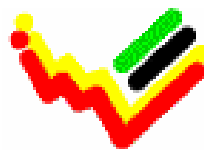# Final Report from a long term consultancy on National Accounts, August 2004 – November 2006

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TA for the Scandinavian Support Program to Strengthen the Institutional Capacity of the National Statistics, Mozambique

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Executive summary

I have been engaged for a series of missions from August 2004 to November 2006 to support the national accounts, in total 64 weeks. This report summarises the activities and results of the whole consultancy, which came to an end in November 2006. My tasks have been: compilation of benchmark estimates for 2003, which is also the new base year for estimates at constant prices, as well as revised time series; design of a new IT-system for the national accounts; and development of quarterly national accounts.

Revised and rebased annual national accounts are now expected to be released during the second quarter of 2007. The base year has been changed from 1996 to 2003. For that year the national accounts have a comprehensive coverage including GDP by activity and expenditure as well a sequence of accounts for the five institutional sectors. The revisions are being brought back to 2002 and carried forward from 2004. For these years somewhat simplified methods are used and less details are provided. A number of new surveys have been crucial for the revised national accounts, among them an enterprise census (2002), a household income and expenditure survey (2002/3), a survey of non-profit institutions (2004) and a labour force survey (2003).

A new IT-system is now in place. The system combines a spreadsheet programme (Microsoft Excel) with a database programme (Microsoft Access). Links between Excel files have been replaced with links between Excel and Access. The system includes procedures for saving data from Excel files to an Access database and loading data from this database into other Excel files.

Quarterly national accounts have been initiated at INE. As a start, they will be limited to estimates of GDP by activity at constant prices, possibly also at current prices. Quarterly estimates of GDP by activity are now planned to be presented for the first time in the second quarter of 2007. A system is in place; data sources have been identified and used to compile the estimates.

1   Introduction

I have been engaged by the Scandinavian Programme for support to the Statistical Institute of Mozambique (Instituto Nacional de Estastíca, INE) for a series of missions starting in August 2004 to support the national accounts. At the end of November 2006 this "long short-term consultancy" came to an end. This report summarises the activities and results of the whole consultancy. An inception report covered the first two months (Aug 16 – Oct 23, 2004) and a sub-sequent progress report the twelve months from November 2004. The terms of reference are attached as Appendix 1 and a time schedule as Appendix 2. Throughout the assignment my three major tasks have been:

- Compilation of new benchmark estimates for 2003, which is also the new base year for estimates at constant prices, as well compilation of revised time series.

- Design and implementation of a new IT-system for the national accounts of Mozambique.

- Development of quarterly national accounts.

I have worked with Ms. Mónica Magaua, Head of the Department for National Accounts, with the national accounts statisticians and with Ms. Fernanda Teixeira, long-term advisor (IMF) in the GDDS-project for Lusophone Africa. On a regular basis, I have also had discussions with Mr. Saide Dade, Director of National Accounts and Global Indicators. The new IT-system has been developed in coopera-tion with Mr. Søren Netterstrøm, who has designed and fine-tuned the system during a series of short-term missions.

INE has also organised support from the World Bank – in total about twenty weeks – for the compilation of a social accounting matrix. This task is intimately related to the compilation of the benchmark estimates. I worked together with the two consultants, Mr. Antonio Lazo and Ms. Carmen Reyes, during their missions.

An account of the work during my consultancy is provided in Section 2-4 of the report while Section 5 contains conclusions and recommendations.

2   Benchmark estimates and change of base year

2.1 Scope

Somewhat delayed compared to plans, the release of revised and rebased national accounts is now expected during the second quarter of 2007. The base year has been changed from 1996 to 2003. For that year the national accounts have a comprehensive coverage:

- Gross domestic product by activity with production and generation of income accounts for some 50 economic activities cross-classified by institutional sector.

- Product balances matching supply and use for some 150 product groups: Output + Imports + Taxes on products + Trade and transport margins = Intermediate

consumption + Final consumption expenditure (by households, by general government, by non-profit institutions serving households) + Gross fixed capital formation + Changes in inventories + Exports. The product balances (commodity flows) constitute the main method for deriving GDP be expenditure.

- A supply and use table created by putting the product balances together. However, due to lack of necessary data, it was not possible to construct an input matrix and, thus, not a complete supply and use table.

- A sequence of accounts including the current accounts and the capital accounts for the five institutional sectors (non-financial corporations, financial corporations, general government, households, non-profit institutions serving households) with sub-sectors. The financial account has been compiled for financial corporations and general government.

The detailed revisions are being brought back to 2002 and carried forward from 2004. For these years somewhat simplified methods are used and less detail is provided:

- Gross domestic product by activity (about 50) with production and generation of income accounts although with less detailed transactions in the accounts but, possibly, cross-classified by institutional sector.

- Product balances for the same number of product groups although with less detailed transactions.

- A sequence of accounts including the current accounts and the capital accounts for financial corporations and general government.

The national accounts will also be revised back to 1991. This will be done mainly by retropolating the revised estimates for 2002 with the existing time series for 1991-2002.

2.2 Sources

The revised estimates have benefited from a number of new, mainly intermittent surveys. Besides, some additions have been made to the source data used previously.

The *2002 Enterprise Census* provided some basic data on enterprises such as turnover and number of persons employed. This has been combined with responses to an annual survey that so far suffers from a low response rate. The census data have been crucial for establishing benchmarks as well as for the cross-classification of economic activities with institutional sectors.

The *Annual Agricultural Survey* was launched some five year ago and provided data for 2002 and 2003. There was no survey in 2004 because of the elections that year.

The *2003 Labour Force Survey* has been important for calibrating employment data and estimating benchmarks for the informal sector.

The *2004 Survey of Non-profit Institutions* provided a benchmark for non-profit institutions serving households.

The *2002/3 Household Income and Expenditure Survey* provided a benchmark for household consumption and for other transactions of the household sector.

A survey of the informal sector was conducted in 2005 but could not provide results in time for the revised national accounts.

The *Foreign Trade Statistics* based on Customs data are beloved to underestimate imports. Foreign trade data have been obtained from South Africa on exports from that country to Mozambique and have been used to estimate imports for a number of products.

A proxy *import price index* has been constructed on the basis of export price indices for major trading partners and on international commodity prices.

3   NADABAS – the national accounts IT-system

When implementing the 1993 SNA, INE adopted an approach to compiling national accounts, developed by the United Nation Statistical Department and accompanied by software developed in Microsoft Excel. This is described in a UN handbook (Systems Approach to National Accounts Compilation). On the whole, the same approach has been followed in the revised national accounts and is also reflected in the design of the spreadsheets in the IT-system. However, the IT-solution has been improved by integrating the database software Microsoft Access in the new system, which is known as NADABAS (National Accounts Database System). The main features are the following.

- Links between Excel files are replaced with links between Excel and Access. NADABAS includes procedures for saving data from Excel files to an Access database and loading data from this database into other Excel files.

- The system is designed as an Add-In to Excel for which Visual Basic for Applications has been used. It includes a user interface with a menu from which several tasks can be executed such as opening workbooks, loading and saving data to and from the database, opening documents related to the system, and many others.

- The system is designed to run in a multi-user environment contained in a local area network. Access to the files is regulated by administrators; there are items on the menu specifically for administrators.

Preliminary estimates for the past year should be available in April/May. These estimates will be limited to gross domestic product by activity and expenditure. One task of the consultancy was to develop a simplified system for the preliminary estimates. However, after attempting a special module for such estimates, the conclusion is that this is not needed. Preliminary estimates can be compiled using the system as it is but with simplified and less detailed methods.

NADABAS is now up and running on the network at INE and the national accounts staff are able to operate the system. However, a major problem is the speed of the network – some operations in NADABAS take an excruciatingly long time. A possible solution could be a dedicated server for the national accounts.

A manual for the system has been compiled in Portuguese and is accessible as part of NADABAS.

4 Quarterly national accounts

There is an increasing user demand for quarterly national accounts and the development of this is included in INE's work plans. As a start, the quarterly national accounts will be limited to estimates of GDP by activity at constant prices, possibly also at current prices. The general method will be to extrapolate values added with output indicators and then benchmark the results with the annual estimates, i.e. the sum of the four quarters must add up to the annual totals in the annual national accounts. The Denton method will be used for the benchmarking.

A working/study visit by four national accounts staff to Statistics Sweden and Denmark took place in June 2005. The main task during the visit was preparation of quarterly GDP-estimates. The report from the visit includes an outline of the quarterly GDP-estimates, discussion of sources and a time plan for the implementation. By and large, the work has proceeded as outlined in the said report and quarterly estimates of GDP by activity will be presented during the second quarter of 2007.

Excel will be used for the quarterly estimates. There is one workbook for each industry linked to workbooks for totals. Each workbook includes macros for running programmes for benchmarking and seasonal adjustment. Later on the quarterly files can be linked to the NADABAS system.

5 Conclusions and recommendations

a) The full scope of the benchmark estimates for 2003 is very ambitious and is needed for the compilation of a SAM. However, it is not sustainable to compile such detailed national accounts on an annual basis. Therefore, as indicated in Section 2.1, the current annual estimates should comprise only GDP by activity and expenditure, the current and capital accounts for the rest of the world and the institutional sectors general government and financial corporations. Furthermore, the first preliminary estimates for the past year could be limited to include only GDP.

b) Data from the Customs Department on imports and exports of goods is the main source for foreign trade in the revised national accounts. However, South African data have been used for a number of products resulting in totals that are different from the balance of payments, which is compiled by the Central Bank. Thus, the surplus/deficit in transactions with the rest of the world in the balance of payments is different from the same surplus/deficit according to the national accounts. It is important to coordinate the estimates of the Central Bank and INE in order to arrive at the same surplus/deficit.

c) The annual surveys should be reviewed in order to improve the response rates. A simplified form could be introduced for smaller enterprises.

d) The compilation of the quarterly GDP-estimates has initially been handled by the section for short term indicators (Conjuntura). In due course, it could be considered whether to allocate the responsibilities for the quarterly estimates to the

national accounts section. However, keeping the quarterly estimates with Conjuntura could also be a possible option.

e) The NADABAS system has been designed using Visual Basic. Currently, there is no capacity at INE to mend and adjust the system if that would be necessary. In the medium term, one or two staff members at the IT section should be trained for this task, possibly by attending training courses in Visual Basic.

f) Some operations in NADABAS take a very long time. A possible solution could be a dedicated server for the national accounts. This problem should be dealt with in one of the planned missions on IT.

Terms of reference – national accounts adviser

General responsibilities and tasks

The adviser shall assist INE in the elaboration of plans, guidelines and procedure for the compilation of annual and quarterly national accounts. He will report to the Team Leader and shall collaborate with and assist the Vice-President, the Head of the Directorate for National Accounts and Global Indicators and other staff at INE. The adviser shall provide assistance, guidance, advice and training related to national accounts.

The adviser will work at INE for about ten months during the period August 2004 – December 2005.

Specific tasks

The specific tasks shall include but not necessarily be limited to:

- Support the improvement of source data for the national accounts;

- Consolidate and improve the current production of the annual national accounts, in particular the compilation of a new benchmark estimate for 2003:

- Support the review of the current compilation system aiming at making it easier to handle and overview; and

- Support the establishment and production of quarterly national accounts.

Qualifications

- A masters degree in economics;

- At least 10 years working experience with national accounts;

- Substantial experience of statistical systems and the development of national accounts systems in particular;

- Substantial experience of the 1993 SNA;

- Experience from advisory positions and/or training;

- Familiarity with Scandinavian development assistance in general; and

- Fluency in written and spoken English and adequate working knowledge of Portuguese.

Working language

Portuguese and English

Appendix 2

Work schedule

Year	Week no and dates			Planned	Actual
2004	34	16 Aug	22 Aug	5	5
	35	23 Aug	29 Aug	5	5
	36	30 Aug	5 Sep	5	5
	37	6 Sep	12 Sep	3	3
	38	13 Sep	19 Sep	5	5
	39	20 Sep	26 Sep	5	5
	40	27 Sep	3 Oct	5	5
	41	4 Oct	10 Oct	3	3
	42	11 Oct	17 Oct	5	5
	43	18 Oct	24 Oct	5	5
	44	25 Oct	31 Oct		
	45	1 Nov	7 Nov		
	46	8 Nov	14 Nov		
	47	15 Nov	21 Nov	4	4
	48	22 Nov	28 Nov	5	5
	49	29 Nov	5 Dec	5	5
	50	6 Dec	12 Dec	5	5
	51	13 Dec	19 Dec		1
	52	20 Dec	26 Dec		
	53	27 Dec	2 Jan		
2005	1	3 Jan	9 Jan		
	2	10 Jan	16 Jan		
	3	17 Jan	23 Jan		
	4	24 Jan	30 Jan		
	5	31 Jan	6 Feb	5	
	6	7 Feb	13 Feb	5	5
	7	14 Feb	20 Feb	5	5
	8	21 Feb	27 Feb	5	5
	9	28 Feb	6 Mar	5	3
	10	7 Mar	13 Mar	5	5
	11	14 Mar	20 Mar	5	5
	12	21 Mar	27 Mar	5	5
	13	28 Mar	3 Apr	5	5
	14	4 Apr	10 Apr	5	3
	15	11 Apr	17 Apr	5	5
	16	18 Apr	24 Apr		5
	17	25 Apr	1 May		
	18	2 May	8 May		
	19	9 May	15 May	5	5
	20	16 May	22 May	5	5
	21	23 May	29 May	2	
	22	30 May	5 Jun		2

Year	Week no and dates			Planned	Actual
2005	23	6 Jun	12 Jun		5
	24	13 Jun	19 Jun		2
	25	20 Jun	26 Jun		
	26	27 Jun	3 Jul	5	
	27	4 Jul	10 Jul	5	5
	28	11 Jul	17 Jul	5	5
	29	18 Jul	24 Jul		
	30	25 Jul	31 Jul		5
	31	1 Aug	7 Aug		5
	32	8 Aug	14 Aug		4
	33	15 Aug	21 Aug	5	
	34	22 Aug	28 Aug	5	
	35	29 Aug	4 Sep	5	
	36	5 Sep	11 Sep	4	
	37	12 Sep	18 Sep	5	5
	38	19 Sep	25 Sep	5	5
	39	26 Sep	2 Oct	5	5
	40	3 Oct	9 Oct	5	4
	41	10 Oct	16 Oct	5	3
	42	17 Oct	23 Oct	5	4
	43	24 Oct	30 Oct		5
	44	31 Oct	6 Nov		4
	45	7 Nov	13 Nov		
	46	14 Nov	20 Nov		
	47	21 Nov	27 Nov	5	5
	48	28 Nov	4 Dec	5	3
	49	5 Dec	11 Dec	5	
	50	12 Dec	18 Dec	5	
	51	19 Dec	25 Dec		
	52	26 Dec	1 Jan		
2006	1	2 Jan	8 Jan		
	2	9 Jan	15 Jan		
	3	16 Jan	22 Jan		
	4	23 Jan	29 Jan		
	5	30 Jan	5 Feb		
	6	6 Feb	12 Feb	4	4
	7	13 Feb	19 Feb	5	5
	8	20 Feb	26 Feb	5	5
	9	27 Feb	5 Mar		
	10	6 Mar	12 Mar	5	5
	11	13 Mar	19 Mar	5	5
	12	20 Mar	26 Mar	5	5

Year	Week no and dates			Planned	Actual
2006	13	27 Mar	2 Apr	3	3
	14	3 Apr	9 Apr		
	15	10 Apr	16 Apr		
	16	17 Apr	23 Apr		
	17	24 Apr	30 May		
	18	1 May	7 May		
	19	8 May	14 May		1
	20	15 May	21 May	5	5
	21	22 May	28 May	5	5
	22	29 May	4 Jun		
	23	5 Jun	11 Jun		
	24	12 Jun	18 Jun		
	25	19 Jun	25 Jun	4	3
	26	26 Jun	2 Jul	4	4
	27	3 Jul	9 Jul	5	5
	28	10 Jul	16 Jul	5	5
	29	17 Jul	23 Jul	5	5
	30	24 Jul	30 Jul	5	2
	31	31 Jul	6 Aug	5	
	32	7 Aug	13 Aug	5	
	33	14 Aug	20 Aug		
	34	21 Aug	27 Aug		
	35	28 Aug	3 Sep		
	36	4 Sep	10 Sep	4	
	37	11 Sep	17 Sep	5	5
	38	18 Sep	24 Sep	5	5
	39	25 Sep	1 Oct	4	4
	40	2 Oct	8 Oct	4	3
	41	9 Oct	15 Oct	5	
	42	16 Oct	22 Oct	5	2
	43	23 Oct	29 Oct		5
	44	30 Oct	5 Nov		5
	45	6 Nov	12 Nov		5
	46	13 Nov	19 Nov		5
	47	20 Nov	26 Nov		5
	48	27 Nov	3 Dec		4
	49	4 Dec	10 Dec		
	50	11 Dec	17 Dec		
	51	18 Dec	24 Dec		
	52	25 Dec	31 Dec		
	Occasional days off			-13	
	Total weeks at INE			63	64