2022/23 Social Accounting Matrix for India

A Nexus Project SAM

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Nexus Project

The Nexus Project is a collaboration between IFPRI and its partners, including national statistical agencies and research institutions. Our aim is to improve the quality of social accounting matrices (SAMs) used for computable general equilibrium (CGE) modeling. The Nexus Project develops toolkits and establishes common data standards, procedures, and classification systems for constructing and updating national SAMs. This addresses the need for greater transparency and consistency in SAM construction to strengthen model-based research and policy analysis in developing countries. Nexus SAMs allow for more robust cross-country comparisons of national economic structure, especially agriculture-food systems. The Nexus Project's guiding principles are that all data should be traceable to original sources and/or assumptions, and that all SAMs should be freely available online. Greater transparency and accessibility should facilitate more data validation and participation of the modeling community. Statistics are continuously being revised and errors are often only identified when data is used for analysis, and so we welcome your suggestions on how the SAMs can be improved to reflect new and/or better information.

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Abbreviations

BACI	International Trade Database at the Product-level
BOPS	Balance of Payments Statistics
BPM6	Balance of Payments Manual, Sixth Edition
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
SAM	Social Accounting Matrix
SNA	System of National Accounts
SUT	Supply-Use Table
TRAINS	Trade Analysis Information System

1. Social Accounting Matrices

A national 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.[1] 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*:* Nexus SAMs 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 a 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).

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.

[1] For a lengthier discussion on SAMs, see Pyatt and Round (1985) and Reinert and Roland-Holst (1997).

Table 1: Standard Nexus Macro SAM

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

2. Standard Nexus SAM Accounts

***Activities and commodities**:* Standard Nexus SAMs separate domestic production into 42 activities, as shown in Table 2.[2] Each activity represents a group of industries from the International Standard Industrial Classification system (ISIC Revision 4). The 4-digit ISIC codes corresponding to each SAM activity are shown in Table A1 in the appendix. Agricultural activities are further disaggregated using the 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 2012).[3]

Table 2. Standard Nexus SAM Activities and Commodities

Code	Description	Code	Description
maiz	Maize	text	Textiles, clothing and footwear
rice	Rice	wood	Wood and paper products
ocer	Other cereals	chem	Chemicals and petroleum
puls	Pulses	nmet	Non-metal minerals
oils	Oilseeds	metl	Metals and metal products
root	Roots	mach	Machinery, equipment and vehicles
vege	Vegetables	oman	Other manufacturing
sugr	Sugarcane	elec	Electricity, gas and steam
toba	Tobacco	watr	Water supply and sewage
cott	Cotton and fibers	cons	Construction
frui	Fruits and nuts	trad	Wholesale and retail trade
coff	Coffee, tea and cocoa	tran	Transportation and storage
ocrp	Other crops	hotl	Accommodation and food services
catt	Cattle and raw milk	comm	Information and communication
poul	Poultry and eggs	fsrv	Finance and insurance
oliv	Other livestock	real	Real estate activities
fore	Forestry	bsrv	Business services
fish	Fisheries	padm	Public administration
mine	Mining	educ	Education
food	Processed foods	heal	Health and social work
beve	Beverage and tobacco	osrv	Other services

Source: IFPRI Nexus 42/5/10 standard SAM structure.

***Factors of production**:* Nexus SAMs separate factors into three broad categories: labor, land and capital. Labor is further disaggregated across three education-based categories, as shown in Table 3. 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 (see the notes provided in Table 3). 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

[2] Nexus SAMs are aggregations of IFPRI's detailed country SAMs, which adopt a standard classification (90 activities/commodities, 13 factors, and 15 household groups). Some SAMs are even more detailed, but all can be aggregated to the standard 90/13/15 Nexus structure (and to the 42/5/10 structure documented here).
[3] The lengthy concordance between Nexus SAM commodities and HS 2012 codes are available upon request.

using wage and salary data as well as imputed earnings by unpaid family members as reported in household and labor force surveys (see Section 5).

Capital is gross operating surplus (GOS), plus a portion of the mixed income reported in national IOTs or SUTs that is not assigned to either labor or land factors. Crop and livestock capital are paid directly to households, while capital earnings in other sectors are paid to enterprises.

Table 3. Standard Nexus SAM Factors

Code	Description	Notes
lab-n	Labor - low education	Not finished primary schooling (i.e., 0-6 years of schooling)
lab-p	Labor - medium education	Finished primary, but not finished secondary schooling (i.e., 7-11 years of schooling)
lab-s	Labor - high education	Finished secondary or tertiary schooling (12+ years of schooling)
lnd	Land - agricultural crops	Cultivated crop land
cap	Capital	For agricultural crops (e.g., tractors, irrigation infrastructure)

Source: IFPRI Nexus 42/5/10 standard SAM structure.

Households: Nexus SAMs separate national populations into 10 representative household groups, as shown in Table 4. Rural and urban households are distinguished based on a country's official definition of these areas and may vary between countries. Rural and urban households are further disaggregated into per capita consumption quintiles. Quintiles are defined at the national level, meaning that rural and urban quintiles are comparable and that the combined population of each quintile is equal to a fifth of the national population. Per capita consumption groups are not adjusted for adult-equivalency and, like national accounts, include all (most) consumption items reported in a country's household survey (see Section 5). The latter implies that the consumption estimates and quintiles in Nexus SAMs may deviate from poverty-oriented consumption measures and groupings, since these typically use adult equivalence scales, exclude "nonessential" items (e.g., airplane tickets), and impute a "use value" for durable and semidurable assets (in addition to housing).

Table 4. Standard Nexus SAM Households

Code	Description	Notes
hhd-r1	Rural - quintile 1	Rural households separated into national per capita consumption expenditure quintiles
hhd-r2	Rural - quintile 2	
hhd-r3	Rural - quintile 3	
hhd-r4	Rural - quintile 4	
hhd-r5	Rural - quintile 5	
hhd-u1	Urban - quintile 1	Urban households separated into national per capita consumption expenditure quintiles
hhd-u2	Urban - quintile 2	
hhd-u3	Urban - quintile 3	
hhd-u4	Urban - quintile 4	
hhd-u5	Urban - quintile 5	

Source: IFPRI Nexus 42/5/10 standard SAM structure.

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. Standard Nexus SAM Accounts

Code	Description	Notes
a___	Activities	See Table 2 for the list of activity accounts
c___	Commodities	See Table 2 for the list of commodity accounts
f___	Factors	See Table 3 for the list of factor accounts
h___	Households	See Table 4 for the list of household accounts
trc	Transaction costs	From moving goods between producers, markets and/or borders
ent	Enterprises	Financial and non-financial corporations
gov	Government	Government as an institution, not as a producing activity
atax	Taxes - activity	Indirect taxes on producers
dtax	Taxes - direct	Direct taxes on enterprises and households
etax	Taxes - export	Indirect taxes on exports
ftax	Taxes - factor	Direct taxes on factor incomes
mtax	Taxes - import	Indirect taxes on imports (import duties)
stax	Taxes - sales	Indirect taxes on domestic sales (VAT, GST and excise duty)
s-i	Savings-investment	Investment is gross fixed capital formation
dstk	Change in stocks	Inventory accumulation or depletion
row	Rest of world	All foreign countries and economies
total	Total	Row and column totals

Source: IFPRI Nexus 42/5/10 standard SAM structure.

3. Nexus SAM 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 their Macro SAMs have 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 6.

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 use the 2014 GFS Manual (GFSM) (IMF 2014b) and a mapping between GFSM codes and macro SAM accounts can be found in Table A3 in the appendix. Second, the IMF maintains detailed Balance of Payments Statistics (BOPS) (IMF 2014a). Nexus SAMs use the sixth BOPS Manual (BPM) and a mapping between BPM6 codes and macro SAM accounts can be found in Table A4 in the appendix. The conversion from US dollars to local currency uses the official exchange rate, as reported in World Development Indicators (World Bank 2024). 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).

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 (amaiz) to the chemical commodity (cchem) 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 possible, updated using more recent national accounts, agricultural and industrial surveys, and/or censuses of economic activity. 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 and agricultural and industrial surveys. 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 the underlying IOT/SUTs are re-estimated. The description of each SAM in Section 5 indicates the IOT/SUT's benchmark year.

Table 6: Numbered Entries in a Standard Nexus SAM

	Activities	Commodities	Factors	Enterprises	Households	Government	Taxes	Investment	Rest of the World
Activities		4			17				
Commodities	1	5			18	23		29	31
Factors	2								32
Enterprises			8			24			33
Households			9	12		25			34
Government				13	19		28		35
Taxes	3	6	10	14	20				
Savings				15	21	26		30	36
Rest of the World		7	11	16	22	27			

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 includes 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 and/or the FAO's FAOSTAT database (FAO 2024). 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 (or possibly from changing weights of producer price indices).

Labor value added is disaggregated across the worker categories in Table 3 using national household and/or labor force survey data.[4] Workers in these surveys report their sector of employment, their earnings (wages, salaries, in-kind, etc.), and their education levels. Earnings from farm and non-farm enterprises are usually reported at the household level in surveys, and in such cases, these earnings are allocated across 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 subsidies if 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] 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 (e.g., Living Conditions Monitoring Surveys).

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.

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, including exports, to derive new transaction costs. Second, margins are estimated by the gap between producer and market prices, net of indirect taxes, using price data supplied 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 subsidies if 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 2024). Tax rates are applied to the level of domestic sales, imports or exports (see Entries 7 and 31). 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 A4 in the appendix). Goods imports are disaggregated across commodities using 6-digit HS gross import flows from the International Trade Database at the Product-level (BACI) (Gaulier and Zignago 2010) which is built based on the United Nations Commodity Trade Statistics (COMTRADE) database (UNSD 2024). BACI performs various operations to reconcile COMTRADE data reported by both exporting and importing countries. As a result, the trade data are balanced, enhancing the quality of trade data for many low- and low-middle income countries.

8. Factor income to enterprises (Enterprises | Factors)

Definition: Capital payments to enterprises after paying factor taxes and after transfers to the rest of the world (see Entries 10 and 11). Payments equal gross operating surplus (GOS) generated outside the crop and livestock sectors (see direct payments to households below). GOS includes the value of consumption of fixed capital during the production process.

Estimation: This is a residual balancing item for the capital account. Total capital income less capital taxes and foreign transfers is paid to the enterprise account, thereby balancing capital's row and column.

9. Factor income to households (Households | Factors)

Definition: Labor, land, and crop/livestock 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, returns to land, and the capital earnings (i.e., GOS) generated in the crop and livestock sectors.

Estimation: This is a residual balancing item for labor and land. 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 livestock capital payments to households are disaggregated using survey households' reported revenues from agricultural crops and livestock.

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

Definition: Direct taxes paid by 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 of their labor incomes in domestic industries and this income may be repatriated back to 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 is 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. Enterprise transfers to government **(Government | Enterprises)**

Definition: Transfers from enterprises (financial and non-financial corporations) 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).

14. Corporate taxes (Taxes | Enterprises)

Definition: Corporate and other direct taxes paid by enterprises (financial and non-financial corporations) 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).

15. Enterprise savings (Savings | Enterprises)

Definition: Domestic private savings by enterprises (financial and non-financial corporations). 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 corporations (enterprises) and households. Accordingly, in the absence of this 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 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 unallocable 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).

20. 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 if not available or is poorly captured in the survey, then incomes from secondary/tertiary educated labor is used as a proxy for disaggregating total direct tax collections (see Table 3).

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 countries have the detailed national accounts data needed to disaggregate domestic private savings across enterprises (corporations) 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 more 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 drawn directly 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 (financial and non-financial corporations). 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 (of 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 may deviate from national accounts, this may be less concerning since these flows are typically exogenous within economywide 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 A4 in the appendix). Goods exports are disaggregated across commodities using 6-digit HS gross export flows from the International Trade Database at the Product-level (BACI) (Gaulier and Zignago 2010) which is built based on the United Nations Commodity Trade Statistics (COMTRADE) database (UNSD 2024).

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 of 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 incomes 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 SAMs

Nexus SAMs 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, GFS, and BOPS. 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 use 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, as listed below:

- 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).

5. India SAM and Data Sources

The 2022/23 India SAM follows the Standard Nexus Structure (see Section 2). Table 7 lists the specific data sources used to construct the SAM. Most sources are consistent with those used in Standard Nexus SAMs (see Section 3).

Activities: India's national accounts statistics 2024 published by Ministry of Statistics and Program Implementation (MoSPI) were used to get the macro aggregate. The SUT was aggregated to the Nexus activities using the ISIC Revision 4 concordance (see Table A1 in the appendix). National accounts provide disaggregated GDP estimates and output for most of the 42 sectors, except for food processing industries where we take the data from Annual Survey of Industries.

Table 7. Summary of Data Sources for the India SAM

Data needs	Data year	Country data sources	Reference
Macroeconomic structure			
National accounts	2022/23	National Accounts Statistics	MoSPI (2024)
IOT/SUT	2019/20	Supply Use Table	MOSPI (2023)
Government finance	2022	Government Finance Statistics online database	IMF (2024a)
Balance of payments	2022	Balance of Payments BPM6 Compilation	IMF (2024b)
Exchange rate	2022	World Development Indicators	World Bank (2024)
Disaggregating activities			
Crops and livestock subsectors	2022/23	National Accounts Statistics	MoSPI (2024)
Mining	2022/23	National Accounts Statistics	MoSPI (2024)
Manufacturing	2022/23	Annual Survey of Industries	MoSPI (2024)
Disaggregating commodities			
Private consumption	2022/23	NSS Report No. 591 (HCES: 2022-23)-Survey on Household Consumption Expenditure: 2022-23	MoSPI (2024)
Own consumption share	2022/23	NSS Report No. 591 (HCES: 2022-23)-Survey on Household Consumption Expenditure: 2022-23	MoSPI (2024)
Public consumption	2019/20	2019/20 SUT	MOSPI (2023)
Gross fixed capital formation	2019/20	2019/20 SUT	MOSPI (2023)
Goods trade	2022/23	National Accounts Statistics	MoSPI (2024)
Services trade	2022/23	National Accounts Statistics	MoSPI (2024)
Indirect tax rates	2019/20	2019/20 SUT	MOSPI (2023)
Import tariff rates	2021	TRAINS online database	UNCTAD (2024)
Transaction cost margins	2019/20	2019/20 SUT	MOSPI (2023)
Disaggregating labor	2022/23	Annual Report-Periodic Labor Force Survey (PLFS) 2022-23	MOSPI (2023)
Disaggregating households	2022/23	NSS Report No. 591 (HCES: 2022-23)-Survey on Household Consumption Expenditure: 2022-23	MoSPI (2024)

Source: 2022/23 India SAM.

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:

- 2019/20 SUT data was used to disaggregate international goods and services trade.
- The National Sample Survey Report No. 591 (HCES: 2022-23)-Survey on Household Consumption Expenditure: 2022-23, which is a nationally representative household survey

distinguishes between marketed and own consumption spending, and this information was used to disaggregate total private consumption spending across activities and commodities.

- The 2019/20 SUT provided information on the breakdown of public consumption spending across public administration, health and social work, and education.
- Initial indirect tax and import tariff rates were estimated from the 2019/20 SUT and then scaled uniformly to match total revenues by tax instrument.
- Transaction cost margins (as a share of commodity supply) were estimated from the 2019/20 SUT.

Labor: The SUT separates sectoral GDP into compensation of employees, and gross operating surplus. Labor value-added was disaggregated using sector-level worker and household income shares derived from the Periodic Labor Force Survey (PLFS) 2022-23. This includes wage earnings, as well as farm and non-farm enterprise revenues. The latter were apportioned equally to individual household members based on their reported employment status and sector of employment. For example, if more than one household member reports being employed in agriculture, then each of these members are assigned an equal share of the households' reported farm earnings.

Households: Household incomes and expenditures were disaggregated across representative household groups using information from the Periodic Labor Force Survey (PLFS) 2022-23 and Survey on Household Consumption Expenditure, 2022-23. Households receive factor incomes based on reported earnings of individual household members. The value-added generated by crop land 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/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 the PLFS. More specifically, the ratio of transfer earnings to total household consumption was used to estimate initial transfer incomes, and these were then scaled uniformly across all households to match the total value of transfers appearing in government and balance of payments statistics.

Table 8: Macro SAM for India in 2022/23 (Billions of Rupees)

	Activities	Commodities	Factors	Enterprises	Households	Government	Taxes	Investment	Rest of the World	Total
Activities		478,153			17,269					495,422
Commodities	248,859	98,431			139,795	28,836		92,604	61,334	669,859
Factors	246,992								2,231	249,222
Enterprises			122,869			17,643			264	140,776
Households			120,362	68,289		14,989			8,427	212,068
Government				12,993			38,717		17	51,727
Taxes	-428	22,743		9,114	7,288					38,717
Savings				49,632	47,714	-9,855			5,113	92,604
Rest of the World		70,532	5,992	748		113				77,385
Total	495,422	669,859	249,222	140,776	212,068	51,727	38,717	92,604	77,385	

Source: 2022/23 India SAM.

Table 9: Structure of Production and Trade in India (2022/23)

	Share of total (%)			Exports/ output (%)	Imports/ demand (%)
	GDP	Exports	Imports		
All sectors or commodities	**100**	**100**	**100**	**12.8**	**12.6**
Agriculture	**18.4**	**2.4**	**1.1**	**3.9**	**1.6**
Crops	10.2	2.2	1.0	5.5	2.2
Livestock	5.5	0.2	0.2	1.7	1.0
Forestry	1.5	0.0	0.0	0.2	0.1
Fisheries	1.3	0.0	0.0	0.1	0.0
Industry	**27.6**	**58.1**	**80.0**	**14.7**	**17.8**
Mining	2.0	0.9	16.5	6.9	51.8
Manufacturing	14.3	56.4	63.0	21.6	20.5
Processed foods	1.0	3.0	2.7	9.8	8.3
Beverage and tobacco	0.2	0.1	0.2	2.6	7.0
Textiles, clothing, and footwear	1.7	5.5	1.4	23.2	6.5
Wood and paper products	0.5	0.5	1.7	7.1	18.4
Chemicals and petroleum	3.6	22.2	17.8	31.7	23.0
Non-metal minerals	0.8	0.8	0.6	7.9	5.9
Metals and metal products	2.5	6.3	3.5	11.9	6.4
Machinery, equipment, and vehicles	3.0	12.4	26.9	26.1	35.3
Other manufacturing	0.9	5.6	8.2	33.2	35.0
Electricity, gas, and steam	2.1	0.0	0.0	0.0	0.0
Water supply and sewage	0.4	0.0	0.0	0.0	0.0
Construction	8.8	0.8	0.5	0.8	0.6
Services	**54.0**	**39.5**	**18.9**	**12.3**	**6.9**
Wholesale and retail trade	10.6	0.0	0.2	0.1	0.4
Accommodation and food services	1.0	4.3	0.0	35.8	0.0
Transportation and storage	4.6	1.1	2.0	2.6	5.3
Information and communication	1.8	0.7	0.3	4.4	2.3
Finance and insurance	5.8	1.7	0.7	5.0	2.4
Real estate activities	6.5	0.0	0.0	0.0	0.0
Business services	9.8	29.7	11.1	50.3	27.9
Public administration	6.0	0.1	0.2	0.4	0.7
Education	4.5	0.0	0.7	0.2	3.1
Health and social work	1.8	0.0	0.0	0.3	0.1
Other services	1.6	1.9	3.6	20.5	35.4

Source: 2022/23 India SAM.

Table 10: Household Income Sources in India (2022/23)

	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	
All households	**41.1**	**4.6**	**8.5**	**28.0**	**6.0**	**41.8**	**9.6**	**32.2**	**7.1**	**4.0**	**100**
Quintile 1	42.0	10.4	15.8	15.9	11.8	41.1	10.1	31.0	2.9	2.2	100
Quintile 2	40.7	7.6	13.6	19.4	10.2	43.2	10.5	32.7	3.3	2.6	100
Quintile 3	38.4	5.4	12.2	20.8	7.9	47.1	12.4	34.7	3.8	2.8	100
Quintile 4	36.0	4.8	8.8	22.4	6.1	49.4	17.4	32.1	4.9	3.5	100
Quintile 5	44.7	2.5	4.4	37.7	3.1	35.8	4.4	31.5	11.0	5.3	100
Rural households	**33.9**	**6.7**	**9.5**	**17.7**	**10.7**	**50.3**	**16.7**	**33.6**	**3.2**	**2.0**	**100**
Urban households	**50.0**	**2.1**	**7.2**	**40.7**	**0.2**	**31.5**	**1.0**	**30.5**	**11.9**	**6.5**	**100**

Source: 2022/23 India 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 11: Household Populations and Expenditures in India (2022/23)

	Population		Consumption spending			Total spending	
	Millions of people	Share of total (%)	Share of total (%)	Per capita (1000 Rupees)	Food share (%)	Per capita (1000 Rupees)	Savings rate (%)
All households	**1,406.6**	**100**	**100**	**112**	**36.3**	**151**	**22.5**
Quintile 1	281.3	20.0	8.1	45	55.6	56	18.4
Quintile 2	281.3	20.0	12.0	67	51.4	84	18.9
Quintile 3	281.3	20.0	15.9	89	45.6	114	20.7
Quintile 4	281.3	20.0	22.5	126	38.2	171	24.1
Quintile 5	281.3	20.0	41.6	232	23.6	328	23.9
Rural households	**1,007.9**	**71.7**	**57.2**	**89**	**47.0**	**116**	**21.3**
Urban households	**398.7**	**28.3**	**42.8**	**169**	**22.0**	**239**	**24.0**

Source: 2022/23 India SAM.

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

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Table A1. Detailed Classification of Standard Nexus (42) Activity Accounts

Nexus Activity		**International Standard Industrial Classification (ISIC) Revision 4**	
Code	Description	Code	Description
maiz	Maize	0111	Growing of cereals (except rice), leguminous crops and oil seeds
rice	Rice	0112	Growing of rice
ocer	Other cereals	0111	Growing of cereals (except rice), leguminous crops and oil seeds
puls	Pulses	0111	Growing of cereals (except rice), leguminous crops and oil seeds
oils	Oilseeds	0111	Growing of cereals (except rice), leguminous crops and oil seeds
root	Roots	0113	Growing of vegetables and melons, roots and tubers
vege	Vegetables	0113	Growing of vegetables and melons, roots and tubers
sugr	Sugarcane	0114	Growing of sugar cane
toba	Tobacco	0115	Growing of tobacco
cott	Cotton and fibers	0116	Growing of fiber crops
frui	Fruits and nuts	0121	Growing of grapes
		0122	Growing of tropical and subtropical fruits
		0123	Growing of citrus fruits
		0124	Growing of pome fruits and stone fruits
		0125	Growing of other tree and bush fruits and nuts
		0126	Growing of oleaginous fruits
coff	Coffee, tea, and cocoa	0127	Growing of beverage crops
ocrp	Other crops	0119	Growing of other non-perennial crops
		0128	Growing of spices, aromatic, drug and pharmaceutical crops
		0129	Growing of spices, aromatic, drug and pharmaceutical crops
		0130	Plant propagation
		0161	Support activities for crop production
		0163	Post-harvest crop activities
		0164	Seed processing for propagation
catt	Cattle and raw milk	0141	Raising of cattle and buffaloes
poul	Poultry and eggs	0146	Raising of poultry
oliv	Other livestock	0142	Raising of horses and other equines
		0143	Raising of camels and camelids
		0144	Raising of sheep and goats
		0145	Raising of swine/pigs
		0149	Raising of other animals
		0162	Support activities for animal production
		0170	Hunting, trapping and related service activities
fore	Forestry	02xx	Forestry and logging
fish	Fishing	03xx	Fishing and aquaculture
mine	Mining	05xx	Mining of coal and lignite
		06xx	Extraction of crude petroleum and natural gas
		07xx	Mining of metal ores
		08xx	Other mining and quarrying
		09xx	Mining support service activities
food	Food processing	101x	Processing and preserving of meat
		102x	Processing and preserving of fish, crustaceans and mollusks
		103x	Processing and preserving of fruit and vegetables
		104x	Manufacture of vegetable and animal oils and fats
		105x	Manufacture of dairy products
		106x	Manufacture of grain mill products, starches and starch products
		107x	Manufacture of other food products
		108x	Manufacture of prepared animal feeds
beve	Beverage and tobacco	11xx	Manufacture of beverages
		12xx	Manufacture of tobacco products
text	Textiles, clothing and footwear	13xx	Manufacture of textiles
		14xx	Manufacture of wearing apparel
		15xx	Manufacture of leather and related products
wood	Wood and paper products	16xx	Manufacture of wood and of products of wood and cork, except furniture
		17xx	Manufacture of paper and paper products
		18xx	Printing and reproduction of recorded media
chem	Chemicals and petroleum	19xx	Manufacture of coke and refined petroleum products
		20xx	Manufacture of chemicals and chemical products (excl. 2012 and 2021 above)
		21xx	Manufacture of basic pharmaceutical products and pharmaceutical preparations
		22xx	Manufacture of rubber and plastics products
nmet	Non-metal minerals	23xx	Manufacture of other non-metallic mineral products

Table A1 (continued). Detailed Classification of Standard Nexus (42) Activity Accounts

Nexus Activity		**International Standard Industrial Classification (ISIC) Revision 4**	
Code	Description	Code	Description
metl	Metals and metal products	24xx	Manufacture of basic metals
		25xx	Manufacture of fabricated metal products, except machinery and equipment
mach	Machinery, equipment and vehicles	26xx	Manufacture of computer, electronic and optical products
		27xx	Manufacture of electrical equipment
		28xx	Manufacture of machinery and equipment
		29xx	Manufacture of motor vehicles, trailers and semi-trailers
		30xx	Manufacture of other transport equipment
oman	Other manufacturing	31xx	Manufacture of furniture
		32xx	Other manufacturing
		33xx	Repair and installation of machinery and equipment
elec	Electricity, gas and steam	35xx	Electricity, gas, steam and air conditioning supply
watr	Water supply and sewage	36xx	Water collection, treatment and supply
		37xx	Sewerage
		38xx	Waste collection, treatment and disposal activities; materials recovery
cons	Construction	41xx	Construction of buildings
		42xx	Civil engineering
		43xx	Specialized construction activities
trad	Wholesale and retail trade	45xx	Wholesale and retail trade and repair of motor vehicles and motorcycles
		46xx	Wholesale trade, except of motor vehicles and motorcycles
		47xx	Retail trade, except of motor vehicles and motorcycles
tran	Transportation and storage	49xx	Land transport and transport via pipelines
		50xx	Water transport
		51xx	Air transport
		52xx	Warehousing and support activities for transportation
		53xx	Postal and courier activities
hotl	Accommodation and food services	55xx	Accommodation and food services
		56xx	Food and beverage service activities
comm	Information and communication	58xx	Publishing activities
		59xx	Motion picture, video, TV program production, sound and music publishing
		60xx	Programming and broadcasting activities
		61xx	Telecommunications
		62xx	Computer programming, consultancy and related activities
		63xx	Information service activities
fsrv	Finance and insurance	64xx	Financial service activities, except insurance and pension funding
		65xx	Insurance, reinsurance and pension funding, except compulsory social security
		66xx	Activities auxiliary to financial service and insurance activities
real	Real estate activities	68xx	Real estate activities
bsrv	Business services	69xx	Legal and accounting activities
		70xx	Activities of head offices; management consultancy activities
		71xx	Architectural and engineering activities; technical testing and analysis
		72xx	Scientific research and development
		73xx	Advertising and market research
		74xx	Other professional, scientific and technical activities
		75xx	Veterinary activities
		77xx	Rental and leasing activities
		78xx	Employment activities
		79xx	Travel agency, tour operator, reservation service and related activities
		80xx	Security and investigation activities
		81xx	Services to buildings and landscape activities
		82xx	Office administrative, office support and other business support activities
padm	Public administration	84xx	Public administration and defense; compulsory social security
educ	Education	85xx	Education
heal	Health and social work	86xx	Human health activities
		87xx	Residential care activities
		88xx	Social work activities without accommodation
osrv	Other services	90xx	Creative, arts and entertainment activities
		91xx	Libraries, archives, museums and other cultural activities
		92xx	Gambling and betting activities
		93xx	Sports activities and amusement and recreation activities
		94xx	Activities of membership organizations
		95xx	Repair of computers and personal and household goods
		96xx	Other personal service activities
		97xx	Activities of households as employers of domestic personnel
		98xx	Undifferentiated goods/service activities of private households for own use
		99xx	Activities of extraterritorial organizations and bodies

Table A2. Detailed Classification of Standard Nexus Agricultural Activity Accounts

Code	Description (FAOSTAT crop and livestock product codes in parentheses)
maiz	Maize (56)
rice	Paddy rice (27)
ocer	Wheat (15); Barley (44); Rye (71); Oats (75); Millet (79); Sorghum (83); Buckwheat (89); Quinoa (92); Fonio (94); Triticale (97); Canary seed (101); Mixed grain (103); Cereals not elsewhere specified (108)
puls	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)
oils	Soybeans (236); Groundnuts with shell (242); Coconuts (249); Palm oil fruit (254); Palm kernels (256); Palm oil (257); Olives (260); Karite nuts (sheanuts) (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)
root	Potatoes (116); Sweet potatoes (122); Cassava (125); Yautia (cocoyam) (135); Taro (cocoyam) (136); Yams (137); Roots and tubers not elsewhere specified (149)
vege	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); 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)
sugr	Sugar cane (156); Sugar beet (157); Sugar crops not elsewhere specified (161)
toba	Unmanufactured tobacco (826)
cott	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)
frui	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); Bananas (486); Plantains (489); 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)
coff	Green coffee (656); Cocoa beans (661); Tea (667); Mata (671); Tea not elsewhere specified (674)
ocrp	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); Natural rubber (836); Natural gums (839)
catt	Cattle meat (867); Whole fresh cow milk (882); Indigenous cattle meat (944); Live weight cattle meat (945); Whole fresh buffalo milk (951); Whole fresh sheep milk (982); Whole fresh goat milk (1020); Whole fresh camel milk (1130)
poul	Chicken meat (1058); Duck meat (1069); Hen eggs in shell (1062); 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); Other bird eggs in shell (1091); Indigenous chicken meat (1094); Live weight chicken meat (1095)
oliv	Buffalo meat (947); Indigenous buffalo meat (972); Live weight buffalo meat (973); 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); 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)

Table A3. Detailed Classification of the Government Account

Government Financial Statistics Manual (IMF GFSM 2014)		Nexus SAM Entries*	
Code	Description	Row	Column
1	**Revenue**		
11	**Taxes**		
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
12	**Social contributions**		
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-__
13	**Grants**	gov	row
14	**Other revenue**		
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
2	**Expense**		
21	**Compensation of employees**	c____	gov
22	**Use of goods and services**	c____	gov
23	**Consumption of fixed capital**	c____	gov
24	**Interest**		
241	To nonresidents	row	gov
242	To residents other than general government	ent	gov
243	To other general government units	ent	gov
25	**Subsidies**	ent	gov
26	**Grants**	row	gov
27	**Social benefits**	hhd-__	gov
28	**Other expense**	ent	gov

* Table 4 describes the Nexus SAM codes.

Table A4. Detailed Classification of the Rest of World Account

Balance of Payments (IMF BOP6)		Nexus SAM Entries*	
Code	Description	Row	Column
BCA	**Current account**		
BGS	**Goods and services**		
BG	**Goods**		
BXG	**Credit**	c____	row
BMG	**Debit**	row	c____
BS	**Services**		
BXS	**Credit**	c____	row
BXSR	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
BMS	**Debit**	row	c____
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
BIP	**Primary income**		
BXIP	**Credit**		
BXIPCE	Compensation of employees	flab-__	row
BXIPI	Investment income	fcap-_	row
BXIPO	Other primary income	fcap-_	row
BMIP	**Debit**		
BMIPCE	Compensation of employees	row	flab-__
BMIPI	Investment income	row	fcap-_
BMIPO	Other primary income	row	fcap-_
BIS	**Secondary income**		
BXIS	**Credit**		
BXISG	General government	gov	row
BXISO	Financial and nonfinancial corporations, households, and NPISHs		
BXISOPT	Personal transfers	hhd-__	row
BXISOOT	Other current transfers	ent	row
BMIS	**Debit**		
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 4 describes the Nexus SAM codes, and Table 1 describes the activities and commodities.