most important phase in the development of a SAM. Several methods are possible depending on the availability of information. The following table briefly describes the different stages of the SAM's development, as well as the information needed as recommended by Ismaël Fofana, Octobre 2007.

Table 6: SAM Development Steps and Data Source

	Main Steps	Data Requirements
1	Construction of the Primary SAM	Supply and Use Table: Integrated Economic Account Table
2	Adjustment of the Primary SAM	Primary SAM
3	Establishment of the characteristics (structure and size) of the final SAM	Adjusted primary SAM Household survey Tax data
4	Breakdown of the indirect tax account of the primary SAM	Adjusted Primary SAM Tax Data
5	Construction of household income and expenditure Vectors	Household survey
6	Detailed representation of primary SAM factor payments	Adjusted primary SAM, household income, and expenditure vectors
7	Breakdown of the household account of the primary SAM	Adjusted primary SAM, household income, and expenditure vectors

Source: CIRPEE/PEP; Laval University Laval, Québec, Canada

Step 1: Construction of the Primary SAM

4.30 The analysis of the table 5 shows that the development of the SAM is mainly focused on the accounting flows of production and transaction of the industries of activity (column 4) and the supply and use balances of goods and services available in the economy (column 5 and row 5). This information available in the SUT (Table 3) is organised according to the structure of the SAM.

4.31 A model of the primary SAM, like Table 5, is developed for this purpose. The supply matrix presented horizontally (Table 3) is reorganised vertically and integrated into column 5 of the model (Table 5). This transaction requires a prior identification of the size of the industries and the activity products of the SUT and the disaggregation of the "Industries" and "Products" accounts of the model.

4.32 A "Margins" account (column 3 of Table 5), which provisionally considers the trade and transport margins related to commercial transactions, is also created in this case. The use matrix (Table 3) is integrated into row 5 of the model (Table 5), ensuring that the "Industries" and "Products" accounts of the model are disaggregated to the dimension of the activities and products of the SUT.

4.33 In addition, the gross fixed capital formation and the changes in inventories are grouped together in a single account, called "Investment". It is the consumption for the investment which is reported in the primary SAM. The components of the value added, the payments to the factors (salary compensation, gross operating surplus, and mixed income), the taxes on production, and the operating subsidies, are introduced in the model in rows 1 and 2 of column 4 (Table 5).

4.34 Payments to SAM factors are charged to institutional sectors using information from the IEAT primary income allocation account. Distributive shares of compensation of employees, gross operating surplus, and mixed income of institutional units are estimated from the IEAT and used for the imputation of payments to the SUT factors.

4.35 The primary SAM model is first adjusted to the size of the resident and non-resident institutional sectors. The balances of the IEAT income use accounts represent the savings of the institutional units. The overall savings (or investment) of the IEAT economic agents should be equal to the overall investment of the SUT. Where applicable, the total investment (gross fixed capital formation and changes in inventories) of the SUT is allocated to institutional units according to the distributive shares of their savings in the overall savings of the IEAT.

4.36 Inter-institutional transfers are recorded in the IEAT and include primary transfers or income/expenses for the rental of productive factors, and secondary transfers that do not involve any exchange of goods or services. Transfers concern all accounting transactions in the "allocation of primary income", "secondary distribution of income", and "redistribution of income in kind" accounts, except for direct remuneration of factors, i.e., compensation of employees, and gross operating surplus and mixed income.

4.37 The analysis of inter-institutional transfers consists of first in estimating the net value of each category of transfer by agent. A transfer matrix is then developed to break down the agents' income and transfer payments.

4.38 Each institutional account (household, business, government, NPISH, and the rest of the world) in the matrix is broken down into several sub-accounts according to the transfer categories. Negative net transfers are expenses recorded in the column of the account (in positive), while positive net transfers are revenues recorded in the row.

4.39 The number indicated in a cell of the matrix represents a transfer from the agent in column to the agent in row. The exercise consists of tracing the transfer flows and grouping them according to institutional sectors. Starting from the IEAT information represented by the values of the "Total" vectors in Table 5, the exercise consists of reconstructing the values of the cells of the transfer matrix so that the row and column totals remain unchanged.

4.40 The analysis of the IEAT information reveals that three cases may arise:

1. One net payer and several net beneficiaries: It is possible to establish a relationship between the paying agent and the beneficiary agents by breaking down the amounts received in the cells at the intersection of the receivers' rows and the payer's column for the given transfer category.

2. Several net payers and one net beneficiary: The establishment of a correspondence between the different agents involved in the transaction is also possible. Unlike the first case, the amounts paid are broken down in the cells at the intersection of the recipient’s rows and the payers' columns for the transfer category in question.

3. Several net payers and several net receivers: It is less obvious to establish a correspondence between several payers and several receivers. Therefore, the sources of the transfers received, or the destinations of the transfers paid by the agent are traced using one of the following two imputation methods:

   - The distributive shares of the transfer payments of the agents can be used to input the transfer income according to the formulation below (omitting the subscriptions of the transfer categories - institutional sectors).

   - Alternatively, the distributive shares of the agents' transfer income can be used to allocate inter-agent transfer payments. The transfer payments thus estimated are broken down according to the second case (Table 2) discussed above.

4.41 Finally, the transfer matrix is aggregated by institutional sectors. It is more appropriate and advisable to distinguish direct tax payments/income from other forms of transfer and to record them in a specific account called "Taxes and Duties on Income and Wealth".

Step 2: **Adjustment of the Primary SAM**

4.42 This step consists of making corrections and adjustments to certain accounts of the primary SAM. Despite the loss of information it generates, the adjustment procedure of the primary SAM proves to be of capital interest, the purpose of which is to focus the accounting information on the objectives for which it is developed. In addition, it is an important step in reconciling the primary SAM to the standard SAM structure.

4.43 The SAM presents a "Margin" account which records the margins levied on the trade and transport of goods (positive margins) and paid to the "Trade" and "Transport" services (negative margins). The sales of goods and services is an economic activity like other activities. The margins related to their sales are an intermediate demand for transportation and trade services. They are made on the sales of domestic products (including exports) and imported products.

4.44 Like other intermediate demands, the standard SAM could consistently integrate the trade and transport margins in the input-output matrix. Therefore, it will be a matter of estimating the proportion of the overall margin charged to the "Trade" service. This information is used to break down the margins taken from each good sold to the "trade" and "transport" services. The trade and transport margins disaggregated are allocated to the intermediate demand of "Trade" and "Transport" in the input-output matrix (product-activity intersection of Table 5).

4.45 The domestic sale or domestic supply of each good is also increased by the trade and transport margins (intersection of activities-products in Table 5). The "Margin" account is then eliminated from the primary SAM.

4.46 In the primary SAM, exports of goods and services from the use sub-matrix in the SUT are an integral part of the absorption, as household final consumption, intermediate consumption of firms, and their investment demand. Given that exports relate to the different components of the sub-matrix of supply (domestic production and imports), the phenomenon of exporting imported goods (commonly referred to as re-exportation) could then appear when the SAM is used for the analysis of the impact of economic policies.

4.47 In the situation where re-export is marginal, limiting exports to goods and services originating from domestic production becomes essential. Thus, external sales or exports of goods and services are directly related to distributed domestic production and not to total supply (including imports). In the primary SAM, exports go from the row representing the "Product" account to the one representing the "Industry" account while remaining an expense of the "Rest of the world" account as presented in Table 2. The domestic sale or domestic supply of each good is then reduced by the value of exports.

4.48 In general, domestic supply is positive when re-exports are marginal, and negative in the opposite case. Although the consideration of re-exports and the maintenance of the

initial structure of the primary SAM as presented in Table 5 are the appropriate solution, the inconsistency of a negative domestic supply could also be corrected by the aggregation of industries and products.

4.49 Resident households make direct purchases of goods and services from the rest of the world. Although they do not enter the traditional import channels, they are considered in household consumption expenditure and commercial transactions with the rest of the world, through the "direct purchases of foreign products" account. Direct purchases by residents are charged to household consumption expenditure in proportion to the relative share of expenditure on each product in total household expenditure.

4.50 This procedure focuses on categories of household consumption expenditure that involve goods and services subject to importation. It ensures that the balance between supply and use is maintained by attributing household purchases to imports, organized by product.

4.51 However, these expenditures are subtracted from the total household expenditure and added to the exports of local products, and consequently, to the transactions with the rest of the world. The procedure for allocating direct purchases by non-residents is like that for residents. They are deducted from household consumption expenditure, in proportion to the share of each product in the total expenditure and then allocated to exports by product.

4.52 Like direct purchases by residents abroad, this procedure covers only those categories of goods and services subject to international trade (exports). Differences may arise between the values recorded in the SUT and those in the IEAT, necessitating reconciliation. The latter can be done through the adjustment of the IEAT values to those of the SUT, with the advantage of maintaining the initial structure of the SUT's goods and services transactions.

4.53 Central bank balance of payments (BoP) data and related statistics track cross-border monetary transfers between households by country. These figures can therefore supplement income and expenditure survey data on household transfers to and from the rest of the world.

4.54 The wages and salaries received by the Rest of the World (RoW) are disaggregated by the country concerned. The salaries that the governments pay to the RoW are also disaggregated by the countries concerned.

4.55 Reconciliation consists of proportionally adjusting (increasing or decreasing) the relevant income accounts of the institutional units of the IEAT using a uniform proportion for all institutional units. The SAM could also present a residual account recording the differences between supply and use. A procedure for adjusting these differences consists of assimilating the accounting residues to the changes in inventories, and consequently,

charging it to the investment account. In this context, it would be desirable to make the necessary simulations to minimize the differences.

4.56 The SAM offers great flexibility in the level of disaggregation of factors, institutional sectors, and industries of activity. The following section highlights the main characteristics of the sources of information used in the development of a final SAM.

Step 3: Establishing the Characteristics of the SAM

4.57 Depending on the analytical objectives of compilers and users, as well as the availability and reliability of underlying data, the dimensions of the final SAM (products, industries, households, factors of production, and taxes/subsidies) are determined in advance. In this section, we establish a correspondence between the various sources of information (primary SAM, household surveys, and other data sources) to reconcile the needs and availability of information to set the structure and dimensions of the SAM to be developed:

- The dimensions of the industries and products depend essentially on the possibility of establishing a reliable correspondence between the industries and the products from the classifications adopted in the primary databases (classification of industries and products in the national accounts and household surveys), and the concerns of the SAM's compilers and users. Three situations can arise:

  1. The industries and products correspond perfectly in both data sources; therefore, no adjustment is required.

  2. Several industries and products from one source correspond to one industry (product) from the other source. Two solutions are possible: a simple aggregation of the industries and products) of the detailed source, or a disaggregation of the industry (product) of the non-detailed source requiring the use of proportions.

  3. Several industries and products of a source correspond to several other industries and products of the other source. The aggregation or disaggregation of industries and products could therefore be considered in this situation. In general, the SAM has an identical number of products and industries, when the latter are classified according to the logic of the product. However, the industries of activity could present one or more ancillary products different from the main product.

In the last two cases, a consultation of the national accounts database is necessary. The SAM could possibly present industries of activity and products of different sizes; in this case, a product could come from several activities, as an activity could produce several goods and/or services.

- The categorisation of productive factors and households also responds to the concerns of the SAM's compilers and users and the availability of statistical information. The allocation of mixed income to self-employment and capital by

industry and by the various categories of households requires information on the remuneration and volumes of activity of employees, and the volumes of activity of self-employed persons available by industry.

4.58 A detailed representation of the labour market by the breakdown of workers according to predefined criteria (qualification, place of residence, gender, etc.) and the breakdown of the household account into several categories (place of residence, socio-professional categories, etc.) requires the availability of additional information.

4.59 The SAM developed from the national accounts is in an aggregated form. In general, it has two factor accounts (compensation of employees, and gross operating surplus and mixed income) and four institutional accounts (households, businesses, government and the rest of the world). In addition, the various taxes levied on transactions of goods and services (value added tax, customs tariff, sales tax, etc.) are often grouped into a single accounting flow.

4.60 This level of aggregation of the SAM is not appropriate in the impact analysis of economic shocks and policies on income distribution and poverty in developing countries. Thus, the disaggregation of several primary SAM accounts is essential and consists mainly of:

- The distinction of the various forms of compulsory levy on transactions of goods and services (value added tax, customs tariffs, sales taxes, etc.).
- The allocation of gross operating surplus and mixed income (GOS-MI) generated from production activities to capital and labour factors, and the integration of several categories of the latter.
- The breakdown of the household account into several representative categories according to the objectives for which the SAM is developed.

4.61 This exercise requires the availability of additional data on the various types of indirect taxes, the economic activities of individuals, and the formation of household income and its allocation to the various categories of expenditure. Apart from the tax data, all the above information may be available in a representative survey of the population of the budget-consumption type conducted among households. Other types of surveys, such as the employment survey and the time-use survey, have partial information that often complements the budget-consumption survey.

Step 4: **Breakdown of The Indirect Tax Account**

4.62 In general, the SAM's indirect tax account shows taxes on production and taxes on products. If the standard presentation of the SUT's production taxes seems to be indicated in the impact assessment of macroeconomic shocks and policies, that of taxes on products is, however, not very appropriate for such an analysis.

4.63 In the primary SAM, the various taxes on products (customs duty, value added tax, sales tax, export tax, etc.) are grouped into a single accounting flow. On the other hand, it is increasingly clear that transactions and tax levies on products are differently influenced by macroeconomic shocks and policies depending on the origin and destination of goods and services traded in the economy, hence the interest of distinguishing taxes on products.

4.64 Thus, the taxes on the products of the primary SAM are disaggregated into several categories according to the origin and destination of the products (customs duty on imports, export taxes), and other taxes on products (value added tax, sales tax, etc.). The aggregate value of the tax on product of the primary matrix is charged to the various types of tax on product according to their distributive share in the total tax revenue information from a tax data source.

Step 5: Construction of the income and expenditure vectors of the households surveyed

4.65 The breakdown of the SAM factor and household accounts requires additional information from other data sources. Ideally, a representative survey of the population with detailed information on economic activities, income, and household expenditures is required at this stage.

4.66 The disaggregation of the SAM's factor and household accounts involves the construction of household income and expenditure vectors according to the SAM's structure. Firstly, an implicit price is estimated for the factors (labour and capital) operated by the household; mixed income (net income) is then adjusted to be at least equal to the cost of using the factors; finally, the labour factor is disaggregated into several categories and the income and transfer payments are analysed and organised according to the structure of the SAM. To this end, the industries and products of the survey's activity are rearranged according to the classification of the final SAM in step 4.

- ***Estimation of the Implicit Price of Factors***

4.67 Estimating the implicit price of factor is indispensable in imputing the net income or mixed income to the productive factors operated by the household. Indeed, in the case of individual enterprises, the entrepreneur and family helpers, not being employees, do not explicitly appear as remuneration for their work, which therefore remains included in the net income. However, these individual companies are very important, especially in agriculture, food processing and preservation, trade, and other services.

4.68 According to its method of remuneration, there are two categories of labour factor: paid employees, where the individual works for a salary, and self-employed , where they work on their own account. The cost of self-employment of the individual in the household is equal to the volume of labour service offered during a period, usually a year, multiplied by his implicit salary, i.e. the potential salary to which he would have aspired by offering his services to an employer.

4.69 This salary can be a simple average of wages and salaries at the national level, by region, by occupation and/or by industry of activity, and should take into account employment opportunities (involuntary unemployment); or an individual salary estimated by econometric regression taking into account the characteristics of the individual (education, experience, gender, etc.), and their household (size, income, environment, etc.).

4.70 The cost of productive capital is equal to the rental charges of the factor when it is fully rented. The cost of using the productive capital of households and individual entrepreneurs includes the direct rental costs, generally available in the surveys, and the indirect costs represented by the implicit rents that owners should pay directly to their assets.

4.71 The estimation of the cost of using productive capital is mainly based on the calculation of the indirect costs of this factor, particularly that of the implicit return on capital operated by the household. The cost of using capital is equal to the volume of productive capital of the household multiplied by its rental price.

4.72 Ideally, capital owned by households and self-employed entrepreneurs should be valued at its rental cost, like other factors. In this case, we must find a market and a rental price for each type of capital. Since these requirements cannot be met, particularly in developing economies, the alternative option would be to value the capital at its cost of use, i.e., its cost of wear and tear and obsolescence (or depreciation), in general, increased by its opportunity cost (or average interest rate). This leads to information on the acquisition and current values, as well as the duration of use of the capital.

4.73 These data, often available in household surveys, do not, however, concern all known forms of capital; many of them (buildings, land, etc.) are not affected by wear and tear or obsolescence, but rather acquire value over the years. In this case, depreciation also becomes limited, in addition to the availability of the required information. In the absence of using the first two methods, the rental cost of the capital unit could be estimated by the return on the monetary unit of invested capital, which is equal to the gross operating surplus (or mixed income) net of the cost of self-employment of producer households per monetary unit invested at the beginning of the period.

4.74 The value of the capital operated during the period is an average of the capital stock at the beginning and end of the period before depreciation. A rental price of capital is estimated for all households; this could also be assessed by industry of activity.

- ***Adjustment of household mixed income***

4.75 Once the cost of the productive factors (capital and labour) exploited in property is estimated, it is then compared to the net income declared by the household. The net income minus the cost of the factors is equal to the profit of the activity, which can be either a positive value or a negative value.

4.76 Since households tend to underestimate their income from activity, we estimate that the net income of households cannot be lower than the cost of using the factors involved in the production process, the factors being valued at their rental cost. Therefore, the zero value is attributed to negative profits under the assumption that income and/or activity expenses are underestimated in the households concerned.

4.77 Positive profits are attributed to the capital factor, which is a form of return on capital. When the information required to estimate the implicit return on capital is not available in the survey, the procedure is limited to estimating the remuneration of productive capital by subtracting the cost of self-employment from the net income.

4.78 This approach amounts to cancelling the profit of all households in paragraph 4.80, which is directly considered in the remuneration of capital. The negative remuneration of the capital factor is also cancelled (set at zero) under the following assumptions: the households concerned underestimate their income from activity, and the latter are not very capital-intensive.

- ***Decomposition of the Labour Factor***

4.79 The real and implicit wages and salaries of individuals and household capital income are the microeconomic information available at this stage of data processing. Real and implicit wages could in turn be disaggregated into several other categories according to the objectives for which the SAM is developed. If we wish to represent several segments of the labour market (skilled and unskilled labour), the definition of the criteria for separating workers is then an indispensable step in disaggregating wages and self-employment income according to the different categories selected.

- ***Reorganisation of Income and Transfer Payments***

4.80 The income and transfer expenses of the survey are classified according to the logic of the institutional units, like the transfer items of the SAM. After reorganisation of the transfers, three situations can thus arise:

1. The transfer item appears in both data sources (SAM and household survey), in this case, the analysis is limited to the database reconciliation procedure.
2. The item is available in the survey and not in the SAM, the survey values are introduced in the SAM by aggregating households into representative categories (Step 7).
3. The item appears in the SAM and not in the survey, the income or transfer payment of the household of the survey is estimated by imputation using the distributive shares of income (payment) of transfer in the total income (total expenditure) of the household category of the SAM.

- ***Rearrangement of Industries and Products***

4.81 The survey's industries and products are reorganised according to the correspondence established with the final SAM in Step 5. This exercise is easier when the two databases have the same classification of industries and products. However, if they are different, the categorisation of the industries/products of the household survey could be different from that of the SAM.

4.82 Consequently, either a simple aggregation of the household survey accounts and their integration into the SAM is adopted, or proportions are developed from the survey data to disaggregate the SAM accounts. At the end of this stage, we have income vectors (paid employees, self-employed, capital, and transfers) and expenditure (final consumption of products, transfers, and savings/investment) of households. Information on the various categories of industries and products, as well as the variables of differentiation of the representative categories of households, are also available. It is this information that is used to disaggregate the factor and household accounts of the SAM in the next steps.

Step 6: **Detailed Representation of Payments to Primary SAM Factors**

4.83 Information on labour income (paid employees and self-employed) and capital from the survey is used in the imputation of factor payments (wages and salaries, and GOS-MI) of the industries of activity of the primary SAM to the labour and capital categories of the final SAM. The gross operating surplus/mixed income is first allocated to self-employment and capital, then wages and self-employment income are disaggregated into several categories.

• Imputation of the GOS-MI to self-employment and capital

4.84 Two approaches for imputing the gross operating surplus /mixed income of the SAM to labour and capital are proposed, depending on the periods of the databases (SAM and household survey).

1) The first approach is proposed when the SAM and the household survey are from the same period, the cost of self-employment of the survey is first aggregated according to the logic of the industries. In the case where the activity of industries in the survey are identical to those of the SAM, this cost is integrated directly into the SAM. On the other hand, a procedure for adjusting this cost is used in the situation where the categories of activity of industries are different from one database to another.
2) The second approach is proposed when several industries of the survey correspond to an industry of the SAM, the cost of self-employment of the first base is grouped into a single category and integrated into the second. When an industry category of the survey corresponds to several categories of the SAM, the distributive shares of the gross operating surplus /mixed income of the industries of the SAM are used to allocate the cost of self-employment of the industry of the survey to the corresponding industries of the SAM. The costs thus charged are included in the SAM.

4.85 In the case where the SAM and the household survey are not from the same period, we assume that the sectoral ratios for compensation of employees to the implicit costs of self-employment vary slightly from one database to another (SAM and household survey), regardless of the periods.

4.86 The ratios of compensation of employees to the self-employment costs of the industries are estimated from the household survey and used to allocate the self-employment costs of the industries of activity of the SAM, from the compensation of employees recorded in the latter.

4.87 In general, the gross operating surplus/mixed income is more important than the costs of self-employment. Indeed, the GOS_MI of the SAM is charged to companies, and to individual enterprises (households and self-employed entrepreneurs). The net income of companies mainly remunerates their productive assets or capital, while that of individual enterprises is divided between self-employed work and capital. Sometimes, the value of the GOS_MI is lower than the payments charged to self-employment, indicating that either the GOS_MI of the SAM is underestimated or the self-employment income of the household survey is overestimated. In general, the adjustment procedure consists of revising the estimate of the (implicit) cost of self-employment in step 6.

• ***Breakdown of payments to the labour factor***

4.88 The wages and costs of self-employment of the SAM are then broken down according to the categories of work selected. The sectoral distributive shares by category of salaried and self-employed work are estimated from the household survey and used in the imputation of the salary remuneration and the self-employment costs of the SAM to the various categories selected. When the costs of self-employment have been directly introduced into the SAM, this procedure applies only to compensation of employees; the costs of the various categories of self-employment are directly integrated into the SAM. Finally, wages and self-employment costs are grouped by category in the SAM.

Step 7: Breakdown of the Household Account of the Primary SAM

4.89 The use of the primary SAM in the distribution of income and the analysis of well-being requires a breakdown of the single household account into several representative categories using the household income and expenditure vectors developed in Step 5. These vectors, built from the household survey and organised according to the structure of the SAM, consist of factor income (labour and capital) and transfers, which are then devoted to the acquisition of consumer goods and services, compulsory levies, and transfer payments.

4.90 An excess (positive) balance is saved for investment, while the household draws down to cover a deficit (negative) balance. The disaggregation criteria of the household account are chosen according to the objectives for which the SAM is developed.

4.91 In paragraphs 28.83-28.85, 2008 SNA recommends a breakdown based on the main sources of household income, namely, employers, self-employed workers, employees, beneficiaries of property income, and recipients of other transfers (pensions and other transfers).

4.92 Household classification can also be made according to the socio-economic category of the main contributor to household income. In general, the "head of household" includes public employees, non-agricultural formal private employees, informal private employees, agricultural workers, non-agricultural self-employed, inactive workers, and others. However, other classifications may be considered depending on the availability of information. Thus, the household sub-sector can also be structured with the modalities "poor households" and "non-poor households" which, in turn, are disaggregated by type of households as follows: public employees, private employees, independent farmers, non-agricultural self-employed, unpaid workers, unemployed, and inactive workers.

4.93 Household income and expenditure vectors, grouped according to the criteria used for household aggregation, are included in the SAM when the expenditure categories of the two databases are identical. However, a data adjustment procedure is required when these categories are different. Therefore, two situations may arise when the product categories of the survey differ from those of the SAM:

- When several product categories of the survey correspond to a category of the SAM, the values of the survey are aggregated by simple addition.
- When a survey category corresponds to several other SAM categories, the household product expenditure of the latter is estimated by imputation according to the following procedure: either the product category ‘a’ of the survey corresponding to the categories ‘i’' of the SAM, the procedure consists in estimating the distributive share of the expenditure in product ‘i’ of the single household category of the SAM.

4.94 The insertion of income and expenditure vectors in the SAM inevitably leads to an imbalance in the SAM. Two methods are generally used to rebalance the SAM: the imputation method and the programming method.

1. The imputation method consists of distributing the income and expenditure of the household category of the primary SAM to the representative household categories using distributive shares estimated in the household survey.
2. The programming method consists of using a computer programme to rebalance the SAM. The procedure consists of modifying the values of the cells so that the total values of the columns equal those of the SAM rows. Certain values deemed relatively more reliable are set before proceeding to rebalance the SAM. Detailed discussions on the rebalancing of a SAM are provided by Fofana, Lemelin, and Cockburn (2005) and Robinson, Cattaneo, and El-Said (1998).

In summary:

4.95 Two national accounts tables, the SUT and the IEAT, are compiled to develop a SAM. The IEAT is then adjusted to address the concerns of its compilers and users. After establishing the structure and dimensions of the SAM to be developed, considering the needs and availability of statistical information, a detailed representation of the labour market is proposed, and the household account is disaggregated into several representative categories.

4.96 The adjustment and consideration of an increasing number of productive factors and representative household categories in the SAM have the advantage of understanding the heterogeneity of the distributive impacts of economic shocks and policies. However, the adjustments proposed in the second step, although necessary in the development of a standard and consistent accounting framework, result in the loss of often important information in the distributive analysis of economic shocks and policies.

4.97 For example, the adjustment of the trade and transport margins proposed at this stage would be inappropriate in understanding the direct effects of a change in imports on the demand for trade and transportation services. Consequently, this adjustment would underestimate the welfare effects of an impact of disaggregating customs tariffs on imports of goods and services. In this case, a mathematical specification of the margins would be more appropriate than the adjustment of the SAM proposed in the second step.

4.98 The estimation of the rental value of capital in a residual manner proposed earlier has the advantage of being simple in its formulation and in need of information (net income and implicit value of self-employment). However, they are closely dependent on the reported net income and the estimated (not actual) cost of self-employment. The more negative the profit (underestimation of declared net income and/or overestimation of the cost of self-employment), the more the upward adjustment of activity income is in favour of self-employment.

CHAPTER 5 : DISAGGREGATION AND BALANCING OF THE MICRO-SAM

5.1. The disaggregation of the Micro-SAM is done in two steps:

- The first step is to disaggregate the elements of the Macro-SAM built from the structures obtained from the SUT, the IEAT, the household expenditure survey, the Government Finances Operations Table (GFOT), and Foreign Trade, etc.
- The second step concerns the balancing phase of the SAM by reconciling and ensuring the macroeconomic consistency of the data.

A. Disaggregation of the Micro-SAM

5.2. The expansion of the accounting matrix of the sequence of accounts to incorporate the disaggregation of households is the usual form of Micro-Social Accounting Matrix" (Micro-SAM). As such, the Micro-SAM goes beyond a rigorous accounting structure based on observations to allocate income by household group, possibly based on a survey of household income and expenditure.

5.3. In some cases, it is based on a single survey. As noted in Chapter 24 on the household sector, the problem is that income flows in the 2008 SNA concern individuals (whether they are employees, beneficiaries of property income, or transfers), while expenditures are associated with households. The grouping of individuals in relation to households is necessarily difficult and is based to a greater or lesser extent on a set of assumptions. Any analysis of the impact of government policies on households and their consumption depends on the achievement of such a grouping.

5.4. Experts advise against subdividing all accounts uniformly instead, they suggest selecting the most relevant subdivision for each account. This approach facilitates optimal utilisation of the matrix presentation's capabilities. For ECOWAS Member States, the following breakdowns are proposed:

a) **Industry/product accounts**:

5.5. For the disaggregation of these accounts, 24 industries/products were selected, which are as follows:

Table 7: Classification of the industries and products selected

No.	Industries	Products
1.	Subsistence agriculture	Subsistence farming products
2.	Export agriculture	Products of export agriculture
3.	Livestock and hunting	Livestock and hunting products
4.	Forestry, logging	Forestry and logging products
5.	Fishing and aquaculture	Fishery and aquaculture products
6.	Extraction of hydrocarbons	Extraction of Hydrocarbon products
7.	Extraction of gold ore	extraction of gold products
7.	Extraction of bauxite ore	Extraction of bauxite products
7.	Uranium ore extraction	Extraction of uranium products
8.	Other mining and quarrying	Extraction of other mining products
9.	Manufacture of food products, beverages and tobacco	Food, beverages and tobacco
10.	Manufacture of textiles, clothing and leather	Textiles, clothing and leather
11.	Coke and refined petroleum products	Petroleum refining products
12.	Other manufacturing activities	Other manufacturing products
13.	Production and distribution of electricity, gas	Electricity and gas
14.	Water production and distribution, sanitation	Water and sanitation
15.	Construction	Construction work
16.	Trade and repair	Trade, repair
17.	Transportation and storage	Transportation and storage services
18.	Accommodation and food service activities	Accommodation and food services
19.	Information and communications	Information and communication services
20.	Financial and insurance activities	Financial and insurance services
21.	Public administration activities	Public administration services
22.	Education	Education
23.	Human health and social work activities	Health and social work services
24.	Other services	Other services

Source: Common Methodological Guide for the Compilation of National Accounts (ECOWAS), 2024

5.6. This disaggregation comes from the classification of activities used for national accounts within the framework of the Common Methodological Guide for the Compilation of National Accounts for ECOWAS Member States.

b) Disaggregation of the General Government Account

5.7. On the revenue side, industries pay taxes less subsidies on production to the State . These amounts are recorded in the production tax account, which pays them back to the Government as expenses. The product account pays the State taxes on exports, imports, and other taxes on products. These amounts are recorded in the various product tax accounts (row), which will be paid back in expenses (in column) to the Government in the form of a transfer. Current taxes on income and wealth paid by companies and households are recorded in the account of current taxes on income and wealth. Other transfers are received by the Government. The number of transfers received from households by the Government is disaggregated by category according to the general structure of transfers received by household category.

5.8. The State pays to the RoW, the Community Solidarity Levies (CSL) or Community Levies (CL), ECOWAS, debt service, and other current transfers (international cooperation).

Table 8: Classification of the General Government (or State) account

State or Public Administrations
Government Current Account
VAT-type taxes and duties
Taxes on production less subsidies
Import duties and taxes
Export duties and taxes
Subsidies on products
Other taxes on products
Current taxes on income and wealth

Source: Author's construction

c) Disaggregation of the Household Account

5.9. The disaggregation of the household account is based on the employment of the head of household and mainly relates to data from the most recent household consumption expenditure survey conducted in the country by the National Statistical Office (NSO).

5.10. The disaggregation of total wages and salaries received by households by category is compiled using the general structure of consumption expenditure by categories of households whose head is an employee in the absence of reliable information on income from wages and salaries. Similarly, the GOS received by households is shared between non-agricultural self-employed, agricultural workers, the unemployed, and others using the structure of their overall expenditures. The breakdown of transfers received from companies, public administration, and NPISHs by household category is analysed using the general structure of transfers received by household categories provided by the household survey.

5.11. For the breakdown of transfers received from the rest of the world, the total amount must be disaggregated by country of origin. The structure of the intra-regional matrix of workers' remittances can be obtained from the central bank. The rest of the transfers received are disaggregated to other countries based on an arbitration on the weight of the country's diaspora in the countries of origin.

5.12. The breakdown by type of household is based on the structure of the overall transfers received by households. The disaggregation of final household consumption by household category is made based on the structure of total household expenditure by category provided by the household survey used.

5.13. The disaggregation of transfers paid by households to financial corporations, governments, NPISHs, and the RoW is possible based on the structure of transfers paid by households by category. The structure of the intra-regional matrix of workers' remittances provided by the central bank then makes it possible to isolate transfers to the ECOWAS

Zone, the rest of the transfers to other countries being obtained by arbitration. This disaggregation gives rise to several sub-matrices.

5.14. In the household sector, the next step describes the disaggregation of income distributed by companies to households, transfers received from the Government, and the RoW by household category. The same applies to household income taxes, transfers to the RoW, and the split of household savings by household category.

5.15. The variable of interest for the distribution of income by companies to households is the interest and dividends received by household category in the household survey. This distribution was approximated by the overall structure of household income, excluding distributed income and net transfers received by households.

5.16. In the household survey, the proxy used to approximate government transfers to households is the variable "Transfers" or, otherwise, the overall structure of income without transfers. This is disaggregated by household category to identify a structure for the distribution of the overall amount resulting from the macro-SAM.

5.17. The amount of these transfers is included in the Balance of Payments, but there is a problem with their distribution by household category. Hence, the overall structure, excluding transfers, is used.

5.18. To disaggregate household savings by category, the treatment is differentiated according to the country: it can be the structure of household final consumption expenditure or the overall structure of household income, a structure which is very close to the structure of household final consumption expenditure.

5.19. Household income taxes, according to GFOT data, consists mainly of payroll taxes. Also, the breakdown of these taxes mainly concerns public and private employees, as well as self-employed and non-agricultural employees. In some countries, it is possible that the household survey makes it possible to find a breakdown structure of property income.

Table 9: Household Account Classifications

Households
Public employees
Formal private sector employees
Informal private sector employees
Employers in the formal private sector
Employers in the non-agricultural informal private sector
Farmers
Family helpers, apprentices and trainees
Unemployed
Inactive

Source: Author's construction

d) Disaggregation of the Capital Account

5.20. The disaggregation of the capital account is to distinguish public capital from private capital. The extraction of data from national accounts allows us to disaggregate investment into public investment and private investment at the global level. However, it does not allow this disaggregation by product and by type of capital. The strategy may be to first split the overall public capital obtained by type of product using data from the Public Investment Programme (PIP) to calculate the structural coefficients. Private investments by product are deducted from the balance.

5.21. The savings of the governments are public, and those of the other resident institutions are private. External savings (current account balance) must be broken down into public and private external savings. One of the solutions is to use the proportion of domestic savings between the public and private. Public external savings are disaggregated by country from the public debt file or the government's net external position vis-à-vis each of the RoW countries. Household savings and private external savings constitute an adjustment item that allows for balancing the SAM.

Table 10: Capital Account Classifications

Savings account - investment or capital account
Public investment
Private investment (households, companies)

Source: Author's construction

e) Disaggregation of the factor account

5.22. This process allots wages, gross operating surplus, and mixed income to industries and factor types, taking cognisance of household categories

Table 11: Production Factor Account Classification

Production Factors Account
Labour Factor
Capital Factor

Source: Author's construction

f) Disggregation of the Rest of the World Account

5.23. The treatment of the Rest of the World (RoW) is done according to the following steps:

- Organisation of imports and exports of goods by country of origin and destination, respectively, and according to the classification of national accounts.
- Creation of the structures of imports of goods, according to which the breakdowns and the balances are derived by adding the differences in the larger values.
- Imports of services, in the absence of information from the central bank, are based on proxies.

Table 12: Rest of the World Account Classifications

Rest of the World Account
ECOWAS Member Countries
Other African countries
China
European Union
Other countries

Source: Author's construction

B. Balancing the Micro - SAM

5.24. It is virtually impossible that the statistics used for the construction of a SAM, which often come from various sources, produce a balance from the outset. A balancing process is, therefore, necessary, to correct any inconsistencies in the data collected.

5.25. It should be noted that the very principle of a SAM is that, for each account and sub-account, the total of the rows must be equal to the total of the columns. It is an essential methodological advantage to refer to the fundamental macroeconomic identities, not only those of national accounts (equality of supply and use of the various agents) but also those of the balance of the goods and capital markets, as well as the balance of external accounts.

5.26. Several balancing techniques are used by the SAM compiler:

- The RAS method is used when constructing the SAM. This method is mainly applied to balance a matrix when there are discrepancies between the different data sources used. To use the RAS method, simply specify control totals for each row and column of the matrix to be balanced. Then, by iteration, the values inside the matrix are adjusted proportionally until the equality between the sum of the rows and columns of the matrix and the specified control totals is obtained. The advantage of this method is that it is simple and requires little information. In addition, if the control totals are consistent, convergence is ensured. However, it is difficult to add constraints or additional information to the process, which would have allowed the improvement of the estimate.
- The manual method is the widely used balancing technique. The advantage of this method is that it allows the analyst to use values that are as close as possible to the available official estimates (SUT, GFOT, Balance of Payments). It makes it possible to give an individual informational weight to the different cells of the initial SAM according to their estimated degree of reliability. Thus, it is possible to "freeze" certain cells whose source is considered particularly reliable (tax data, balance of payments, official GDP statistics) and to assign them a high informational weight. On the contrary, the other boxes or cells had to serve as adjustment variables during balancing.

5.27. The reconciliation of the imbalances in the accounts is as follows:

a) Industry accounts

5.28. The industry account is made up of supply by production disaggregated by industry according to the ECOWAS classification used for the national accounts. In terms of use, we have intermediate consumption, compensation of employees, taxes on production less subsidies, and GOS/mixed income.

5.29. Regarding the distribution of the whole (COE + mixed income), the mixed income of the informal sector is determined by the industry to which the COE is added. All these household incomes are disaggregated by industry using the structure obtained from the household survey, which makes it possible to split these incomes by type of household and by industry. The GOS by industry, which is used to remunerate the "capital" factor, is obtained by balance.

5.30. Resolving these imbalances results in a balanced branch account.

b) Factor Accounts

5.31. For the balancing of the factor account, it must be ensured that at the level of the industry accounts, the total sum of the incomes (wages and salaries + mixed income) of the households by type of qualification is equal to the total amount paid by the factor account at the level of the Macro-SAM. Once this condition is satisfied, it must also be verified that the total GOS of the industries is equal to the share of the GOS paid by the factors to the companies plus (+) the balance of the income of the factors of the rest of the world. If these conditions are met, the household income is then balanced by category and by type.

5.32. For public employees, farmers, breeders, loggers, and fishermen, a one-to-one relationship is established with the distribution of income at the level of industry accounts with respective to public administration, agriculture intended for export, subsistence agriculture, livestock and hunting, logging, and fishing. We therefore have the same amounts if we go from industry accounts to factor accounts.

5.33. The balance of household income is distributed among employees in the formal private sector, employees in the informal private sector, self-employed and non-agricultural employers, and the unemployed. This distribution is done by recalculating the income structure by household category and by type, considering only the categories mentioned above. This makes it possible to balance the "labour" factor account.

5.34. For the "capital" factor, the problem does not arise for public capital, which is equal to the Consumption of Fixed Capital (CFC) already entered in the macro-SAM. Similarly, the share of the GOS paid to companies and to the rest of the world is also carried over, and the balance of factor income is distributed between the "ECOWAS" and "NON-ECOWAS" zones,

including China and the European Union. The detailed data of the BoP makes it possible to make this distribution.

c) Product accounts

5.35. They make it possible to relate the supply composed of the total production resulting from the industry accounts and the imports with the demand composed of the intermediate consumption of the industries, the final consumption of households and public administrations, the gross fixed capital formation, changes in inventories, and exports. In national accounts, this leads to achieving supply-use balances (SUB) by product.

5.36. Resources are listed in rows and uses in columns. The control mechanism performs the sum of the column values minus the sum of the row values for each product. It is assumed that imports and exports are official data, the breakdown of which is derived from structures calculated using Foreign Trade statistics for goods. Indeed, the amounts used are those from the Balance of Payments and the foreign trade data that served as the basis for developing a structure to break down these amounts, particularly the "Goods" portion.

5.37. In practical terms, we start by balancing the supply quadrant, i.e. Production + Import.

5.38. If the value of the difference revealed by the balancing is not very significant (the magnitude depends on the activity of industry), this difference is reported at the level of the ICs, the objective is not to significantly modify the structure of the ICs of a given industry.

5.39. If for a given product, the difference is negative, it means that there is more demand for this product than supply. We then identify an industry where we can decrease the ICs of this product and add the same amount to another product in ICs of the same industry. If the difference is positive, the reverse transaction is performed.

5.40. If the difference is high, we opt for adjustments in the level of Household Final Consumption Expenditure (HFCE). This option is justified by the fact that the HFCE is estimated from a survey and may be subject to adjustments. Suppose the difference is positive, for example, the product's supply exceeds the use, this difference is added to the HFCE in proportion to the existing values for the selected household categories.

5.41. However, if the value is negative, the reverse transaction is performed. In this case, it may happen that the difference exceeds the total amount of the HFCE for all the different categories of households. We are therefore led to reduce both the intermediate consumption (IC) and the HFCE while keeping in mind that if we decrease the value of IC in a product of a given industry by any amount, we must add the same value to another product of the same industry.

5.42. We proceed step by step to obtain the balance on the quadrant containing the production and imports by product. All imbalances, are, therefore reported on the final consumption matrix.

5.43. Once all the imbalances are reported at the level of the HFCE matrix, the balancing is carried out as follows but having first checked that the sum of the various imbalances is zero. We reconcile the imbalances having the same orders of magnitude and opposite signs corresponding to two distinct household categories: For example, a positive discrepancy of a given household category means that the expenditure of this category exceeds its supply.

5.44. This imbalance is reduced by adjusting the difference based on each product's expenditure in the affected category, then adding the value to the other category with an equal but opposite discrepancy. This approach preserves the final consumption among selected household categories, whilst ensuring the HFCE quadrant is balanced by product and household type.

d) Sector Accounts

- ✓ Households

5.45. Before balancing the product account, we ensure that certain elements of the household account are disaggregated from a structure obtained from the household survey or from a structure deduced from the existing elements. The underlying assumption is that the transfer of household income to the RoW depends on the income level of the household category.

- ✓ Governments

5.46. As for the government account, the supply has not changed after the first breakdown exercise. However, in terms of use, it may happen that the structure of Government Final Consumption Expenditure (GFCE) or transfers from the government to households is modified in order to achieve equilibrium. This last element is also obtained by balancing at the macro-SAM level and disaggregated according to the structure obtained from the household survey. Concerning the current transfers received from the RoW or paid by the governments to the RoW, the details of the BoP allow the distribution to be made according to the breakdown selected.

- ✓ Enterprises

5.47. The business account has not changed since the Macro-SAM.

e) Accumulation accounts

5.48. The accumulation accounts have not changed after the first breakdown, following the structure of the SUT. By focusing on products, it is possible to balance it by adjusting or allocating the discrepancy in investment between public and private investment.

f) Rest of the World Accounts

5.49. Generally, the details on the elements of the BoP and the structures derived from foreign trade are sufficient to balance the RoW account. The distribution of the current account balance between public and private, and by RoW countries, can be derived based

on the shares between public and private domestic savings. The balance of the public current account can be distributed among the RoW countries based on the bilateral debt structures or the net external position of the government vis-à-vis each RoW country. The balance of the private current account can be distributed among the RoW countries by balancing the final equilibrium of the SAM at the level of the columns concerned.

5.50. At the end of these adjustments, the disaggregated SAM is fully balanced. It will then be necessary to report the adjustments made in the sub-matrices concerned (RoW, household, compensation of employees, GOS/MI, current account balance, investment), specifying in tables the results before and after the adjustments.

CHAPTER 6 : CONSTRUCTION AND BALANCING OF A MULTI-COUNTRY OR REGIONAL SOCIAL ACCOUNTING MATRIX

6.1 The development of empirical models that capture the macroeconomic, microeconomic, and regional impacts of economic policies, including their inter-regional spillover effects, is increasingly arousing keen interest, particularly among sub-regional and regional institutions.

6.2 The SAM approach offers a general equilibrium perspective for analysing a wide range of economic shocks and alternative policy strategies. Several experts believe that SAMs are useful for generally reflecting the economic interdependencies between different economies by adopting a multi-regional perspective capable of capturing the detailed links between trade and income of countries or regions.

6.3 The intensity of trade between countries makes the SAM increasingly a practical and appropriate way to regionalise this tool. Thus, inter-regional trade flows are treated as exports and imports from a region of origin to a destination region.

6.4 One way to make foreign trade data more credible is to perform data reconciliation work in each economic zone. This method involves examining the exports and imports of two countries to make them consistent.

6.5 Some specialists believe that, because the data are presented in current prices, without adjustment according to Purchasing Power Parity (PPP), this can introduce biases in the analysis. When countries or regions use multiple exchange currencies, comparability between regions is difficult, so conclusions about the relative wealth of a given region should be considered with caution.

6.6 Therefore, to make the construction of a multi-country or regional SAM easier, it is desirable that:

- the structure, i.e. the degree of disaggregation, is well defined beforehand according to the objectives to be achieved;
- the Member States of the Community have a SAM with the same characteristics or with data allowing the construction of such a SAM for the same year.
- foreign trade data are available with the required details in all countries;
- the concepts of economic territory and residence are well clarified in accordance with the 2008 SNA;
- in short, country SAMs should be developed according to a harmonised methodology.

This makes it possible to obtain harmonised country SAMs, thus facilitating their compilation at the regional level.

A. What Structure for a Multi-Country or Regional SAM?

6.7 While for the aggregate matrix or Macro-SAM, all West African Member States adopt the same structure, this is not the case for the disaggregated SAM, as each Member State seeks to give it a specific character according to its economic realities.

6.8 It should be noted that the Macro-SAM or standard matrix is identical for all ECOWAS Member States. It generally comprises six (6) accounts: (i) a current account of productive factors (labour and capital); (ii) a current account of resident institutional units (households, businesses and the government); (iii) an account of productive activities; (iv) a product account (goods and services); (v) a capital account (savings/investment); and finally, (vi) a current account of the rest of the world.

Table 13: Aggregate Structure of the Standard Country's SAM

	Productive Factors	Institutional Sectors	Industries of activity	Products	Savings - Investment	Rest of the World
Productive Factors			Payments to factors			
Sectors Institutional	Income from factors	Transfers	Taxes and Subsidies on production	Taxes and Subsidies on product		Transfers
Industries of activity				Domestic production		Exports
Products		Final Consumption	Intermediate Consumption		Investment - Expenditure	
Savings - Investment		Domestic Savings				External Savings
Rest of the World		Transfers		Imports		

Source: Functional form and parameterization in MEGC, Centre for Research in Applied Economics and Finance (CRAEF), University of Laval

6.9 Therefore, it will be up to the regional compiler, during the disaggregation phase, to find the right balance to consider the realities of all the Member States while remaining at a "sustainable" level of disaggregation.

6.10 Disaggregation can be applied to all accounts, but those relating to goods and services and households seem more complicated due to the diversity of the field that can be found from one country to another. Part 3.1 has already mentioned the structure adopted for the ECOWAS regional matrix.

B. Steps in Building a Multi-Country or Regional SAM

6.11 The filling and balancing of the regional SAM follow the same principles as those of the country's SAM though with some peculiarities. The methods for loading and balancing the regional SAM are based on the technical and methodological document on regional economic models published by the Quebec Institute of Statistics in May 2008.

6.12 As part of the construction of a multi-country or regional SAM, the literature explains the methods without surveys into three main steps:

1. The first step is to estimate the flows of intra-country trade as well as trade with the outside world. In general, this estimate results from the regionalisation of national data using allocations. It results in discrepancies between the revenue and expenditure of the accounts. This does not guarantee the balance of the SAM
2. The second step corrects the observed discrepancies. The processing is carried out according to the nature of the account and in one of two possible ways. If an account must be balanced, adjustments are made to remove discrepancies. When it comes to an account that shows relations with the outside world, the difference is assimilated into the balance of trade.
3. The third step is based on the net countries' balances to estimate intra-country flows as well as trade between countries and abroad. These estimation techniques are generally based on the assumptions of structural similarities. This is the illustrative case where it is assumed that, for each country, the marginal propensity to import and export are the same as at the national level.

6.13 In addition to the data sources used for the construction of the SAMs of the different member countries, the filling of the multi-country SAM for the whole of the Community requires, at the level of the member countries, more detailed information on the structure of imports, exports, and transfers (current and capital).

6.14 Since the overall estimates are recorded in the 'ECOWAS' sub-account, it is essential to determine the proportions reflecting their distribution structure, in line with the first stage of constructing a regional SAM. The detailed structure of imports and exports is provided by the data on trade flows between the countries of the zone. Hence, there is a need for a proportion on the volume of trade for all the products selected. To obtain this proportion, it is possible to use the ECOWAS database on foreign trade in goods and services.

6.15 The analysis of imports in the context of a multi-country SAM depends on the economic territory considered to the extent that they constitute exports for other countries. In other words, for two countries A and B, the imports of country A from country B represent the exports of country B to country A. In general, the imports (M) of country i are thus disaggregated according to the main data sources.

$$M_i = \sum_{\substack{j=1 \\ j \neq i}}^{N} M_{ij} \qquad [6]$$

Where, M_i = total imports of country i

M_{ij} = imports of country i from country j

N = total number of countries

6.16 Exports represent the outflows of goods and services from the national economy to the rest of the world. Like imports, the analysis of exports in the context of a multi-country SAM depends on the economic territory considered. They constitute imports for other countries. Indeed, for two countries, A and B, the exports of country A to country B represent the imports of country B from country A. By generalising the case of several countries, the exports (X) of country i can be broken down according to the different destinations and can be schematised with the following formular:

$$X_i = \sum_{\substack{j=1 \\ j \neq i}}^{N} X_{ij} \qquad [7]$$

Where, X_i = total exports of country i

X_{ij} = exports of country i from country j

N = total number of countries

6.17 In summary, the main implications of the analysis of the above results for the construction of a multi-country SAM lead to "juxtaposing" the different accounts of the activity of industries, products, factors, institutional sectors, and accumulation for the countries considered.

6.18 From the matrix obtained, we add an account of the RoW, recording the transactions carried out by the countries outside the regional area under consideration. The rest of the world account is considered to comprise of other African countries, China, the European Union, and other countries.

C. Balancing a Regional SAM

6.19 The balancing of a regional SAM can be carried out using the automatic methods described above (RAS, cross-entropy). Despite the principle of scientific neutrality, the main disadvantages of these methods in the context of a regional SAM stems mainly from the non-compliance with the constraint relating to the balance of the regional trade balance in accordance with official statistics.

6.20 This equilibrium of the regional trade balance is reflected in the equality between the total amount of exports and that of imports within the regional area considered. To remedy this, the method based on the "regional balance" is proposed. This is one of the variants of the manual methods, which consist of adjusting the deviations in the same way as described in the second step of the construction of a regional SAM, set out above. However, this method is criticised for overestimating the impact of policy shocks.

6.21 To use the RAS method, simply specify control totals for each row and column of the matrix to be balanced. Then, by iteration, the values within the matrix are adjusted proportionally until the sum of the rows and columns of the matrix equals the specified control totals. The advantage of this method, as mentioned above, is that it is simple and

requires little information. In addition, if the control totals are consistent, convergence is ensured. Nevertheless, it is difficult to add constraints or additional information to the process, which would allow the improvement of the estimate

6.22 Other experts prefer manual methods. The justification given for the choice of this method is that they allow a better comparison of the consistency of the official statistics provided by the national statistical offices, the Central Bank, and the Treasury.

6.23 The opening of these accounts means that we find ourselves in the second case described by the method. This allows for the adjustment of the differences in terms of balance. The justification for choosing this method is based on compliance with the constraint on the balance of the current account within the economies of the region. In addition, this balance should be in accordance with the official statistics on "internal transactions" provided as part of the construction of the various harmonised SAMs. In other words, the use of balancing methods (RAS and cross-entropy) would have the consequence of modifying the nature of certain information relating to the national accounts.

D. Principles and Limits of a Regional SAM

6.24 A SAM is a table showing all the economic flows between agents of a given economy, including intersectoral linkages (input-output relations) and links with the Row (current account balance, capital account). The accounts of the different types of agents appear both in rows and columns. The SAM is, therefore, a square matrix. It is based on the principle of balance between use (by convention appearing in columns) and supply (appearing in rows) at the level of each account that comprises it.

6.25 Each type of agent has double-entry accounting, facilitating the presentation of budgetary balances and market balances: all the supplies it receives from other agents in the economy will constitute its use (expenses), which will be disaggregated among other agents.

6.26 Given the availability of regional data, national SAMs typically draw on sources such as national accounts, Intermediate Input Tables (IIT), foreign trade statistics, sectoral studies, and household surveys. however, the lack of comparable tools at the local level significantly limits the scope of such exercises.

6.27 The consistency of the results obtained leads to internal and external consistency with respect to other analyses. However, some parameters of inter-regional flows of products and income are not available. This is why the compiler is required to formulate hypotheses to fill these gaps, which can lead to biases whose magnitude is not controlled. Some assumptions that stagger the flows of products and factor income (economic linkages) probably underestimate the inter-regional links to which greater attention should be paid.

CONCLUSION

The Social Accounting Matrix (SAM) is a double-entry table recording, for a given period, all the income and expenditure made by economic agents. The SAM is a useful concept as an integrated system of socio-economic statistics. It is governed by the principle of double entry.

The main objective of the SAM is to provide a framework for empirical and accounting analysis for macroeconomic modelling. Thus, it serves as a database for the calibration of Computable General Equilibrium Models (CGEM).

It is also a privileged tool necessary for the construction of SAM multiplier models for the simulation of reform policy impacts. At the macroeconomic level, the primary sources of data are the Integrated Economic Accounts Table (IEAT) and the Supply and Use Table (SUT).

Data on microeconomic variables are derived from household expenditure surveys, foreign trade statistics, government finance statistics, balance of payments statistics, and population statistics. The methodology adopted for the construction of the SAM is primarily based on the framework outlined in Fofana (2006) on the development of a SAM for analysing the impacts of macroeconomic shocks and policies, as well as on the Backiny Yetna et al. (2001) manual for the compilation of local accounts.

Regional analysis is essential to observe the regional impacts of national policies or, conversely, the impacts of regional policies on neighbouring regions.

The multi-country or regional SAM is a valuable tool for impact analysis and transmission of economic shocks at the regional level. It also supports more effective coordination and management of multinational economic policies. The main results will be used to simulate the impacts of economic and social policies. This simulation could particularly be carried out through the construction of regional or multi-country CGEM. The construction and implementation of this tool depends on the existence of a reliable statistical information system, which remains a major challenge for ECOWAS Member States.

ANNEX**ES**

Annex 1: Multi-country SAM framework for ECOWAS Member States

	Benin	Burkina Faso	Cape Verde	Côte d'Ivoire	The Gambia	Ghana	Guinea	Guinea-Bissau	Liberia	Mali	Niger	Nigeria	Senegal	Sierra Leone	Togo	ECOWAS	China	European Union	Other countries	TOTAL
	Accounts	Accounts	Accounts	Accounts	Accounts	Accounts	Accounts	Accounts	Accounts	Accounts	Accounts	Accounts	Accounts	Accounts	Account	Accounts	Accounts	Accounts	Accounts	
Benin																				B1
Burkina Faso																				BF2
Cape Verde																				CV3
Côte d'Ivoire																				CI4
The Gambia																				G5
Ghana																				GH6
Guinea																				GU7
Guinea-Bissau																				GB8
Liberia																				L9
Mali																				M10
Niger																				NIM11
Nigeria																				NGR12
Senegal																				SN13
Sierra Leone																				SL14
Togo																				T15
ECOWAS																				COM16
China																				CH17
European Union																				UE18
Other Countries																				AP19
TOTAL	B1	BF2	CV3	CI4	G5	GH6	GU7	GB8	L9	M10	NIM11	NGR12	SN13	SL14	T15	COM16	CH17	UE18	AP19	

Example of two countries, A and B, forming a region called ‘R’. The rest of the world comprises all partner countries, with the option of breaking this down further to highlight the European Union, China and the United States (which have significant economic clout)

	COUNTRY A ACCOUNTS						**COUNTRY B ACCOUNTS**						**REGION R (A+B)**						**TOTAL**
	Activities	Factors	Products	Sectors	Savings / Investments	Rest of the World	Activities	Factors	Products	Sectors	Savings / Investments	Rest of the World	Activities	Factors	Products	Sectors	Savings / Investments	Rest of the World	**A+B**
Activities			9223			480			5862			155	0	0	15085	0	0	635	**15720**
Factors	6863					915	3680					10	10543	0	0	0	0	925	**11468**
Products	2455			6703	840		2142			3751	420		4597	0	0	10454	1260	0	**16311**
Sectors	385	7428	315	1532		572	195	3540	201	764		384	580	10968	516	2296		956	**15316**
Savings / Investments				-920		1760				-256		676	0	0	0	-1176	0	2436	**1260**
Rest of the World		350	460	2917				150	250	825			0	500	710	3742	0	0	**4952**
TOTAL	**9703**	**7778**	**9998**	**10232**	**840**	**3727**	**6017**	**3690**	**6313**	**5084**	**420**	**1225**	**15720**	**11468**	**16311**	**15316**	**1260**	**4952**	

Annex 2: Regional SAM Framework for ECOWAS Member States

			ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS)					China	European Union	Other countries	
			Factor accounts	Institutional Sector accounts	Industry accounts	Product accounts	Savings - Investment Accounts	Rest of the World Accounts			TOTAL
ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS)	Factor accounts										
	Sector institutional accounts										
	Industry accounts										
	Product accounts										
	Savings - Investment Accounts										
China	Rest of the World Accounts										
European Union											
Other countries											
TOTAL											

In this second case, it is assumed that aggregation at country level has already been carried out. Only the Community and the main partner countries are shown

		ECOWAS					REST OF TE WORLD				TOTAL
		Activities	Factors	Products	Sectors	Savings / Investments	European Union	China	USA	Others	**A+B**
ECOWAS	Activities	0	0	15085	0	0	112	320	60	143	**15720**
	Factors	10543	0	0	0	0	235	340	145	205	**11468**
	Products	4597	0	0	10454	1260					**16311**
	Sectors	580	10968	516	2296	0	230	380	150	196	**15316**
	Savings / Investments	0	0	0	-1176	0	650	1270	390	126	**1260**
Rest of the World	European Union		150	170	907						
	China		120	185	2005						
	USA		130	215	400						
	Others		100	140	430						
	TOTAL	**15720**	**11468**	**16311**	**15316**	**1260**					

Annex 3: Supply and Use Table (SUT)

			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
			A10	A20	A30	A40	B10.1	B10.2	B10.3	B10.4	B10.5	C10.1	C10.2	C10.3	C10.4	C10.5	C10.6	C10.7	D10	E10	F10
			Agriculture	Livestock	Forestry, forest	Fishing and aquaculture	Oil extraction	Uranium extraction	Gold extraction	Quarry extraction	Other extractions	F. food, beverages, tobacco	F. textiles, clothing, leather	F. paper, printing, reproductio	Coke and oil refining	F. Chemical and pharmaceuti	F. Cement and other mineral	Manufactur e. other products	P. and Dist Electricity and gas	P. and Dist Water, sanitrad	Construction
01	A10	Agricultural products and annexes	67 461	47 475								112 774									52 212
02	A20	Products from the breeding of live animals	52 659									115 807	3 042								20 413
03	A30	Forestry and forest products		3 040								9 097				1 289		1 276			17 306
04	A40	Fishery and aquaculture products				878						19 011									
05	B10.1	Crude oil													205 585						
06	B10.2	Uranium ores																			
07	B10.3	Gold ores																30 229			
08	B10.4	Stones, sands and clays										544					2 154	800			41 572
09	B10.5	Other extraction products						5 110			38 435	3 858	389			609			2 541	795	2
10	C10.1	Food, beverages, tobacco		8 330		3 742	2 346	1 854	1 235		3 756	34 670					891		1 325	643	
11	C10.2	Textiles, clothing and leather products				384	1 608	2 341			1 431	2 458	17 027	1 500			500		2 876	1 652	
12	C10.3	paper, printing and reproduction					981	874	478		897	784	576	1 775		198	55		699	754	389
13	C10.4	Products of coke production, petroleum refining			1 530	896	1 851	1 186	1 124	3 702	1 282	1 985	1 381	981	287	367	427	1 275	41 769	1 202	1 367
14	C10.5	Chemical and pharmaceutical products					360	426	1 931		2 639	1 611	458	423	56	3 191	384	421	1 910	741	
15	C10.6	Cement and other mineral products																			120 458
16	C10.7	Other manufacturing products	12 322		9 514	466	11 767	9 315	5 080	1 025	49 353	1 442		789	996	179	12 630		7 780	3 214	40 015
17	D10	Electricity and gas		291			9 963	7 734	1 125		3 986	5 604	1 336	780	177	1 389	1 409	1 053	3 127	1 739	
18	E10	Water, sanitation and treatment	1 045	450			589	789	287		105	548	189	175	79	63	298	440	585	461	1 333
19	F10	Construction						1 275	400		640	509									1 080
20	G10.1	Car and motorcycle trade and repair						569	142	1 263	115	228	147	124	968	34	61	552	543	374	242
21	G10.2	Wholesale and retail trade																			
22	H10	Transportation and storage services	6 458	155	7 250	1 317	1 912	17 269	3 707	915	22 418	10 950	889	530	628	931	1 480	1 088	2 144	300	30 940
23	I10	Accommodation and food services					769	1 506	502	367	1 650										5 483
24	J10	Information and communication services					2 024	946	194		2 782	3 763	707	122	630	878	88	849	1 438	489	3 122
25	K10	Financial and insurance services					423	2 315	111		2 339	1 320	9	97		67	49	978	487	91	15 024
26	L10	Real estate services					675	940	98		650	1 457	28	124	563	598	61	587	679	549	
27	M10	Professional and technical services					895	7 418	135		12 551	2 636		155	94	1 000			2 910	89	11 935
28	N10	Support and office services					1 574	8 570	648		12 974	2 983	603	79	395	388	127	675	5 613	590	14 315
29	O10	Public administration services																			
30	P10	Education services						1 380			454	567	2	141	56			206	454	75	295
31	Q10	Health and social services																			
32	R10	Other services					822	1 691	1 180	187	682	1 450	4	165	28	48		189	274	4	195
	CI	TOTAL CI / USES	139 945	59 741	18 294	7 683	38 559	73 508	18 377	7 459	159 139	336 056	26 787	7 960	210 542	11 229	20 614	40 618	77 154	13 762	377 698
	RS	Employee compensation	55 380	2 605	1 227	2 881	2 677	28 518	5 578	5 750	15 545	14 086	7 210	1 833	14 187	3 147	1 312	7 869	8 507	4 997	24 953
	IP	Net taxes on production		101			21 937	1 121	379	917	1 377	3 511	1 437	539	1 415	525	913	2 072	990	337	13 481
	EBITDA / RM	Gross operating surplus / Mixed income	1 156 880	469 907	118 963	55 509	142 412	113 212	51 579	23 785	153 049	128 941	43 829	11 496	33 395	8 211	18 178	79 153	40 294	38 791	150 432
	GVA	Gross added value	1 212 260	472 613	120 190	58 390	167 026	142 851	57 536	30 452	169 971	146 538	52 476	13 868	48 997	11 883	20 403	89 094	49 791	44 125	188 866
	X	Production by branch	1 352 205	532 354	138 484	66 073	205 585	216 359	75 913	37 911	329 110	482 594	79 263	21 828	259 539	23 112	41 017	129 712	126 945	57 887	566 564
	M	Imports of goods and services	13 932	131	33	25				248	1 025	105 214	37 000	3 345	76 505	116 265	80 544	1 022 391	15 580	432	68 968
	MC	Trade margins	203 186	88 567	19 490	22 950			8 706	6 945	473	158 622	34 797	2 047	62 164	30 812	19 908	236 023			
	IM	Taxes on imports	919	5	1						126	22 631	2 368	663	131	10 295	1 808	25 647	883		
	IX	Taxes on exports	9 218	6 116		156			2 288			3 609	995	13	4 663	59	22	3 861			
	IP	Other taxes on products										10 775			5 569		4 151	4 488			
	VAT	Value Added Tax	882	10								50 374	8 146	1 606	5 018	14 722	15 534	62 097	8 531	5 252	9 807
	RT	**TOTAL RESOURCES**	**1 580 342**	**627 183**	**158 008**	**89 204**	**205 585**	**216 359**	**86 907**	**45 104**	**330 734**	**833 819**	**162 569**	**29 502**	**413 589**	**195 265**	**162 984**	**1 484 219**	**151 939**	**63 571**	**645 339**
	GDP N	Gross Domestic Product at current prices	1 223 279	478 744	120 191	58 546	167 026	142 851	59 824	30 452	170 097	233 927	63 985	16 150	64 378	36 959	41 918	185 187	59 205	49 377	198 673
	VAR	Gross value added at 2015 prices	1 212 260	472 613	120 190	58 390	167 026	142 851	57 536	30 452	169 971	146 538	52 476	13 868	48 997	11 883	20 403	89 094	49 791	44 125	188 866
	EE	Number of salaried employees by branch	143 976	3 568	1 657	3 790	583	4 302	4 529	6 345	1 946	12 928	4 373	2 246	733	2 709	1 689	8 744	4 724	3 150	24 332

Annex 4: Supply and Use Table (SUT cont'd)

		20	21	22	23	24	25	26	27	28	29	30	31	32								
		G10.1	G10.2	H10	I10	J10	K10	L10	M10	N10	O10	P10	Q10	R10								
		Trade, car repair,	Wholesale and retail trade	Transport and storage	Accommodation and food	Information and communica	Financial and insurance	Real estate activities	Professional and technical	Business support activities	Public administration	Education	Human health activities	Other services	TOTAL IC Supply	CF House hold	Public CF	CF ISBLSM	GFCF	Change in inventories	Exports of goods and services	Final uses	TOTAL USES
01	A10				72 520								1 470		353 912	1 128 002					98 428	1 226 430	1 580 342
02	A20				136 467						35 608	9 002	4 060		377 058	152 122			20 160	10 079	67 764	250 125	627 183
03	A30				1 807								324		34 139	123 846					23	123 869	158 008
04	A40				6 709								557		27 155	56 374					5 675	62 049	89 204
05	B10.1														205 585	0					0	0	205 585
06	B10.2														0	0				-24 403	240 762	216 359	216 359
07	B10.3														30 229	0					56 678	56 678	86 907
08	B10.4														45 070	0					34	34	45 104
09	B10.5			5											51 744	2 806			276 143		41	278 990	330 734
10	C10.1	789	12 396	0	8 602	2 061	905				5 825	2 053	1 290		92 713	700 846					40 260	741 106	833 819
11	C10.2	784	4 952	2 381	690	3 094	1 860		784	2 119	11 046	1 103	1 450	14 007	76 047	70 054					16 467	86 521	162 569
12	C10.3	612	1 217	1 047	1 097	797	540	542	620	792	4 000	1 542	648	872	22 786	6 373					343	6 716	29 502
13	C10.4	1 745	10 645	57 692	1 258	2 040	1 249	5 249	1 197	1 414	18 209	770	1 675	1 785	167 540	157 319					88 730	246 049	413 589
14	C10.5		733	686	740	382	686	686	450	2 260	2 867	3 068	2 877	568	30 554	162 414					2 297	164 711	195 265
15	C10.6			0											120 458	42 384					142	42 526	162 984
16	C10.7	8 151	20 798	86 345	783	30 088	26 496	15 733	10 347	31 721	11 003	10 827	901	14 966	434 046	56 314			931 533		62 325	1 050 172	1 484 219
17	D10	904	12 945	3 777	1 750	5 950	3 980	6 432	2 954	4 802	10 054	2 946	1 838	1 902	99 947	51 992					0	51 992	151 939
18	E10	140	422	264	865	461	527	265	105	298	798	459	658	475	13 173	50 398					0	50 398	63 571
19	F10		2 800	3 023		1 500	500		1 400	500	3 399	800		1 200	19 026	1 617			624696		0	626 313	645 339
20	G10.1		921	5 109	208	412	382	97	250	261	2 559	97	110	398	16 166	76 280						76 280	92 446
21	G10.2			0											0	0						0	0
22	H10	3 170	59 223	37 389	624	17 818	7 175	4 182	6 458	16 248	45 739	2 210	1 534	13 598	326 649	154 139					10 160	164 299	490 948
23	I10			0		765					9 245		1 637	91	22 015	255 426					37 276	292 702	314 717
24	J10	1 279	10 706	7 813	970	6 399	9 564	1 065	2 265	4 056	24 557	178	892	3 367	91 143	216 516					31 816	248 332	339 475
25	K10	1 979	8 246	15 522	552	4 398	1 985	2 154	1 590	1 264	47 613	123	637	1 512	110 885	61 078	4156				1 509	66 743	177 628
26	L10	286	3 745	1 464	897	1 109	1 345		1 184	1 422	6 953	678	517	755	27 364	101 751	0				9 600	111 351	138 715
27	M10	2 735	4 248	14 086		21 342	6 620	750	1 283	2 269	15 715	94	119	5 160	114 239	2 675	0		887		0	3 562	117 801
28	N10	679	5 945	3 180	287	32 690	10 714	3 830	7 540	6 120	22 465	147	984	3 050	147 165	30 883	0				1 972	32 855	180 020
29	O10			0											0	10 592	672 768				0	683 360	683 360
30	P10	397	242	300	108	350	140	150	162		2 375		815	571	9 240	36 772	195 625	4 471			0	236 868	246 108
31	Q10			0											0	40 300	58 207	5 311			2 267	106 085	106 085
32	R10	204	368	348	232	457	310	108	476	615	1 053		337	482	11 909	47 739	20 932	44 414			42 324	155 409	167 318
	CI	23 854	160 552	240 432	237 166	132 113	74 978	41 243	39 065	76 161	281 083	36 097	25 330	64 759	3 077 958	3 797 012	951 688	54 196	1 853 419	-14,324	816 895	7 458 886	10 536 844
	RS	11 195	35 926	21 835	7 554	20 166	31 859	1 444	14 437	26 290	265 545	181 485	48 462	70 054	944 514								
	IP	2 310	20 377	7 958	1 497	6 844	3 258	1 593	2 452	1 018	212	1 090	368	4 049	104 078								

VALUE ADDED	5 342 090

		20	21	22	23	24	25	26	27	28	29	30	31	32								
		G10.1	G10.2	H10	I10	J10	K10	L10	M10	N10	O10	P10	Q10	R10								
		Trade, car repair,	Wholesale and retail trade	Transport and storage	Accommodation and food	Information and communica	Financial and insurance	Real estate activities	Professional and technical	Business support activities	Public administration	Education	Human health activities	Other services	TOTAL IC Supply	CF House hold	Public CF	CF ISBLSM	GFCF	Change in inventories	Exports of goods and services	Final uses	TOTAL USES
	EBITDA/MR	55 087	677 835	100 850	66 421	106 712	46 262	93 840	61 847	36 029	136 520	27 437	31 925	14 717	4 293 498								
	GVA	68 592	734 138	130 643	75 472	133 722	81 379	96 877	78 736	63 337	402 277	210 012	80 755	88 820	5 342 090								
	X	92 446	894 690	371 075	312 638	265 835	156 357	138 120	117 801	139 498	683 360	246 109	106 085	153 579	8 420 048								
	M			90 370		58 675	8 529			32 771				11 864	1 743 847								
	MC		-894 690												0								
	IM														65 477								
	IX														31 000								
	IP						7 768			3 808					36 559								
	VAT			29 503	2 079	14 965	4 974	595		3 943				1 875	239 913								
	RT	**92 446**	**0**	**490 948**	**314 717**	**339 475**	**177 628**	**138 715**	**117 801**	**180 020**	**683 360**	**246 109**	**106 085**	**167 318**	**10 536 844**								
	GDP N	68 592	734 138	160 146	77 551	148 687	94 121	97 472	78 736	71 088	402 277	210 012	80 755	90 695	5 715 039								
	VAR	68 592	734 138	130 643	75 472	133 722	81 379	96 877	78 736	63 337	402 277	210 012	80 755	88 820	5 342 090								
	EE	11 234	35 407	22 617	8 111	8 404	5 785	1 520	10 632	14 261	31 488	113 377	24 260	128 052	651 472								

IMPORT TAXES	65 477
EXPORT TAXES	31 000
OTHER TAXES / INCOME	276 472
GROSS DOMESTIC PRODUCT	**5 715 039**

COMPENSATION OF EMPLOYEES	944 514
NET TAXES OF SUBSIDY	477 027
GROSS OPERATING SURPLUS	4 293 498
GROSS DOMESTIC PRODUCT	**5 715 039**

FINAL CONSUMPTION	4 802 896
G.C.F.	1 853 419
CHANGES IN INVENTORIES	-14 324
EXPORTS	816 895
IMPORTS	1 743 847
GROSS DOMESTIC PRODUCT	**5 715 039**

Annex 5: Integrated Economic Accounts Table (IEAT)

In millions of Local Currencies (FCFA)

USE | **SUPPLY**

Accounts	TOTAL	Goods and services (Supply)	Rest of World 0S2	National Economy 0S1	Non-Financial Institutions 0S1001	Financial Institutions 0S1002	Government 0S1003	Households 0S1004	NPISHs 0S1005	Codes	Transactions and accounting balances	Non-Financial Institutions 0S1001	Financial Institutions 0S1002	Government 0S1003	Households 0S1004	NPISH 0S1005	National Economy S.1	Rest of World 0S1	Goods and services (Jobs)	TOTAL
I.																				
	1 743 847	1 743 847								OP7	Imports of goods and services							1 743 847		1 743 847
	816 895		816 895							OP6	Exports of goods and services								816 895	816 895
PRODUCTION ACCOUNT	8 420 048	8 420 048								OP1	Production	2 968 174	156 357	965 013	4 263 708	66 796	8 420 048			8 420 048
OR EXTERNAL ACCOUNT	6 601 435	6 601 435								OP100A	Market output	2 968 174	152 201	31 424	3 449 636		6 601 435			6 601 435
OF	764 187	764 187								OP100B1	Production for own final use				764 187		764 187			764 187
GOODS AND	1 054 426	1 054 426								OP100B2	Non-market output		4 156	933 589	49 885	66 796	1 054 426			1 054 426
SERVICES	3 077 958			3 077 958	1 472 111	74 978	332 676	1 173 944	24 249	OP2	Intermediate consumption								3 077 958	3 077 958
	5 342 090			5 342 090	1 496 063	81 379	632 337	3 089 764	42 547	B01	**Gross added value**	1 496 063	81 379	632 337	3 089 764	42 547	5 342 090			5 342 090
	5 715 039			5 715 039							**Gross Domestic Product**						5 715 039			5 715 039
	926 952		926 952							B11	**Balance of foreign trade in goods and services**							926 952		926 952
II.1.1																				
	987 286		42 772	944 514	259 079	31 859	445 954	173 492	34 130	OD1	Employee compensation				954 106		954 106	33 180		987 286
	477 027	372 949		104 078	76 581	3 258	387	23 852		OD2	Net taxes on products and imports			477 027			477 027			477 027
	239 913	239 913								OD200A	Value Added Tax			239 913			239 913			239 913
	65 477	65 477								OD200B	Taxes on imports (excluding VAT)			65 477			65 477			65 477
OPERATING	31 000	31 000								OD200C	Taxes on exports			31 000			31 000			31 000
ACCOUNT	36 559	36 559								OD200D	Other taxes on products			36 559			36 559			36 559
	104 078			104 078	76 581	3 258	387	23 852		OD200E	Other taxes on production			104 078			104 078			104 078
	4 293 498			4 293 498	1 160 403	46 262	185 996	2 892 420	8 417	BOA001	**Operating income**	1 160 403	46 262	185 996	2 892 420	8 417	4 293 498			4 293 498
II.12																				
	381 849		18 717	363 132	300 446	29 359	26 676	6 310	341	OD4	Property income	16 896	90 020	68 771	89 138	809	265 634	116 215		381 849
PRIMARY INCOME ALLOCATION ACCOUNT	5 627 133			5 627 133	876 853	106 923	705 118	3 929 354	8 885	B05	**Primary income/Gross national income**	876 853	106 923	705 118	3 929 354	8 885	5 627 133			5 627 133
II.2																				
	171 905			171 905	126 833	9 305		32 009	3 758	OD5	Current taxes on income and capital			171 905			171 905			171 905
	52 035			52 035				52 035		OD6001	Social contributions			52 035			52 035			52 035
	20 222			20 222			20 222			OD6002	Social benefits				20 222		20 222			20 222
	410 567		207 749	202 818	116 428	28 478	32 915	14 163	10 834	OD7	Other current transfers	27 771	41 981	156 636	88 240	61 553	376 181	34 386		410 567
	5 800 496			5 800 496	661 363	111 121	1 032 557	3 939 609	55 846	B06	**Gross disposable income**	661 363	111 121	1 032 557	3 939 609	55 846	5 800 496			5 800 496
II.4																				
	4 802 896			4 802 896			951 687	3 797 013	54 196	OP3	Final Consumption Expenditure								4 802 896	4 802 896
USE	3 097 569			3 097 569				3 097 569		OP300A	FC spending on market products								3 097 569	3 097 569
OF INCOME ACCOUNT	1 705 327			1 705 327			951 687	699 444	54 196	OP300B	FC spending on non-market products								1 705 327	1 705 327
	997 600			997 600	661 363	111 121	80 870	142 596	1 650	B08	**Gross savings**	661 363	111 121	80 870	142 596	1 650	997 600			997 600
	841 495		841 495	0						B12	Balance of credit transactions with the outside							841 495		841 495
III.1																				
	1 853 419			1 853 419	1 039 507	10 489	608 587	143 787	51 049	P51	Gross fixed capital formation								1 853 419	1 853 419
F	-14 324			-14 324	-12 018	0	1 178	-3 484		P52	Change in inventories								-14 324	-14 324
CAPITAL ACCOUNT	0			0						P53	Net acquisitions of valuables									0
	0			0						OD9	Net capital transfers			154 507		19 407	173 914	-173,914		0
	0		667 581	-667,581	-366,126	100 632	-374,388	2 293	-29,992	B09	**Financing capacity (+) / requirement (-)**									0
	22 724 603	10 536 844	1 753 714	10 911 072	3 012 841	288 358	2 045 894	5 415 414	148 565		**Total non-financial transactions**	3 012 841	288 358	2 045 894	5 415 414	148 565	10 911 072	1 753 714	10 536 844	22 724 603

Annex 6: Social Accounting Matrix (SAM) aggregated from the SUT and IEAT above

	Activities	Factors	Products	Sectors	Savings/ Investment	Rest of the world	TOTAL
Activities			7,603,153			816,895	**8,420,048**
Factors	5,238,012					42,772	**5,280,784**
Products	3,077,958			4,802,896	1,839,095		**9,719,949**
Sectors	104,078	5,247,604	372,949			226,466	**5,951,097**
Savings/Investment				997,600		841,495	**1,839,095**
Rest of the world		33,180	1,743,847	150,601			**1,927,628**
TOTAL	**8,420,048**	**5,280,784**	**9,719,949**	**5,951,097**	**1,839,095**	**1,927,628**	

Annex 7: Terms of reference

ECOWAS COMMISSION
COMMISSION DE LA CEDEAO
COMISSÃO DA CEDEAO

HARMONIZING AND IMPROVING STATISTICS IN WEST AND CENTRAL AFRICA

(HISWACA)

PROJECT FOR THE HARMONIZATION AND IMPROVEMENT OF STATISTICS IN WEST AND CENTRAL AFRICA (PHASAOC)

DEPARTMENT OF ECONOMIC AFFAIRS AND AGRICULTURE

DIRECTORATE OF RESEARCH AND STATISTICS

Activity A Development of a Common Regional Methodological Guide for the Development of a Social Accounting Matrix (SAM) in ECOWAS Member States.

Activity B Technical Working Group (TWG) on the review and finalisation of the Common Regional Methodological Guide.

Activity C Validation by the Regional Technical Committee (RTC) of the Common Regional Methodological Guide.

Budget Lines …… of HISWACA

BACKGROUND AND RATIONALE

The improvement of statistical production in accordance with international standards and methods, as well as the dissemination of statistics, has always been at the heart of the Commission's efforts to support ECOWAS Member States. This support aims to enhance their capacity to measure progress in the long journey toward improving the living conditions of populations and achieving the creation of the single currency in the region. In addition, quality statistical information is crucial, not only for the design and implementation of policies (national, regional, continental, and international levels), but also for monitoring and evaluating their impacts on economic growth and social well-being.

In this regard, as part of the implementation of the ECOWAS Monetary Cooperation Programme, the assessment of the convergence of economic performance and policies within the framework of multilateral surveillance implies the availability of comparable and reliable statistics. However, the definition and scope of statistics developed for national needs differ from one country to another, making comparisons within ECOWAS very difficult. Similarly, the statistical data required for the multilateral surveillance exercise are not limited to those required for the calculation of convergence indicators. Indeed, to be operational, the multilateral surveillance exercise needs to have qualitative and quantitative data to: (i) assess the economic situation of the Member States of the Community and compliance with the convergence criteria; (ii) define economic policy guidelines; (iii) propose appropriate solutions when a Member State deviates significantly from the rules defined in the framework of multilateral surveillance.

Thus, in the process of deepening regional integration, ECOWAS has embarked on a process of harmonising statistics produced by Member States to assess their performance based on reliable and comparable statistics. Much effort has been made in the development of common methodological guides for the compilation of Annual National Accounts, the Harmonised Index of Consumer Prices (HICP), International Merchandise Trade Statistics, Balance of Payments and Global External Position (BoP & GEP), and Social Accounting Matrix (SAM). The same harmonisation efforts are also expected in the areas of Government Finance Statistics (GFS), Public Debt Statistics, and Quarterly National Accounts (QNA).

National accounts constitute a vital component of the national statistical information system, providing a concise and coherent representation of the economy. They not only enable the estimation of Gross Domestic Product (GDP) but also generate key indicators that measure changes and assess the performance of the national economy over time.. A change in the base year of the national accounts, combined with the migration to a new System of National Accounts (SNA), leads to an issue of comparability between the series of the new base and the old base, due to changes in concepts, coverage, methodologies, and data sources. To maintain a consistent and homogeneous time series of national accounts, the country should carry out a backcasting exercise. Backcasting consists of recalculating

the old accounts according to the concepts and methodology used in the new series. It provides harmonised, comparable, consistent and homogeneous series for the development of macroeconomic policies, the construction of macroeconomic models, the development of QNA using the Direct Method, as well as research and other activities related to past economic developments.

Regarding the QNA, the GDP is used as the most important indicator for the calculation of certain convergence criteria, including the budget deficit ratio, grants (commitment basis) to nominal GDP (≤3%), and the ratio of outstanding public debt to nominal GDP (≤70%). The semi-annual assessment of the economic and financial performance of the countries requires the availability of the quarterly GDP of the Member States. Within the Community, the production of ANAs by all Member States is not the case for QNAs. This situation does not allow these countries that do not produce the QNA to assess the performance relative to the Semi-Annual GDP and to estimate the ECOWAS Regional Quarterly GDP.

Similarly, the methods applied (direct and indirect), and the approaches used to compile quarterly accounts vary across countries, underscoring the need for regional harmonization. Regarding the direct method, only Nigeria compiles Quarterly Gross Domestic Product (QGDP) using all three approaches: production, expenditure, and income. The Gambia and Ghana also apply the direct method but compile QGDP only using the production approach. Cape Verde and all the WAEMU Member States apply the Indirect method using different approaches. Most of these countries adopt the production approach for compiling the quarterly accounts, due to the availability of data within their statistical systems. In contrast, the expenditure approach is less frequently used to compile QGDP, primarily due to the lack of quarterly data on key components such as final consumption expenditure, gross fixed capital formation, and changes in inventories.

For the GFS and public debt at the national level, the Government Finances Operations Table (GFOT) makes it possible to establish a clear relationship between the transactions defining the financing capacity/need (corresponding to the surplus/deficit), the financing transactions, and their consequences on the dynamics of the debt. At the regional level, the GFOT is an essential tool for the development, monitoring, and coordination of fiscal policies at the Community level. It is indeed necessary that the indicators ensuring fiscal convergence come from a framework whose method of development and presentation is common to all Member States to guarantee comparability according to international standards. The objective is to establish an operational instrument ensuring the comparability of data and the monitoring of management elements that fall directly under the control of public authorities. Thus, all ECOWAS Member States will have a harmonised GFOT, in accordance with the guidelines of the GFSM 2014. The harmonisation of the preparation of accounts in the ECOWAS region is aimed at data sources, methods of data collection and processing, as well as the compilation and dissemination of statistics.

In addition, for the monitoring and evaluation of development policies and programmes within the framework of the ECOWAS Vision 2050, apart from the *timely availability of reliable and comparable statistics, it is also essential to have a harmonised regional SAM. The SAM constitutes an accounting system that allows for the expansion of the structure of national accounts, by integrating in a single framework the flows of production activities by industries, cross-border trade flows, factor remuneration, income accounts and other transfers, and expenditures of the various economic agents. It is a database used for the calibration of impact assessment of the CGEM and Leontief multiplier model. CGEMs are modelling tools used to estimate how an economy might react to changes in policy, technology, supply, or other external factors i.e. shocks. These are deterministic models whose costing is carried out by calibration over a reference year. Their development is based on the construction of complete and consistent databases, in the form of SAMs. In a primary form, the SAM can also be used directly for economic policy simulations using the Leontief multiplier method. The Leontief input-output model* considers *the interdependencies of all* sectors *and links the intermediate and final productions of the various goods.*

Based on the above, the Directorate of Research and Statistics (DRS) has developed these technical documents of Common Methodological Guides. The production and operationalisation of these technical documents will ensure the availability of harmonised statistical data, in support of the integration and development programme, and contribute to the application of international standards and methods to the uniqueness of ECOWAS countries.

ACTIVITY A: Development of the Common Regional Methodological Guide for the Construction of a Social Accounting Matrix (SAM) in ECOWAS Member States

Objectives of activity A

The objective pursued through the development of a common regional methodological document for the construction of a Social Accounting Matrix (SAM) is to help Member States to have a regional reference framework that describes in detail all the steps to follow, as well as the methods to be applied to facilitate the construction of a regional SAM that can facilitate better planning and decision-making.

Specifically, it will be:

- Develop a harmonised regional method for the development of a macro SAM and a Micro SAM in accordance with the current international standards and adapting them to the various harmonised frameworks being developed and validated, such as the classification of activities and products, the guide to the development of national accounts, household surveys, etc.) Presenting the data sources essential for the disaggregation of a micro-SAM, in this case, the administrative data sources (number of employees, foreign trade details, etc.) and the survey data sources (Household Survey, informal foreign trade, structural surveys, census, etc.)

- Describe in detail the steps of disaggregation of a micro-SAM.
- Propose a method of construction or aggregation of a community or regional SAM.

Expected result of the activity A

Harmonised regional methodological guide for the development of SAMs of ECOWAS Member States and Region is made available.

Methodological approach of study 1, deliverables, and timeline

This activity will be carried out in person in Abuja, Nigeria, with the services of two (2) resource persons. These two Experts will work closely with the Directorate of Research and Statistics (DRS) of the ECOWAS Commission.

Deliverables must be prepared in one of the official languages of ECOWAS (French, English, or Portuguese). The Consultants' terms of reference will last according to the schedule below:

À activities	Number of working days	Deliverables
Phase 1: Development of the theoretical framework of the harmonised methodological guide for the development of a macro SAM, a micro SAM, and a disaggregated micro SAM	20 days	Part of the theoretical framework of the regional methodological guide for macro, micro, and disaggregated micro SAM
Phase 2: Development of the practical framework of the harmonised methodological guide for the development of a macro SAM, a micro SAM, and a disaggregated micro SAM in the ECOWAS Member States	20 days	Part of the practical framework of the regional methodological guide for macro, micro, and disaggregated micro SAM
Phase 3: Drafting of the theoretical framework of the regional methodological guide for the development or consolidation of a regional or Community SAM.	15 days	Part of the theoretical framework of the regional methodological guide for the consolidation of a regional or Community SAM.
Phase 4: Development of the practical framework of the Regional Methodological Guide for the development or consolidation of a regional or Community SAM.	15 days	Part of the practical framework of the regional methodological guide for the consolidation of a regional or Community SAM.

Resource Person Evaluation Criteria

Resource persons will be evaluated based on the following elements:

No.	Evaluation Criteria	Rating Scales
1. Senior Expert, Head of Mission		
I	**General qualification (training and general experience)**	**35 points**
I-1	Hold a higher education degree (Advanced Level +5 or Master's) in statistics or economics.	10
I-2	Have more than twenty-five (25) years of professional experience, having carried out and supported countries in the development of national accounts and the implementation of the 2008 SNA, including at least one ECOWAS country.	15
I-3	Proven experience in the design of methodological guides.	10
II	**Specific experiences related to the mission**	**65 points**
II-1	Have good experience in developing country Social Accounting Matrices (SAMs). Have developed at least three country SAMs, including at least two disaggregated micro-SAMs.	25
II-2	Have developed at least once regional SAMs in the sub-region, including at least one (1) ECOWAS country,	30
III	**Proficiency in an official ECOWAS language**	
	Fluency in one of the three official languages of ECOWAS (French, English, and Portuguese)	10
TOTAL SCORE FOR LEAD EXPERT		**100**
2. Assistant Principal Expert/Associate Expert		
I	**General qualification (training and general experience)**	**35 points**
I-1	Hold a higher education degree (Advanced Level +5 or Master's) in statistics or economics.	10
I-2	Have more than five (5) years of professional experience in the development of national accounts and the implementation of the 2008 SNA, including at least one ECOWAS country.	15
I-3	Have good experience in designing methodological guides.	10
II	**Specific experiences related to the mission**	**65 points**
II-1	Have good experience in developing country Social Accounting Matrices (SAMs). Have developed at least two (2) country SAMs, including at least one disaggregated micro SAM. Have good experience in integrating survey data into SAMs Have a good command of survey data	25
II-2	Have a good knowledge of developing regional SAMs	30
III	**Proficiency in an official ECOWAS language**	
	Perfect mastery of one of the three official languages of ECOWAS (French, English and Portuguese)	10
TOTAL SCORE Assistant LEAD EXPERT		**100**

Submission of Proposals

Interested candidates are invited to submit a proposal including:

A methodological note detailing their understanding of the terms of reference and their approach to carrying out the mission.

A detailed work schedule.

A detailed budget.

The CVs of the experts involved.

Annex 8: Bibliography

a. 2008 System of National Accounts (SNA 2008).
b. Common Methodological Guide for the Development of National Accounts in ECOWAS Member States.
c. Explications méthodologiques sur la construction de la MCS pour la Suisse, Office fédéral de la statistique (OFS).
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f. Une matrice de comptabilité sociale pour la Corse, Marie-Antoinette et Charles Vellutini, février 2008.
g. Elaborer une Matrice de Comptabilité Sociale Pour l'Analyse d'Impacts des Chocs et Politiques Macroéconomiques, Ismael FOFANA, October 2007.
h. Develop a Macro Micro 2004 Social Accounting Matrix for Niger, World Bank - Niger, 2007.