A Social Accounting Matrix for Namibia, 2002

A Tool for Analysing Economic Growth, Income Distribution and Poverty

Glenn-Marie Lange (Earth Institute, Columbia University)
Klaus Schade (NEPRU)
John Ashipala (NEPRU)
Ndeutalala Haimbodi (NEPRU)

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THE NAMIBIAN ECONOMIC POLICY RESEARCH UNIT
Postal: P. O. Box 40710, Ausspannplatz, Windhoek, Namibia
Street: 59 Bahnhof, Windhoek, Namibia
Tel.: +264 - 61 - 277500 *Fax:* +264 - 61 - 277501
Email: nepru@nepru.org.na *Web site:* www.nepru.org.na

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List of abbreviations

AGOA	African Growth and Opportunity Act
CBS	Central Bureau of Statistics
CFC	Consumption of fixed capital
GDP	Gross domestic product
GOS	Gross operating surplus
IO	Input-output
ILO	International Labour Organisation
LaRRI	Labour Resources and Research Institute
LFS	Labour Force Survey
NAB	Namibian Agronomic Board
NCA	Northern Communal Areas
NDP	National Development Plan
NEPRU	Namibian Economic Policy Research Unit
NOS	Net operating surplus
NPISH	Non-profit institutions serving households
ROW	Rest of the world
SAM	Social accounting matrix
SUT	Supply and use table
UN	United Nations
VCF	Veterinary Cordon Fence

1. Introduction

Economic growth is often cited as a necessary condition for improvement of living standards. Persistent income inequalities, however, have led to the recognition that economic growth alone may not reduce poverty and income inequality; one must also take into account the distribution of benefits from economic growth among different segments of the population, especially the poorest households. Real GDP may grow by 5% in a given year, but this figure doesn't tell policy-makers which households benefit from this increase in national income. For example, the additional income may go mostly to middle or upper-income households, may go mainly to poor households, or may benefit all households equally. As a country with an extremely unequal household income distribution, it is critical for Namibia to monitor this aspect of economic development. It is also important to assess the likely impacts of policy actions on income distribution, and to design long-term development strategies that target poverty.

Namibia, like many countries, has established poverty reduction as a development objective and has designed various policies to achieve this objective, which are described in the National Development Plans. Examples include investment in transportation infrastructure, the establishment of Export Processing Zone industrial parks, and the promotion of agricultural diversification into high value crops such as table grapes. How much will they contribute to poverty reduction?

Other government policies, such as fuel taxes or trade liberalization, may not be specifically designed to target poverty, but can have far-reaching effects on the incomes of different kinds of households, and the economic incentives faced by different sectors of the economy. Are these policies consistent with government's poverty reduction objectives? External economic events, such as oil price increases or drought, can also have unequal effects on different households. Without an appropriate economic tool, there is no way to assess the macro-economic impact of economic policies and external events on income distribution, and especially the status of the poorest households.

The Social Accounting Matrix (SAM) is a tool that can provide such an economic analysis. The SAM is a database that provides a snapshot picture of the economy in one year, showing, among other things, how income is generated, how it is distributed among different households, and how different households spend their income. SAMs are used to build economy-wide macroeconomic models explicitly designed to analyse the distributional impacts of policy change, that is, the effects on employment, incomes and poverty of different household groups. That makes it uniquely suited to addressing Namibia’s broad development challenges: promoting sustainable economic growth, lowering income inequalities, and reducing poverty.

The SAM model differs from Namibia’s only other macroeconomic model, NAMEX, because of its focus on explicit representation of how household income is generated and used. NAMEX - the Namibian macro-econometric model - has been mainly used

to forecast government revenues and other macroeconomic indicators from highly aggregate economic data (See Tjipe *et al*., 2004 for description of this model).

1.1 Who uses SAMs?

SAM-based models are widely used throughout the world in both developed and developing countries. The range of policy applications include:

- Trade policy: impact of trade liberalisation on exports, imports, household income, government revenue from tariffs, and the environment
- Tax policy: impact on poor households of different forms of taxation
- Sectoral planning for cross- cutting issues such as water, energy, land use - what is the economy-wide impact of new projects and policies, infrastructure development, etc.Vulnerability to external “shocks” - energy price increases, drought, exchange rate changes, etc.
- Education and labour force planning: anticipating future need for workers with specific skills/training
- Other cross-cutting issues, such as HIV/AIDS

1.2 How will Namibia benefit from the SAM?

For Namibia, the SAM is an extremely valuable tool, providing a model that can help policymakers think systematically about what kind of future they want and what actions to take today in order to achieve that future. As an economy-wide model, the SAM provides a concrete basis for moving away from sectoral planning to integrated, economy-wide planning. The National Development Plans (NDP) and Vision 2030 are two planning exercises, for the medium term and the long-term, that can benefit from analysis using a SAM-based model. The SAM can provide quantitative answers to questions like:

- Will the growth of leading sectors be sufficient to achieve the desired level of GDP growth?
- If Namibia is to move away from a resource-based economy (minerals, fisheries), how much will other sectors have to grow to replace them?
- Who will benefit from economic growth? Will the growth strategy reduce poverty significantly?
- Are there unanticipated constraints, conflicts among sectors that might prevent implementation of all strategies?
- What skills will the labour force need, and what education do we need to provide today in order to ensure that Namibian workers with the right skills are available in the future?

- How sensitive is the development strategy to external events like exchange rates, energy prices, trade regulations, etc.

Integrating the use of SAM modelling in the development planning process will help to *improve dialogue* about feasible economic objectives and concrete actions to achieve them. Its contribution to policy dialogue comes from its ability to quantify the mostly qualitative descriptions of sector strategies found in many planning documents, so that the economic outcomes can be calculated. Examples of outcomes include the number of jobs created (by skill-level, by industry, by gender) and the wages paid, the distribution of income among different household groups, the effects of growth in manufacturing on upstream industries (suppliers of inputs like raw materials, electricity, transportation, etc.) and downstream (users of products like other industries, consumers, transportation, etc.), the balance of trade, etc.

1.3 The SAM Programme at NEPRU

The current SAM programme, based in NEPRU, builds on an earlier effort to estimate a Pilot SAM for Namibia, initiated by the Ministry of Environment and Tourism under the auspices of the Natural Resource Accounting Programme for Southern Africa (Conningarth, 2001). The purpose of the Pilot SAM was to establish a general framework for a SAM appropriate to Namibia, to determine where data problems are most severe, and to provide a teaching device to illustrate how a SAM could be used in Namibia for policy. However, given the resource constraints of the Pilot SAM project, there was no capacity building and most of the data was 'borrowed' from the 1988 SAM for South Africa, which limited the ability of the Namibian Pilot SAM to provide useful information on Namibian policy questions.

The current SAM Programme began in mid-2002 with funding from SIDA and was planned to coincide with the new Household Income and Expenditure Survey. However, the HIES was unexpectedly delayed and did not start until August 2003. The SAM Programme decided to go ahead and construct a *preliminary SAM* for 2002 based on the 1993/94 HIES. There are many other examples of SAMs constructed on the basis of relatively old data for critical components, such as the Supply and Use Table and HIES. The purpose of the preliminary SAM would be to collect the other necessary data for the SAM, which can be easily updated when the 2003/2004 HIES is ready. More importantly, the preliminary SAM can be used to introduce the SAM to policymakers and begin to demonstrate the many policy applications of a SAM. The SAM has a major contribution to make for planning exercises such as Vision 2030, and the National Development Plans, as well as sector master plans, such as the Water Master Plan.

The *final SAM* will be prepared upon completion of the 2003/2004 HIES. The final SAM will also provide more detailed accounts for products and industries than the preliminary SAM. In recent discussions, CBS expected the data from the 2003/2004 HIES to be available by early 2005, so the final SAM will be completed by mid-2005.

The SAM project team includes the authors of this study as well as two consultants, Mr. Jürgen Hoffmann who has provided expertise on agriculture and food processing sectors, and Mr. Jan Redeby of Statistics Sweden, who has provided assistance regarding use of the Namibian national accounts for constructing the SAM. Our colleagues at CBS, notably Mr. Hangula, the Government Statistician, and Ms. Kali, Deputy Director for Economic Statistics, have provided extensive assistance and support. Numerous individuals and companies have also assisted in constructing the SAM by providing data or feedback on the data the SAM team gathered.

In addition to constructing a SAM, the SAM Programme has two other major activities:

1) training and capacity building and
2) ways to improve the national accounts.

In its first year, the SAM Programme focused strongly on training. Several formal training workshops have been held on modelling with SAMs, most recently, a CGE (computable general equilibrium) modelling course. Course participants have included NEPRU staff as well as staff from the major government partners in the SAM project, the Bank of Namibia, National Planning Commission, and the Ministry of Finance. Staff from other agencies, notably the Ministry of Environment and Tourism, has also attended. In addition to formal training workshops, weekly seminars have been held over several months.

In the process of constructing the SAM, the project team is working closely with the Central Bureau of Statistics and the Bank of Namibia. A SAM is especially useful for assessing national accounts; it is common practice among statistical offices to construct a core component of the SAM, the Supply and Use Table (SUT), as a consistency check on the national accounts. We have identified several major ways to improve the national accounts; some of them are mentioned here, the full recommendations will be made in the final report.

1.4 Outline of the report

In the next section, the structure of a SAM is described along with the major data sources used for each component of the SAM. The discussion of the data sources is intended to provide an overview of the strengths and weaknesses of the data. Section 3 describes the SAM in greater detail. It discusses the classifications used for each account in both the preliminary and final SAM. It also summarises the assumptions and methodologies used to estimate missing data for the preliminary SAM, and to balance the preliminary SAM. Complete documentation of assumptions and methodologies will be provided in the report on the final SAM. It should be noted that the project team is continuing to collect and improve SAM data, so that the assumptions may change by the time the final SAM is compiled.

The process of compiling a SAM always reveals errors and omissions in the national accounts. In fact, statistical offices often compile supply-and-use-tables, a core component of the SAM, as a means to check the national accounts and improve them.

So, it is not surprising that numerous differences between the Namibian SAM and the published national accounts were revealed. These differences are discussed in Section 4 of the report. Most of these differences resulted simply from the omission of data: through industry surveys, the SAM team found economic activities that were not included in the national accounts. Other differences were revealed as inconsistencies between product supply and demand during the balancing of the SAM.

Generally, the SAM team has taken a very conservative approach to discrepancies between the SAM and the national accounts, taking the national accounts data as given in most instances. For example, the reader may note that informal and unregistered business is not well represented in the national accounts. The SAM does not include an estimate of this missing activity at this time because we could not provide a credible 'guesstimate' without extensive survey work. It is certainly an important area for future work, especially because of the role it often plays in poverty reduction. On the other hand, when it was clear that the Namibian trade statistics did not fully reflect the new AGOA-related textile manufacturing, we sought information from the import statistics of Namibia's trading partner, the United States, and used these figures in the SAM. Even with a very conservative approach, GDP in the SAM is 4.5% higher than GDP for 2002 in the published national accounts.

Section 5 concludes by outlining the next steps: the data improvements expected in the final SAM, and the policy applications of the SAM. The full preliminary SAM is provided in Appendix 3.

2. The Structure of a Social Accounting Matrix

The framework for the Social Accounting Matrix (SAM) was first developed in the 1950s as an extension of the core national accounts in order to integrate the economic and social aspects of development (Pyatt and Round, 1985). The SAM began to be implemented for policy in the 1970s, when it became clear that economic development, measured by growth in GDP, could not ensure poverty reduction, and that a tool to monitor income distribution was needed. The SAM is now included as part of the 1993 revision of the System of National Accounts, the framework used by virtually all countries for compiling national accounts (UN, 1993, Chapter XX).

The SAM is a comprehensive, economy-wide database using a double-entry bookkeeping approach to present the data in a square table format. Data from the National Accounts and statistics about households and other institutions are used to construct accounts for

- Supply of products from imports and domestic production
- Production structure of each industry
- Generation of income by each industry
- Redistribution of incomes among institutions, for example transfers among different groups of households, transfers from government to households, taxes paid by households and enterprises to government, etc.
- Detailed expenditure patterns of households and other institutions
- Savings and investment
- Transactions with the rest of the world (ROW), imports and exports

Each account is represented by a row and column, as seen in Figure 1: reading the SAM across a row shows the incomes or sales revenue of an account, while reading the SAM down a column shows the expenditures or outlays of that account. The principle of accounting requires that total revenue (row total) equals total expenditure (column total).

Figure 1 Structure of a Social Accounting Matrix

		PRODUCTION ACCOUNTS		PRIMARY INCOME	INSTITUTION ACCOUNTS			CAPITAL ACCOUNT	REST OF WORLD ACCOUNT	TOTAL INCOMES
		Commodities	**Activities**	**Factor Payments**	**Households**	**Enterprises**	**Government**			
PRODUCTION	**Commodities**	Trade margins	Intermediate use of commodities		Household Consumption Expenditure		Government Consumption Expenditure	Investment & Change in Inventories	Exports	Total use of commodities
	Activities	Domestic supply								Domestic supply of commodities
	Factors		Net Value Added						Factor Income from Abroad	Factor income
INSTITUTIONS	**Households**			Labour incomes	Inter-household transfers	Enterprise income distributed to households	Government Transfers to Households		Remittances from Abroad	Household income
	Enterprises			Undistributed profits			Transfers to Enterprises		Enterprise Income from abroad	Enterprise Income
	Government	Taxes less subsidies on products	Taxes less subsidies on production	Taxes on labour and profits	Taxes on household income & property	Direct taxes on Enterprises			Government Income from World	Government revenue
CAPITAL ACCOUNT			Consumption of Fixed Capital		Household Saving	Enterprise savings	Government Saving		Capital Account BoP	Total savings
REST OF WORLD ACCOUNT		Imports		Factor payments abroad	Remittances abroad	Transfers abroad	Transfers abroad			Total imports
TOTAL EXPENDITURES		Total Commodity Supply	Total domestic output	Total factor outlay	Household expenditure	Enterprise Expenditure	Government expenditure	Capital expenditure	Total exports	

2.1 Explanation of main accounts

Commodities and Activities. The SAM distinguishes commodities (markets for the goods and services) from activities, that is, the domestic production of products by industries. This distinction is important because some activities may produce more than one commodity. For example, farming activities may produce both livestock and crop products, or the fishing industry may produce both fish and processed fish products. Reading down the column of the commodity account shows how much of each commodity is supplied by domestic activities (the detailed SAM will show this for each activity or industry) and how much is imported from the Rest of the World (ROW). There are two additional entries in this column:

- Trade margin, which is the difference between the price received by the producer and the price paid by the purchaser. This difference is the 'mark-up' added by wholesale or retail traders. Similar margins for transportation from producer to purchaser and other associated services (insurance) are also included, reflecting the cost of moving a product from the producer (or, in the case of imports, from the border) to the purchaser.
- Taxes less subsidies on products include taxes like the fuel levy or import tariffs on specific products.

The sum of this column is the total supply of commodities available in the economy, valued at the prices purchasers pay. Reading across the row shows the uses for all commodities: as inputs to domestic production activities, and to final users including households, government, investment and ROW (exports). Total use of commodities is equal to total supply.

The activity accounts show production by domestic industry: across the activity account rows, the amount of each commodity an industry supplies, down the activity account column, the cost of production which includes the inputs required for production, 'factor inputs' and taxes on production.

Factor accounts. Factor accounts consist of factor inputs to production: labour, capital, and rent on property. Labour is often disaggregated into several types by occupation, skill level or other characteristics. Income to capital often distinguishes the gross operating surplus (GOS) of formally organised enterprises from the surplus earned by the self-employed, which is called 'mixed income.' The earnings of the self-employed, such as farmers, are called 'mixed income' because the surplus of sales revenue over input costs includes both a payment for their own labour as well as a payment for capital inputs. It is difficult to impute the labour cost, so the national accounts simply leaves the surplus as mixed income. SAMs that focus on labour may attempt to disaggregated mixed income into its two parts (EC, 2003). Some factor income is earned abroad and some payments must be made to the ROW for external factors used in the domestic economy.

Institution accounts. There are three major categories of institutions: households, enterprises and government. Households obtain income (across the row) by supplying labour as a factor in production, but also receive transfers from other households, from government, from ROW, and distributed earnings (interest and dividend payments) from enterprises. The expenditure of households (down the column) includes purchases of goods and services for consumption, transfers made to other households, taxes paid to government, remittances to ROW and savings.

Enterprises receive income from factor markets for the capital they provide and use the income by distributing it to households and ROW, paying taxes, and saving (retained earnings). Government receives income from various kinds of taxes and transfers from ROW, which include development assistance; like the other institutions, government uses its income for purchases of goods and services, transfers, and saving.

Capital account. The capital account consists of Savings across the row and expenditures for Investment down the column.

Rest of the World account. The economy's interactions with ROW is represented in the last row and column. Income is obtained by ROW from sales of imports (of goods, services and factors) to the domestic economy; ROW spends income in the domestic economy from its purchase of Namibia's exports, the use of Namibian factors of production (labour and capital), transfers and foreign net borrowing/lending which constitutes the balance of payments.

2.2 Main data sources and the Macro SAM

A SAM is highly data-intensive and requires integration of data collected by many different agencies, often collected for different purposes and not always directly compatible. A major activity is to adjust the data from different sources so they are compatible, an issue discussed in greater detail in section 3.1.

The major data sources used to construct a SAM are listed below along with general comments on their coverage and availability. A more detailed discussion follows in the next section of this report.

- *Integrated, or consolidated, National Accounts*: fully integrated accounts are not regularly published by the CBS but can largely be constructed from available data
- *Supply and Use Tables (SUT)*: these tables cover the commodity and activity accounts described above. A fully detailed SUT has never been estimated for Namibia; only row and column totals have been calculated as part of a consistency check for the national accounts, and there has been no attempt in the CBS to balance row and column totals. A major activity of the SAM project has been to collect data to develop a Supply and Use Table for Namibia.
- *Disaggregated commodity trade data*: these data are available from CBS and the Bank of Namibia.

- *Taxes and subsidies*: taxes and subsidies on products and production are provided in the national accounts. Detailed trade taxes are not published but can be provided by the Ministry of Finance.
- *Surveys and Censuses of Agriculture*: extensive information about agricultural production levels is available from the Ministry of Agriculture, Water and Rural Development, the Namibian Agronomic Board, and other institutions, although mainly limited to the commercial sector.
- *Surveys and Censuses of Manufacturing and Services, Mining, and Fishing*: CBS used data from the 1994 Census of Manufacturing to establish benchmark figures for industry output and value-added in the national accounts. A more recent Census was conducted but suffered from very low response rates; the data have not been used to set new benchmarks for the national accounts. However, the Bank of Namibia carries out quarterly surveys of output and value-added of selected manufacturing and service industries, usually the large companies that are likely to maintain good financial records. A mining company survey is carried out annually for the national accounts by the Ministry of Mines and Energy. It surveys the large companies that account for most of the activity. A survey of fishing companies is also carried out annually. It has achieved very high response rates (99%+) but its results have not been made available to the SAM project.
- As a general observation, most data collection efforts (except for the fishing company survey) tend to focus on larger companies and do not have an established mechanism for identifying new companies and incorporating them in the survey sample over time. Small scale and informal business is not surveyed, although the national accounts attempts to include some of these activities by applying a 'raising factor' to survey data.
- *Employment surveys*: The Ministry of Labour has carried out two labour force surveys (LFS) in 1997 and 2000. The LFS did not ask for hours of work from which full-time equivalent employment could be calculated, but did ask people about characteristics of employment. In the 2000 LFS 79% of workers reported themselves to be employed fulltime. The LFS provides some information about formal and informal employment, based on the International Labour Organisation (ILO) definition of informal employment.
- *Survey of Labour Costs*. A Wage Survey was carried out in 2003. It was not yet available at the time the preliminary SAM was constructed but will be included in the final SAM. A Namibian NGO, the Labour Resources and Research Institute (LaRRI) has also carried out a useful survey of employment and earnings for 2002.
- *Household Income and Expenditure Survey*: the first HIES was done in 1993-1994. This survey is highly unsatisfactory for constructing a SAM because it substantially underestimated total household expenditures, and there was no alternative source of information from which the 'missing expenditures' could be estimated. In relation to national accounts estimates of private consumption, SAMs in most countries provide estimates of household consumption that are

much higher than those in the national accounts. In Namibia, the opposite occurred: even using values for the upper limit of the 90% confidence interval, household consumption (cash + in-kind) was only 50% of consumption estimated in the national accounts.

A new HIES began in August 2003 and is expected to be completed by August 2004. No results from the new HIES were available at the time the preliminary SAM was constructed, so the 1993/94 HIES was used, adjusted in ways described in section 3.2.3. The final SAM will incorporate data from the 2003/2004 HIES.

In all countries, the most important data sources for constructing a SAM are the Supply and Use Table, the HIES (or a Household Budget Survey), and the Labour Force Survey. In Namibia, no SUT is available and the available HIES was quite old. Missing data has been estimated using a number of methods described in the next section: direct industry surveys by the SAM project, use of data from surveys undertaken for other studies, experts' judgement, and 'borrowing' structural relationships from other economies which are expected to be similar. The resulting Macro SAM is shown in Figure 2. It differs somewhat from the published national accounts for reasons that will be discussed in Section 4. GDP is about 4.5% higher than published GDP for 2002, mainly because of the discovery of economic activities that were missing from the national accounts.

Figure 2 Macro SAM for Namibia, 2002 (millions of N$)

		PRODUCTION ACCOUNTS		PRIMARY INCOME	INSTITUTION ACCOUNTS			CAPITAL ACCOUNT	REST OF WORLD ACCOUNT	TOTAL INCOMES
		Commodities	Activities	Factor Payments	Households	Enterprises	Government			
PRODUCTION	Commodities	0	24,309		16,920		8,045	5,715	16,081	71,070
	Activities	52,939								52,939
FACTOR ACCOUNTS			24,195						1,808	26,003
INSTITUTIONS	Households			12,804	261	6,817	1,485			21,367
	Enterprises			11,689			831			12,520
	Government	2,816	331		2,094	1,931			3,072	10,245
CAPITAL ACCOUNT			4,104		2,092	3,771	-560		-3,693	5,715
REST OF WORLD ACCOUNT		15,315		1,510	0	0	444			17,268
TOTAL EXPENDITURES		71,070	52,939	26,003	21,367	12,520	10,245	5,715	17,268	

3. The Namibian SAM: Methodology and Data Sources

For policy analysis, a more detailed SAM is required than the Macro SAM presented in the previous section. This section summarises the approach taken to constructing the preliminary SAM. A more extensive final report prepared will document all the underlying data and assumptions used to construct the final SAM (to be completed by mid-2005). As mentioned in the introduction, some of the assumptions and methodologies may change in the final SAM, as new data become available.

The detailed SAM disaggregates the macro SAM accounts into many sub-components, which are shown in Table 1 for both the final and the preliminary SAM (the classification scheme for each account of the SAM is provided in Appendix 1). The classification emphasises the importance of agriculture and associated food processing activities to the economy. In the preliminary SAM, there are 4 agricultural products and farming activities, and 4 processed food products and activities; the final SAM, will disaggregate agriculture into 15 products and farming activities. Although tourism is not a separate sector in the national accounts, a dummy sector was created for Foreign Tourism because of its importance to the economy[1].

Note that there are two more commodities than manufacturing industries. These extra commodities represent products not manufactured in the Namibian economy: petroleum products and the purchase by Namibian residents of products abroad. Purchases abroad include estimates of purchases by business travellers, government staff and Namibian tourists travelling abroad.

The Factor accounts distinguish skilled and unskilled labour, as well as 3 categories of Mixed Income and Operating surplus (4 in the final SAM). Only the 2 agricultural Mixed Income categories are included in the preliminary SAM because there is no information in the national accounts about informal activities in other industries. Some estimates of unregistered business and (non-farm) informal activities may be included in the final SAM.

The Institution Accounts distinguish 6 categories of households: urban and rural, distinguished by main source of income. For urban households, the main sources of income include

- Wages & salaries in cash
- Business and commercial agriculture
- Other, mainly pensions and cash remittances

For rural households the main sources of income include:

[1] The creation of a dummy sector is described below in Section 3.2.

- Wages & salaries in cash
- Business and commercial agriculture
- Subsistence farming, pensions, cash remittances and other sources

Table 1 Components of the detailed SAM

Component	Final SAM	April SAM
Commodities (43 + Trade margins)	15 Agricultural products 4 Processed food prods. 23 Other products Tourism Trade margins	4 Agricultural products 4 Processed food prods. 19 Other products Foreign tourism Trade margins
Activities (41)	15 Agricultural activities 4 Food processing. 21 Other manufacturing & services Tourism	4 Agricultural activities 4 Food processing. 17 Other manufacturing & services Foreign tourism
Factors of production (6)	Skilled labour Unskilled labour Mixed income in Commercial Agriculture Mixed Income in Traditional Agriculture Non-agr. mixed income Net operating surplus	Skilled labour Unskilled labour Mixed income in Commercial Agriculture Mixed Income in Traditional Agriculture Net operating surplus
Institutions (9)	NPISH Enterprises Government 6 Households: Urban (3) Rural (3)	NPISH Enterprises Government 6 Households: Urban (3) Rural (3)
Capital (1)	Savings Consumption of Fixed Capital Investment	Savings Consumption of Fixed Capital Investment
Rest of World (1)	Imports & Exports	Imports & Exports

3.1 Methodology: "top-down" versus "bottom-up" approach

In constructing a SAM, a choice must be made about whether to take a "top-down approach" or a "bottom-up approach."[2] The top-down approach takes macroeconomic totals from the national accounts for industry production, household consumption, etc., and uses them as the row and column sums of the SAM. The challenge then becomes one of disaggregating the rows and columns so that they match the sums.

These row and column totals remain fixed during the construction of the SAM - they are used as control totals - and the individual cells in the rows and columns are then

[2] This discussion is based mainly on European Commission (2003), Keuning and deRuijter (1998), and Thorbecke (2001).

estimated by applying some distribution of totals derived from sources outside the national accounts. In many developing countries, SAMs have been estimated fairly quickly (in a matter of weeks or months) by applying distributions obtained from other countries. The resulting inconsistencies - that is, the row and column sums are no longer equal - are eliminated by applying a mechanical balancing process to the entire matrix. The two most common methods are the long-established RAS method (Bacharach, 1970) and the more recent 'cross-entropy' method developed by Sherman Robinson and his colleagues (Robinson et al., 1998).

The top-down approach depends on two important assumptions: the accuracy of the control totals from the national accounts (or other sources), and the accuracy of the external data used for distribution of row and column totals. The accuracy of both sets of factors can vary enormously across different components of the SAM. Regarding control totals, national accounts totals for the output of activities like the mining industry may be quite accurate when only a few large companies are involved because it is relatively easy to measure the volume and value of output. On the other hand, the output of transportation services or business services is likely to be much more difficult to measure because the physical output is not always well defined and these services are provided by many small operators, making surveys expensive. Hence these column totals may not be very accurate.

Regarding distribution of column totals, it is common to apply industry input cost coefficients from one country to the total output of the same industry in the target country. Whether the input coefficients of one country accurately reflect those of another depends on many factors, including similarity of product mix and technology, relative prices of inputs, age of the industry, etc.

The bottom-up approach to constructing a SAM draws more extensively on primary data and undertakes adjustment of inconsistencies by further research into all data for the SAM rather than a mechanical balancing. In this approach, one returns to the primary data from which the national accounts were constructed to review its accuracy. In addition, new data may be collected. If the new data are considered more reliable or more comprehensive, all the figures from the national accounts may be adjusted to be consistent with the new data. Inconsistencies are not adjusted by means of a mechanical balancing tool - rather, inconsistencies are met with more research into a sector to resolve the discrepancies. This approach is preferable where there are large discrepancies between the primary data and the national accounts. Small, remaining discrepancies can be resolved by routine balancing methods. (This point is discussed more thoroughly in Thorbecke, 2001).

A Handbook on SAMs by the European Commission discusses the advantages and disadvantages of both approaches:

Top down approach

> ***Advantages*:** SAM can be constructed quickly, at low cost with relatively little data or capacity

> ***Disadvantages:*** It is often not possible to justify the resulting detailed SAM, discrepancies between the SAM and the actual economy are hidden, and problems with the macro control totals cannot be corrected. If discrepancies are large, the SAM becomes less reliable for policy analysis

Bottom-up Approach

> ***Advantages:*** SAM is a better representation of the real economy, inconsistencies can be identified and resolved, national accounts can be improved by researching inconsistencies
>
> ***Disadvantages*****:** time-consuming and resource intensive (based on EC, 2003, p. 92)

Summarising, the Handbook points out the choice between a top-down and bottom-up approach is essentially balancing a trade-off between speed/cost and accuracy. While the bottom-up approach results in a more accurate SAM - highly desirable for policy applications with the SAM - it is also more time consuming and expensive to construct a SAM in this manner. Clearly, every SAM must weigh tradeoffs between the level of resources that can be put into construction of a SAM and the desired level of accuracy.

Why not just use the top-down approach in Namibia? The starting point for the top-down approach is accepting row and column totals, in particular, totals for products and activities from the national accounts. However, there are several reasons to question the reliability of these totals, at least for some goods and services. The supply and use in the national accounts do not balance - published national accounts are provided by using a mechanical balancing method, but there has never been an investigation into the discrepancies between supply and use for individual commodities and industries.

A detailed supply and use table, which would help improve the national accounts, has never been constructed for Namibia. Furthermore, there has been no overhaul of many of the benchmarks for compiling the national accounts since the mid-1990s, 10 years ago. The benchmark figures for output and value-added in many industries as well as commodity supply are still based on the 1994 Census of Manufacturers; growth may be based on indirect measures such as population growth or an arbitrarily assigned growth factor. There are no regular, comprehensive surveys of service industries, including major ones like trade, construction, transportation, hotels and restaurants. Survey data are very limited and there is no monitoring system to ensure that new companies are added to the surveys. Informal activities are not surveyed. Early SUTs constructed by the SAM project and a SAM put together for a training course revealed large inconsistencies at the industry and commodity level in the national accounts - large enough to warrant further investigation rather than mechanical balancing, especially as one of the objectives of the SAM project is to improve the accuracy of the national accounts.

Because the SAM is entirely new to most Namibian policy-makers, accuracy and the ability to justify the SAM are high priorities. Very little macroeconomic modelling has

been undertaken in Namibia, and no multi-sectoral, meso-level modelling has been done before, so policy-makers and other potential users of the SAM need to be convinced of the reliability of the SAM. For this reason, as well as the weaknesses of the national accounts, a bottom-up approach is preferred. However, it was not possible, nor was it necessary, to undertake large-scale primary data collection for all components of the SAM. For the Namibian SAM, a combination of bottom-up and top-down approaches was used. The combination approach tends to minimise the disadvantages while maximising the advantages.

In this combined approach, some new data were assembled directly from primary sources or were collected though surveys, and all the data in the national accounts were reviewed. The data from the national accounts were initially taken for some sectors as control totals, and adjusted as necessary. Data taken as control totals included those available from the national accounts or HIES that were considered either 1) reasonably reliable, 2) too expensive to replace through primary data collection, and/or 3) not likely to be critical for the policy applications to which the SAM would be put. The combined approach allowed for feedback and research into discrepancies. Discrepancies are resolved not through mechanical balancing techniques, but through an investigative process of consultation with experts and research to learn more about the economy. This approach improves both the SAM and the national accounts. The remaining discrepancies are resolved through mathematical balancing.

3.2 Data sources

The data sources are summarised in this section. The final report to be prepared for the final SAM by the end of 2004 will provide detailed technical chapters which present all the source data and describe how the figures were obtained.

3.2.1 Commodity and activity accounts

The commodity and activity accounts constitute an important component of the SAM and are described in some detail. We begin with the first set of accounts for the SAM, the supply of commodities (the first column of the macro SAM). For each of the 28 commodities, there are 4 possible entries: the amount of a commodity supplied by a domestic industry, import of commodities, trade margins and taxes on products. Initially, all figures were obtained from the national accounts except agriculture, mining, some food processing and textile products for which other sources were used. Figure for other commodities were revised during the course of reconciling inconsistencies and when better data became available. Figures for marketing margins, taxes on products and imports obtained from the national accounts were not revised.

The second set of accounts (columns) contains the intermediate consumption accounts - the purchase of goods and services by industries as inputs for production - as well as value-added, which includes factors of production, taxes less subsidies on production

and consumption of fixed capital. Much of the data collection and revision efforts of the SAM project focused on these accounts.

For Agriculture, Fishing and Mining, survey and other data sources were used. For Manufacturing and Service sectors, some surveys were carried out, but the SAM relied much more on 'borrowed' input structures from the South African SUT for 1999, mainly because of poor response rates. As described below, for some sectors (food processing, metal processing, electricity) there was some information from the national accounts about major inputs to production - mainly as inputs from agriculture or imports. For theses sectors, the major input was used, and the remaining inputs distributed using the South African SUT coefficients. Table 2 summarises the major data sources; each component is discussed in more detail below.

Table 2 Major data sources for supply and use accounts of the SAM

	Surveys and other data	South African SUT	COMBINATION: Major inputs from Namibian national accounts + SA SUT
Agriculture	**x**		
Fishing	**x**		
Mining	**x**		
Meat processing, Fish processing, Dairy			**X**
Grain milling	**x**		
Other manufacturing	**part**	**Part**	
Electricity and Water	**part**		**Part**
Services		**x**	
Government	**part**		**Part**

Agriculture

The preliminary SAM divides agricultural activities into four subsectors producing four agricultural products:

Agricultural Products	Agricultural Activities
Cereal crops	Cereal crop farming, commercial
Grapes, horticulture, and other crops	Commercial farming of grapes, horticulture and other crops
Commercial livestock	Livestock farming, commercial
Food for own consumption	Traditional agriculture

This classification of products and activities differs somewhat from the one used in the national accounts. The national accounts distinguish two agricultural activities:

- commercial agriculture producing crops and livestock
- own-account agriculture (also called communal agriculture, subsistence agriculture), which includes all agricultural activity and home production taking place in communal areas. The primary product of this activity is food for own consumption.

The SAM agricultural classifications are not based on land tenure, i.e., whether farming takes place on land under commercial or communal tenure. Rather, commercial livestock agriculture is defined as farming oriented primarily toward production of animals for sale, regardless of where it occurs. Traditional agriculture is defined as farming primarily for household food security and non-market reasons; this occurs exclusively in communal areas. The Ministry of Agriculture is encouraging traditional farmers in communal areas to increase their market-oriented farming, and there were some indications that a number of farmers are doing so. An estimate of market-oriented cattle production in communal areas was included as part of commercial livestock farming in the preliminary SAM. However, a brief survey carried out by the SAM team recently in the northern communal areas revealed that this phenomenon is much smaller than expected. When further data are obtained, estimates of this activity will be revised for the final SAM.

The SAM compiled data about commercial output of crops and livestock, as well as the value-added and detailed intermediate consumption for each activity. For output, the data were compiled from administrative records and surveys—in some instances, notably grapes, the figures collected differed significantly from those in the national accounts. It is not clear why the figures in the national accounts differed. For intermediate consumption and labour costs, surveys were administered for grapes and livestock. For other farming activities, secondary sources were used, studies undertaken for other purposes (see Appendix 2 for major secondary sources). Gathering of data from administrative and secondary sources, design and administration of surveys, and interpretation of the data relied mainly on the expert opinion of our main agricultural consultant, Mr. Jürgen Hoffmann.

Commercial Crop Farming: the value of output and the cost of inputs were estimated separately for the following products, distinguishing irrigated from dryland production:

Maize: White, dryland
White, irrigated
Yellow, dryland

Wheat, irrigated

Lucerne, irrigated

Sunflower, dryland

Groundnuts, dryland

Cotton, irrigated

Cotton, dryland

Grapes, irrigated

Other horticultural products, irrigated

The general methodology was to estimate input costs and the value of output on the basis of hectares planted. Input costs per hectare are multiplied by total hectares planted to get total costs for each crop, *j*:

$$C_j = c_j \times H_j$$

C is total N$ of inputs of product j (including labour)

c is the N$ of input of product j per hectare planted

H is total hectares planted for crop j

Note: When figures were not provided for 2002, price indexes were applied to convert them to 2002 prices.

Costs and yield were calculated separately for irrigated and dryland production.

The value of output is obtained by multiplying actual output in tons (or other physical unit) times its unit price in N$ in a given year.

$$X_j = p_j \times O_j$$

X is the total N$ value of output of crop j

p is the N$ unit price of the crop j

O is total output in tons

These figures for each crop were then aggregated into the two commercial farming activities in the SAM.

Commercial Livestock Farming. Commercial livestock farming includes the following subsectors:

Commercial cattle farming south of VCF

Market-oriented cattle farming north of VCF

Commercial small stock farming south of VCF

Dairy farming

Other livestock: pigs, poultry, ostrich, seals, game, etc.

The value of output is measured as the offtake of animals, the method currently used in the national accounts[3]. Input costs for the major livestock sectors are calculated on the basis of inputs per head of livestock and herd size. In the commercial livestock sector, herd size and offtake are obtained from administrative records; inputs per animal were obtained from survey data and secondary sources. The major challenge was to estimate the herd size for market-oriented farmers in communal areas. Sales to MEATCO in the NCA provided an indication of market-oriented sales; it was assumed that any farmer who sold 21 or more cattle a year constituted a market-oriented farmer. However, as mentioned above, this figure will be adjusted downwards in the final SAM.

Traditional Agriculture. The national accounts estimates output as changes in livestock inventories (obtained from the Ministry of Agriculture) plus estimates of food produced for own consumption based on the 1993/94 HIES adjusted annually for population growth, plus sales of livestock and cereals in formal markets. In the absence of any other information, the preliminary SAM used the national accounts after subtracting the activities of market-oriented cattle farmers in communal areas. As explained above, this will be revised as well.

Fishing and Fish processing

The figures in the national accounts for output and value-added for these two activities were used in the SAM. For intermediate consumption to Fishing, information from the annual survey of fishing companies, carried out by the Ministry of Fisheries and Marine Resources, was used. Figures from the 1998 survey were available and were used to estimate intermediate inputs to Fishing; the survey results for 2002 were not made available to the SAM project. For intermediate consumption of Fish processing, the proportions in the South African SUT were used, adjusted as described in the section on Manufacturing and services below.

Mining

The Ministry of Mines and Energy carries out an annual survey of the major mining companies, which is used to provide data to the national accounts for output and value-added. For 2002, the SAM project appended to this survey a supplemental questionnaire about detailed intermediate consumption; these data were used to disaggregate intermediate inputs to production. In the course of processing the survey data, a new company was discovered, which had not been included in the survey, DeBeers Marine Namibia. Its output and value-added are not yet included in the national accounts, but were added to the Mining industry of the SAM. It is likely that the output of this company is underestimated since information was only obtained

[3] Offtake as a measure of output has the advantage of being very simple: sales volume and value are readily observable and, for formal markets, regularly monitored and reported. However, the method recommended by the System of National Accounts for representing the output of livestock intended for sale that are reared for more than 1 year is 'work in progress'. This approach treats livestock as an inventory, which is only later sold. This method is more complicated than the offtake method; it is not yet used in the national accounts.

about services it provided to other mining companies, and it does have mineral exploration rights on its own.

Manufacturing and Services

For all Namibian manufacturing and service industries, the data about output, value-added, and total intermediate consumption from the national accounts were initially taken as control totals. The remaining task is to disaggregate total intermediate consumption by product. In terms of information available about industry input structure, industries are divided into 3 categories:

1. Industries for which full information about detailed input structure was available from surveys
2. Industries for which partial information about inputs was available from the national accounts
3. Industries for which no information is available about input structure from the national accounts or Namibian surveys

In the first case, the information from industry surveys is converted into percentage shares of commodities used as intermediate inputs. These shares, the structure of production, are then applied to the total intermediate consumption from the national accounts. Only four manufacturing industries make use of survey or administrative data: *Grain milling, Metal processing, Electricity* and *Water utilities.* Other industries were surveyed, but often refused to provide data. Ironically, while many countries face difficulties in carrying out surveys because of the large number of companies that must be covered, Namibia faces difficulties because of the small number of companies in some critical industries, such as Beverages and Textiles. Often, one company may dominate an industry, hence, concerns about confidentiality of data are great.

In the second case, the national accounts may be able to provide information for the most important input to an industry, for example, livestock inputs to Meat processing. This figure was used, and the remaining products in intermediate consumption were distributed in the same proportion as those in the corresponding South African industry. Four industries fell into this category: *Meat processing, Fish processing, Dairy, and Metal processing*.

In the third case, for industries for which no information about detailed input structure is available, the distribution of intermediate inputs from the SA SUT was applied to total intermediate consumption in the Namibian national accounts. The amount of a given product, *i,* purchased by Namibian industry *j*, or T_{ij}, is calculated as the product of intermediate consumption of industry *j* in Namibia, IC_j^N , and the share of product *i* in the total intermediate consumption of the corresponding South African industry, s_{ij}^{SA}.

$$T_{ij}^{N} = s_{ij}^{SA} IC_{j}^{N}$$

$$IC_{j}^{N} = \sum_{i=1}^{n} T_{ij}^{N}$$

where

$$s_{ij}^{SA} = T_{ij}^{SA} \Big/ IC_{j}^{SA}$$

Two adjustments were made when the input structure from South Africa is used to estimate the inputs to Namibian industries:

- In the South African SUT, only one agricultural commodity input is represented. The industries for which agricultural inputs are most important, food processing, had additional information from the national accounts which allows identification of the detailed agricultural input. The allocation of agricultural inputs to other industries was determined by experts' judgment on a case-by-case basis.
- Inputs of Coal, crude petroleum and natural gas must be redistributed to other energy sectors. Namibia's use of coal is limited to metal processing and some electricity production in cases of power disruptions. Namibian industry does not use crude petroleum or natural gas. The share of coal, crude petroleum and natural gas input from the SA SUT was reallocated to purchases of refined petroleum products.

Table 3 shows the method that was used for each of the manufacturing and service industries in the Namibian SUT. Estimates of intermediate consumption were based on the most detailed level of classification for industry which could be obtained; these were then aggregated to the SAM classification.

Table 3 Sources used to estimate intermediate inputs by industry

	Surveys and other data	South African SUT	SA SUT combined with major inputs from Namibian national accounts
Meat processing			Livestock inputs
Fish processing			Fish inputs
Dairy			Milk inputs
Grain milling	X		
Manufacture of beverages		x	
Manufacture of other food products		x	
Manufacture of textiles and leather goods		x	
Manufacture of wood; other manufacturing		x	
Manufacture of paper; printing and publishing		x	
Manufacture of chemicals		x	
Rubber, plastic products manufacture		x	
Man of other non-metallic mineral products		x	
Manufacture of basic metals			Metal inputs
Manufacture of fabricated metal products, Machinery		x	
Electricity supply	Part	Part	Imports of electricity
Water supply	Part	Part	
Construction		X	
Wholesale and retail trade; repairs		X	
Hotels and restaurants		X	
Transport and storage		X	
Communications		X	
Banking, Insurance		X	
Real estate activities		x	
Business service activities		x	
Sewage and refuse disposal, etc.		x	
Other community, etc. services		x	

Government Services

Government services consist of Central and Local Government, accounting for roughly 95% and 5%, respectively of total government expenditures. The figures in the national accounts for output, value-added, and total intermediate consumption are considered quite accurate because they are obtained from administrative records. The only issue is the disaggregation of intermediate consumption into detailed goods and services. For Local government, the detailed financial records of the municipality of Windhoek were used. For Central government, the Ministry of Finance reports annual expenditures on goods and services in *State Revenue Fund: Estimate of Revenue and Expenditure for the Financial Year*. The purchase of goods and services is disaggregated into 7 main categories: Travel and subsistence allowance, Materials and supplies, Transport, Utilities, Maintenance expenses, Property rental and related charges, Other services and expenses. While some of these categories could be

readily allocated to commodities in the Namibian SAM (e.g., Transport, Property rental), others were disaggregated according to the South African SUT.

Tourism

Full representation of tourism requires construction of Tourism Satellite Accounts, for which there is not sufficient data at this time (the Ministry of Environment and Tourism is considering the construction of Tourism Satellite Accounts later this year). Creation of a 'dummy sector' is a commonly used method to represent an activity of interest, when that activity may not correspond to an actual industry. All national accounts, for example, create a dummy sector for owner-occupied housing, although it is not an actual market where transactions take place.

There is no tourism industry in the national accounts; rather, tourism consists of a combination of several activities and products, dominated by accommodation, restaurants, and transportation services. However, given the importance of tourism to the economy, it is useful to create a dummy industry to represent tourism explicitly. The national accounts include an estimate of the total value of foreign tourism, represented as "the purchase of products in the Namibian economy by non-residents;" which amounted to N$2,377 million in 2002. Only the total amount of foreign tourism spending is given in the national accounts, not the values for specific goods and services that foreign tourists have purchased. In the SAM, the composition of foreign tourism purchases was estimated from a report by the Ministry of Environment and Tourism.

There is no estimate of the value of domestic tourism at this time.

Consumption of Fixed Capital

In the national accounts, gross operating surplus (GOS) is calculated as a residual of output minus intermediate inputs, taxes less subsidies, and compensation of employees. GOS can be further divided into net operating surplus (NOS) and consumption of fixed capital (CFC). CFC represents depreciation, the amount of capital stock that has been 'used up' during production in a given year, and is based on estimates of the capital stock in each industry. But both capital stock and CFC are estimated only for 11 major industry groups: Agriculture, Fishing, Mining, Manufacturing, Electricity and water, Construction, Trade (including Hotels & Restaurants), Transportation and communication, FIREB, Community and social services, and General government. Capital stock is not estimated for each of the detailed industries within each group at which much of the rest of the national accounts are estimated.

As a first approximation, we assumed that all sub-sectors within each major industry group have the same capital-output ratio. Hence, the CFC-output ratio would be the same for each subsector within a group. (But, of course, the capital-output ratios and the CFC-output ratios would vary across groups).

3.2.2 Factor accounts

The primary generation of factor income by activity was partially discussed in the previous section. Total compensation of employees is either estimated under the Activity Accounts, or taken from the national accounts. The split into skilled and unskilled labour is presently based on the ratios of skilled and unskilled labour by industry in the South African SAM. The number of employees by skill level for Namibia can be calculated from the Labour Force Survey (LFS), but the wages paid for skilled and unskilled labour will require combining results from the LFS with the Wage Survey, which should be available later in 2004. In the final SAM, the Wage Survey data will be used to allocate labour earnings among households, but the preliminary SAM has had to use a rather crude, although not unreasonable method to allocate labour income among households.

There are several other remaining entries in the SAM for factor accounts:

Factor incomes payable and receivable abroad: these are obtained from the national accounts. It is assumed that all labour income payable and receivable is skilled labour.

Distribution of mixed income from commercial agriculture: this is split among rural and urban households who, in the 2001 Census, identified their primary source of income as commercial agriculture. Urban households relying mainly on commercial agriculture engage only in livestock farming.

Distribution of mixed income from traditional agriculture: this factor payment is distributed to households whose primary source of income is subsistence agriculture.

Distribution of NOS: a small amount is distributed to NPISH (the amount accruing to social services excluding sewerage services); the rest is distributed to Enterprises.

Distribution of labour incomes: All compensation of employees is distributed to households. (Social security payments are included in compensation of employees and will be shown as a distribution to government in the final SAM). Information about major *sources* of household income is relatively easy to obtain, but the *quantity of income* received from each source is notoriously elusive and represents a serious challenge for most SAMs. In Namibia, the best data sources for allocating labour earnings among households would be the Ministry of Labour's Wage Survey linked with the Labour Force Survey; but the Wage survey was not available for the preliminary SAM, so an alternative, much more crude method was used, based on the 1993/94 HIES.

With Household Income and Expenditure Surveys, it is commonly the case that the reported income of a household will not add up to the expenditure of that household, even though, by definition, the two are equal. In many countries, a Household Budget survey is administered instead, which does not attempt to

collect data about income. The 1993/94 Namibian HIES did not provide a usable dataset on household income. However, the HIES does provide some information on the expenditure side which was used together with some plausible assumptions to allocate labour income.

Skilled labour income: taxes are paid only on annual incomes above $24,000, which is typically more than an unskilled worker would earn (LaRRI, 2004), so it was assumed that only households with skilled workers would pay taxes. It was further assumed that earnings were proportional to taxes paid. Earnings of skilled labour were then distributed among households in proportion to the share of income taxes paid by households, as reported in the 1993/94 HIES. Some categories of households were assumed to provide no skilled labour: those whose main source of income was subsistence farming, gifts and remittances, and pensions.

Unskilled labour income was distributed among households relying mainly on wages (urban and rural), subsistence farming, pensions, and gifts & remittances, assuming that households relying on business or commercial farming provided no unskilled labour. It was further assumed that households whose main source of income was subsistence farming, gifts & remittances, and pensions had virtually zero savings. For these households, an amount of unskilled labour income was allocated so that income matched (or was slightly higher) than expenditures. The remaining income from unskilled labour was divided between urban and rural wage earners: rural households earned the same amount from skilled and unskilled labour and the balance was allocated to urban wage-earning households, who earned somewhat more skilled labour income than unskilled. This is consistent with the LFS which reports more skilled workers in urban areas than in rural areas.

3.2.3 Institution accounts

Households: Expenditures by households were estimated using data from the 1993/94 HIES. First, expenditures per household in 1993/94 were calculated, then total expenditures were calculate to reflect the 2002 number of households and distribution by urban-rural location and main source of income[4]. Expenditures were then inflated to 2002 prices. The following assumptions were made for specific items:

- Total taxes paid by households were obtained from the national accounts; they were distributed in proportion to tax payments reported by household in the HIES.
- Inter-household gifts were similarly distributed, based on HIES data. Only net gifts are reported, so it was assumed that only two categories of households

[4] The Population Census provided figures for 2001; the average population growth rate was applied to estimate figures for 2002.

received significant net gifts: those in both rural and urban areas that relied primarily on gifts, pensions and subsistence farming for income.

- Savings as a proportion of total expenditure in the HIES was assumed for 2002.

NPISH: Figures for this institution are taken from the national accounts, as there is no other information available

Enterprises: The major expenditures for this institution include the distribution of enterprise earnings, payments of taxes and savings (retained earnings). Payments of taxes are obtained from the national accounts. Distribution of enterprise earnings were made as a balancing item to cover household expenditures. It should be noted that enterprise earnings include mixed income of the self-employed, for which there is no estimate in the national accounts, so even relatively poor households may derive some income from enterprises. In the final SAM, an estimate of Mixed income from non-agricultural activities will be made to improve the treatment of this source of income.

Government: Its primary expenditure is the purchase of government services. Other figures for transfers to enterprises, households, and payments to ROW are taken from the national accounts, based on the Ministry of Finance's annual report, *State Revenue Fund: Estimate of Revenue and Expenditure for the Financial Year*. The figure for Savings (deficit) is calculated as a residual of income minus expenditures, -$560 million. It differs from the figure in the current published national accounts (-$632) due to revisions made in the national accounts after the preliminary SAM was compiled. The final SAM will include all revisions to national accounts available at the time of compilation.

3.2.4 Capital account and Rest of World account

Figures for these two accounts are taken from the national accounts, except for the Balance of Payments, which is a balancing item in the SAM. The Capital account provides an estimate of investment and changes in inventories by commodity. The estimates of changes in inventories in the national accounts are, except for livestock, considered rather crude; for two industries (mining and fishing/fish processing) with relatively limited interdependence with the rest of the economy, small discrepancies between supply and use were adjusted through the figure for changes in inventories.

The capital account also includes sources of Savings, which have been discussed under the institutional accounts. The Balance of Payments represents Namibia's net savings with the Rest of the world. Because the BoP is a balancing item and the SAM differs from the national accounts, the BoP will also differ from that reported in the published SAM. Differences with the published national accounts are discussed in Section 4.

Trade statistics provide merchandise imports and exports by detailed commodity; exports of a few products were adjusted when we had better data (e.g., table grapes, textiles, discussed below). These may be disaggregated in the final SAM by country of origin/destination for Namibia's main trading partners. The Bank of Namibia compiles

statistics on trade in services as well as other financial transactions, which are included in the national accounts. The methods and data quality have not yet been examined in much detail. Given the importance of foreign tourism for the Namibian economy, some work on this sector is warranted.

3.2.5 Labour accounts

The SAM includes all monetary flows in the economy; payments for labour are included, but not the actual number of people employed. However, employment is a very important policy issue so the SAM was extended to include employment. Employment in 2002 was estimated using data from the Labour Force Survey (LFS) of 2000 by assuming that labour per unit of industry output has not changed substantially between 2000 and 2002[5]. The LFS also provided data about skill level of employee so that the SAM could distinguish skilled from unskilled labour.

3.2.6 Balancing the SAM

Even with good data for every component of the SAM, there would still be discrepancies between row and column totals. Discrepancies arise because of differences in the design and purpose of survey instruments, sampling errors, and other problems. In the SAM project, reconciliation of these discrepancies provides an opportunity to learn more about how the economy functions and to improve the national accounts, one of the major objectives of the SAM Project. In the course of constructing the SAM, it was clear that several major adjustments needed to be made. Consistency with the national accounts is important, so adjustments were made only where there was very strong justification. Once all the major adjustments were introduced, the small remaining discrepancies (under 5%) were balanced using RAS. The major adjustments include:

> *All agricultural production*: the survey data and secondary sources provided a value-added component of output that was somewhat higher than the share assumed in the national accounts. The SAM used the figures from survey and secondary data sources.
>
> *Grape and horticultural production*: the figures in the national accounts and trade statistics for production and export of table grapes were far lower than industry figures. Industry figures were used in the SAM. Horticultural production was also underestimated; an industry survey provided figures for 2000 and 2003, which were used to estimate production in 2002.

[5] While this implicit assumption of constant labour-output ratios is not satisfactory, there is not sufficient data for making any other assumption at this time. There have been only two Labour Force Surveys in Namibia, in 1997 and 2000. The Population Census of 1991 and 2001 might provide additional data, but they are not entirely comparable, and the detailed national accounts in 1991 are not reliable.

Mining: The operation of a new mining industry, DeBeers Marine Namibia, is not included in the national accounts. The survey of mining revealed part of that company's activity; this lower-bound figure was introduced into the national accounts.

Beverages, Dairy and Other food processing: Figures for Beverages and Dairy are considered fairly accurate because there are a few major producers. Other food processing is not well measured; considering the products in this category which are manufactured domestically (mainly bread and other prepared foods) it appeared that the output of this industry was overestimated; it was reduced in the SAM.

Textiles: This newly established industry is not yet included in the national accounts or in trade statistics. Since most production is taking place under AGOA, it was possible to obtain figures for the value of United States' imports of textiles from Namibia from the US government's trade statistics. This figure was used as (a lower bound) estimate of the output and export of the Textile industry.

Transportation services: Transportation services are based on figures from TransNamib and an estimate of all other transport providers, the latter accounting for most of this activity's output. A benchmark level of output for other transport providers was established in 1994; since than it is assumed to grow at an annual rate derived by averaging passenger transport growth and freight transport growth. Passenger transport is assumed to be growing 3% annually; a proxy for growth of freight transport is given by the increase in the value of imported goods. The growth of other transportation is lower than GDP growth in recent years. Generally, the output of transportation services appears to be underestimated and was increased by 8%.

Business services: In the early stages of compiling the SUT, there appeared a very large excess of use over supply of Business services. In the national accounts, mineral exploration comprises 40% of Business services. Figures for mineral exploration come from mining company surveys, but since mining is underestimated due to the omission of some major mining companies from the survey, it is likely that mineral exploration is also underestimated. The rest of Business Services is assumed to be growing at a constant annual rate of 2.5% from 1993, although it is not clear how the base year figure was derived. The 2.5% annual growth is slower than GDP growth; since it is highly likely that business services have been growing at least as fast, if not faster, than GDP, it seemed clear that the national accounts' estimate of Business services was too low and needed to be increased. Output was increased by 24%, which roughly satisfied the demand for Business services generated by the rest of the economy.

4. GDP for 2002 in the SAM and Published National Accounts

The revisions made for the SAM result in a different estimated of GDP for 2002, one that is higher than the published national accounts. These effects are summarised in Table 3. The contribution to GDP of Agriculture, Mining and Services are somewhat higher than published figures; the contribution of Manufacturing is slightly lower. Although the inclusion of textiles increased Manufacturing, the reduction of Other food products, on balance, resulted in a downward revision of the Manufacturing sector. For two components of GDP at market prices, no changes were made: Fishing and Taxes on products. The net effect is that GDP is 4.5% higher than the published figure. Because consistency with the national accounts was important, changes were introduced into the SAM very conservatively; it is likely that GDP is underestimated in other ways.

Table 4 GDP in 2002: estimates from the national accounts and the SAM (million N$)

	National Accounts GDP	SAM GDP	SAM GDP minus NA GDP
Agriculture	1,507	1,783	276
Fishing	1,597	1,597	0
Mining	3,945	4,485	540
Manufacturing	4,444	4,342	-102
Services	15,791	16,424	633
Taxes - subsidies on products	2,816	2,816	0
GDP at Market prices	**30,101**	**31,447**	**1,346**
GDP % change			**4.5%**

Note: Explanation of the differences between the SAM and the published national accounts is found in section 3.

5. Next Steps: The Final SAM and Policy Applications

The Final SAM is expected to be completed by June 2005. During the remaining period of time, the project team will continue to improve the data in the SAM and begin to use the SAM for several applications where policymakers have requested assistance. Given the limited funds, these applications will be rather simple. However, even simple applications provide the opportunity both to test the Namibian SAM and to demonstrate the contribution that SAM-based analysis can make to policy analysis and design.

5.1 Data improvements for the final SAM

Numerous data weaknesses have been identified in this report. Many of these weaknesses can be at least partially improved by data from surveys that are currently underway or being processed. The final SAM will improve the preliminary SAM in the following respects:

Agriculture: more detailed representation of agricultural sectors, focusing on better representation of agriculture in the communal areas

Trade: detailed accounts for taxes and duties related to trade

Distribution of Factor Income: improved representation of the distribution of labour income among households by drawing on the HIES, Wage Survey and other specialized studies

Household Expenditures: improved representation of household incomes and expenditures by drawing on results from the HIES for 2003/04.

Industry Output and Input Structure: data for other sectors may become available during the course of the year as the result of expanded coverage of ongoing surveys like the Mining Company survey and new surveys such as the Tourism Industry Survey. There may also be a survey of small-scale and informal business activity.

A detailed Technical Report will be prepared which describes in full all the data sources and assumptions in constructing the SAM.

5.2 The SAM, Vision 2030 and NDP 3

There have been several requests for policy analysis using a SAM-based model, including the following:

Identifying strategies to achieve Vision 2030 and incorporating the first steps in NDP3

Land Reform: how will it affect agricultural production and incomes?

Trade and Poverty Linkages: What exports have the greatest poverty-reduction potential? How will Namibia be affected by trade liberalisation within SACU? What taxes should be raised to replace declining SACU tariff revenues?

Tourism and Poverty Reduction: Tourism is one of Namibia's fastest growing exports and it has the potential to act as an engine of growth, but how much can it grow? How can high-value tourism be promoted? How much do local communities and poor households benefit from different types of tourism?

Gender, Education and Development: What sectors create the greatest opportunities for women? What will be the labour demands in the future by occupation and by gender? What kind of education and training will future workers need?

The most far-reaching application is for analysis of Vision 2030. Vision 2030 is an excellent example of an attempt at integrated, cross-sectoral planning and the SAM was applied in a very crude way to assess the quantitative implications of Vision 2030 in May 2004. The analysis revealed that there is a need for much more economic input into Vision 2030 if its objectives are to be achieved. Although an annual GDP growth target of 7% was identified and poverty reduction is a major objective, there was no discussion at the sectoral level of how these objectives are to be achieved in a manner consistent with sustainable use of resources. Most sectors did not identify specific economic targets for growth, income and employment. Major sectors of the economy, like Mining and Fishing, were discussed mainly in terms of its environmental impact, but not in terms of likely levels of future economic activity. Kudu Gas was not mentioned, nor were several other major development strategies such as the Green Scheme or the development of the textile industry under AGOA.

It is also clear that the foundation for Vision 2030 must be laid in NDP3. The SAM can be of enormous assistance in this process, by addressing some of the questions identified above.

Economic Growth and Poverty Reduction

- What sectors have the greatest impact on poor households?
- Will mining and fisheries activities continue to grow in the future? If not, what activities will replace these mainstays of the Namibian economy?
- How will HIV/AIDS affect labour supply & productivity? How will it affect household well-being?

Water, electricity, energy

- What are future demands likely to be and how can they best be met?

References

Bacharach, M. 1970. *Biproportional Matrices and Input-output Change*. Cambridge, University Press: Cambridge.

Central Bureau of Statistics. 2003. unpublished national accounts database.

Conningarth Economists. 2001. Pilot Social Accounting Matrix for Namibia. Report to the Natural Resource Accounting Programme of Southern Africa, Centre for Environmental Economics and Policy in Africa, University of Pretoria.

European Commission, Leadership Group SAM. 2003. *Handbook on Social Accounting Matrices and Labour Accounts*. Population and Social conditions Report 3/2003/E/Number 23. EC: Luxembourg.

Keuning, S.J. and W. de Ruijter. 1998. Guidelines to the construction of a Social Accounting Matrix, *Review of Income and Wealth*, Series 34, No. 1, February.

Labour Resources and Research Institute (LaRRI). 2004. The Namibian labour market—workers' experiences and perceptions. LaRRI: Windhoek, Namibia

Miller, R. and P. Blair. 1985. *Input-Output Analysis: Foundations and Extensions.* Prentice-Hall: Englewood Cliffs, New Jersey.

Ministry of Labour. 2002. *Labour Force Survey 2000*. MoL: Windhoek, Namibia

National Planning Commission. 1996. *Namibian Household Income and Expenditure Survey 1993/1994.* NPC: Windhoek, Namibia.

Pyatt, G. and J. Round. 1985. *Social Accounting Matrices: A Basis for Planning*. World Bank: Washington, D.C.

Robinson, S., A. Cattaneo, and M. El-Said. 1998. Estimating a social accounting matrix using cross entropy methods, IFPRI, Washington, D.C. TMD Discussion Paper No. 33.

Thorbecke, E. 2001. The social accounting matrix: deterministic or stochastic concept. Paper presented at the Institute for Social Studies, The Hague, 29 November.

Tjipe, T., H. Nielsen, and E. Uanguta. 2004. Namiba macroeconometric Model (NAMEX). Unpublished paper of the Bank of Namibia.

United Nations, European Commission, International Monetary Fund, Organization for Economic Cooperation and Development, and World Bank. 1993. *System of National Accounts*. UN: New York.

UN Statistics Division. 1998. *Input-output Table Compilation and Analysis*. UN: New York

Appendix 1. Classifications in the SAM

A. PRODUCT ACCOUNT CLASSIFICATION

Preliminary SAM		Full SAM	CPC Code
1	Commercial cereal crops	Maize farming, commercial	01a
		Wheat	01b
		Mahangu	01c
2	Other commercial crops and Forestry	Cotton	01d
		Other crops (lucerne, sunflower, groundnuts) and forestry products	01e, 03
		Grapes	01f
		Other fruits; vegetables	01g
3	Commercial livestock	Cattle	02a
		Sheep and goats	02b
		Other livestock and livestock products	02c
4	Food for own consumption	Food for own consumption	02d
5	Fish	Fish and Services incidental to fishing	04
6	Mining	Coal; petroleum, natural gas	011, 012
		Uranium and metal ores; Stone, sand and other minerals	013-015,016a
		Diamonds	016b
7	Meat and meat products	Meat and meat products	21a
8	Prepared and preserved fish	Prepared and preserved fish	21b
9	Grain mill products	Grain mill products	23a
10	Other food products and tobacco	Beverages	24
		Other food products; Tobacco	21c, 22, 23b, 25
11	Textiles; wearing apparel; leather; footwear	Textiles; wearing apparel; leather; footwear	26-29
12	Light manufacturing products	Wood and wood products; furniture; Paper & publishing; manuf. products n.e.c.	31,32, 38, 39
		Chemicals; rubber and plastic	34-36
13	Coke; petroleum products	Coke; petroleum products	33
14	Heavy manufacturing products	Other non-metallic mineral products	37
		Basic metals	41
		Machinery and equipment	42-49
15	Electricity; electr. distr. services	Electricity; electr. distr. services	17,69a
16	Water; water distribution services	Water; water distribution services	18, 69b
17	Buildings and Civil engineering works	Buildings and Civil engineering works	53,54
18	Trade services; repair services	Trade services; repair services	61,62
19	Lodging; restaurant services	Lodging; restaurant services	63
20	Transportation services	Transportation services	64-67
21	Communication	Postal and courier services	68
		Telecommunications services	84a
22	Finance and insurance	Financial intermediation services, FISIM, insurance and pension	71
23	Services from own dwellings	Services from own dwellings	72a
24	Real estate services; Business	Real estate services	72b

	services	Rental, etc; business services	73,81-83, 84b, 85-87
25	Other services	Sewerage; Other community, social & personal services	91-99
26	Government services	Government services	not in CPC codes
27	Purchases by residents abroad	Purchases by residents abroad	
28	Purchases in Namibia by non-residents	Purchases in Namibia by non-residents	

B. ACTIVITY ACCOUNT CLASSIFICATION

Preliminary SAM		Full SAM	ISIC Code
1	Commercial cereal crop farming	Maize farming, commercial	011A
		Wheat farming, commercial	011B
2	Other commercial crop farming; Forestry	Cotton farming, commercial	011C
		Other crop farming; forestry	011D
		Growing of grapes	011E
		Other horticulture farming, commercial	011F
3	Livestock farming, commercial	Cattle farming, south of VCF	012A
		Cattle-farming, market-oriented in NCA	012B
		Farming of sheep and goats, south of VCF	012C
		Farming of sheep and goats, market-oriented, in NCA	012D
		Other livestock farming	012E
		Dairy farming	012F
4	Traditional agriculture	Traditional agriculture, maize-livestock	13a
		Traditional agriculture, mahangu, livestock	13b
5	Fishing	Fishing and fish processing onboard	5
6	Mining	Mining and quarrying excl. diamond mining	12-14a
		Diamond mining	14b
7	Meat processing	Meat processing	1511
8	Fish processing	Fish processing	1512
9	Grain milling	Grain milling	1531
10	Manufacture of beverages; other food products	Manufacture of other food products	15x
		Manufacture of beverages	155
11	Manufacture of textiles, wearing apparel; leather; footwear	Manufacture of textiles, wearing apparel; leather; footwear	17-19
12	Light manufacturing	Manufacture of wood and furniture; Printing & publishing; manufacturing n.e.c.	20-22, 36
		Manufacture of paper; printing and publishing	21-22
		Manufacture of chemicals, rubber and plastic products	24-25
13	Heavy manufacturing	Man. of other non-met. min. prod.	26
		Manufacture of basic metals; fabricated metal products and machinery and equipment n.e.c.	28-35
14	Electricity supply	Electricity supply	40
15	Water supply	Water supply	41
16	Construction	Construction	45
17	Wholesale and retail trade; repair	Wholesale and retail trade; repair	50-52
18	Hotels and restaurants	Hotels and restaurants	55
19	Transportation	Transportation	60-63

20	Communications	Communications	64
21	Financial intermediation	Financial intermediation	65-67
22	Owner-occupied dwellings	Owner-occupied dwellings	70a
23	Real estate activities; rental and business activities	Real estate activities; rental and business activities	70b-74
24	Social, community and personal services activities excl. government services	Social, community and personal services activities excl. government services	80-93, 95
25	Producers of government services	Producers of government services	
26	Tourism	Tourism	Dummy industry

C. FACTOR ACCOUNT CLASSIFICATION

	Preliminary SAM	Final SAM
1	Labour, skilled	Labour, skilled
2	Labour, unskilled	Labour, unskilled
3	Mixed income, commercial agriculture	Mixed income, commercial agriculture
4	Mixed income, traditional agriculture	Mixed income, traditional agriculture
5	Net operating surplus	Mixed income, non-agriculture
		Net operating surplus

Note: Consumption of fixed capital, which is part of Gross operating surplus, is included in the capital account.

D. INSTITUTION ACCOUNT CLASSIFICATION

	Preliminary SAM	Final SAM
Households		
1	Urban: wage & salaries in cash	Urban: wage & salaries in cash
2	Urban: business activities including farming	Urban: business activities including farming
3	Urban: pensions, cash remittances and other sources of income	Urban: pensions, cash remittances and other sources of income
4	Rural: wage & salaries in cash	Rural: wage & salaries in cash
5	Rural: business activities & commercial farming	Rural: business activities & commercial farming
6	Rural: subsistence farming, pensions, cash remittances and other sources of income	Rural: subsistence farming, pensions, cash remittances and other sources of income
Other institutions		
7	NPISH (Non-profit institutions serving households)	NPISH (Non-profit institutions serving households)
8	Enterprises	Enterprises
9	Government	Government

E. OTHER ACCOUNTS

Preliminary SAM		Final SAM
Tax accounts		
	Taxes included in the Institution Accounts for Government	Taxes on products
		Taxes on production
		Income and property taxes
	Trade taxes included under SACU payment from ROW to Government	Taxes on imports
		Taxes on exports
Capital accounts		
	1 account to represent saving, CFC, and investment	1 account to represent saving, CFC, and investment
Rest of World		
	1 account to represent imports and exports	1 account to represent imports and exports

Appendix 2. Major Secondary Sources of Data for Agriculture

Source	Study
Namibian Resource Consultants (2002) Study of the utilisation of GMO's	Study compared the input costs and yields of GMO and non-GMO crops and livestock for 2002
NAU, unpublished farm surveys. 2001	Surveys of input costs for commercial production of white maize, cotton for several years (1999-2001) in 2001 prices.
NAU, unpublished farm surveys. 2002	Surveys of input costs for commercial cattle farming, 2002
Namibian Resource Consultants (1996)	Assessment of the competitiveness of cereal production in Namibia compared to cereal production elsewhere in the region.
Development Consultants for Southern Africa (DECOSA). *The Prospects of Domestic Import Substitution in Various Agricultural Commodities*. Report to NDC and MAWRD, 2001	Surveys of current farming for horticultural crops, cereal crops, dairy and chicken.
J.I. Barnes, unpublished livestock enterprise models	Detailed farming enterprise models for livestock under different systems of production
ProAnd Associates, International comparison of beef competitiveness.	Some data about input costs for livestock in 2001
MAWRD, Farm surveys for Caprivi, Kavango, Ohangwena, Omusati	Surveys of subsistence crop production and input costs by region in the years 1995-1999. Figures are given for 3 different systems of farming in each region, based on numbers of livestock.

Appendix 3. Namibian Social Accounting Matrix 2002 (million N$ in current prices)

			Products																											
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	Subtotal
Products	P1	ComCereal																															0
	P2	ComOtherCrops																															
	P3	Commercial animal prods																															0
	P4	FoodForOwnCon																															0
	P5	Fishing																															0
	P6	Mining																															0
	P7	Meat processing																															0
	P8	Fish processing																															0
	P9	Grain milling																															0
	P10	Bev&other food proc.																															0
	P11	Textiles																															0
	P12	Light manufacturing																															0
	P13	Petroleum products																															0
	P14	Heavy manufacturing																															0
	P15	Electricity																															0
	P16	Water																															0
	P17	Construction																															0
	P18	Trade, repairs																															0
	P19	Hotels and restaurants																															0
	P20	Transport																															0
	P21	Communication																															0
	P22	Finance and insurance																															0
	P23	Real estate, own																															0
	P24	MktRealEst + BusServ																															0
	P25	Other private services																															0
	P26	Government services																															0
	P27	Direct purch. abroad by res																															0
	P28	Dom.Purchases by non-res																															
	P29	Trade and transport margins	77	34	7	0	0	0	110	17	163	405	371	814	1,226	1,270	0	0	0	-4,493	0	0	0	0	0	0	0	0	0	0	0	0	0
	P30	CIF/FOB adjustment																				-1,114		-125								1,238	0
		Subtotal	77	34	7	0	0	0	110	17	163	405	371	814	1,226	1,270	0	0	0	-4,493	0	-1,114	0	-125	0	0	0	0	0	0	0	1,238	0
Activities	A1	ComCereal	63																														63
	A2	ComOtherCrops		303																													
	A3	Commercfial livestock			1,396	153																											1,549
	A4	Traditional agriculture				398																											398
	A5	Fishing					696			1,938																							2,634
	A6	Mining						7,322																									7,322
	A7	Meat processing							1,070																								1,070
	A8	Fish processing								1,265																							1,265
	A9	Grain milling									755																						755
	A10	Bev&other food proc.										2,657																					2,657
	A11	Textiles											143																				143
	A12	Light manufacturing												929																			929
	A13	Heavy manufacturing														1,038																	1,038
	A14	Electricity															747																747
	A15	Water																557															557
	A16	Construction																	2,681														2,681
	A17	Trade; repairs																		5,150													5,150
	A18	Hotels and restaurants																			1,440												1,440
	A19	Transport																				2,939											2,939
	A20	Communication																					1,197										1,197
	A21	Finance and insurance																						1,890									1,890
	A22	Real estate, own																							1,470								1,470
	A23	MktRealEst + BusServ																								2,374							2,374
	A24	Other private services																									1,520						1,520
	A25	Government services																										8,468					8,468
	A26	Tourism-Nonresidents																												2,377			2,377
		Subtotal	63	303	1,396	551	696	7,322	1,070	3,203	755	2,657	143	929	0	1,038	747	557	2,681	5,150	1,440	2,939	1,197	1,890	1,470	2,374	1,520	8,468		2,377			52,939
Factors	F1	Skilled labour																															0
	F2	Unskilled labour																															0
	F3	Mixed income, ComAgr																															0
	F4	Mixed income, Trad Agr																															
	F5	NOS																															0
		Subtotal																															0
Institutions	I1	U-Wage&salary																															0
	I2	U-Farm&Business																															0
	I3	U-Other																															0
	I4	R-Wage&salary																															0
	I5	R-ComAgr+Bus																															0
	I6	R-SubsFarm&Other																															0
	I7	NPISH																															0
	I8	Enterprises																															0
	I9	Govt	2	10	9	0	0	358	96	15	117	647	224	336	268	475	0	0	0	11	187	0	0	0	0	57	4	0	0	0	0		2,816
		Subtotal	2	10	9	0	0	358	96	15	117	647	224	336	268	475	0	0	0	11	187	0	0	0	0	57	4	0	0			0	2,816
K	K1	Saving																															0
ROW	R1	Imports	290	140	31	0	5	402	166	0	287	867	823	3,281	1,515	6,148	34	0	193	0	0	972	2	138	0	576	0	0	684	0	0	-1,238	15,315
		TOTAL	432	487	1,443	551	702	8,082	1,443	3,235	1,323	3,998	1,561	5,360	3,008	8,931	781	557	2,875	668	1,627	2,797	1,199	1,903	1,470	3,007	1,524	8,468	684	2,377	0	0	71,070

			Activities																									
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24	A25	A26	Subtotal
Products	P1	ComCereal	3	2		1					344	83																	432
	P2	ComOtherCrops	0	11	5		0	0	0	0		44	3	16	1	0	0	0	0	23	0	0	0	0	1	6	3	24	137
	P3	Commercial animal prods	0	0	14	10	0	0	725	0	0	64	0	0	0	0	0	0	0	58	0	0	0	0	0	3	8	0	881
	P4	FoodForOwnCon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	P5	Fishing	0	0	0	0	0	0	0	452	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	452
	P6	Mining	0	0	0	0	0	881	0	0	0	0	0	16	211	0	0	89	0	0	7	0	0	0	1	3	9	0	1,218
	P7	Meat processing	0	0	0	1	0	0	82	0	0	13	0	0	0	0	0	0	0	102	1	0	0	0	2	5	7	48	259
	P8	Fish processing	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	1	24	45
	P9	Grain milling	0	0	0	1	0	0	7	1	0	73	0	0	0	0	0	0	0	43	1	0	0	0	2	4	27	0	159
	P10	Bev&other food proc.	0	0	113	1	0	0	12	4	0	584	0	0	0	0	0	0	11	261	23	0	0	0	3	17	61	95	1,186
	P11	Textiles	0	2	0	0	0	2	1	0	0	2	47	21	1	0	0	34	9	3	15	9	0	0	2	9	11	24	193
	P12	Light manufacturing	7	22	41	2	175	166	17	13	6	246	11	358	46	10	20	326	420	40	243	34	255	0	138	216	195	71	3,078
	P13	Petroleum products	4	2	43	4	296	332	3	6	5	22	0	7	15	4	7	116	61	10	568	22	15	0	30	26	59	119	1,776
	P14	Heavy manufacturing	2	4	32	26	349	672	4	17	2	202	4	32	135	94	18	1,165	67	25	284	88	19	0	65	93	391	0	3,791
	P15	Electricity	0	5	21	0	0	100	4	3	5	14	1	7	38	40	13	8	30	32	49	11	15	0	8	16	190	12	622
	P16	Water	1	1	2	4	0	6	1	1	0	10	0	1	1	0	161	5	8	14	16	2	6	0	10	8	224	12	497
	P17	Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	66	4	37	0	9	0	48	11	42	0	219
	P18	Trade, repairs	0	0	0	0	0	37	6	14	9	21	2	8	6	0	0	9	163	1	100	40	16	0	43	25	46	0	546
	P19	Hotels and restaurants	0	0	0	0	0	9	0	0	2	0	0	0	0	0	0	0	28	1	61	0	5	0	20	24	163	951	1,264
	P20	Transport	0	34	16	1	0	92	52	27	29	296	10	89	51	2	7	61	283	9	106	46	73	0	93	55	588	713	2,734
	P21	Communication	0	1	13	0	10	4	3	3	2	14	2	13	7	4	2	45	320	10	88	188	58	0	95	61	52	71	1,067
	P22	Finance and insurance	1	3	49	0	49	30	8	9	1	57	3	19	18	3	10	68	271	12	241	6	72	0	166	36	67	24	1,224
	P23	Real estate, own	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	P24	MktRealEst + BusServ	0	2	20	0	139	418	7	2	20	20	1	11	19	21	18	87	284	25	98	13	198	0	104	86	115	71	1,777
	P25	Other private services	0	0	0	0	0	0	4	2	14	21	2	12	7	0	0	6	4	1	12	1	6	0	6	4	71	119	292
	P26	Government services	0	0	0	0	0	32	1	1	2	9	0	3	2	0	0	11	32	0	11	1	19	0	7	16	70	0	220
	P27	Direct purch. abroad by res	0	0	0	0	18	58	2	1	4	8	1	0	2	0	0	21	0	14	19	2	35	0	14	0	45	0	241
	P28	Dom.Purchases by non-res																											
	P29	Trade and transport margins																											
	P30	CIF/FOB adjustment																											
		Subtotal	20	90	369	52	1,037	2,837	937	568	445	1,719	86	615	559	180	257	2,052	2,060	696	1,979	463	802	0	857	723	2,445	2,377	24,309
Activities	A1	ComCereal																											
	A2	ComOtherCrops																											
	A3	Commercfial livestock																											
	A4	Traditional agriculture																											
	A5	Fishing																											
	A6	Mining																											
	A7	Meat processing																											
	A8	Fish processing																											
	A9	Grain milling																											
	A10	Bev&other food proc.																											
	A11	Textiles																											
	A12	Light manufacturing																											
	A13	Heavy manufacturing																											
	A14	Electricity																											
	A15	Water																											
	A16	Construction																											
	A17	Trade; repairs																											
	A18	Hotels and restaurants																											
	A19	Transport																											
	A20	Communication																											
	A21	Finance and insurance																											
	A22	Real estate, own																											
	A23	MktRealEst + BusServ																											
	A24	Other private services																											
	A25	Government services																											
	A26	Tourism-Nonresidents																											
		Subtotal																											
Factors	F1	Skilled labour	1	7	25	0	352	433	22	81	21	78	11	61	80	80	57	159	521	66	223	175	94	0	132	517	1,512		4,705
	F2	Unskilled labour	3	36	129	6	371	457	27	99	26	96	15	75	58	99	70	58	549	166	462	123	70	0	87	203	3,499		6,783
	F3	Mixed income, ComAgr	31	127	771																								930
	F4	Mixed income, Trad Agr				340																							340
	F5	NOS					655	2,907	73	447	229	560	27	164	296	196	88	202	1,792	457	16	27	751	1,405	1,042	106	0		11,438
		Subtotal	35	171	925	345	1,378	3,797	122	626	276	733	53	299	433	375	214	419	2,861	688	702	325	914	1,405	1,261	826	5,011		24,195
Institutions	I1	U-Wage&salary																											
	I2	U-Farm&Business																											
	I3	U-Other																											
	I4	R-Wage&salary																											
	I5	R-ComAgr+Bus																											
	I6	R-SubsFarm&Other																											
	I7	NPISH																											
	I8	Enterprises																											
	I9	Govt	0	0	4	0	152	12	1	3	0	5	0	-11	0	0	0	7	33	7	7	0	36	66	65	-56	0		331
		Subtotal	0	0	4	0	152	12	1	3	0	5	0	-11	0	0	0	7	33	7	7	0	36	66	65	-56	0		331
K	K1	Saving	9	43	251	0	68	675	11	69	35	116	4	25	45	192	86	202	195	50	250	410	138	0	191	27	1,012		4,104
ROW	R1	Imports																											
		TOTAL	63	303	1,549	398	2,634	7,322	1,070	1,265	755	2,573	143	929	1,038	747	557	2,681	5,150	1,440	2,939	1,197	1,890	1,470	2,374	1,520	8,468	2,377	52,939

			Factors						Institutions										Capital	ROW	Total
			F1	F2	F3	F4	F5	Subtotal	I1	I2	I3	I4	I5	I6	I7	I8	I9	Subtotal	K1	R1	Total
Products	P1	ComCereal																0	0		432
	P2	ComOtherCrops							33	7	5	11	3	41	0		0	100		251	487
	P3	Commercial animal prods							37	5	6	22	31	23	0		0	124	-195	632	1,443
	P4	FoodForOwnCon							0	0	0	55	0	496	0		0	551	0	0	551
	P5	Fishing							0	0	0	0	0	0	0		0	0	0	250	702
	P6	Mining							0	0	0	0	0	0	0		0	0	-163	7,026	8,082
	P7	Meat processing							244	37	35	107	27	203	0		0	653	0	530	1,443
	P8	Fish processing							21	4	5	9	4	39	0		0	82	0	3,108	3,235
	P9	Grain milling							100	15	25	147	59	759	0		0	1,104	0	60	1,323
	P10	Bev&other food proc.							645	110	89	443	115	1,124	0		0	2,526	0	863	4,575
	P11	Textiles							508	95	28	196	50	421	0		0	1,297	0	71	1,561
	P12	Light manufacturing							997	168	177	236	94	333	0		0	2,005	22	254	5,360
	P13	Petroleum products							594	86	36	156	189	171	0		0	1,232	0	0	3,008
	P14	Heavy manufacturing							558	136	56	414	70	521	0		0	1,754	2,850	536	8,931
	P15	Electricity							91	21	10	13	0	19	0		0	154	0	5	781
	P16	Water							43	9	5	1	0	2	0		0	60	0	0	557
	P17	Construction							0	0	0	0	0	0	0		0	0	2,640	16	2,875
	P18	Trade, repairs							74	9	2	11	5	21	0		0	122	0	0	668
	P19	Hotels and restaurants							181	80	8	47	3	44	0		0	363	0	0	1,627
	P20	Transport							30	5	2	9	1	17	0		0	63	0	0	2,797
	P21	Communication							52	16	6	9	6	1	0		0	90	0	42	1,199
	P22	Finance and insurance							537	20	21	71	7	8	0		0	664	0	16	1,903
	P23	Real estate, own							878	183	107	93	41	168	0		0	1,470	0	0	1,470
	P24	MktRealEst + BusServ							253	26	174	100	56	18	0		0	627	558	44	3,007
	P25	Other private services							125	29	16	24	41	40	958		0	1,233	0	0	1,524
	P26	Government services							108	19	6	30	18	23	0		8,045	8,249	0	0	8,468
	P27	Direct purch. abroad by res							339	59	0	34	10	0	0			442	2		684
	P28	Dom.Purchases by non-res																		2,377	2,377
	P29	Trade and transport margins																			0
	P30	CIF/FOB adjustment																			0
		Subtotal							6,449	1,136	819	2,238	830	4,491	958	0	8,045	24,965	5,715	16,081	71,070
Activities	A1	ComCereal																			63
	A2	ComOtherCrops																			
	A3	Commercfial livestock																			1,549
	A4	Traditional agriculture																			398
	A5	Fishing																			2,634
	A6	Mining																			7,322
	A7	Meat processing																			1,070
	A8	Fish processing																			1,265
	A9	Grain milling																			755
	A10	Bev&other food proc.																			2,657
	A11	Textiles																			143
	A12	Light manufacturing																			929
	A13	Heavy manufacturing																			1,038
	A14	Electricity																			747
	A15	Water																			557
	A16	Construction																			2,681
	A17	Trade; repairs																			5,150
	A18	Hotels and restaurants																			1,440
	A19	Transport																			2,939
	A20	Communication																			1,197
	A21	Finance and insurance																			1,890
	A22	Real estate, own																			1,470
	A23	MktRealEst + BusServ																			2,374
	A24	Other private services																			1,520
	A25	Government services																			8,468
	A26	Tourism-Nonresidents																			2,377
		Subtotal																			52,939
Factors	F1	Skilled labour																		46	4,751
	F2	Unskilled labour																		0	6,783
	F3	Mixed income, ComAgr																		0	930
	F4	Mixed income, Trad Agr																			340
	F5	NOS																		1,762	13,200
		Subtotal	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	1,808	26,003
Institutions	I1	U-Wage&salary	3,759	3,383	0	0	0	7,142								2,000	0	2,000		0	9,142
	I2	U-Farm&Business	39	0	154	0	0	193								1,500	0	1,500		0	1,693
	I3	U-Other	0	524	0	0	0	524	7	2		3	3			250	73	338		0	862
	I4	R-Wage&salary	824	824	0	0	0	1,648								1,200	0	1,200		0	2,848
	I5	R-ComAgr+Bus	58	0	775	0	0	833								500	0	500		0	1,333
	I6	R-SubsFarm&Other	0	2,052	0	340	0	2,391	95	25		45	40			950	984	2,140		0	4,531
	I7	NPISH					73	73	11	3	1	5	5	15		417	428	885			958
	I8	Enterprises					11,689	11,689									831	831			12,520
	I9	Govt					0	0	1,618	17	40	369	26	23	0	1,931		4,025		3,072	10,245
		Subtotal	4,679	6,783	930	340	11,762	24,493	1,732	47	41	423	73	38	0	8,749	2,316	13,419		3,072	44,132
ROW K	K1	Saving							961	510	2	187	430	2	0	3,771	-560	5,304		-3,693	5,715
ROW	R1	Imports	72	0	0		1,438	1,510	0	0	0	0	0	0	0	0	444	444			17,268
		TOTAL	4,751	6,783	930	340	13,200	26,003	9,142	1,693	862	2,848	1,333	4,531	958	12,520	10,245	44,132	5,715	17,268	