



REPUBLIC OF RWANDA



**NATIONAL INSTITUTE OF STATISTICS OF RWANDA**

# **THE 2011 SUPPLY USE TABLE**

## **An explanatory note**

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# The 2011 Supply Use Table

## 1 Overview of the methods

### 1.1 Introduction

A key framework in national economic accounting is the Supply Use Table (SUT). An SUT presents a comprehensive picture of the structure of the economy of a country for a given year in terms of the supply and use of (demand for) all goods and services (products). It has two main purposes. First, it is fundamental to establishing the level of the GDP as a firm basis for up to date annual and quarterly estimates of economic growth. Secondly, it plays a key role in economic analysis in which the effects of policy changes and external shocks can be predicted.

Current estimates of nominal GDP and its growth in real terms can and do go off track. It is therefore recommended internationally that a “benchmark” exercise (involving the establishment of a new SUT) should be undertaken at least every five years.

Building an SUT involves bringing together data from many different sources, some of which are not available every year (or have not been available previously). Perhaps the most important of these is a high quality survey of household expenditures. Such surveys are very demanding in terms of both human and financial resources, so few countries undertake to collect these data every year. Another important dataset, not necessarily available every year, is the cost structures of the various economic activities.

### 1.2 The structure of a Supply Use Table

An SUT is a very large and complex table. It can be described as having five main parts:

- A. Summary “production accounts” showing, for each economic activity, total output, total inputs of goods and services (intermediate consumption) and hence “gross value added at basic prices” (GVA). In aggregate, GVA plus (indirect) taxes less subsidies on products is equal to GDP at market prices.
- B. Summary balances of the supply of and demand for each product category (also known as commodity flow accounts or *équilibre-ressources-emplois*). In aggregate, these balances also provide a solid estimate of GDP at market prices.
- C. An intermediate consumption matrix (a form of Input-Output Table or *tableau entrées-sorties*), showing details of the products used in production by each activity.
- D. A “make” matrix, showing the products produced by each activity.
- E. Further details of the GVA of each activity in terms of employment income, self-employment income and companies’ operating surpluses.

Thus the SUT framework incorporates all three approaches to measuring GDP: the production approach (A), the expenditure approach (B) and the income approach (E).

Balancing an SUT provides a framework both for estimating data that are otherwise not available (filling the gaps) and for ensuring consistency between the different sources (detecting serious data discrepancies). When carefully completed, provided key data sources are available, the exercise results in a high quality “benchmark” estimate of the level of GDP.

# The SUPPLY USE TABLE and its parts

PRODUCTS	DOMESTIC OUTPUT								Total output	Imports of gds & servs	Margins	Taxes on prodcts	Total supply
	ACTIVITIES												
	A	B	C	D	E	F	G	H	etc				
TOTAL	PART A												
A1	PART D										PART B		
A2													
A3													
A4													
A5													
B0													
C1													
C2													
C3													
C4													
C5													
C6													
C7													
C8													
etc													

Total demand	INTERMEDIATE CONSUMPTION								Total IC	Final consump <sup>tn</sup> House-holds	Govern-ment	Capital forma-tion	Exports of gds & servs
	ACTIVITIES												
	A	B	C	D	E	F	G	H	etc				
	PART A												
	PART C										PART B		

- PART A: Production accounts
- PART B: Commodity flow balances
- PART C: Intermediate consumption matrix
- PART D: Make matrix
- PART E: Generation of income

GROSS VALUE ADDED	
TOTAL	PART A
Compens of employees Other productn taxes Gross operating surplus Mixed income	PART E

### **1.3 The development of SUTs in Rwanda**

The 2011 SUT is third SUT to be compiled in Rwanda this century. Each one has been associated with the corresponding household survey (*Enquête Intégrée des Conditions de Vie, EICV*) completed in the years 2001, 2006 and 2011. The two previous SUTs (for 2001 and 2006) have formed the basis for the annual series of estimates of GDP and its components between 2001 and 2006 and for the annual and quarterly series since 2006. However, they comprised only of summary versions, that is to say parts A and B above.

For 2011, the SUT comprises not only these, but also the intermediate consumption matrix (part C). It also incorporates several new sources of data not previously available, notably the new Integrated Business Enterprise Survey (IBES) and detailed data from MINECOFIN's Financial Management Database. Details of the data sources are given in Annex A.

No attempt was made to produce a make matrix (D). It was assumed that most production is "on the diagonal". However, adjustments were made in a few cases where products were identified as being outside the main activity of the producer. As far as part E is concerned, at present insufficient data is available on incomes to make the compilation of this part viable.

### **1.4 International standards**

As far as possible, the 2011 SUT brings the estimates into line with the latest international standards the *System of National Accounts 2008* (SNA2008). For Rwanda, the most significant change in the SNA2008 is the use of the latest version, Revision 4, of the *International Standard Industrial Classification* (ISIC Rev.4). While there are a number of changes at the detailed level of ISIC, at the level of the published categories the main difference is the introduction of a new category for "Information and Communication Services". This category includes publishing (previously in Manufacturing), film making and broadcasting; telecommunications (previously with Transport) and IT services (previously part of Business Services).

Another change is in the treatment of "Imputed bank service charges" nowadays known as *Financial Intermediation Services Indirectly Measured* (FISIM). Previously these services (essentially the difference between the interest received by banks and the interest paid) were deducted as a global adjustment from the total value added of producers (interest charges being excluded from intermediate consumption). Now however FISIM has been allocated between users of bank services and the need for an overall adjustment has gone.

A number of further methodological improvements have been introduced to bring the estimates closer to full compliance. See Annex B for details. .

### **1.5 The SUT process in brief**

The first step in compiling the SUT was to construct a revised Rwandan Classification of Products and Activities (RCPA2), based on the new ISIC Rev.4. Then "correspondence tables" between the codes used in the various data sources (see Annex A) and RCPA2 had to be prepared, so that all the data could be reclassified and entered into the SUT framework.

After this, as indicated above, the SUT was balanced by filling the gaps and eliminating discrepancies between the estimates of the supply and the demand for each of the product categories. The general policy in the case of a discrepancy was to increase whichever side was too low, but initially in many rows the gap was filled with an estimate of intermediate demand.

## 2 *The benchmarked results*

### 2.1 *The supply use tables*

#### ***Table A: Summary production accounts***

In the SUT this table appears horizontally. For presentational convenience it is transposed into vertical orientation. It shows the total production (output), the intermediate consumption and the resulting GVA of each activity. Total production and total intermediate consumption in this table are equal to total output and total intermediate demand respectively in Table B.

#### ***Table B: Summary commodity flow accounts***

Table B is the key result of the benchmarking exercise. It shows the supply and demand for each product category. The expenditure measure of the GDP can be derived from this table in the following way:

<b>Gross Domestic Product</b>	<b>3,846</b>
<b>Total final consumption expenditure</b>	<b>3,554</b>
Government	525
Non-government organizations	91
Households	2,938
<b>Gross capital formation</b>	<b>905</b>
<b>Gross fixed capital formation</b>	<b>879</b>
Construction	605
Durable capital goods	274
<b>Changes in inventories</b>	<b>26</b>
<b>Net exports</b>	<b>-613</b>
<b>Exports of goods and services</b>	<b>525</b>
Goods (fob)	274
Services	251
<b>Imports of goods and services</b>	<b>1,139</b>
Goods (fob)	851
Services	287

#### ***Table C: Summary intermediate consumption matrix***

This is a summary of the intermediate consumption matrix, in which the intermediate demand column from Table B is split between the main activities according to the intermediate consumption figures in Table A.

### 2.2 *The revised level of GDP*

In the field of national accounting, revisions occur. As a result of compiling the SUT, the benchmark 2011 level of GDP overall was within 1 per cent of the previous estimate. Given the track record of benchmark revisions in many countries (in Rwanda in 2006, there was a 10 per cent upward revision); such a small revision may seem surprising. However, in several activity categories the revisions were larger, some areas having been overstated and others understated,

## **Annex A: Data Sources used in the Supply Use Table**

The following is a list of major data sources used in compiling the SUT

<b>Source</b>	<b>Datasets</b>	<b>Uses</b>
NISR: Enquête Intégrée des Conditions de Vie 2010/11 (EICV3)	Household purchases, imputed rents & consumption of own produce	Household final consumption expenditure; Non-market output; Valuing food crop production
	Informal activity: non- labour costs & income of businesses not registered for VAT	Output of the informal sector; Informal trade margins
	Household expenditure on construction	Fixed capital formation & output
	Animal stocks	Growth rates between surveys
NISR: Seasonal Agricultural Survey (2013)	Crop areas and yields; value of seed & fertiliser inputs	Output of food crops (2013); intermediate consumption
NISR: Consumer prices	Food crop prices in local markets	Valuing food crop production
NISR Population Census (2012)	Animal stocks	Benchmark for livestock estimates
NISR Integrated business enterprise survey	Business accounting data for 2011	Input/output ratios; Trade margins; NGOs' Final consumption
NISR Census of business establishments	Employment in NGOs	Grossing up NGO data
NISR/BNR Informal cross border trade survey	Value of trade by product	Imports and exports
NISR: International comparison project	Cost structure of construction	Fixed capital formation
MINAGRI	Crop forecasts (adjusted by NISR)	Extrapolating back to 2011
MINECOFIN	FMIS database: Expenditure by economic category, chart of accounts (COA) item, separately for education, health & other	Output; Govt. final consumption expenditure & capital formation

<b>Source</b>	<b>Datasets</b>	<b>Uses</b>
	Public sector enterprises financial accounts	Subsidies, output & inputs
Rwanda Revenue Authority (RRA)	Customs system: Customs values, duties & VAT by product	Imports & exports of goods; taxes on products
	VAT system: Total turnover, output & input VAT by activity	Output; taxes on product
	Business income tax; Total turnover	Output for those not covered by VAT
	Non-tax revenue	Govt. final consumption expenditure
Rwanda Development Board	Survey of departing visitors	Classify travel credits by product
BNR	Trade in services credits and debits Electricity	Imports & exports of services
	Banks' profit & loss accounts	Output and inputs of banks
	Insurance profit & loss accounts	Insurance output and inputs

## ***Annex B: Methodological notes***

### **Improvements since the previous benchmark**

The most significant development is the introduction of the intermediate consumption matrix. NISR would welcome feedback on the estimates in any area that needs improvement. Such comments will be taken into account in the next benchmark exercise (for 2014).

Users of the SUT should understand that it provides only an impressionistic picture of the actual position. As in any country, many assumptions have been used in the absence of perfectly full and accurate data. Although based on information from the Integrated Business Enterprise Survey and other sources, many of the detailed individual cells (including those that are zero) may be subject to wide margins of error. However, such errors become relatively smaller as the numbers are aggregated, and the SUT framework ensures that the overall GDP is as accurate as it can be.

The following improvements have also been introduced since the previous exercise in 2006:

- Estimates of informal cross-border trade.
- Revised CIF/FOB adjustments to the Customs value of imports.
- First estimates for the final consumption expenditure of NGOs.
- The development of new benchmark estimates for the construction sector.
- Better estimates for the output of the livestock sector including increases in stocks (capital formation).
- Fixed capital formation in banana, tea and coffee plantations and in IT systems.
- Improved analysis of government expenditure.
- Subsidies to public sector enterprises introduced since 2006.
- Estimates of crop production from the new Seasonal Agricultural Survey, including season C for the first time.
- Business income tax data to supplement VAT data.
- Analysis of informal activity recorded in the EICV3.
- Simple allocation of FISIM to the consumers of imputed bank services.

## Supply Use Table A Production accounts 2011

( in billion Frw)

Activity description	ISIC Rev.4C code	Total output at basic prices	Input output ratio	Inter-mediate consumption	Gross value added
<b>Gross domestic product (GDP) at market prices</b>					<b>3,846</b>
<b>ALL ACTIVITIES at basic prices</b>	<b>Total</b>	<b>6,032</b>	<b>41%</b>	<b>2,444</b>	<b>3,588</b>
<b>AGRICULTURE, FORESTRY &amp; FISHING</b>	<b>A</b>	<b>1,327</b>	<b>6%</b>	<b>83</b>	<b>1,244</b>
Food crops	AA	895	6%	50	845
Export crops	AB	88	11%	9	79
Livestock & livestock products	AC	128	5%	7	122
Forestry	AD	199	7%	14	185
Fishing	AE	17	19%	3	14
<b>INDUSTRY</b>	<b>B-F</b>	<b>1,734</b>	<b>68%</b>	<b>1,179</b>	<b>554</b>
Mining & quarrying	B	117	37%	44	74
<b>TOTAL MANUFACTURING</b>	<b>C</b>	<b>824</b>	<b>75%</b>	<b>620</b>	<b>204</b>
<i>Manufacturing of food</i>	CA	277	82%	227	50
<i>Manufacturing of beverages &amp; tobacco</i>	CB	298	67%	199	99
<i>Manufacturing of textiles, clothing &amp; leather goods</i>	CC	36	78%	28	8
<i>Manufacturing of wood &amp; paper; printing</i>	CD	62	78%	48	14
<i>Manufacturing of chemicals, rubber &amp; plastic products</i>	CE	41	78%	32	9
<i>Manufacturing of non-metalic mineral products</i>	CF	28	69%	19	9
<i>Manufacturing of metal products, machinery &amp; equipment</i>	CG	50	83%	41	9
<i>Furniture &amp; other manufacturing</i>	CH	33	77%	25	8
Electricity	D	56	80%	45	11
Water & waste management	E	24	44%	11	14
Construction	F	711	65%	460	251
<b>SERVICES</b>	<b>G-T</b>	<b>2,971</b>	<b>40%</b>	<b>1,182</b>	<b>1,790</b>
<b>TRADE &amp; TRANSPORT</b>	<b>G-H</b>	<b>857</b>	<b>31%</b>	<b>265</b>	<b>592</b>
Maintenance & repair of motor vehicles	GA	40	54%	22	19
Wholesale & retail trade	GB	566	18%	100	466
Transport services	H	251	57%	144	107
<b>OTHER SERVICES</b>	<b>I-T</b>	<b>2,115</b>	<b>43%</b>	<b>917</b>	<b>1,198</b>
Hotels & restaurants	I	311	68%	211	100
Information & communication	J	148	37%	56	93
Financial services	K	162	33%	54	108
Real estate activities	L	311	8%	25	286
Professional, scientific & technical activities	M	137	29%	40	97
Administrative & support service activities	N	148	31%	46	102
Public administration & defence; compulsory social security	O	379	70%	264	115
Education	P	190	36%	68	122
Human health & social work activities	Q	132	71%	94	39
Cultural, domestic & other services	R-T	196	30%	60	137
<b>Taxes less subsidies on products</b>					<b>258</b>

Source: National Institute of Statistics of Rwanda

**Supply Use Table B**  
**Commodity flow accounts 2011**

( in billion Frw)

Product description	ISIC Rev.4C ode	Imports of goods & services	Total output at basic prices	Margins	Taxes on products less subsidies	TOTAL SUPPLY TOTAL USE	Inter-mediate demand	Final household consumption	Final govt & NGO consumption	Capital formation	Exports of goods & services	ISIC Rev.4C ode	Product description
<b>ALL ACTIVITIES at basic prices</b>		<b>1,139</b>	<b>6,032</b>		<b>258</b>	<b>7,429</b>	<b>2,444</b>	<b>2,938</b>	<b>616</b>	<b>905</b>	<b>525</b>		<b>ALL ACTIVITIES at basic prices</b>
<b>AGRICULTURAL &amp; FISHING PRODUCTS</b>	<b>A</b>	<b>52</b>	<b>1,327</b>	<b>72</b>	<b>2</b>	<b>1,453</b>	<b>415</b>	<b>908</b>		<b>53</b>	<b>78</b>	<b>A</b>	<b>AGRICULTURAL &amp; FISHING PRODUCTS</b>
Food crops	A1	44	895	46	1	986	294	666		15	11	A1	Food crops
Export crops	A2	4	88	6	0	98	31	7		14	46	A2	Export crops
Livestock & livestock products	A3	4	128	8	0	140	62	36		22	19	A3	Livestock & livestock products
Forestry	A4	1	199	11	0	210	27	182		1	0	A4	Forestry
Fishing	A5	0	17	1	0	19	1	17			1	A5	Fishing
<b>INDUSTRIAL PRODUCTS</b>	<b>B-F</b>	<b>946</b>	<b>1,734</b>	<b>481</b>	<b>237</b>	<b>3,398</b>	<b>1,188</b>	<b>1,173</b>		<b>840</b>	<b>196</b>	<b>B-F</b>	<b>INDUSTRIAL PRODUCTS</b>
Mining & quarry products	B0	5	117	36	1	159	59			0	100	B0	Mining & quarry products
Manufactured food products	C1	113	277	39	21	451	57	335		7	52	C1	Manufactured food products
Beverages & tobacco	C2	15	298	27	63	402	119	280			4	C2	Beverages & tobacco
Textiles, clothing & leather goods	C3	42	36	97	12	187	32	149			6	C3	Textiles, clothing & leather goods
Wood, paper & printing products	C4	26	62	14	5	108	66	41			1	C4	Wood, paper & printing products
Petroleum products	C51	172	0	45	53	271	189	71			11	C51	Petroleum products
Chemicals, rubber & plastic products	C5X	148	41	54	14	257	188	65			4	C5X	Chemicals, rubber & plastic products
Non-metallic mineral products	C6	56	28	21	8	113	109	0			3	C6	Non-metallic mineral products
Metal products, machinery & equipment	C7	335	50	136	51	571	268	98		190	14	C7	Metal products, machinery & equipment
Furniture & other manufactured products	C8	28	33	12	4	77	3	34		38	2	C8	Furniture & other manufactured products
Electricity	D0	3	47		-6	44	33	11			0	D0	Electricity
Water & waste management	E0		24		0	24	7	17				E0	Water & waste management
Construction	F0	2	721		11	734	57	73		605		F0	Construction
<b>TRADE &amp; TRANSPORT SERVICES</b>	<b>G-H</b>	<b>-2</b>	<b>856</b>	<b>-556</b>	<b>-25</b>	<b>273</b>	<b>151</b>	<b>91</b>			<b>30</b>	<b>G-H</b>	<b>TRADE &amp; TRANSPORT SERVICES</b>
Maintenance & repair of motor vehicles	G1		40		2	43	32	10				G1	Maintenance & repair of motor vehicles
Wholesale & retail trade	G2		566	<b>-556</b>		10	10					G2	Wholesale & retail trade
Transport services	H	<b>-2</b>	250		<b>-27</b>	220	109	81			30	H	Transport services
<b>OTHER SERVICES</b>	<b>I-T</b>	<b>79</b>	<b>2,116</b>	<b>2</b>	<b>44</b>	<b>2,241</b>	<b>643</b>	<b>946</b>	<b>616</b>	<b>12</b>	<b>24</b>	<b>I-T</b>	<b>OTHER SERVICES</b>
Hotels & restaurants	I0		311		9	320	48	272				I0	Hotels & restaurants
Publishing & broadcasting services	J1	9	9	2	1	21	10	11			0	J1	Publishing & broadcasting services
Telecommunication	J2	21	117		22	159	82	57			20	J2	Telecommunication
Information technology services	J3		23		1	24	12	1		11		J3	Information technology services
Financial services	K0	4	162		6	172	93	67	11		1	K0	Financial services
Real estate	L0		311		0	311	58	253				L0	Real estate
Professional, scientific & technical services	M0	44	137		2	184	177	6		1	0	M0	Professional, scientific & technical services
Administrative & support services	N0		148		2	150	125	22			3	N0	Administrative & support services
Public administration & defence	O0		379			379	11	4	364			O0	Public administration & defence
Education	P0		191		0	191	21	86	84			P0	Education
Human health & social work	Q0		132		0	133		38	94			Q0	Human health & social work
Arts, entertainment & recreation	R0	0	14		0	14	4	10			0	R0	Arts, entertainment & recreation
Other personal & community services	S0	0	131		1	132	1	67	63		<b>-0</b>	S0	Other personal & community services
Domestic services	T0		52		0	52		52				T0	Domestic services
<b>Travel debits &amp; credits</b>	<b>V</b>	<b>64</b>				<b>64</b>	<b>48</b>	<b>-181</b>			<b>196</b>	<b>V</b>	<b>Travel debits &amp; credits</b>
Spending by residents abroad	V1	64				64	48	16				V1	Spending by residents abroad
Spending by non-residents in Rwanda	V2							<b>-196</b>			196	V2	Spending by non-residents in Rwanda

Source: National Institute of Statistics of Rwanda

**Supply Use Table B**  
**Commodity flow accounts 2011**

( in billion Frw)

Source: National Institute of Statistics of Rwanda

**Supply Use Table C**  
**Intermediate consumption matrix 2011**

( in billion Frw)

**Supply Use Table C**  
**Intermediate consumption matrix 2011**

( in billion Frw)

Product description	Code based on ISIC Rev.4	Inter-mediate demand	Agriculture & fishing A	Mining & quarrying B	Food manufacturing CA	Beverages & tobacco CB	All other manufacturing CX	Electricity, water, etc D,E	Construction F	Trade & transport G,H	Hotels & restaurants I	Public administration O	Education & health P,Q	All other services X
<b>ALL ACTIVITIES at basic prices</b>		<b>2,444</b>	<b>83</b>	<b>44</b>	<b>227</b>	<b>199</b>	<b>194</b>	<b>56</b>	<b>460</b>	<b>265</b>	<b>211</b>	<b>264</b>	<b>161</b>	<b>281</b>
Food crops	A1	294	24		94	139	6				30			
Export crops	A2	31	6		23						0	2	0	0
Livestock & livestock products	A3	62	2		58						2			
Forestry	A4	27			2	0	21			0	3	0	1	0
Fishing	A5	1									1			
Mining & quarry products	B0	59					2		57					
Manufactured food products	C1	57	1		25	14					16			
Beverages & tobacco	C2	119				7					111			
Textiles, clothing & leather goods	C3	32	1				22			0		2	0	7
Wood, paper & printing products	C4	66		0	0	1	26	0	17	1	3	7	5	5
Petroleum products	C51	189	10	5	2	9	8	28	21	78	7	5	3	13
Chemicals, rubber & plastic products	C5X	188	26	5	2	9	37	2	28	17	1	3	53	5
Non-metalic mineral products	C6	109		3		2	4	1	92	5	0		0	2
Metal products, machinery & equipment	C7	268	2	19	2	4	40	4	119	22	2	2	5	49
Furniture & other manufactured products	C8	3		-0	-0	-0	-1	-0	-1	-1	-0	8	4	-6
Electricity	D0	33		0	3	3	6	3	1	2	4	5	2	6
Water & waste management	E0	7			2	1	0	0	0	1	1		1	1
Construction	F0	57		1	0	0	1	5		3	1	18	3	25
Maintenance & repair of motor vehicles	G1	32	3	1	1	1	1	1	6	10	2	1	1	5
Wholesale & retail trade	G2	10												10
Transport services	H	109		1	4	0	2	0	3	63	1	14	4	17
Hotels & restaurants	I0	48			0	1	0	0	0	2	2	32	5	5
Publishing & broadcasting services	J1	10		-0	-0	-0	-0	0	-0	-0	-0	4	6	0
Telecommunication	J2	82	7	1	1	2	3	8	8	11	2	4	7	29
Information technology services	J3	12	0	0	1	1	1	0	3	1	1	1	0	2
Financial services	K0	93		2	1	1	3	0	15	13	12	4	12	31
Real estate	L0	58		1	0	0	3	0	2	10	4	7	4	26
Professional, scientific & technical services	M0	177	0	1	1	3	2	1	43	3	0	86	21	15
Administrative & support services	N0	125			2	0	3	2	42	6	4	54	1	11
Public administration & defence	O0	11	0	0	1	1	1	0	2	1	1		0	2
Education	P0	21			0		1	0	0	2	0		8	10
Human health & social work	Q0													
Arts, entertainment & recreation	R0	4									-0	4	0	
Other personal & community services	S0	1		1			0							0
Spending by residents abroad	V1	48		2	0	0	2			16	0		15	12