



SUDAN



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# A 2019 Nexus Social Accounting Matrix for Sudan

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## FOREWORD

Nexus SAMs aims to improve the quality and standardize the construction process of SAMs using a standard toolkit that enables tracing data sources and assumptions. The unified structure of nexus SAMs allows for more robust cross-country comparisons of economies, especially the sectoral composition, allocation of government spending and trade orientation. The 2019 SAM for Sudan is a snapshot capturing the structure of the Sudanese Economy and depicting the different transactions between the production activities, factors of production and other income generating and consuming entities in the economy besides the good and services (produced and consumed). The circular flow of income is completed by including the accounts for enterprises, government, and rest of the world. The International Food Policy Research Institute (IFPRI) relied on both international and local data sources to develop the first Nexus SAM for Sudan for the year 2019. The leading domestic data sources are the Central Bureau of Statistics (CBS), the Central Bank of Sudan (CBoS), the Ministry of Finance and Economic Planning (MFEP) and the Ministry of Human Resources Development and Labor (MHRDL). Like other Nexus SAMs, the Sudan SAM puts a strong emphasis on the household accounts by providing details on both income and expenditure sides as well as savings. We used a household income and expenditure survey to disaggregate the household account into income deciles both in rural and urban areas. The SAM also provides disaggregated representation of production activities including 77 activities producing 79 commodities. Production factors included in the Nexus SAM for Sudan are labor, capital, and land. Labor is further classified by location to rural and urban, by gender to male and female, and by the level education to unskilled, semi-skilled and skilled labor. Land and capital factors are left without further disaggregation.

**The SAM datasets can be downloaded from:** <https://dataverse.harvard.edu/dataverse/IFPRI>  
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## ACRONYMS AND ABBREVIATIONS

BOPS	Balance of Payments Statistics
BPM6	Balance of Payments Manual, 6 <sup>th</sup> Edition
CBS	Central Bureau of Statistics in Sudan
CBoS	Central Bank of Sudan
CGE	Computable General Equilibrium
COMTRADE	Commodity Trade Statistics Database
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization's Statistical Database
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GFS	Government Finance Statistics
GFSM	Government Finance Statistics Manual
GOS	Gross Operating Surplus
IMF	International Monetary Fund
IOT	Input-Output Table
ISIC	International Standard Industrial Classification
MFEP	Ministry of Finance and Economic Planning (Sudan)
MHRDL	Ministry of Human Resources Development and Labor (Sudan)
SAM	Social Accounting Matrix
SNA	System of National Accounts
SUT	Supply-Use Table
TRAINS	Trade Analysis Information System

# 1 SOCIAL ACCOUNTING MATRICES

A *national social accounting matrix (SAM)* is an economy-wide data framework that captures the detailed economic structure of a country. A SAM is a square matrix in which each account is represented by a row and a column<sup>1</sup>. Each cell reflects a payment from the column account to the row account, i.e., incomes appear along rows and expenditures along columns. Double-entry accounting requires that, for each account, total revenue (row total) equals total expenditure (column total). Table 1 shows an aggregate SAM, with verbal explanations in place of numbers.

**Activities and commodities:** Standard SAMs created under the Nexus project<sup>2</sup> distinguish between “activities” (entities that carry out production) and “commodities” (representing markets for goods and non-factor services). SAM flows are valued at producer prices in activity accounts and at market prices in commodity accounts, i.e., inclusive of indirect taxes and transactions cost margins. Commodities consist of activity outputs, either exported or sold domestically, and imports. In the activity columns, payments are made to commodities (intermediate demand) and factors of production (value-added, equal to operating surplus and compensation of employees). In the commodity columns, payments are made to domestic activities, the rest of the world, and various tax accounts (for domestic and import taxes).

**Government income and payments:** The government in a Nexus SAM is disaggregated into a core government account and various tax collection accounts. Tax accounts are necessary since otherwise the economic interpretation of certain payments becomes ambiguous. Direct payments between the government and other domestic institutions are reserved for transfers. Payments from the government to factors are captured in the government services activity. Government consumption demand is the purchase of the output from the government services activity, which, in turn, pays labor.

**Domestic nongovernment institutions:** Domestic nongovernment institutions consist of households and enterprises. Enterprises earn factor incomes, reflecting their ownership of capital, and receive transfers from other institutions. Enterprise incomes are used for corporate taxes, enterprise savings, and transfers to other institutions. Unlike households, enterprises do not demand commodities. In the SAM, enterprises are an aggregation of financial and nonfinancial corporations, as defined within the System of National Accounts (SNA).

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<sup>1</sup> For a lengthier discussion on SAMs, see Pyatt and Round (1985) and Reinert and Roland-Holst (1997).

<sup>2</sup> The Nexus Project is a collaboration between international organizations and national statistical agencies and research institutions to improve the quality of social accounting matrices (SAMs) used for country-level computable general equilibrium (CGE) modeling. The Nexus Project establishes common data standards, procedures, and classification systems for constructing and updating national SAMs. The Nexus Project addresses the need for greater transparency and consistency in SAM construction to strengthen model-based research and policy analysis in developing countries. It also supports more robust cross-country comparisons of economic structure and policy. The guiding principle of the Nexus Project is that all SAM data should be traceable to its original sources and/or assumptions. Nexus SAMs are freely available online or from collaborating organizations and statistical agencies.

The Nexus Project is led by the International Food Policy Research Institute (IFPRI) and receives support from the Bill and Melinda Gates Foundation (BMGF), the United States Agency for International Development (USAID), and contributors to the CGIAR Trust Fund through support to the CGIAR Research Initiative on Foresight.

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**Table 1. Standard Nexus Macro Social Accounting Matrix**

	Activities	Commodities	Factors	Enterprises	Households	Government	Taxes	Investment	Rest of the World	Total
Activities		Marketed out-puts			Private non-marketed consumption					<b>Activity income</b>
Commodities	Intermediate demand	Transaction costs			Private marketed consumption	Government consumption		Gross capital formation	Exports	<b>Total demand</b>
Factors	Value-added								Foreign transfers to factors	<b>Factor income</b>
Enterprises			Factor income to enterprises			Government transfers to enterprises			Foreign transfers to enterprises	<b>Enterprise income</b>
Households			Factor income to households	Enterprise transfers to households		Government transfers to households			Foreign transfers to households	<b>Household income</b>
Government				Enterprise transfers to government	Household transfers to government		Tax revenues paid to government		Foreign transfers to government	<b>Government income</b>
Taxes	Taxes on producers	Taxes on products	Factor taxes	Corporate taxes	Household taxes					<b>Tax income</b>
Savings				Enterprise savings	Household savings	Government savings			Foreign savings	<b>Savings</b>
Rest of the World		Imports	Factor payments abroad	Enterprise payments abroad	Household payments abroad	Government payments abroad				<b>Foreign exchange outflow</b>
Total	<b>Activity expenditures</b>	<b>Total supply</b>	<b>Factor expenditures</b>	<b>Enterprise expenditures</b>	<b>Household expenditures</b>	<b>Government expenditures</b>	<b>Tax payments</b>	<b>Investment</b>	<b>Foreign exchange inflow</b>	

***Household consumption:*** Nexus SAMs distinguish between home (own) consumption of activities and marketed consumption of commodities by households. Home consumption, which appears in the SAM as payments from household accounts to activity accounts, is valued at producer prices, i.e., without marketing margins and sales taxes that may be levied on marketed commodities. Final household consumption of marketed commodities appears as payments from household accounts to commodity accounts, valued at consumer prices, including marketing margins and taxes.

## 2 STANDARD NEXUS SOCIAL ACCOUNTING MATRIX ACCOUNTS

**Activities and commodities:** Standard SAMs created under the Nexus project separate domestic production into 90 activities, as shown in Table 2. Each activity represents a group of industries from the International Standard Industrial Classification system (ISIC Revision 4) (UNDESA 2008). The 4-digit ISIC codes corresponding to each SAM activity are shown in Table A1 in the Appendix.<sup>3</sup> Agricultural activities are further disaggregated using FAO’s classification system, as shown in Table A2 in the Appendix. Information on production technologies comes from national input-output tables (IOT) or supply-use tables (SUT). Activities and commodities have a one-to-one mapping based on a concordance between ISIC industries and Harmonized System products (HS Version 2007).<sup>4</sup> Some countries’ national accounts capture how activities can produce multiple commodities in the 2019 SAM, some of the standard Nexus activities and commodities are not produced as shown in Table A3 in the Appendix. Therefore, the Sudan SAM includes 77 activities producing 79 commodities.

**Factors of production:** Nexus SAMs separate factors into three broad categories: labor, land, and capital. Labor is further disaggregated across rural and urban areas and into four education-based categories, as shown in Table 3. Nexus SAMs follows official definitions of “rural” and “urban” areas, which may vary between countries, but are consistent with the definitions used in national and international statistics.<sup>5</sup> There is greater consistency in education categories across countries since these are based on the number of years of schooling that workers report having completed. Information on total labor value-added as a share of sectoral gross domestic product (GDP) is drawn from national IOTs or SUTs. This is disaggregated across labor subcategories using wage and salary data as well as imputed earnings for unpaid family members as reported in household and labor force surveys (see Section 5).

Capital is disaggregated into four subcategories: crops, livestock, mining, and others. Crop capital in each crop-based agricultural activity is the portion of gross operating surplus (GOS) and mixed income that is reported in national IOTs or SUTs and that is not assigned to either labor or land factors, i.e., it is a residual. Livestock capital is the total GOS generated in the three livestock activities, i.e., cattle, poultry, and other livestock, while mining capital is the total GOS earned in the four mining activities, i.e., coal and lignite, crude oil, natural gas, and other mining. Crop and livestock capital are separated from mining and other capital, since, in Nexus SAMs, the former is paid directly to households, while the latter are paid to enterprises. Mining capital is separated from “other” capital because its earnings are often subject to mining-specific taxes and royalties, and they are more likely to be repatriated to foreign-based companies.<sup>6</sup>

**Table 2. Activities and Commodities in the Standard Nexus Social Accounting Matrix**

Code	Description	Code	Description	Code	Description
maiz	Maize	eggs	Eggs	clth	Clothing
sorg	Sorghum & millet	smlr	Small ruminants	leat	Leather and footwear
rice	Rice	oliv	Other livestock	wood	Wood products
whea	Wheat and barley	fore	Forestry	papr	Paper products and printing

<sup>3</sup> Mapping between Nexus SAM activities and ISIC Revision 3.1 codes (UNDESA 2002) are available upon request.

<sup>4</sup> The concordance between Nexus SAM commodities and HS 2007 codes are available upon request.

<sup>5</sup> Rural and urban status is based on workers’ reported place of residence, rather than their place of work. This is consistent with most household and labor force surveys, and hence with most official statistics.

<sup>6</sup> Capital in the current 2019 SAM is aggregated in one account.

Code	Description	Code	Description	Code	Description
<b>ocer</b>	Other cereals	aqua	Aquaculture	petr	Petroleum products
<b>puls</b>	Pulses	fish	Capture fisheries	fert	Fertilizers and herbicides
<b>gnut</b>	Groundnuts	coal	Coal and lignite	plas	Rubber and plastic products
<b>oils</b>	Other oilseeds	coil	Crude oil	chem	Other chemicals
<b>cass</b>	Cassava	ngas	Natural gas	nmet	Non-metal minerals
<b>ipot</b>	Irish potatoes	more	Metal ores	metl	Basic metals
<b>spot</b>	Sweet potatoes	omin	Other mining	metp	Metal products
<b>root</b>	Other roots	meat	Meat processing	mach	Electrical equipment
<b>leaf</b>	Leafy vegetables	fsea	Fish and seafood processing	equi	Machinery and other equipment
<b>vege</b>	Other vegetables	dair	Fruit and vegetable processing	vehi	Motor vehicles
<b>sugr</b>	Sugarcane	fveg	Fats and oils	oman	Other manufacturing
<b>toba</b>	Tobacco	foil	Dairy	elec	Electricity, gas and steam
<b>cott</b>	Cotton and fibres	mml	Maize milling	watr	Water supply and sewage
<b>nuts</b>	Nuts	sml	Sorghum and millet milling	cons	Construction
<b>bana</b>	Bananas	rml	Rice milling	trad	Wholesale and retail trade
<b>plan</b>	Plantains	wml	Wheat and barley milling	tran	Transportation and storage
<b>frui</b>	Other fruits	gmll	Other grain milling	hotl	Accommodation
<b>teal</b>	Leaf tea	sref	Sugar refining	rest	Restaurants and food services
<b>coff</b>	Coffee	pcof	Coffee processing	comm	Information and communication
<b>coco</b>	Cocoa	ptea	Tea processing	fsrv	Finance and insurance
<b>flwr</b>	Cut flowers	food	Other foods	real	Real estate activities
<b>rubb</b>	Rubber	feed	Animal feed	bsrv	Business services
<b>ocrp</b>	Other crops	beve	Beverages	padm	Public administration
<b>catt</b>	Cattle	ptob	Tobacco processing	educ	Education
<b>milk</b>	Raw milk	yarn	Cotton yarn	heal	Health and social work
<b>poul</b>	Poultry	text	Textiles	osrv	Other services

**Table 3.** Factors in the Standard Nexus Social Accounting Matrix

Code	Description
<b>flab-r-m-1</b>	Labor - rural - male uneducated
<b>flab-r-m-2</b>	Labor - rural - male primary
<b>flab-r-m-3</b>	Labor - rural - male secondary
<b>flab-r-m-4</b>	Labor - rural - male tertiary

Code	Description
flab-r-f-1	Labor - rural - female uneducated
flab-r-f-2	Labor - rural - female primary
flab-r-f-3	Labor - rural - female secondary
flab-r-f-4	Labor - rural - female tertiary
flab-u-m-1	Labor - urban - male uneducated
flab-u-m-2	Labor - urban - male primary
flab-u-m-3	Labor - urban - male secondary
flab-u-m-4	Labor - urban - male tertiary
flab-u-f-1	Labor - urban - female uneducated
flab-u-f-2	Labor - urban - female primary
flab-u-f-3	Labor - urban - female secondary
flab-u-f-4	Labor - urban - female tertiary

**Households:** Nexus SAMs separates national populations into 10 representative household groups, as shown in Table 4. As with labor, the SAM distinguishes between rural and urban households using a country's official definition of these areas. Households are further disaggregated into per capita expenditure deciles. Deciles are defined at the national level, meaning that rural and urban deciles are comparable, and the combined population of each decile is a tenth of the national population. Per capita expenditure groups are not adjusted for adult-equivalency and include all consumption expenditure items reported in national household surveys. The latter implies that the definition of deciles in Nexus SAMs may deviate slightly from those based on poverty-oriented consumption measures, which may exclude "non-essential" nonagricultural expenditure items (e.g., airplane tickets or gambling).

**Table 4.** Household Types in the Standard Nexus Social Accounting Matrix

Code	Description	Notes
hhd-r-01	Rural - decile 1	Rural households separated into national per capita consumption expenditure deciles
hhd-r-02	Rural - decile 2	
hhd-r-03	Rural - decile 3	
hhd-r-04	Rural - decile 4	
hhd-r-05	Rural - decile 5	
hhd-r-06	Rural - decile 6	
hhd-r-07	Rural - decile 7	
hhd-r-08	Rural - decile 8	
hhd-r-09	Rural - decile 9	
hhd-r-10	Rural - decile 10	
hhd-u-01	Urban - decile 1	

Code	Description	Notes
hhd-u-02	Urban - decile 2	Urban households separated into national per capita consumption expenditure deciles
hhd-u-03	Urban - decile 3	
hhd-u-04	Urban - decile 4	
hhd-u-05	Urban - decile 5	
hhd-u-06	Urban - decile 6	
hhd-u-07	Urban - decile 7	
hhd-u-08	Urban - decile 8	
hhd-u-09	Urban - decile 9	
hhd-u-10	Urban - decile 10	

**Other accounts:** The remaining accounts in the Nexus SAMs are shown in Table 5. These include the transaction costs of moving goods between producers, domestic markets, and national borders, as well as the various indirect taxes imposed on marketed commodities.

**Table 5. Accounts in the Standard Nexus Social Accounting Matrix**

Code	Description	Notes
<b>a</b> __	Activities	See Table 2 for the list of activity accounts
<b>c</b> __	Commodities	See Table 2 for the list of commodity accounts
<b>f</b> __	Factors	See Table 3 for the list of factor accounts
<b>h</b> __	Households	See Table 4 for the list of household accounts
<b>Trc</b>	Transaction costs	From moving goods between producers, markets, and/or borders
<b>Ent</b>	Enterprises	Financial and non-financial corporations
<b>Gov</b>	Government	Government as an institution, not as a producing activity
<b>Atax</b>	Taxes - activity	Indirect taxes on producers
<b>Dtax</b>	Taxes - direct	Direct taxes on enterprises and households
<b>Etax</b>	Taxes - export	Indirect taxes on exports
<b>Ftax</b>	Taxes - factor	Direct taxes on factor incomes
<b>mtax</b>	Taxes - import	Indirect taxes on imports (import duties)
<b>Stax</b>	Taxes - sales	Indirect taxes on domestic sales (VAT, GST and excise duty)
<b>s-i</b>	Savings-investment	Investment is gross fixed capital formation
<b>Dstk</b>	Change in stocks	Inventory accumulation or depletion
<b>Row</b>	Rest of world	All foreign countries and economies
<b>Total</b>	Total	Row and column totals

**Sex-disaggregated and regional accounts:** Standard Nexus SAMs often include variants with more detailed accounts. Each **SAM variant aggregates back to the Standard Nexus SAM (note that the 90-sector national SAM is labeled “v90N”)**. It should be noted that adding more detail to a SAM often requires greater use of assumptions and proxy variables for distributing incomes and expenditures, and it can stretch the representativeness of survey data. The Nexus Project therefore publishes its national SAMs separately from its regional and gendered SAMs.

Gendered Nexus SAMs (v8G) disaggregates each labor category in Table 3 into male and female workers. Land, livestock, and agricultural capital are disaggregated based on the gender of the de jure household head whose household reports incomes from these factors. Each household group in Table 4 are disaggregated according to whether they have a male or female household head. Accounts that change between the Standard and Gendered Nexus SAMs are shown in Table 6.

**Table 6.** Gendered Accounts in the Nexus Social Accounting Matrix

Code	Description
flab-__-m	Male labor (see Table 3 for further codes)
flab-__-f	Female labor (see Table 3 for further codes)
flnd-m	Crop land owned by male-headed households
flnd-f	Crop land owned by female-headed households
fcap-c-m	Crop capital owned by male-headed households
fcap-c-f	Crop capital owned by female-headed households
fcap-l-m	Livestock capital owned by male-headed households
fcap-l-f	Livestock capital owned by female-headed households
hhd-__-m	Male headed households (see Table 4 for further codes)
hhd-__-f	Female headed households (see Table 4 for further codes)

**Country-specific deviations from the standard structure:** The SAM structure presented above represents the minimum level of disaggregation required of a Nexus SAM. Some countries have more disaggregated accounts, but these can always be aggregated to the Standard Nexus accounts. Section 5 documents any extensions to the Standard Nexus SAM structure that were used in developing the SAM for Sudan.

### 3 NEXUS SOCIAL ACCOUNTING MATRIX ENTRIES AND GENERAL DATA SOURCES

The previous section outlined the broad structure of a Nexus SAM, including its standardized classification of accounts. This section describes the information included in each row and column entry in the SAM. One advantage of Nexus SAMs is that the Macro SAM has a common classification or definition of cell entries. This section describes each of the blocks of cells in the Macro SAM following the numbered sequence shown in Table 7.

The Macro SAMs are compiled using three key data sources. First, the International Monetary Fund’s (IMF) Government Finance Statistics (GFS) database provides detailed information on government revenues and expenditures and follows a standardized accounting framework. Nexus SAMs uses the 2014 GFS Manual (GFSM) (IMF 2014b) – a mapping between GFSM codes and macro-SAM accounts can be found in Table A4 in the Appendix. Second, the IMF maintains detailed Balance of Payments Statistics (BOPS) (IMF 2014a). Nexus SAMs uses the sixth BOPS Manual (BPM) – a mapping between BPM6 codes and macro-SAM accounts can be found in Table A5 in the Appendix. The conversion from US dollars to local currency uses the official exchange rate, as reported in the World Development Indicators (World Bank 2020). Third, countries maintain their own national accounts that include production and expenditure-based GDP estimates. To the extent possible, the Nexus SAMs, like most countries, follow the United Nation’s System of National Accounts (SNA) (UN 2009).

**Table 7.** Numbered Entries in a Standard Nexus Social Accounting Matrix

	Acti- ties	Com- modities	Factors	Enter- prises	House- holds	Government	Taxes	Invest- ment	Rest of the World
<b>Acti- ties</b>		4			17				
<b>Com- modities</b>	1	5			18	23		29	31
<b>Factors</b>	2								32
<b>Enter- prises</b>			8			24			33
<b>House- holds</b>			9	12		25			34
<b>Taxes</b>	3	6	10	13	19				
<b>Government</b>				14	20		28		35
<b>Savings</b>				15	21	26		30	36
<b>Rest of the World</b>		7	11	16	22	27			

## 1. Intermediate demand (Commodities | Activities)

**Definition:** Intermediate demand includes payments by activities for the commodities used as non-factor inputs in production processes. For example, payments by the maize activity to the chemical commodity for the fertilizer inputs used to grow maize.

**Estimation:** Intermediate demand for each activity is estimated in three steps. First, the ratio of total intermediate demand to total value-added in each activity is derived from national IOT/SUTs and, where available, updated using more recent national accounts and/or agricultural and industrial survey data. Second, this ratio is used to derive the absolute level of total intermediate demand based on the estimated level of activity value-added (see Entry 2 below). Third, total intermediate payments are disaggregated across individual commodities using shares derived from national IOT/SUTs. Note that IOT/SUTs are usually only updated when national statistical agencies rebase national accounts. The quality or accuracy of intermediate input coefficients therefore declines over time until such time as

the underlying IOT/SUTs are updated. The description of each SAM in Section 5 indicates the IOT/SUT's benchmark year.

## 2. Value-added (Factors | Activities)

**Definition:** Value-added is the returns earned by factors during the production process, such as labor wages and salaries, land rents, and capital profits. Land and capital include gross operating surplus (GOS), part of which may be reported as “mixed income” in national accounts or IOT/SUTs.

**Estimation:** Total value-added by activity is estimated in two steps. First, national accounts report the level of gross domestic product (GDP measured in basic prices) for aggregate sectors, and these are assigned to groups of SAM activities. Second, aggregate GDP estimates are disaggregated to the level of the SAM activities using information on sub-sectoral production from sources beyond national accounts. The value of activity level agricultural production is estimated using production quantity and producer price data from national Ministries of Agriculture or from the FAO's FAOSTAT database (FAO 2020). Total value-added in each agricultural sector is estimated by multiplying the ratio of GDP to gross output (derived from IOT/SUTs) by the estimated value of activity gross output. Similarly, information on activity-level industrial production is derived from manufacturing or industrial surveys.

Labor value added is disaggregated across the worker categories in Table 3 using national household and/or labor force survey data.<sup>7</sup> Workers in these surveys report their sector and location of employment, their remuneration levels, and their education levels. Earnings from farm and non-farm enterprises are usually reported at the household level, and these are assigned to individual household members based on their reported employment status and sector of employment. It is assumed that paid and unpaid family members earn equal shares of household enterprise incomes (net of input costs).

## 3. Taxes on producers (Taxes | Activities)

**Definition:** Net taxes on production (or net subsidies if SAM value is negative).

**Estimation:** The total value of activity taxes (atax) is taken from the IMF's GFS and includes “taxes on payroll and workforce” (GFSM code 112). This is disaggregated across activities using information from national tax authorities and/or from the IOT/SUT. For the latter, tax rates are derived from the IOT/SUT and then applied to the sectoral value of GDP and intermediate payments (see Entries 1 and 2). This provides an initial estimate of net activity tax payments, which are then scaled to match the total value of activity tax collections.

## 4. Marketed output (Activities | Commodities)

**Definition:** Value of domestically produced goods and services that are supplied to markets, either for domestic use or for export. Marketed output is net non-marketed or home produced and consumed goods and services (see Entry 18).

**Estimation:** This is a residual balancing item for activities. The value of gross output less the value of non-marketed consumption is paid from each activity to its corresponding commodity, thereby balancing activity rows and columns.

## 5. Transaction costs (Commodities | Commodities)

**Definition:** Trade and transport costs associated with moving goods between producers, markets, and national borders, either for domestic, import or export trade. For example, exporters incur transport fees when moving goods from their factories to the national border, whereas importers incur fees when delivering goods to domestic markets.

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<sup>7</sup> The national household surveys used to build Nexus SAMs are often the same as the surveys used to estimate poverty rates or the weights for the consumer price index. These surveys are like the World Bank's Living Conditions Monitoring Surveys (LCMS).

**Estimation:** There are two approaches to estimating transaction costs in Nexus SAMs. First, margin payments as a share of total demand are estimated using past IOT/SUTs. These rates are then applied to total demand estimates in the SAM to derive new transaction costs. Second, margins are estimated by the gap between producer and market prices, net of indirect taxes, using price data provided by national statistical agencies. The first approach is preferred and is the one typically used for Nexus SAMs (see detailed description of each SAM's data sources for information on which approach was used). Finally, transaction cost margins generate income for trade and/or transport activities.

## 6. Taxes on products (Taxes | Commodities)

**Definition:** All indirect taxes imposed on goods and services (or net subsidies if SAM value is negative).

**Estimation:** Nexus SAMs separate taxes on products into three categories: sales taxes (stax), export taxes (etax), and import tariffs (mtax) (see Table 4). The total value of tax collections is taken from the IMF's GFS. Sales taxes are "taxes on goods and services" (GFSM code 114), which is a summation of various tax instruments, most importantly value-added taxes (GFSM 11411), sales taxes (GFSM 11412), and excise duties (GFSM 1142). Import tariffs (mtax) are "taxes on international trade and transactions" (GFSM 115), excluding "taxes on exports" (GFSM 1152), which are assigned to export taxes in the SAM.

Tax revenues are disaggregated across commodities using national tax authority data and/or tax rates estimated from the IOT/SUT. If the IOT/SUT is outdated, then weighted import tariff rates are taken from the United Nations Conference on Trade and Development's Trade Analysis and Information System (TRAINS) (UNCTAD 2020). Tax rates are applied to the level of domestic sales, imports, or exports (see Entries 7 and 32). This provides an initial estimate of commodity level tax payments, which are then scaled to match the total value of each tax revenue category, as estimated above.

## 7. Imports (Rest of World | Commodities)

**Definition:** Value of goods and services imported from abroad, less the cost of carriage, insurance, and freight.

**Estimation:** The total value of imports is taken from national accounts, and this is then disaggregated into total goods and total services using current account data from the IMF's BOPS (i.e., BPM6 codes BMG for "goods, debit" and BMS for "services, debit"). BOPS provides detailed information on services imports by commodity, and this is used to assign imports to service commodities in the SAM (see Table A5 in the appendix). Goods imports are disaggregated across commodities using 6-digit HS gross import flows from the United Nations Commodity Trade Statistics (COMTRADE) database (UNSD 2020).

## 8. Factor income to enterprises (Enterprises | Factors)

**Definition:** Mining and "other" capital payments to enterprises, after paying factor taxes and making transfers to the rest of the world (see Entries 10 and 11). These payments equal gross operating surplus, which includes the value of consumption of fixed capital during the production process.

**Estimation:** This is a residual balancing item for the mining and other capital accounts. Total capital income less capital taxes and foreign transfers is paid to the enterprise account, thereby balancing mining and other capitals' rows and columns.

## 9. Factor income to households (Households | Factors)

**Definition:** Labor, land and agricultural capital payments to households, after paying factor taxes and making transfers to the rest of the world (see Entries 10 and 11). These payments equal compensation to workers and returns to land and agricultural capital.

**Estimation:** This is a residual balancing item for labor, land, and agricultural capital accounts (i.e., crop and livestock capital). Total factor incomes less factor taxes and foreign transfers are paid to individual household accounts, thereby balancing these factors' rows and columns. Labor payments to households are disaggregated across household and labor categories using information from national household or labor force surveys (see Entry 2 on treatment on workers' shares of household enterprise incomes). Land and agricultural capital payments to households are disaggregated using survey households' reported incomes from agricultural crops and livestock.

#### 10. Factor taxes (Taxes | Factors)

**Definition:** Direct taxes paid by mining and "other" capital to the government.

**Estimation:** The value of capital tax collections is taken from the IMF's GFS. Factor taxes are "taxes on property" (GFSM code 113), which is a summation of various taxes, including wealth and estate taxes and capital levies.

#### 11. Factor payments abroad (Rest of World | Factors)

**Definition:** Labor, land and capital incomes paid to foreign households or enterprises. For example, workers belonging to foreign households may earn some or all their labor incomes in domestic industries and this income may be repatriated back to these workers' home countries. Similarly, some profits generated by foreign-owned mining companies may be repatriated to company headquarters in another country.

**Estimation:** Factor transfers to the rest of the world are from the IMF's BOPS. Labor transfers are "compensation of employees, debit" (BPM6 code BMIPCE). Capital transfers are "investment income, debit" (BPM6 BMIPI), which includes, amongst others, payments on equity and investment funds to foreign investors.

#### 12. Enterprise transfers to households (Households | Enterprises)

**Definition:** Indirect capital payments by enterprises to households, after paying corporate taxes and saving and making transfers to government and the rest of the world (see Entries 13, 14, 15 and 16). This includes indirect gross operating surplus paid from the earnings of household nonfarm enterprises.

**Estimation:** This is a residual balancing item for the enterprise account. Total enterprise income less taxes and transfers are paid to households, thereby balancing the enterprise row and column. Enterprise earnings are paid to households based on households' earnings from nonfarm enterprises, dividends and private pension funds as reported in national household surveys.

#### 13. Corporate taxes (Taxes | Enterprises)

**Definition:** Corporate and other direct taxes paid by enterprises to the government.

**Estimation:** The total value of taxes collected from enterprises is taken from the IMF's GFS. This includes taxes "payable by corporations and other enterprises" (GFSM code 1112) and "other taxes on income, profits, and capital gains" (GFSM 1113).

#### 14. Enterprise transfers to government (Government | Enterprises)

**Definition:** Transfers from enterprises to governments, other than direct tax payments (see Entry 13). For example, domestic banks may provide loans to the government, or parastatal enterprises may pay

dividends or repay loans to the general government. Enterprises may also contribute to public social welfare schemes on behalf of their employees.

**Estimation:** Transfers received by the government from financial and non-financial corporations are taken from the IMF's GFS. This is "property income" (GFSM code 141), which includes, amongst others, interest and dividend payments and payments for rented public property. Transfers from enterprises also include "other taxes" (GFSM 116), which are either paid by business or are unidentifiable. Finally, enterprises include employer contributions to social security (GFSM 1212) and other social schemes (GFSM 1222).

#### **15. Enterprise savings (Savings | Enterprises)**

**Definition:** Domestic private savings by enterprises. This includes reinvested earnings as well as the value of the consumption of fixed capital (i.e., provision for capital depreciation).

**Estimation:** Total domestic private savings is back-calculated by subtracting public and foreign savings from the value of gross capital formation (see Entries 21, 26, 29 and 36). Unfortunately, few developing countries have the detailed national accounts data needed to disaggregate domestic private savings across enterprises and households. Accordingly, in the absence of detailed information, the Nexus SAMs assume that enterprises and households have similar savings rates, after enterprises have subtracted their allowance for the depreciation of working capital.

#### **16. Enterprise payments abroad (Rest of World | Enterprises)**

**Definition:** Secondary income transfers from domestic financial and non-financial enterprises to the rest of the world.

**Estimation:** The value of enterprise foreign payments comes from the IMF's BOPS. This includes "other transfers, debit" (BPM6 code BMISOOT).

#### **17. Private non-marketed consumption (Activities | Households)**

**Definition:** Activity output that is both produced and consumed within the household, i.e., "own" or "home" consumption.

**Estimation:** Non-marketed consumption is estimated in three steps. First, the share of total private consumption for each Nexus SAM commodity is estimated using aggregate private consumption from national accounts and commodity-level consumption from national household surveys. Second, the share of home consumption in total consumption of each commodity is estimated using the household surveys, and this share of then used to separate total commodity consumption into marketed and non-marketed components. Third, home consumption is disaggregated across household groups using household survey data. Home consumption is defined as any products not purchased in markets, including the consumption of both home-produced products and products received "in-kind" from other households (i.e., without monetary payment).

#### **18. Private marketed consumption (Commodities | Households)**

**Definition:** Commodities that are purchased in markets and consumed by households.

**Estimation:** Marketed consumption is estimated in three steps. First, the share of total private consumption for each Nexus SAM commodity is estimated using aggregate private consumption from national accounts and commodity-level consumption from national household surveys. Second, the share of home consumption in total consumption of each commodity is estimated using the household surveys, and this share of then used to separate total commodity consumption into marketed and non-marketed components. Third, marketed consumption is disaggregated across household groups using household survey data. Marketed consumption is defined as any products purchased in markets, i.e., not home produced or received "in-kind" from other households.

## 19. Household taxes (Taxes | Households)

**Definition:** Direct income or personal taxes paid by households. For example, households often “pay as you earn” (PAYE) taxes to the government based on their wages and salaries.

**Estimation:** Total tax collection is taken from the IMF’s GFS. It includes taxes on income, profits and capital gains that are “payable by individuals” (GFSM code 1111). This is disaggregated across the household groups in the Nexus SAMs using personal income tax rates reported by households in the national household survey. If tax data is not available or is poorly captured in the survey, then incomes from secondary and tertiary educated labor is used as a proxy for disaggregating total direct tax collections (see Table 3).

## 20. Household transfers to government (Government | Households)

**Definition:** Payments by household to the government other than for direct taxes (see Entry 19). For example, households may contribute to public social welfare schemes, including retirement and healthcare funds.

**Estimation:** The total value of transfers is taken from the IMF’s GFS. This is social security and other social contributions, including payments by employees (GFSM codes 1211 and 1221), self-employed and unemployed people (GFSM 1213), and un-allocable and imputed contributions (GFSM 1214 and 1223). Household transfers to government also include various other revenue sources, including from sales of goods and services (GFSM 142), and fines penalties and forfeits (GFSM 143).

## 21. Household savings (Savings | Households)

**Definition:** Domestic private savings by households.

**Estimation:** Total domestic private savings is back-calculated by subtracting public and foreign savings from the value of gross capital formation (see Entries 21, 26, 29 and 36). Unfortunately, few developing countries have the detailed national accounts data needed to disaggregate domestic private savings across enterprises and households. Accordingly, in the absence of detailed information, the Nexus SAMs assume that enterprises and households have similar savings rates, after enterprises have subtracted their allowance for the depreciation of working capital. Household savings are then disaggregated across household groups in the SAM using information from national household surveys. Although survey households often report the value of deposits made into bank accounts or the amount of savings during the year, including private pension contributions, this information is often poorly captured. In such cases, proxy indicators are derived from household earnings from enterprises and incomes from higher educated labor.

## 22. Household payments abroad (Rest of World | Households)

**Definition:** Secondary income transfers from households to the rest of the world.

**Estimation:** The value of household foreign payments comes from the IMF’s BOPS. This includes “personal transfers, debit” (BPM6 code BMISOPT). Transfers are disaggregated across household groups in the SAM using information from national household surveys that capture the amount of remittances households sent abroad.

## 23. Government consumption (Commodities | Government)

**Definition:** Government recurrent spending on goods and services. Public consumption demand by the government institution is the primary source of demand for services produced by government activities, which consist of public administration, education, and health and social work.

**Estimation:** The total value of government consumption is taken from a country’s national accounts data. This is cross-checked against recurrent expenditures in the IMF’s GFS, which reports government’s “compensation of employees” (GFSM code 21), “use of goods and services” (GFSM 22), and

“consumption of fixed capital” (GFSM 23). Total consumption is disaggregated across commodities using budget shares derived from the IOT/SUT, and then adjusted to reflect changes in the composition of supply of public administration, education, and health and social work services.

#### **24. Government transfers to enterprises (Enterprises | Government)**

**Definition:** Transfers from the government to enterprises. For example, the government may pay interest or repay the principal on a loan from a domestic bank, or the government may lend money to parastatal companies.

**Estimation:** Transfers paid by the government to financial and non-financial corporations are taken from the IMF’s GFS. This is interest payments to nongovernment residents (GFSM code 242), subsidies to public corporations and private enterprises (GFSM 25) and “other expenses” (GFSM 28). The latter includes property expenses like dividend and rental payments.

#### **25. Government transfers to households (Households | Government)**

**Definition:** Payments by the government to households. For example, governments may pay households from a public pension or cash transfer scheme.

**Estimation:** The total value of transfers is taken from the IMF’s GFS. This is social benefits (GFSM code 27), which includes social security, social assistance, and other employment-related social benefits, each of which may be paid in cash or in-kind.

#### **26. Government savings (Savings | Government)**

**Definition:** Recurrent fiscal surplus for the government (or deficit if cell entry is negative). Note that this is the difference between revenues and recurrent expenditures, i.e., before public capital investment. Recurrent expenditures include public consumption spending (see Entry 25) and transfers to domestic and foreign institutions (see Entries 24, 25 and 27).

**Estimation:** This is the residual balancing item for the government account, although it cross-checked against the difference between total revenues and total recurrent expenses in the IMF’s GFS (GFSM codes 1 and 2). Any deviation from GFS data is due to the Nexus SAM giving preference to statistics from national accounts (for indirect tax collections and government consumption spending, see Entries 3, 6 and 23) and to the IMF’s BOP database (for foreign transfers, see Entries 27 and 35).

#### **27. Government payments abroad (Rest of World | Government)**

**Definition:** Transfers from the government to the rest of the world. For example, government may provide foreign aid to other countries, or must pay interest or repay loans to foreign governments and financial enterprises.

**Estimation:** The value of government foreign payments comes from the IMF’s BOPS and is cross-checked against the IMF’s GFS. BOPS-based payments include “general government transfers, debit” under secondary income (BPM6 code BMISG). GFS-based payments include interest payments to nonresidents (GFSM code 241), and grants paid to foreign governments and international organizations (GFSM 26).

#### **28. Tax revenues paid to government (Government | Taxes)**

**Definition:** Revenues transferred from individual tax accounts to the government account.

**Estimation:** This is a residual balancing item for the tax accounts in the SAM. The distinction between taxes and the government account allows the SAM to disaggregate indirect taxes on commodities, i.e., sales taxes, export taxes, and import tariffs (see Entry 6).

#### **29. Gross capital formation (Commodities | Investment)**

**Definition:** Combination of gross fixed capital formation (GFCF) and changes in stocks or inventories. GFCF is the spending on commodities involved during the investment in capital stock. For example, investment typically involves the purchase of machinery, vehicles, and equipment, as well as payments for constructing new factories and storage facilities. Changes in stocks occur when businesses carry-over stock for sale in subsequent years, or when they sell products in the current year that were produced in previous years. Positive values in the SAM indicate an accumulation of stocks and negative values indicate a depletion of stocks. Finally, note that the Nexus SAMs combine private, public, and foreign investment, just as they combine private, public and foreign savings (see Entries 15, 21 and 26).

**Estimation:** The Nexus SAMs distinguish between GFCF (s-i) and changes in stocks (dstk). SAM entries are determined in two steps. First, the total value of GFCF and stock changes are taken from official national accounts data. Second, these total values are disaggregated across commodities using expenditure shares from the IOT/SUT. In some cases, countries report the composition of GFCF on an annual basis, in which case this information is used in place of the IOT/SUT shares. The same is true for stock changes, although most countries only report detailed stock changes when a new IOT/SUT is produced during the rebasing of national accounts. Although commodity level stock changes in Nexus SAMs typically deviate from national accounts, this is not overly concerning since they are usually an exogenous decision variable in economy-wide models.

### 30. Inventory or stock change adjustment (Savings | Investment)

**Definition:** The accumulation of stocks for sale in subsequent years are added to the amount of savings available in the country (and a depletion of stocks reduces savings). For example, if an activity produces a machine this year for sale next year, then they are effectively saving the value of the machine (or investing in future sales). This transfer of total stock changes to the savings account was not shown in Table 1, because it nets to zero in SAMs that aggregate gross fixed capital formation (GFCF) and changes in stocks.

**Estimation:** This is a residual balancing item for the change in stocks account (see Entry 29). The total value of stock changes is paid to the savings account. A positive value means a net accumulation of stocks and a negative value means a net depletion.

### 31. Exports (Commodities | Rest of World)

**Definition:** Value of goods and services exported abroad.

**Estimation:** The total value of exports is taken from national accounts, and this is then disaggregated into total goods and total services using current account data from the IMF's BOPS (i.e., BPM6 codes BXG for "goods credit" and BXS for "services credit"). BOPS provides detailed information on services exports by commodity, and this is used to assign exports to service commodities in the SAM (see Table A5 in the appendix). Goods exports are disaggregated across commodities using 6-digit HS gross export flows from the United Nations Commodity Trade Statistics (COMTRADE) database (UNSD 2015).

### 32. Foreign transfers to factors (Factors | Rest of World)

**Definition:** Labor, land and capital incomes received from the rest of the world. For example, workers belonging to domestic households may earn some or all their labor incomes working in a foreign country and this income may be repatriated. Similarly, domestically-owned companies may repatriate profits earned abroad.

**Estimation:** Factor transfers from the rest of the world are from the IMF's BOPS. Labor receipts are "compensation of employees, credit" (BPM6 code BXIPCE). Capital receipts are "investment income, credit" (BPM6 BXIPI), which includes, amongst others, income on foreign equity and investment funds.

### **33. Foreign transfers to enterprises (Enterprises| Rest of World)**

**Definition:** Secondary income transfers from the rest of the world to domestic financial and non-financial enterprises.

**Estimation:** The value of enterprise foreign receipts comes from the IMF's BOPS. This includes "other transfers, credit" (BPM6 code BXISOOT).

### **34. Foreign transfers to households (Households| Rest of World)**

**Definition:** Secondary income transfers from households to the rest of the world. For example, households may receive remittance incomes from family members working abroad.

**Estimation:** The value of household foreign income comes from the IMF's BOPS. This includes "personal transfers, credit" (BPM6 code BXISOPT). Transfers are disaggregated across household groups in the SAM using information from national household surveys that capture the amount of remittances households received from abroad.

### **35. Foreign transfers to government (Government| Rest of World)**

**Definition:** Transfers from the rest of the world to the government. For example, government may receive foreign aid from other countries.

**Estimation:** The value of government foreign receipts comes from the IMF's BOPS, and this is cross-checked against the IMF's GFS. BOPS-based receipts include "general government transfers, credit" under secondary income (BPM6 code BXISG). GFS-based payments include grants received from foreign governments and international organizations (GFSM code 131 and 132).

### **36. Foreign savings (Savings | Rest of World)**

**Definition:** Current account balance equal to total foreign capital or savings inflows.

**Estimation:** This is the residual balancing item for the rest of world account, although it cross-checked against the current account balance reported in the IMF's BOPS (BPM6 code 1). Any deviation from BOPS data – and this is usually small – is due to the Nexus SAM giving preference to total the value of imports and exports reported in national accounts (see Entries 7 and 31).

## 4 BALANCING NEXUS SOCIAL ACCOUNTING MATRICES

Nexus social accounting matrices are constructed in three stages using the IFPRI SAM Building Toolkit. The toolkit uses a standardized template in Microsoft-Excel® to construct and export an unbalanced SAM to a compilation and balancing program that is executed in the General Algebraic Modeling System (GAMS).

During the first stage of the SAM Toolkit, a Macro SAM is constructed using the data described in previous sections. The three main data sources for the Macro SAM are national accounts, the IMF's Government Finance Statistics (GFS) database, and the IMF Balance of Payments Statistics (BOPS) database. Unfortunately, in many developing countries, these three data sources are not fully reconciled. For example, the total value of exports and imports in national accounts may not exactly match the values appearing in BOPS. Preference is given to certain data sources. For instance, Nexus SAMs always uses national accounts data instead of trade data from BOPS or government consumption spending estimates from GFS. Similarly, preference is given BOPS over GFS when estimating transfers between the government and the rest of the world. Row and column totals in the Macro SAM are reconciled manually through various residual balancing items:

- Marketed supply balances the activity accounts (see Entry 4)
- Transfers to households or enterprises balances the factor accounts (see Entry 8 and 9)
- Transfers to households balances the enterprise account (see Entry 12)
- Household and government savings balance the household and government accounts (see Entries 21 and 26)
- Foreign savings balances the rest of world account (see Entry 36).

During the second stage, income and expenditure shares derived from surveys and other sources are used to disaggregate the Macro SAM entries across detailed activities, commodities, factors, and households. Sectoral and product data is used to disaggregate production and trade, and survey data is used to disaggregate factor and household incomes and consumer demand. There are always imbalances between the level of supply and demand for commodities and between household incomes and expenditures. These imbalances are manually checked for misclassification issues and logical errors in data collection and reporting. However, imbalances invariably remain, and so Nexus SAMs use cross-entropy estimation techniques to reconcile row and column totals at the detailed commodity and household level. For more information on cross-entropy-based reconciliation of SAM accounts, see Robinson et al. (2001).

Finally, in the third stage, Standard Nexus SAM entries are further disaggregated to include sex-disaggregated and regional information. As above, separating activities, factors, and households always introduces new imbalances. These are reconciled using a second round of cross-entropy estimation techniques.

## 5 SUDAN SOCIAL ACCOUNTING MATRIX AND DATA SOURCES

The 2019 Sudan SAM follows the Standard Nexus structure, as described in Section 2. Table 8 lists the data sources used to construct the SAM. All major data sources are consistent with those used for Standard Nexus SAMs, as described in Section 3.

**Table 8.** Summary of Data Sources for the Sudan Social Accounting Matrix

Bold 8pt	Bold 8pt	Bold 8pt	Bold 8pt
<b>Macroeconomic structure</b>			
National accounts	2019	National accounts, Central Bureau of Statistics	CBS (2022a)
Government finance	2019	Fiscal Data, Ministry of Finance and Economic Planning	MFEP (2022)
Balance of payments	2021	BPM6 online database	IMF (2022)
<b>Input-output table (IOT)</b>			
Aggregate structure	2019	Sudan SAM for 2019	Elnour et al. (2022)
Agriculture subsectors	2019	Sudan SAM for 2019	Elnour et al. (2022)
Industrial subsectors	2019	Sudan SAM for 2019	Elnour et al. (2022)
<b>Disaggregating activities</b>			
Aggregate sectors	2019	National accounts, Central Bureau of Statistics	CBS (2022a)
Crops and livestock subsectors	2019	FAOSTAT online database and AOAD (2022)	FAO (2021) and AOAD (2022)
Industrial subsectors	2019	National accounts, Central Bureau of Statistics and Sudan SAM for 2019	CBS (2022a), and Elnour et al. (2022)
<b>Disaggregating commodities</b>			
Private consumption	2009/2014	Household Income, Expenditure, and Consumption Survey, Central Bureau of Statistics	CBS (2022c)
Public consumption	2019	National Accounts, Central Bureau of Statistics	CBS (2022a)
Gross fixed capital formation	2019	National Accounts, Central Bureau of Statistics	CBS (2022a)
Goods trade	2019	BACI online database	BACI (2022)
Services trade	2019	BPM6 online database	IMF (2022)
Indirect tax rates	2019	Sudan SAM for 2019	Elnour et al. (2022)
Subsidy rates	2019	Sudan SAM for 2019	Elnour et al. (2022)
<b>Disaggregating labor</b>	2009/2014	Household Income, Expenditure, and Consumption Survey, Central Bureau of Statistics	CBS (2022c)
<b>Disaggregating households</b>	2009/2014	Household Income, Expenditure, and Consumption Survey, Central Bureau of Statistics	CBS (2022c)

Source: Authors.

**Activities:** Sudan's national accounts provided GDP estimates for 39 sectors, which were disaggregated to 77 Nexus activities using (i) crop production and price data from FAOSTAT (see Section 3); and

(ii) industrial data from the 2019 Sudan SAM (Elnour et al., 2022). An updated IOT was estimated using (i) the technical coefficients derived from the 2019 Sudan SAM (Elnour et al., 2022), which were aggregated to the 77 Nexus activities using the ISIC Revision 4 concordance (see Table A1 in the appendix); (ii) technical coefficients for agriculture subsectors from the 2019 Sudan SAM (Elnour et al., 2022) ; and (iii) intermediate consumption from the 2019 Sudan SAM (Elnour et al., 2022).

**Commodities:** National accounts report GDP by expenditure group, i.e., private, and public consumption, investment demand, and exports and imports. These groups were disaggregated across the Nexus commodities using the following data:

- Six-digit BACI and itemized BOPS data were used to disaggregate international goods and services trade, respectively.
- The 2009 and unpublished data on Household Income, Expenditure, and Consumption Survey (HIEC), which is a nationally representative household survey, was used to disaggregate total private consumption spending across activities and commodities.
- Public consumption spending was disaggregated across public administration, health, and education using GDP information from national accounts, after subtracting other consumption and intermediate demand.
- Initial indirect tax rates were estimated using sales tax collection rates calculated from the 2019 SAM (Elnour et al., 2022).
- Import tariffs and subsidy rates were estimated and scaled based on information from the 2019 SAM (Elnour et al., 2022). Taxes on income, profits, and capital gains for the year 2019, were split into Payable by individuals and taxes Payable by corporations and other enterprises, using the shares from the more disaggregated fiscal data for the year 2017, available from the Ministry of Finance and Economic Planning (MFEP, 2022).

**Labor:** The updated IOT separates sectoral GDP into compensation of employees and gross operating surplus. Labor value-added was disaggregated using sector-level income shares of household members derived from the 2009/2014 household survey (CBS, 2022c). This survey provides information on wage earnings, as well as enterprise revenues. The household survey didn't include any data on labor wages by activities. Hence, the estimated labor wages were derived from the Sudan Labor Force Survey for 2011 (MHRDL, 2012), for the three dimensions: rural vs, urban, gender and educational attainment. We relied on the data that was provided by Sudan Labor Force Survey (SLFS) 2011 (MHRDL, 2012)<sup>8</sup> as well as the compensation of employees by economic activities that were provided by the National Account department of the CBS. CBS provided the value of compensation for employees disaggregated by 29 economic activities. This value was split into rural and urban and then into gender using shares from the SLFS 2011. Subsequently, these values were split into the four educational attainments using shares from the SLFS 2011, as well.

**Households:** Household incomes and expenditures were disaggregated across representative household groups using information from the 2009/2014 (CBS, 2022c). Households receive factor incomes based on reported earnings of individual household members. The value-added generated by cropland and livestock capital were paid to household groups based on their reported farm enterprise revenues. Direct tax payments were assumed to be proportional to secondary and tertiary-educated workers' wage and non-farm enterprise earnings. Finally, transfers received from the government and the rest of the world were assigned to households using information from SLFS. More specifically, the ratio of transfer earnings to total household consumption was used to estimate initial transfer incomes. These were then scaled uniformly across all households to match the total value of transfers appearing in government and balance of payments statistics.

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<sup>8</sup> - Ministry of Human Resources Development and Labor (Directorate General of Planning and Monitoring).

The 2019 SAM for Sudan is a monetary representation of the economic transactions that took place within a year. In Tables 9 to 12, we present a summary information about the economy based on the SAM. Table 9 presents a Macro SAM for Sudan in 2019 showing the aggregate transactions such as the total private consumption, total government expenditure, total exports, and total imports, all reported in billions of Sudanese Pound.

Table 10 presents the structure of production and trade in Sudan in 2019 as depicted by the SAM. It shows the sectoral contribution to the overall GDP, exports and imports while showing the export share of each sector/commodity in total output and the import share of each commodity in total demand.

Table 11 classifies and presents the sources of household income in Sudan in 2019. Households are grouped by income quintile and by location (rural and urban). The income sources of the households are labor (classified by education level to three groups), crop land, capital (agriculture and non-agriculture) and transfers (from the government or the rest of the world).

Table 12 classifies and presents the population by household groups considering income quintile and location (rural and urban) in millions of people and the share of each group in total population (%). It also shows their consumption spending of goods and services including the share of household group in total spending (%), the per capita spending (1000 Sudanese Pound) and the food share of each household group (%) in total spending by that group.

**Table 9: Macro SAM for Sudan in 2019 (Billions of Sudanese Pound)**

	Activities	Commodities	Factors	Enterprises	Households	Government	Taxes	Investment	Rest of the World	Total
Activities		2,889			258					3,147
Commodities	1,195	598			1,457	120		285	177	3,833
Factors	1,952								5	1,956
Enterprises			819			3			9	831
Households			1,057	789		92			18	1,955
Government				4	19		9		63	96
Taxes			0	8	1					9
Savings				15	213	-120			177	285
Rest of the World		345	80	14	6	1				447
Total	3,147	3,833	1,956	831	1,955	96	9	285	447	

Source: 2019 Sudan SAM.

**Table 10: Structure of Production and Trade in Sudan (2019)**

	Share of total (%)			Exports/ output (%)	Imports/ demand (%)
	GDP	Exports	Imports		
<b>All sectors or commodities</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>6.1</b>	<b>10.3</b>
<b>Agriculture</b>	<b>20.2</b>	<b>8.1</b>	<b>2.5</b>	<b>4.7</b>	<b>2.3</b>
Crops	10.4	6.7	2.5	6.0	3.8
Livestock	9.1	1.0	0.1	1.8	0.1
Forestry	0.5	0.4	0.0	11.6	0.1
Fisheries	0.2	0.0	0.0	0.8	0.0
<b>Industry</b>	<b>21.8</b>	<b>75.4</b>	<b>82.3</b>	<b>15.1</b>	<b>22.8</b>
Mining	7.9	65.8	0.0	52.7	0.0
Manufacturing	9.9	9.6	82.3	3.5	30.6
Processed foods	4.2	0.8	12.8	1.0	18.1
Beverage and tobacco	0.0	0.0	0.4	0.0	22.0
Textiles, clothing, and footwear	0.0	0.1	5.7	11.3	80.3
Wood and paper products	0.1	0.0	2.2	1.2	55.3
Chemicals and petroleum	2.2	0.1	10.2	0.1	15.4
Non-metal minerals	1.6	0.0	3.8	0.0	17.4
Metals and metal products	1.8	8.6	0.0	11.8	0.0
Machinery, equipment, and vehicles	0.0	0.0	31.0	0.0	79.7
Other manufacturing	0.0	0.0	16.2	0.0	74.0
Electricity, gas, and steam	0.2	0.0	0.0	0.0	0.0
Water supply and sewage	0.3	0.0	0.0	0.0	0.0
Construction	3.6	0.0	0.0	0.0	0.0
<b>Services</b>	<b>58.0</b>	<b>16.5</b>	<b>15.1</b>	<b>1.7</b>	<b>3.0</b>
Wholesale and retail trade	15.3	0.0	0.0	0.0	0.0
Accommodation and food services	3.2	3.6	1.6	6.2	5.6
Transportation and storage	7.8	10.7	3.3	6.4	4.0
Information and communication	1.9	0.0	0.0	0.0	0.0
Finance and insurance	2.9	0.1	7.1	0.1	25.5
Real estate activities	4.3	0.0	0.0	0.0	0.0
Business services	7.2	2.2	3.0	1.7	4.5
Public administration	4.8	0.0	0.0	0.0	0.0
Education	2.5	0.0	0.0	0.0	0.0
Health and social work	2.4	0.0	0.0	0.0	0.0
Other services	5.7	0.0	0.0	0.0	0.1

Source: 2019 Sudan SAM.

**Table 11: Household Income Sources in Sudan (2019)**

	Share of total household income (%)										
	Labor by education level				Crop land	Capital			Transfers		Total
	All workers	Low educated	Medium educated	High educated		All	Agriculture	Non-agriculture	Government	World	
<b>All households</b>	<b>42.4</b>	<b>12.7</b>	<b>12.2</b>	<b>17.4</b>	<b>4.9</b>	<b>47.1</b>	<b>6.8</b>	<b>40.3</b>	<b>4.7</b>	<b>0.9</b>	<b>100</b>
Quintile 1	49.1	23.3	17.8	8.0	10.1	37.7	17.1	20.6	2.7	0.5	100
Quintile 2	46.8	26.2	7.8	12.8	9.6	39.1	14.2	25.0	3.9	0.6	100
Quintile 3	46.8	17.6	16.6	12.6	7.4	42.5	8.9	33.6	2.9	0.5	100
Quintile 4	48.0	14.1	15.0	18.9	6.2	43.0	7.0	36.1	2.4	0.4	100
Quintile 5	37.6	7.3	10.0	20.3	2.3	52.4	3.5	48.9	6.4	1.3	100
<b>Rural households</b>	<b>40.9</b>	<b>13.2</b>	<b>10.6</b>	<b>17.2</b>	<b>8.9</b>	<b>46.1</b>	<b>12.9</b>	<b>33.2</b>	<b>3.4</b>	<b>0.7</b>	<b>100</b>
<b>Urban households</b>	<b>43.6</b>	<b>12.4</b>	<b>13.6</b>	<b>17.7</b>	<b>1.6</b>	<b>48.0</b>	<b>1.6</b>	<b>46.4</b>	<b>5.8</b>	<b>1.1</b>	<b>100</b>

Source: 2019 Sudan SAM.

Notes: Labor is separated by the maximum level of education achieved: "low educated" workers have not finished primary schooling (i.e., 0-6 years of schooling); "medium educated" workers have finished primary schooling, but not finished secondary schooling (i.e., 7-11 years of schooling); and "high educated" workers have finished secondary or tertiary schooling (12+ years of schooling).

**Table 12: Household Populations and Expenditures in Sudan (2019)**

	Population		Consumption spending			Total spending	
	Millions of people	Share of total (%)	Share of total (%)	Per capita (1000 Sudanese Pound)	Food share (%)	Per capita (1000 Sudanese Pound)	Savings rate (%)
<b>All households</b>	<b>42.8</b>	<b>100</b>	<b>100</b>	<b>40</b>	<b>42.3</b>	<b>46</b>	<b>10.9</b>
Quintile 1	8.6	20.0	8.0	16	71.0	17	5.0
Quintile 2	8.6	20.0	9.1	18	65.8	20	6.7
Quintile 3	8.6	20.0	14.3	29	53.0	31	7.1
Quintile 4	8.6	20.0	18.5	37	46.1	41	8.9
Quintile 5	8.6	20.0	50.1	100	28.9	120	14.1
<b>Rural households</b>	<b>27.8</b>	<b>64.9</b>	<b>49.2</b>	<b>30</b>	<b>60.0</b>	<b>32</b>	<b>5.2</b>
<b>Urban households</b>	<b>15.0</b>	<b>35.1</b>	<b>50.8</b>	<b>58</b>	<b>25.2</b>	<b>70</b>	<b>15.7</b>

Source: 2019 Sudan SAM.

Notes: Expenditures are annual. Consumption spending includes spending on goods and services. Total spending is consumption spending plus taxes, savings, and outward remittances

**Data files:** The Microsoft Excel® file (SDN\_N90\_2019.xlsx) accompanying this documentation includes the following worksheets:

- **Notes:** Description of the Sudan Nexus SAM accounts.
- **SAM v90N:** The 2019 national SAM with 77-sector corresponding to the standard Nexus SAM structure of 90-sector. The final SAM for dissemination was aggregated to the standard 42 activities, 5 factors of production, and 10 representative households.

The number of activities/commodities used in the SAM description is based on the number of Standard Nexus accounts considered when constructing the SAM (see Table 2).

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## APPENDICES

**Table A1. Detailed Classification of Nexus 77 Activity Accounts**

Nexus Activity		International Standard Industrial Classification (ISIC) Revision 4	
<b>maiz</b>	Maize	111	Growing of cereals (except rice), leguminous crops and oil seeds
<b>Sorg</b>	Sorghum and millet	111	Growing of cereals (except rice), leguminous crops and oil seeds
<b>Rice</b>	Rice	112	Growing of rice
<b>whea</b>	Wheat and barley	111	Growing of cereals (except rice), leguminous crops and oil seeds
<b>Ocer</b>	Other cereals	111	Growing of cereals (except rice), leguminous crops and oil seeds
<b>Puls</b>	Pulses	111	Growing of cereals (except rice), leguminous crops and oil seeds
<b>gnut</b>	Groundnuts	111	Growing of cereals (except rice), leguminous crops and oil seeds
<b>Oils</b>	Other oilseeds	111	Growing of cereals (except rice), leguminous crops and oil seeds
<b>spot</b>	Sweet potatoes	113	Growing of vegetables and melons, roots and tubers
<b>Root</b>	Other roots	113	Growing of vegetables and melons, roots and tubers
<b>Leaf</b>	Leafy vegetables	113	Growing of vegetables and melons, roots and tubers
<b>vege</b>	Vegetables	113	Growing of vegetables and melons, roots and tubers
<b>sugr</b>	Sugar cane	114	Growing of sugar cane
<b>Cott</b>	Cotton and fibers	116	Growing of fiber crops
<b>Nuts</b>	Nuts	125	Growing of other tree and bush fruits and nuts
<b>bana</b>	Banana and plantains	125	Growing of other tree and bush fruits and nuts
<b>Frui</b>	Fruits	121	Growing of grapes
<b>Teal</b>	Tea	127	Growing of beverage crops
<b>Ocrp</b>	Other crops	119	Growing of other non-perennial crops
<b>Catt</b>	Cattle	141	Raising of cattle and buffaloes
<b>Milk</b>	Raw milk	141	Raising of cattle and buffaloes
<b>poul</b>	Poultry	146	Raising of poultry
<b>eggs</b>	Eggs	146	Raising of poultry
<b>Smlr</b>	Small ruminants	144	Raising of sheep and goats
<b>Oliv</b>	Other livestock	142	Raising of horses and other equines
<b>fore</b>	Forestry	02xx	Forestry and logging
<b>aqua</b>	Aquaculture	032x	Aquaculture
<b>fish</b>	Fishing	031x	Fishing
<b>coal</b>	Coal and lignite	05xx	Mining of coal and lignite

Nexus Activity		International Standard Industrial Classification (ISIC) Revision 4	
<b>coil</b>	Crude oil	061x	Extraction of crude petroleum
<b>omin</b>	Other mining	07xx	Mining of metal ores
<b>meat</b>	Meat processing	101x	Processing and preserving of meat
<b>fsea</b>	Fish and seafood processing	102x	Processing and preserving of fish, crustaceans and mollusks
<b>fveg</b>	Fruit & vegetable processing	103x	Processing and preserving of fruit and vegetables
<b>foil</b>	Fats and oils	104x	Manufacture of vegetable and animal oils and fats
<b>dair</b>	Dairy	105x	Manufacture of dairy products
<b>mml</b>	Maize milling	1061	Manufacture of grain mill products
<b>smll</b>	Sorghun and millet milling	1061	Manufacture of grain mill products
<b>rml</b>	Rice milling	1061	Manufacture of grain mill products
<b>wml</b>	Wheat and barley milling	1061	Manufacture of grain mill products
<b>gmll</b>	Other grain milling	106x	Manufacture of grain mill products, starches and starch products
<b>sref</b>	Sugar refining	1072	Manufacture of sugar
<b>pcof</b>	Coffee processing	1079	Manufacture of coffee products
<b>ptea</b>	Tea processing	1079	Manufacture of tea products
<b>food</b>	Other foods	107x	Manufacture of other food products (excl. sugar: 1072 above, coffee and tea products)
<b>feed</b>	Animal feed	108x	Manufacture of prepared animal feeds
<b>beve</b>	Beverages	11xx	Manufacture of beverages
<b>ptob</b>	Tobacco processing	12xx	Manufacture of tobacco products
<b>yarn</b>	Yarn	1311	Preparation and spinning of textile fibers
<b>text</b>	Textiles	13xx	Manufacture of textiles
<b>clth</b>	Clothing	14xx	Manufacture of wearing apparel
<b>leat</b>	Leather and footwear	15xx	Manufacture of leather and related products
<b>wood</b>	Wood products	16xx	Manufacture of wood and of products of wood and cork, except furniture
<b>papr</b>	Paper and publishing	17xx	Manufacture of paper and paper products
<b>Plastic</b>	Rubber and Plastics	22xx	Manufacture of rubber and plastics products
<b>chem</b>	Other chemicals	20xx	Manufacture of chemicals and chemical products (excl. 2012 and 2021 above)
<b>nmet</b>	Non-metal minerals	23xx	Manufacture of other non-metallic mineral products
<b>metl</b>	Metals and metal products	24xx	Manufacture of basic metals
<b>equi</b>	Electrical equipment	26xx	Manufacture of computer, electronic and optical products
<b>mach</b>	Machinery & other equipment	28xx	Manufacture of machinery and equipment n.e.c.
<b>vehi</b>	Vehicles & transport equipment	29xx	Manufacture of motor vehicles, trailers and semi-trailers

Nexus Activity		International Standard Industrial Classification (ISIC) Revision 4	
<b>oman</b>	Other manufacturing	31xx	Manufacture of furniture
<b>elec</b>	Electricity, gas and steam	35xx	Electricity, gas, steam and air conditioning supply
<b>watr</b>	Water supply and sewage	36xx	Water collection, treatment and supply
<b>cons</b>	Construction	41xx	Construction of buildings
<b>trad</b>	Wholesale and retail trade	45xx	Wholesale and retail trade and repair of motor vehicles and motorcycles
<b>tran</b>	Transportation and storage	49xx	Land transport and transport via pipelines
<b>hotl</b>	Accommodation & food services	55xx	Accommodation
<b>rest</b>	Restaurants and food services	56xx	Food and beverage service activities
<b>comm</b>	Information and communication	58xx	Publishing activities
<b>fsrv</b>	Finance & insurance	64xx	Financial service activities, except insurance and pension funding
<b>real</b>	Real estate activities	68xx	Real estate activities
<b>bsrv</b>	Business services	69xx	Legal and accounting activities
<b>padm</b>	Public administration	84xx	Public administration and defense; compulsory social security
<b>educ</b>	Education	85xx	Education
<b>heal</b>	Health and social work	86xx	Human health activities
<b>osrv</b>	Other services	90xx	Creative, arts and entertainment activities

Note: n.e.c. = "not elsewhere considered".

**Table A2. Detailed Classification of Nexus 90 Agricultural Activity Accounts**

Code	Description (FAOSTAT crop and livestock product codes)
<b>maiz</b>	Maize (56)
<b>sorg</b>	Millet (79); Sorghum (83)
<b>rice</b>	Paddy rice (27)
<b>whea</b>	Wheat (15); Barley (44)
<b>ocer</b>	Rye (71); Oats (75); Buckwheat (89); Quinoa (92); Fonio (94); Triticale (97); Canary seed (101); Mixed grain (103); Cereals not elsewhere specified (108)
<b>puls</b>	Dry beans (176); Dry broad beans and horse beans (181); Dry peas (187); Chick peas (191); Dry cow peas (195); Pigeon peas (197); Lentils (201); Bambara beans (203); Vetches (205); Lupins (210); Pulses not elsewhere specified (211)
<b>gnut</b>	Groundnuts with shell (242)
<b>oils</b>	Soybeans (236); Coconuts (249); Palm oil fruit (254); Palm kernels (256); Palm oil (257); Olives (260); Karite nuts (shea-nuts) (263); Castor oil seed (265); Sunflower seed (267); Rapeseed (270); Tung nuts (275); Jojoba seed (277); Safflower seed (280); Sesame seed (289); Mustard seed (292); Poppy seed (296); Melonseed (299); Tallowtree seed (305); Vegetable tallow (306); Stillingia oil (307); Cottonseed (329); Linseed (333); Hempseed (336); Oilseeds not elsewhere specified (339)
<b>cass</b>	Cassava (125)
<b>ipot</b>	Potatoes (116)
<b>spot</b>	Sweet potatoes (122)
<b>root</b>	Yautia (cocoyam) (135); Taro (cocoyam) (136); Yams (137); Roots and tubers not elsewhere specified (149)
<b>leaf</b>	Cabbages and other brassicas (358); Artichokes (366); Asparagus (367); Lettuce and chicory (372); Tomatoes (388); Cauliflowers and broccoli (393); Pumpkins, squash and gourds (394); Cucumbers and gherkins (397); Eggplants (aubergines) (399)
<b>vege</b>	Chilies and peppers, green (401); Green onions and shallots (402); Dry onions (403); Garlic (406); Leeks and other alliaceous vegetables (407); Green beans (414); Green peas (417); Leguminous vegetables not elsewhere specified (420); String beans (423); Carrots and turnips (426); Okra (430); Green maize (446); Mushrooms and truffles (449); Chicory roots (459); Carobs (461); Fresh vegetables not elsewhere specified (463)
<b>sugr</b>	Sugar cane (156); Sugar beet (157); Sugar crops not elsewhere specified (161)
<b>toba</b>	Unmanufactured tobacco (826)
<b>cott</b>	Kapok fruit (310); Seed cotton (328); Flax fiber and tow (773); Hemp tow waste (777); Jute (780); Bastfibers, other (782); Ramie (788); Sisal (789); Agave fibers not elsewhere specified (800); Manila fiber (abaca) (809); Fiber crops not elsewhere specified (821)
<b>nuts</b>	Brazil nuts with shell (216); Cashew nuts with shell (217); Chestnut (220); Almonds with shell (221); Walnuts with shell (222); Pistachios (223); Kola nuts (224); Hazelnuts with shell (225); Areca nuts (226); Nuts not elsewhere specified (234)
<b>bana</b>	Bananas (486); Plantains (489)
<b>frui</b>	Oranges (490); Tangerines, mandarins, clementines and satsumas (495); Lemons and limes (497); Grapefruit (including pomelos) (507); Citrus fruit not elsewhere specified (512); Apples (515); Pears (521); Quinces (523); Apricots (526); Sour cherries (530); Cherries (531); Peaches and nectarines (534); Plums and sloes (536); Stone fruit not elsewhere specified (541); Pome fruit not elsewhere specified (542); Strawberries (544); Raspberries (547); Gooseberries (549); Currants (550); Blueberries (552); Cranberries (554); Berries not elsewhere specified (558); Grapes (560); Watermelons (567); Other melons (including cantaloupes) (568); Figs (569); Mangoes, mangosteens, and guavas (571); Avocados (572); Pineapples (574); Dates (577); Persimmons (587); Cashew apple (591); Kiwi fruit (592); Papayas (600); Fresh tropical fruit not elsewhere specified (603); Fresh fruit not elsewhere specified (619)
<b>coco</b>	Cocoa beans (661)
<b>coff</b>	Green coffee (656)
<b>teal</b>	Tea (667); Mata (671); Tea not elsewhere specified (674)

Code	Description (FAOSTAT crop and livestock product codes)
<b>flwr</b>	Not reported in FAOSTAT
<b>rubb</b>	Natural rubber (836); Natural gums (839)
<b>ocrp</b>	Hops (677); Pepper (piper spp.) (687); Dry chilies and peppers (689); Vanilla (692); Cinnamon (canella) (693); Cloves (698); Nutmeg, mace and cardamoms (702); Anise, badian, fennel and coriander (711); Ginger (720); Spices not elsewhere specified (723); Peppermint (748); Dried pyrethrum (754)
<b>catt</b>	Cattle meat (867); Indigenous cattle meat (944); Live weight cattle meat (945)
<b>milk</b>	Whole fresh cow milk (882); Whole fresh buffalo milk (951); Whole fresh sheep milk (982); Whole fresh goat milk (1020); Whole fresh camel milk (1130)
<b>poul</b>	Chicken meat (1058); Duck meat (1069); Indigenous duck meat (1070); Live weight duck meat (1071); Goose and guinea fowl meat (1073); Indigenous goose meat (1077); Live weight goose meat (1078); Turkey meat (1080); Indigenous bird meat not elsewhere specified (1084); Other live weight poultry meat (1085); Indigenous turkey meat (1087); Live weight turkey meat (1088); Bird meat not elsewhere specified (1089); Indigenous chicken meat (1094); Live weight chicken meat (1095)
<b>eggs</b>	Hen eggs in shell (1062); Other bird eggs in shell (1091)
<b>smlr</b>	Sheep meat (977); Greasy wool (987); Indigenous sheep meat (1012); Live weight sheep meat (1013); Goat meat (1017); Indigenous goat meat (1032); Live weight goat meat (1033)
<b>oliv</b>	Buffalo meat (947); Indigenous buffalo meat (972); Live weight buffalo meat (973); Pig meat (1035); Indigenous pig meat (1055); Live weight pig meat (1056); Horse meat (1097); Ass meat (1108); Mule meat (1111); Indigenous horse meat (1120); Live weight horse meat (1121); Indigenous ass meat (1122); Live weight ass meat (1123); Indigenous mule meat (1124); Live weight mule meat (1125); Camel meat (1127); Indigenous camel meat (1137); Live weight camel meat (1138); Rabbit meat (1141); Indigenous rabbit meat (1144); Live weight rabbit meat (1145); Other rodent meat (1151); Indigenous rodent meat (1154); Live weight rodent meat (1155); Other camelid meat (1158); Indigenous other camelid meat (1161); Live weight other camelids meat (1162); Game meat (1163); Meat not elsewhere specified (1166); Snails (1176); Natural honey (1182); Beeswax (1183); Silk-worm cocoons (1185)
<b>maiz</b>	Maize (56)

**Table A3. Activity and Commodity Accounts of the Nexus SAMs excluded from Sudan SAM**

Activity code	Commodity code	Description	Note
<b>acass</b>	ccass	Cassava	
<b>aipot</b>	cipot	Irish potatoes	
<b>atoba</b>	ctoba	Tobacco	
<b>aplan</b>	cplan	Plantains	
<b>acoff</b>	ccoff	Coffee	
<b>acoco</b>	ccoco	Cocoa	
<b>aflwr</b>	cflwr	Cut flowers	
<b>arubb</b>	crubb	Rubber	
<b>angas</b>	cngas	Natural gas	
<b>amore</b>	cmore	Metal ores	
<b>apcof</b>	cpcof	Coffee processing	Commodity account included in the SAM
<b>aptob</b>	cptob	Tobacco processing	Commodity account included in the SAM
<b>ametp</b>	cmetp	Metal products	

**Table A4. Detailed Classification of the Government Account**

Government Financial Statistics Manual (IMF GFSM 2014)		Nexus SAM Entries*	
Code	Description	Row	Column
<b>1</b>	<b>Revenue</b>		
<b>11</b>	<b>Taxes</b>		
111	Taxes on income, profits, and capital gains		
1111	Payable by individuals	dtax	hhd-__
1112	Payable by corporations and other enterprises	dtax	ent
1113	Other taxes on income, profits, and capital gains	dtax	ent
112	Taxes on payroll and workforce	ftax	flab-__
113	Taxes on property	ftax	fcap-__
114	Taxes on goods and services	stax	c____
115	Taxes on international trade and transactions		
1151	Customs and other import duties	mtax	c____
1152	Taxes on exports	etax	c____
1153	Profits of export or import monopolies	mtax	c____
1154	Exchange profits	mtax	c____
1155	Exchange taxes	mtax	c____
1156	Other taxes on international trade and transactions	mtax	c____
116	Other taxes	dtax	ent
<b>12</b>	<b>Social contributions</b>		
121	Social security contributions		
1211	Employee contributions	gov	hhd-__
1212	Employer contributions	gov	ent
1213	Self-employed or unemployed contributions	gov	hhd-__
1214	Unallocable contributions	gov	hhd-__
122	Other social contributions		
1221	Employee contributions	gov	hhd-__
1222	Employer contributions	gov	ent
1223	Imputed contributions	gov	hhd-__
<b>13</b>	<b>Grants</b>	<b>gov</b>	<b>row</b>
<b>14</b>	<b>Other revenue</b>		
141	Property income	gov	ment
142	Sales of goods and services	gov	hhd-__
143	Fines, penalties, and forfeits	gov	hhd-__
144	Transfers not elsewhere classified	gov	hhd-__
145	Premiums, fees, and nonlife insurance claims	gov	ment
<b>2</b>	<b>Expense</b>		
<b>21</b>	<b>Compensation of employees</b>	<b>c____</b>	<b>gov</b>
<b>22</b>	<b>Use of goods and services</b>	<b>c____</b>	<b>gov</b>
<b>23</b>	<b>Consumption of fixed capital</b>	<b>c____</b>	<b>gov</b>
<b>24</b>	<b>Interest</b>		
241	To non-residents	row	gov
242	To residents other than general government	ent	gov
243	To other general government units	ent	gov
<b>25</b>	<b>Subsidies</b>	<b>ent</b>	<b>gov</b>
<b>26</b>	<b>Grants</b>	<b>row</b>	<b>gov</b>
<b>27</b>	<b>Social benefits</b>	<b>hhd-__</b>	<b>gov</b>
<b>28</b>	<b>Other expense</b>	<b>ent</b>	<b>gov</b>

\* Table 5 describes the Nexus SAM account codes.

**Table A5. Detailed Classification of the Rest of World Account**

Balance of Payments (IMF BOP6)		Nexus SAM Entries*	
Code	Description	Row	Column
<b>BCA</b>	<b>Current account</b>		
<b>BGS</b>	<b>Goods and services</b>		
BG	Goods		
BXG	Credit	c____	row
BMG	Debit	row	c____
BS	Services		
<b>BXS</b>	<b>Credit</b>	<b>c____</b>	<b>row</b>
BXHR	Maintenance and repair services n.i.e.	ctrad	row
BXSTR	Transport	ctran	row
BXSTV	Travel	chotl	row
BXSOCN	Construction services	ccons	row
BXSOIN	Insurance and pension services	cfsrv	row
BXSOFI	Financial services	cfsrv	row
BXSORL	Charges for the use of intellectual property n.i.e.	cbsrv	row
BXSOTCM	Telecommunication, computer, and information services	cbsrv	row
BXSOOB	Other business services	cbsrv	row
BXSOPCR	Personal, cultural, and recreational services	cosrv	row
BXSOGGS	Government goods and services n.i.e.	cpadm	row
<b>BMS</b>	<b>Debit</b>	<b>row</b>	<b>c____</b>
BMSR	Maintenance and repair services n.i.e.	row	ctrad
BMSTR	Transport	row	ctran
BMSTV	Travel	row	chotl
BMSOCN	Construction services	row	ccons
BMSOIN	Insurance and pension services	row	cfsrv
BMSOFI	Financial services	row	cfsrv
BMSORL	Charges for the use of intellectual property n.i.e.	row	cbsrv
BMSOTCM	Telecommunication, computer, and information services	row	cbsrv
BMSOOB	Other business services	row	cbsrv
BMSOPCR	Personal, cultural, and recreational services	row	cosrv
BMSOGGS	Government goods and services n.i.e.	row	cpadm
<b>BIP</b>	<b>Primary income</b>		
<b>BXIP</b>	<b>Credit</b>		
BXIPCE	Compensation of employees	flab-__	row
BXIPI	Investment income	fcap-_	row
BXIPO	Other primary income	fcap-_	row
<b>BMIP</b>	<b>Debit</b>		
BMIPCE	Compensation of employees	row	flab-__
BMIPI	Investment income	row	fcap-_
BMIPO	Other primary income	row	fcap-_
<b>BIS</b>	<b>Secondary income</b>		
<b>BXIS</b>	<b>Credit</b>		
BXISG	General government	gov	row
BXISO	Financial and nonfinancial corporations, households, and NPISHs		
BXISOPT	Personal transfers	hhd-__	row
BXISOOT	Other current transfers	ent	row
<b>BMIS</b>	<b>Debit</b>		
BMISG	General government	row	gov
BMISO	Financial and nonfinancial corporations, households, and NPISHs		
BMISOPT	Personal transfers	row	hhd-__
BMISOOT	Other current transfers	row	ent

\* Table 5 describes the Nexus SAM account codes; Table 1 describes the activities and commodities.  
Note: n.i.e. = "not included elsewhere"; NPISH = Non-profit institutions serving households

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