



Final Report
from a long-term consultancy on National Accounts

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

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List of abbreviations

CCAINE	Conselho Consultivo Alargado do INE
INE	Instituto Nacional de Estatística, Moçambique
DCNIG	Direção Contas Nacionais e Indicadores Globais
LTA	Long Term Advisor
NA	National Accounts
QNA	Quarterly National Accounts
SEN	Sistema Estatístico Nacional
STA	Short Term Advisor
TOR	Terms of Reference

1 Introduction

This report constitutes the summary of documents from a long term consultancy by Mr Timmi Graversen in National Accounts to the National Statistical Institute during the period 1 September 2002 – 31 January 2004.

The consultant would like to express his thanks to all officials and individuals met for the kind support and valuable information and material which he received during his stay in Mozambique, and which highly facilitated the work.

This report contains the views of the consultant, which do not necessarily correspond to the views of Danida or INE.

2 Activities during the mission

The Directorate for National Accounts and Global Indicators (DCNIG), which is a Directorate in the Economic Statistics Division, is responsible for producing the national accounts, short-term indicators every quarter (A conjuntura económica) and the consumer price index every month.

The long-term consultant for National Accounts started his assignment on 1 September 2002 under The Bridging Programme and continued in the Scandinavian Programme and ended his assignment on 31 January 2004. His main counterpart has been the Director for DCNIG (See TOR in Appendix 9).

The daily work took place in the National Accounts (NA) department working with the Head of Department, the IMF-consultant and the 6-9 technicians. A large part of the mission was filled up with being daily available as an advisor in the NA department, participating in meetings and seminars with other departments at INE, current discussions and coordination with the other LTAs and discussions and meetings with STAs. Apart from this the major activities, results, proposals and subjects for discussion in each quarter are mentioned below, and in some cases reference is given to a relevant appendix.

Major activities in the 3rd quarter of 2002

- Meeting in Tilburg, The Nederland's on the Bayesian approach to National Accounts compilation and the previous assistance to NA in Mozambique
- Short-term mission on Quarterly National Accounts

Major activities in the 4th quarter of 2002

- Follow-up on the short term mission on quarterly accounts and drafting plan for experimental QNA calculations (Appendix 8)
- Investigation of the system for compiling annual National Accounts
- Assistance to planning activities concerning INEs five year plan, the new prodoc for the Scandinavian programme and the National Accounts operational plan for 2003
- Participation in seminar with all consultants in the Bridging project in Ponta do Ouro
- Participation with National Accounts staff in seminar in Bilene on national accounts working procedures
- Investigation of the Bayesian approach and meetings with a representative from the University of Tilburg regarding the continued cooperation within the Bridging project.

Major activities in the 1st quarter of 2003

- Discussions and proposals for organizing the workflow in the compilation of Annual NA

- Discussions of the project for QNA development (Appendix 8). Due to the delay in compilation of annual NA it was not possible to dedicate staff for the QNA project
- Designing a structure of directories for QNA (\\MY_OLD_Computer\CNT\)
- Classification and aggregation system for quarterly NA (worksheets in: \\MY_OLD_Computer\CNT\CLA)
- Proposal for revision and publishing policy (Appendix 6)
- Drawing up example of typical organization of work-flow when compiling QNA (Appendix 7)
- Individual sessions with all technicians regarding working procedures, worksheets, file structure etc. within their area of responsibility.
- Participation in the CCAINE (annual planning seminar for SEN) in Beira
- Assistance concerning the evaluation mission (T&B consult) and subsequent discussions and feed-back to reports and the PRODOC for the 'New Scandinavian programme

Major activities in the 2nd quarter of 2003

- Preparation for the short-term mission on IT and documentation. Each technician in the NA department prepared questions and identified problems within their area of responsibility where lack of documentation made it difficult to proceed with the compilation.
- Meetings with the STA on foreign trade statistics on the possibilities of improving quality of im- and export data for NA
- Designing a time consistency procedure for Quarterly National Accounts
- Design of an aggregation interface between annual and quarterly NA.
- In cooperation with the LTA in Economics Statistics a series of bilateral meetings between the technicians for each statistical product in DESE and the relevant counterpart in DCNIG was arranged.
- Budget proposals for upgrading of working facilities (Appendix 5)
- Assistance to drawing up papers for an international seminar on regional accounts

Major activities in the 3rd quarter of 2003

- Assistance to the STA on IT and documentation
- Finalising the translation and discussion of the report from the mission on IT and documentation
- Support technicians in cleaning up the work-sheets of the NA system for dead links etc..
- Proposal to establish documentation on working procedures (for products) and assisting technicians in making such documentation (Appendix 4)
- Proposal on how to introduce a more systematic approach to the compilation process
- Sessions with technicians on how to work in a systematic way with the spread sheets

- Assisting technicians in error correction and balancing of the Supply and Use table for 2000-2001
- Discussions with the STA in economic statistics and proposal for DESE to produce final statistical products in the form of indices
- Proposal and specification of future requests for short term indicators in QNA based on the new and improved business statistics
- Making status report (Appendix 2) and initiating the discussion on how to proceed with the NA development in Mozambique
- Researching opportunities for future STA to INE NA

Major activities in the 4th quarter 2003

- Proposals for and discussions on how to implement the results from Household Budget Survey (IAF) in the new base year
- Discussions and finalizing of the proposals on how to proceed with the change of new bench-mark year (Appendix 3)
- Coaching and studying assistance to new technician in general macroeconomics and NA
- Sessions with technicians regarding basic elements of classifications and aggregations for Quarterly National Accounts
- Assistance to STA on strategic planning in NA

Major activities in the 1st quarter of 2004

- Follow up and discussions on the STA on Strategic Planning in December
- Discussions and proposal for activities and STAs in 2004 (Appendix 1)

Appendix 1: Proposal for activities and missions for establishing new benchmark year in 2004

This proposal is based on a continued work with the existing framework for National Accounts compilation in Mozambique. If another framework is chosen the contents of the missions should be turned more towards direct preparations for that framework. The general subjects and titles of the missions mentioned below should however be the same.

The scope of establishing the new benchmark year should be limited to the SUT calculations including branch-dimensions for production and supplemental calculation of wages and employment. For the sectors the full RoW and General Government accounts should be compiled, but it is proposed to postpone any further calculations and specifications of sector accounts (For the financial sector and for NPISH it will be necessary to compile the production account for the SUT).

5 short-term missions are proposed comprising a total of 17 weeks in the period April - June. Some missions may take place at the same time.

The following missions are proposed:

1. Mission on System Analysis and design (4 weeks in Feb-March)
2. Mission on incorporating Household Budget Survey (IAF) (4 weeks in April-June)
3. Mission on incorporating New Business Statistics (CEMPRE) (4 weeks in April-June)
4. Mission on incorporating Foreign trade and RoW (3 weeks in April-June)
5. Mission on incorporating General Government (2 weeks in April-June)

On the following pages are some drafted comments to the contents of the missions. These will be specified more in the Terms of Reference for each mission, and will of course also be discussed with the relevant consultants. All of these missions are very demanding and will produce very concrete results for the compilation of National Accounts for 2002. To underline this focus on results and to ensure that results are transferred properly to the staff in the department it is advisable that each mission is concluded with a small 1-2 day workshop.

These missions play an important part in the increased functionality of the National Accounts system and will be very demanding to the staff. To take full advantage of this 'new start' for the system and to enable smooth operations in this intensive working period it is advisable that the IT-hardware in the department is upgraded and harmonized into a stable network with full functionality as soon as possible - preferably as a follow up to mission no 1 mentioned above. The working environment also needs improvement to encourage the staff and support the best possible effort and team spirit in the department.

To assist with planning, comments for Terms of References, follow-up and comments to results etc. home office support from the Scandinavian Statistical Offices should be available.

Preparatory work to be made by INE staff

Establish a database of new classifications (Feb-March)

Classifications lay down the fundamental framework for the compilation system, and should be established at an early stage of the developing process. As a general rule it should be avoided to change classifications after they have been implemented. Changes made in classifications at a later stage are very 'expensive' because they will influence many areas of the system and will increase the risk of creating system errors.

The framework of the international classifications used as a basis is exhaustive by definition. Still it is unavoidable that discoveries from later work with data will generate changes in the classifications. If however a consistent set of classifications and standard aggregation levels is established it will be possible to implement later changes as supplements to the classifications on a detailed level on selected aggregation levels and thus minimizing the effect on parts of the systems which has been established on higher aggregation levels.

Classifications should be collected and unique lists should be made for: Products, Branches and Transactions in the SUT. Some example workbooks can be found in \\MY_OLD_Computer\CNT\CLA. It is proposed to use these as inspiration and templates for the new set of classifications.

Products:

A revised NP96 should be made (NP02?) and consistency ensured with: CPC, CNBC, HS, PAUTA, COICOP and COFOG. Translation keys between classifications and aggregation lists within classifications should be made.

Branches:

A revised set of NTRA and NPRA should be made and consistency ensured with: ISIC rev 3 and the Novo CAE in FUE. Translation keys between classifications and aggregation lists within classifications should be made.

Transactions in SUT:

A standardized set of transactions to include in the new SUT should be made. A proposal is made for an un-redundant (i.e. the necessary information) set of transactions this can also be found in the workbooks mentioned above. This proposal can be used directly as a framework for the new SUT transactions. It is proposed to use that. Redundant information should be avoided in the SUT.

Documentation (Feb-March)

Sources and methods for the present calculation of SUT products should be documented in a systematic way. A suggestion for a documentation sheet to describe sources and methods for each product in the SUT is made and should be used as a guideline (see the attached example for the product: Salt). This documentation process will benefit the future calculations of NA and will help preserve the information contained in the existing

system. Both the process of documenting and the later use is however also an important method to increase and develop the understanding of the NA calculations among the staff.

Incorporating information not covered by IAF, CEMPRE, GG and RoW

Based on the established classification of products (NP02), the existing SUT for 2002 and the documentation a list should be made of products and transactions in the SUT where special data collection and evaluations has to be made. The technicians not involved with the short-term missions should mainly cover these areas. Important data sources are: Statistics on agriculture, energy, prices, construction, financial sector and NPISH. To ensure operation this work should take access in the existing sources and methods.

Proposed short-term missions

Each short-term mission should have attached one or more NA technicians who will be responsible for preparations, arranging meetings, obtaining sufficient data etc. related to the mission. The NA technician should together with director or head of department be counterpart for the mission.

Mission on System Analysis and design (2 weeks in Feb-March)

This mission has to main purposes:

Analyze and describe the data-flow and procedures in the system:

The existing compilation system should be described from an IT-system perspective all the way from the inflow of data until the resulting publication tables. The available documentation (especially from the STA in July 2003) should be used as a starting point. It is however very important that the resulting description is based on the actual files and procedures in the system and not on the presentation of the system.

Propose overall framework for the 2002-benchmark version of the system:

The consultant should be free to propose what is regarded as the most efficient solution, but it is an advance request that data and calculation procedures are centralized on a server. The proposal should prioritize that the system should be manageable and that processes should be simplified to enable repetitions of the compilation processes with data for new years and with a high level of error protection. I.e. the manual processes and multiple occurrences of files should be minimized. The headline here is think big start small - and keep it simple.

The mission should also evaluate and list the parts of the existing system, which can be expected to be successfully transformed to the new formats of the CN2002 without larger modifications.

Mission on incorporating Household Budget Survey (IAF) (4 weeks in April-June)

Main focus should be on establishing source data for the SUT-transactions: Production, Private consumption, wages and employment. This work should be coordinated with the establishment of new weights for the Consumer Price index. Distributive transactions and

work with detailed variables for other purposes should be minimized. This type of work can be defined as a separate project later if resources are available. The MPF is beginning a project of compiling SAM-matrices - this should be followed closely.

Specific expected results of the mission:

- A dataset with input data for National Accounts SUT specified for products, transaction type and COICOP/branch for the relevant National Accounts variables and supplemental initial data for wages and employment. The dataset should follow the central classifications established by INE staff.
- A translation table between the national and annual totals for 2002 and 2003 calculated by the IAF consultants and the final totals established for use in National Accounts. The table should specify the major differences between the to results classified by main type of manipulation. This table should be included in the mission report.
- A CD with complete documentation of the detailed intermediate results from the initial IAF source data to the final NA-input. The files should be organized in a logical and self-documenting manner.

Mission on incorporating New Business Statistics (CEMPRE) (4 weeks in April-June)

The starting point of the mission should be a summary table with totals distributed on branches for relevant National Accounts variable from the New Business Statistics for the year 2002. This summary table should be produced by DESE.

Especially important for the work with CEMPRE data is the questions of Completeness and classification of units in market/non-market and branches.

To ensure that the most important areas of the economy are covered lists should be made from the FUE covering the 100 largest units measured by: Turnover, sums of wages and employment. The units on these three lists should be investigated and compared to other data sources i.e. the KPMG report of the 100 largest enterprises in Mozambique. The result from working with the list should be a list of approximately 50 enterprises with the highest importance for the Mozambican economy from a National Accounts point of view. For the future use of data it is important to try to obtain complete accounting statements for these enterprises. Staff at INE could increase the efficiency of the mission by preparing this work.

Specific expected results of the mission:

- A dataset with input data for National Accounts SUT specified for products, transaction type and branch for the relevant National Accounts variables and supplemental initial data for wages and employment. The dataset should follow the central classifications established by INE staff.
- A translation table between the national and the annual summary totals for 2002 from the CEMPRE and the final totals established for use in National Accounts. The table should specify the major differences between the to results classified by main type of manipulation. This table should be included in the mission report.

- A CD with complete documentation of the detailed intermediate results from the initial CEMPRE source data to the final NA-input files. The files should be organized in a logical and self-documenting manner.

Mission on incorporating foreign trade and RoW (3 weeks in April-June)

A National Accounts expert in RoW who should work closely together with the short-term expert covering the foreign trade mission in DESE should perform this mission.

The mission has to main subjects:

1) Foreign trade in goods (DESE)

The quality and coverage of the foreign trade statistics should be investigated in close cooperation with the short-term mission in DESE in this area. If this mission is performed after the IAF and CEMPRE missions the results from these missions should be used to evaluate the quality of the import and export results in the SUT.

2) The rest of the transactions on the RoW including trade in services (Banco Moçambique).

Mission on incorporating General Government (2 weeks in April-June)

Main focus on SUT: production, consumption and taxes on products

Secondary focus on distributive transactions and net lending/borrowing

Investigate for: Completeness, double counting, correct classification by sectors (market/non-market)

Estimate consumption of fixed capital

Calculate Non-market Production and consumption of GG

Guidelines for constant price calculation

The calculation system should take as input the Accounts of General Government from MPF and possibly supplemental information from FUE. The output should be Production, Consumption of General Government, and Taxes on products to be used in the SUT.

SUT (September - October) (LTA or possibly STA)

Balancing and Finalizing Compilation of 2002 (and 2003?)

Depending of the status of LTA support this could be assisted with long or short-term support.

Publication (LTA or possibly STA)

Some support is necessary to establish a publication system. The final results from the National Accounts compilations should be collected in a separate database, which is the basis for publications.

Appendix 2: Initial considerations on calculating new benchmark and changing the base year in National Accounts

Establishing a new benchmark year is a complicated process and needs careful planning. Below are subjects to consider in planning the new calculations in National Accounts (NA). The purpose of the list is to ensure that all relevant subjects are taken into account. It is important to realize that the final plan for the calculations will not necessarily include all the areas discussed below. The final plan must be a result of the common and balanced priority of user's needs, the quality of the NA estimates, the possibilities for future regular production and the time and resources available for the compilations. The main subjects are:

- I. Establishing the new benchmark for 2002
 - a. Changes in external sources effecting the NA calculations
 - b. Change of calculation methods and introduction of new elements
 - c. The scope of future current compilations and publications
 - d. Revision of the present National Accounts Software System
- II. Backward calculations to ensure time series data for 1991-2002
 - a. Establish the scope of backward calculations
 - b. Asses extend of data revision of the existing NA results 1991-2002

I a Changes in external sources effecting the NA calculations

Improvements in data sources and changes in classifications since the current base-year 1996 was established increases the need for changes in the NA system.

1. New classifications in source statistics (Branches on 'Novo CAE' based on ISIC rev 3 and Products on CNBS)
2. Major improvement of coverage of business statistics (CEMPRE)
3. Revisions and improvements in sector classification of units (CEMPRE)
4. Household budget survey 2002/03 (IAF)
5. COICOP in CPI and IAF
6. New Balance of Payment (BoP) statistics from Banco de Mozambique (BM) according to IMF 5th manual
7. Improved information on insurance
8. Project on Government Finance Statistics

The above changes makes it increasingly difficult to transform the source statistics to National Accounts purposes and will over time bias the National Accounts estimates from the actual observations in the economy and thus make it increasingly difficult for the National Accounts to maintain coherence with other observations of economic behaviour.

I b Change of calculation methods and introduction of new elements

As a general rule the specific calculation methods were established with the 1996 benchmark and have been kept unchanged over time to give priority to the comparability of the NA in a time series perspective. The change of benchmark year is an opportunity to revise the existing methods of calculation and to introduce new areas of calculation. Implementation of the following subjects should be considered:

1. Inclusion of VAT
2. Specification of own-account production of gross fixed capital formation
3. Removal of own-account production of intermediate consumption from SUT
4. Reclassification of activities for own account production
5. Explicit inclusion of hidden and illegal economy
6. Calculations of wages and salaries in kind
7. Treating input of FISIM as a separate branch
8. Revise the calculation of non-market production in S13 and S15
9. Treatment of taxes on products other than custom duties and VAT
10. Revision of production boundary for all sectors
11. Inclusion of branch specification in SUT

I c The scope of future current compilations and publications

It is important to plan the development of NA not only as a one time achievement but to take into account a realistic scope for a future current production. Users demand national accounts results on a regular basis to provide information on the economic development. Regularity, comparability and timeliness are very important quality features of a National Accounts system. A current production of National Accounts is dependent on a regular supply of source-data and an organisation who can compile the accounts. The scope of the future current production should reflect the expected data sources and available human resources.

The scope of the benchmark calculations of 2002 should be considered carefully regarding the level of detail in products and branches as well as the level of specification on institutional sectors. Furthermore the ambition level on consistency and restrictions in the system regarding the cross classification of industry and sector (CCIS), the transaction matrices (MATOP) and the integrated economic accounts (IEA) should be evaluated against users needs and the available resources for compilation. It is an option to make more detailed calculations for the bench-mark year than for the future current production. Emphasis should however be on securing the regular future compilation.

I d Revision of the present National Accounts Software System

Some of the above mentioned changes in sources will have consequences for the compilation system. It should be considered what strategy to follow regarding the software system used to assist the NA compilation. Two extreme possibilities can be used to illustrate the considerations:

1. Keep the existing software system and only introduce the necessary system changes which, is a consequence of the changes in sources and classifications.
2. Introduce a new software system and start all calculations from scratch in 2002.

Some disadvantages have been observed in the present organization of the software, and room for improvement exist. Changes in the software system will not necessarily result in changes to the NA results but it cannot be excluded that this will cause some data revisions and changes in methods. Regardless of the choice of software strategy the experience shows that there is a need to simplify the procedures and extend the documentation in the compilation system.

When publishing the results based on 2002 there is an obvious opportunity to revise the design of publishing tables. This will clearly communicate to the users that at new version of NA is made and at the same time it is an opportunity to minimize the confusion among users when introducing new formats and issues in the published tables.

II Backward calculations to ensure time-series data for 1991-2002

One of the main features of the National Accounts is the ability to study the changes in economic phenomena over time. On the other hand it is a very resource demanding task to recalculate the NA estimates for a long period. There is no doubt that users will demand some kind of retropolation of the time series.

II a Establish the scope of backward calculations

The results from a separate NA compilation of 2002 in current prices with the above mentioned improved data-source will deviate from a calculation with similar methods using the existing bench-mark of 1996. This deviation is a result of an increasing tendency of the NA results to 'drift' when increasing the distance from the benchmark year. It is probable that this tendency will be relatively greater on the detailed results. When changing the base year of constant price calculation the result will be a change of the structure and growth rates in real terms. This is a technical result of the change of price-weights (the so called Gerschencron effect).

All in all a retropolation of the new 2002 benchmark year with existing growth rates will result in unbalanced estimates for the previous years. It should be considered how to treat these discrepancies. For instance a recalculation could be made in full detailed SUT with a subsequent new balancing at constant prices. Alternatively selected aggregated series could be recalculated with chained indices without balancing supply and use. Other combinations and solutions are possible and should be considered.

The following principal solutions can be considered:

1. Base year from 2002 onwards – no backward calculation
2. Base year from 2002 onwards – backward calculation on an aggregated level to 1996

3. Base year from 2002 onwards – detailed backward calculation in SUT

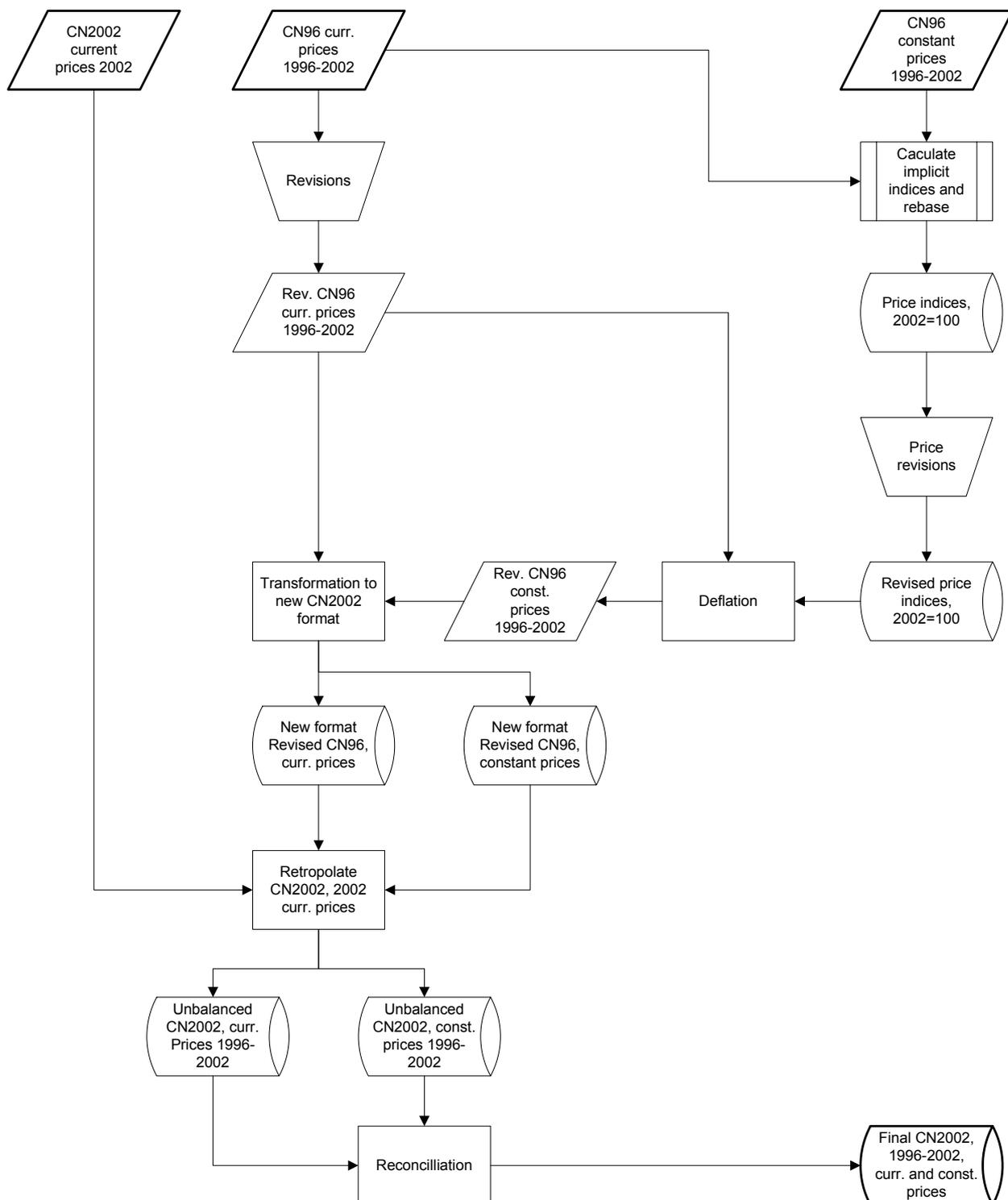
Solution 1 is probably not acceptable for users and solution three is the most resource demanding.

II b Asses extend of data revision of the existing NA results 1991-2002

Retropolation is also an opportunity to correct previous errors and to supplement the previous estimates with new knowledge. In this way the previously estimated growth rates can be improved before using them to estimate the new NA results. Already known problems in previous calculations can be collected and a list of potential revisions made. Feed back from users should also be included in evaluation of the need to revise the existing results.

In the diagram below is a suggestion on how to organize a retropolation. It is usable for any level of aggregation.

Recalculating CN96 for 1996-2002



Appendix 3: National Accounts in INE - suggestions on the way forward

(this note was prepared in September 2003)

The present system for production of statistics on the National Accounts (NA) presents a number of challenges that have to be encountered in order to secure the regular production of quality estimates in the near future. The planned change of base year (2002) is a troublesome operation and it makes it therefore even more urgent to analyse the situation and find out how it can be improved.

This paper contains a rough overview of the present situation including infrastructure and produced output. It is by no means a complete description of the situation. It will be necessary to continue to work on this in order to have a description that is commonly agreed on and sufficiently detailed. This common agreement can be the base from which the ambition level and future planning of activities can be made.

History

The present system for compilation of national accounts is designed and implemented by expatriate experts during a long range of year. It is founded on UN principles and theories (Mr. Van Tongeren), partly designed by Ms Carmen Reis and implemented by Mr Antonio Lazo (during 4-6 years). Other experts have from time to time also been involved.

Production of NA

Year	Status	Published	Coverage
1996	Final	Yes, 2000	Integrated NA
1997	Final	Yes, 2000	Integrated NA
1998	Final	Yes, 2000	Not complete
1999	Final		Not complete
2000	Preliminary		SUT and partly institutional sectors
2001	Preliminary		SUT and partly institutional sectors
2002	Preliminary	Internet, 2003	Main aggregates

The tables for the full scope of the system have been published as a one-time achievement in 2000 in *Contas Nacionais 1999*. The full system has never been in regular production but has been used to produce SUT-tables for dissemination of main results. The level of dissemination since 2000 is not quite clear. For the time being the main aggregates are published on the Internet.

The Present Software System

The software system consists of a very large number of Excel spreadsheets¹. It is implemented on 11 different PC's with various capacities and facilities. All PC's are connected to the internal network and it is possible to transfer files between the PC's. There is a very large number of links to folders within the spreadsheets as well as links between spreadsheets both in the actual PC and other PC's in the network.

It is a very complex system and it is very easy to make changes in the spreadsheets and therefore also almost unavoidable to make mistakes. The fact that the system is located on several PC's makes it necessary with a rather intense traffic between the PC's. This is also an obvious obstacle since the updating procedures have to be initiated manually and there is a great risk that different versions of what should be the same information can be stored in the 'decentralized database'.

There is an overall description but not a detailed one of the system and descriptions and guidelines to working procedures are lacking.

The present staff is quite naturally often in doubt on how to operate the system and it is therefore likely that errors have crept into the system during the use. It has also been reported that some modules are missing. Furthermore the properties of the system and the way it is operated have the unfortunate side effect that errors and complexity is accumulated over time making the system increasingly difficult to manage.

On the other hand it must not be forgotten that considerable information on sources and methods has been added to the system over the years of development and operation. The value of this 'knowledge capital' should not be underestimated. It is important to find a way to preserve this knowledge for the future.

It is obvious that it is necessary with a radical change of the present production situation. It is on the other hand probably not practically feasible to abandon the existing system, at least not within a short time.

The Present Hardware System

11 PCs are connected in a network with the intention of mutual access to file transfers. There is no central server. The actual condition of the PC's is generally poor. Several PC's do not have sufficient capacity. Often the access over the net is interrupted or some of the PC's cannot be recognized. Occasionally the technicians experience denial of access to their own files. The PC's are all of different model and capacity with variations in the setup. Printing facilities are periodically interrupted because of missing toner and paper. Generally the facilities for the current production must be characterized as unstable.

Staffing situation

The present staff consists of 9 technicians with academic degrees. 4 have less than one year's experience. The actual number of persons available for the operation of the system

¹ According to a measurement in 2002 the NA system consists of approximately 49.000 files.

is much lower since other activities also have to be taking into account (training, sickness, external seminars, travels as well as other duties). It is not expected that more people will be allocated to the NA Department. At present there is a gap between the capabilities of the staff and the competence demanded to operate the system. Considerable time and resources has been put into human resource development through courses and internal seminars on general NA subjects in the first semester of 2003. Nevertheless it was assessed in July that the skills of the staff still is insufficient to operate the system². It is therefore advisable that the future training of the staff is focused more directly on the tasks in the compilation process. This can be done with a systematic and planned approach to the activities.

Organisation and planning

The long-term planning of the work in the NA Department does not follow a systematic operational activity plan. In order to operate a very complex NA system with several employees the work should be based on a general understanding and acceptance of a well-defined organisation, activity planning and a clear division of responsibility. It is also necessary to take into account that extraordinary activities (not foreseen seminars or training) can have a negative impact on the daily work. The level of ambition in the NA production is very high in relation to the available competence in the department. This has the unfortunate effect that much effort is wasted on activities the staff is not able to finalize. On the other hand the development of the NA in Mozambique has received foreign support over several years and generally has a good basis of human resources. A realistic planning of the current production should focus on matching the level of ambition with the skills of all the available local staff and should not rely on foreign LTA assistance in the long run.

Suggestions

The above mentioned issues regarding system, staffing, organization and planning cannot be solved independently. The activities should be organized in a systematic way which integrates the HR-development, the current production and the development activities in a predictable timetable.

It is suggested that two short-term missions will be conducted with the purpose of preparing long-term strategic plans for the production of NA. Using the background papers mentioned below as a starting point the short-term missions should make an assessment of the present situation in the National Accounts and develop plans for the future.

It will include a status description of the present system:

- Its advantages and disadvantages
- The possibilities for the further use (if the whole system or only parts of it should be used)
- The possibilities to further develop the system (and in which directions)

² Report of a consultancy mission to the National Statistics Institute, Department of National Accounts, Mozambique (7-25 July 2003), A. Lazo

- An evaluation of the scope of NA dissemination

The long term strategic plans will define a high ambition level taken the preconditions in INE into account (expected staffing situation, data availability and other necessary resources).

The strategic plan for the future NA system will further on include suggestions on

- How to overcome the change of base year (including suggestions on which level 1998-2002 should be finalized on)
- Recommendations on future short-term missions
- How the quarterly NA can be invoked in the process
- A tentative time table for the development activities
- Suggestions for the future internal working procedures
- Other relevant items for the future NA production in INE

The mission(s) should be taken care of by two high level experts with a long experience in the practical successful work with NA preferably in various environments. The length of the missions is estimated to 2-3 weeks each.

Background papers for the future work

- Report of a consultancy mission to the National Statistics Institute, Department of National Accounts, Mozambique (7-25 July 2003), A Lazo
- Upgrading the working environment in National Accounts
- Initial considerations on calculating new bench mark and changing base year in National Accounts

Appendix 4: Proposal for documentation in SUT

P037 Sal não Refinado

Main characteristics of the product:

Salt is mainly produced within Mozambique and used as final consumption by households. The final private consumption of salt per capita cannot be expected to change much over time. Foreign trade in salt is very scarce. In case of large changes in source statistics the causes should be investigated very carefully.

Changes in industrial structure might cause major changes in the intermediate consumption of salt. Intermediate consumption of salt is typically used in food processing industries for conservation purposes, and major changes in the industrial structure of these industries might signal a change in the use of salt. If such changes should occur consequent changes is also expected in production and/or imports.

Data sources:

Only insignificant sources from foreign trade statistics exist on values.

The HBS96/97 provides information on the level of private consumption of salt in the base year. No direct information on production and consumption is available between base years. Volume and price information only exist indirectly. See Assumptions.

Assumptions:

The consumption of salt per capita is assumed to be constant so the growth in real terms is based on the growth of the population. The estimated change in consumption is also used as an approximation of the change in production.

Prices are assumed to develop approximately as the general index for agricultural products.

Evaluation and adjustments:

Unless new knowledge gives specific reasons for adjustments, the development of the production and consumption of salt it is expected to be very stable.

Most important things to check in this equilibrium:

- All references and formulas should be correct.
- Evaluation of figures should be made on columns: Vkyyajus, Vyyajus.
- In general this equilibrium should be very similar to the year before.
- Compared to the year before no new type of use should appear without reason.
- There is no gross fixed capital formation of salt.
- The total supply/use in real terms should grow approximately as the population.
- The price index of total supply/use should change approximately as the average price index for agricultural products.
- In constant price values the trade and transport margins as a percentage of the sum of private consumption purchases and exports should be more or less the same as last year.

Notes:**References:**

Transcode	Transtext	Value	Unit	Source
P1110	Produção empresarial	Q		IC Based on population growth. No direct statistical information available.
P1110	Produção empresarial	P		IC Average CPI for agricultural products
P1110	Produção empresarial	V		R Residual
P7000	Importações (cif)	Q		R Residual
P7000	Importações (cif)	P		I Index from foreign trade subsystem
P7000	Importações (cif)	V		I Foreign trade statistics.
D2120	Dereitos a importação	Q		E1 Residual
D2120	Dereitos a importação	P		R Residual
D2120	Dereitos a importação	V		R Residual
P0110	Margens de comercio	Q		R Residual
P0110	Margens de comercio	P		R Residual
P0110	Margens de comercio	V		R Residual
P0120	Margens de transporte	Q		R Residual
P0120	Margens de transporte	P		R Residual
P0120	Margens de transporte	V		R Residual
P2020	Procura intermedia, compras (p.c.)	Q		IC Based on population growth. No statistical information available.
P2020	Procura intermedia, compras (p.c.)	P		IC Average CPI for agricultural products
P2020	Procura intermedia, compras (p.c.)	V		R Residual
P3210	Consumo privado, compras – urbana	Q		IC Based on population growth. No statistical information available.
P3210	Consumo privado, compras – urbana	P		IC Average CPI for agricultural products
P3210	Consumo privado, compras – urbana	V		R Residual
P3220	Consumo privado, compras – rural	Q		IC Based on population growth. No statistical information available.
P3220	Consumo privado, compras – rural	P		IC Average CPI for agricultural products
P3220	Consumo privado, compras – rural	V		R Residual
P5210	Variação de existencias, productor	Q		Possible
P5210	Variação de existencias, productor	P		Possible
P5210	Variação de existencias, productor	V		Possible
P6000	Exportações (f.o.b.)	Q		R Residual
P6000	Exportações (f.o.b.)	P		I Index from foreign trade subsystem
P6000	Exportações (f.o.b.)	V		I Foreign trade statistics.

I Empirical indicator: A=best, B=acceptable, C=must be improved

R Residually calculated

E Estimated using fixed formula (1,2,...)

Appendix 5: Proposal to upgrade working facilities in National Accounts

(June 2003)

Working with National Accounts (NA) is in its nature very cooperative and is dependent on extensive coordination and communication between colleagues because the estimations of one technician influence the work of others in many ways. The compilation of NA is also very complicated task involving processing of huge files from many different sources in comprehensive calculation systems putting high demands on staff and equipment. It is also a well-known problem in most countries that NA faces problems of maintaining proper HR because the skilled technicians are an attractive work force.

The best method to facilitate high quality of work, motivate staff and create resistance to knowledge loss from resignation is to develop a working environment with continuous knowledge sharing. Together with sufficient technical equipment this is an important precondition for a well functioning National Accounts department.

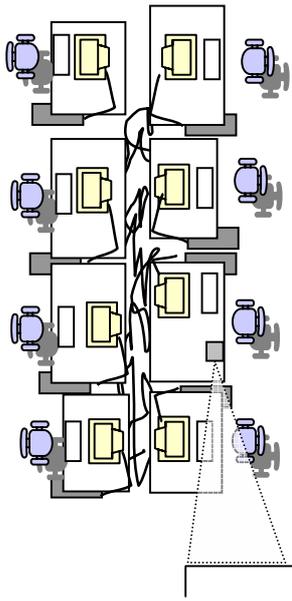
Present situation

For the time being the staff of the National Accounts Department is in a positive process of developing Human Resource capacities and adopting new colleagues concurrent with an intensified pressure on current production and development activities. However there are obstacles to gain the full potential of these efforts.

The condition of 8 computers is insufficient. 4 are practically not functioning and the other 4 have insufficient capacity to serve a good national accounts technician. There is an urgent need to renew 4 computers at once and it will be necessary to replace 4 more in the near future.

The present design of the software system has the disadvantage of accumulating data and errors and as such the technical problems is growing over time making a major restructuring unavoidable in the near future. To ensure the simultaneous current production this must be done systematically over a long period with support from the IT-department. The most probable solution will involve the purchase of a dedicated RAID-server.

Figure 1



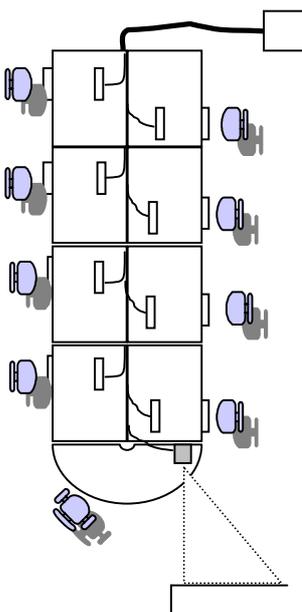
To facilitate the need for cooperation and communication the present physical working environment is organized around a large ‘table island’. It is a very good idea and the arrangement is principally very suitable for this type of work (Figure 1). However the practical possibilities with the available equipment do not take full advantage of this organizational setup. Over time new tables, computers, monitors, UPS etc of uneven sizes have been added to accommodate. The result being that the physical environment has become rather messy. The ‘table island’ now consists of eight odd tables and the computers and monitors are using up a large part of the space. The cabling is a result of development over time and is rather chaotic and difficult to access. The chairs constantly conflicts with the cables making cleaning and maintenance of the floor difficult. A projector is used frequently and is (apart from being a tool for presentations) very useful for general knowledge sharing and demonstration of ideas and working methods in spreadsheets.

As the projector is only temporarily installed it has become a regular task to mess with cables and set up the projector.

Proposal for upgrading

With a little planning it is possible to upgrade this working environment with very low costs more than half of which is costs already expected because of the urgent need to renew the computers. In stead of replacing the necessary computers one by one and install them on an ad hoc basis the investment is utilized better by including it in a larger plan for the working environment. It is important not to underestimate the importance of the relatively small extra costs of cabling and arranging the setup.

Figure 2



It is proposed to buy new tables and setup the new computers in one planned installation. Ideally only keyboard, mouse and monitor should be on the table. No computer equipment should be placed on the floor. The main processor units and the UPS should be placed in a rack. The projector should be installed in the table and permanently connected to one pc to make it possible to switch it on in an instant letting every technician use it to demonstrate something when the need arises (Figure 2).

From day to day the tables will be working tables for 8 persons and a meeting table for 10-12 persons. On special occasions it will be possible to clear the desk and put in 8 extra chairs and it can serve as a meeting or workshop facility for 16 people.

The total estimate of the major purchases needed can be specified as:

8 pc work stations with flat plasma screens	12 000\$
1 projector	2 500\$
Proper cabling and mounting in racks	2 000\$
Combined working and meeting tables	2 000\$
8 chairs to fit the table	2 400\$
Bookshelves	1 000\$
Total	23 500\$

It is proposed to change the working environment in an organized manner over a short period and at the same time take the opportunity to clear out the present facilities and organize the archives and other materials. This could be done in a few days with a joint effort of the staff.

If all materials is ready this could be organized in August and mark the beginning of a period of intensified work with the finalizing and publishing of the national accounts results and in this way also work as a refreshing and motivating factor in the department.

Appendix 6: Revision and publishing plan

Publishing period (ultimo)	Calculation period				Premiere	
	Final Annual	Preliminary Annual	Provisional Annual	Quarterly	Annual	Quarterly
2003q1	1996-97					
2003q2		1998-2001	2002		2002	
2003q3						
2003q4		2000-02				
2004q1	2000					
2004q2		2001-02	2003	1996q1-2003q4	2003	
2004q3				2004q1		2004q1
2004q4				2004q2		2004q2
2005q1	2001			2004q3		2004q3
2005q2		2002-03	2004	2001q1-2004q4	2004	2004q4
2005q3				2005q1		2005q1
2005q4	1996-2003*	2004		1996q1-2005q2		2005q2
2006q1				2005q3		2005q3
2006q2			2005	2005q4	2005	2005q4
2006q3				2006q1		2006q1
2006q4	2004			2006q2		2006q2
2007q1				2006q3		2006q3
2007q2		2005	2006	2005q1-2006q4	2006	2006q4
2007q3				2007q1		2007q1
2007q4	2005			2007q2		2007q2
2008q1				2007q3		2007q3
2008q2		2006	2007	2006q1-2007q4	2007	2007q4
2008q3				2008q1		2008q1
2008q4	2006			2008q2		2008q2
	*New base year					

Appendix 7: Example of principal work programme

Work program: Quarterly National Accounts 2003Q2

Working period: September 2003

Coordinator: NN

Team: NN1, NN2, NN3...

Mon	1	Coordination meeting 13.00-14.00 Team status: settling responsibilities, adjusting work program Preparation of initial quarters and working files Updating list of data-sources and contacting data suppliers
Mon	8	Coordination meeting 13.00-14.00 Status of available data sources Preparation of substitutes for source data Final fixing of publishing date in advance release calendar
Mon	15	Coordination meeting 13.00-14.00 DEADLINE SOURCE DATA Check procedures and final adjustments on source data files
Wed	17	Source data files ready 8.00 Calculation of initial QNA estimates Printing and distribution of analytical tables (av1) Error correction procedures
Fri	19	Error corrections ready 8.00 Compiling unbalanced estimates Printing of analytical tables (av2) Coordination meeting 13.00-14.00 Analyzing results and coordinating adjustments
Tue	23	Files with adjustments ready 8.00 Printing of analytical tables (av3) Final balancing
Wed	24	Final balancing Seasonal adjustment Printing publishing tables and figures (pv1)
Thu	25	Writing draft comments for press release
Fri	26	Draft press release and publishing tables ready 8.00 Discussion of press release 9.00-10.00 Finalizing press release and publishing tables in pdf-format (pv2)
Mon	29	Internal DEADLINE: publishing material 10.00 Final approval of results
Tue	30	Publishing of results 9.00

Appendix 8: DRAFT Initial project for compiling Quarterly National Accounts in Mozambique

(13 December 2002)

To Said and Monica for discussion in January

Overview

Following is an overview of the activities necessary to develop the experimental QNA and the reduced calculation system. Below this overview is a short explanation of each activity. Each activity should be regarded as a small project. The projects are ordered according to dependency – i.e. 2.2 should be finalized before 2.3 etc.

It is important that the development of the system is regarded not only as a collection of computer programs and calculation systems but also as the establishment of a complete sustainable production system including the organizing of staff and establishing of working procedures, publishing and revision policy, communication with suppliers and users etc.

After initiating the project meetings should be held with the relevant persons every week and detailed s of performing the activities should be discussed and agreed upon before each activity is started.

It will be necessary with a high degree of flexibility when performing the activities as methods may develop according to the results of previous activities.

Discussion and adjustment of project plan

Detailed discussion of the possibilities of this drafted project plan and other suggestions for compilation methods should be conducted before finalizing the project plan. Furthermore detailed planning of participation by staff of national accounts and settlement of contacts with users and data suppliers etc. should be considered. The revised plan will be the basis for initiating the project in the National Accounts Department.

Scope of calculations

Realizing users needs (Main users, GDDS, LDB, Bayesian)

The scope of calculation will take the table 5.8 in 'Contas Nacionais 1999' as a starting point; this is the recommendation of a short-term mission in September 2002. After consulting main users like 'Banco do Moçambique' and 'Ministério do Plano et Financia', considering the demands for GDDS and the Live Data Base and coordinating with the Dutch development of the Bayesian approach and the present reduced model of National Accounts the scope of calculation and publishing will be assessed.

Defining and listing National Accounts variables

The decisions on scope are implemented through a detailed list of national accounts variables including level of detail in branch and product dimensions and a specification of the unique reference to the placement in the present annual system. This list is later used in activity 3.1.

Annual and quarterly linking/aggregation

Operational files of classifications and 'keys'

Quarterly National Accounts (QNA) is basically a projection of the detailed Annual National Accounts (ANA) but on a less detailed level. To facilitate this projection and to ensure consistency through a fast automatic updating procedure when ANA is revised it is necessary to have a system to aggregate the ANA to the working level of the QNA. The core of this system will be a transformation 'key'.

Furthermore a database of classification codes needs to be established for automating later stages of the compilation process.

Programming of aggregation system

Establishing of an automatic system to collect the data from the present ANA-system and to transform it to the format of the QNA using the defined 'keys' mentioned in 3.1. This system may have to be supplemented ad hoc by data from the most recent ANA years, as the level of detail is not the same for Final ANA and Preliminary ANA.

Aggregating ANA to QNA format

The actual aggregation of the ANA data for the period 1996-2001 into working files to be used in ensuring the time-consistency in the QNA mentioned in 5.7 below.

Sources

Research for available data sources 1996q1-2001q4

Organized into areas of responsibility according to the present organization of the ANA it is suggested, that the staff of the NA department take contact with suppliers of source statistics to investigate the possibilities of collecting quarterly or monthly data for the period 1996-2001. The collection will be coordinated and guided through a special inquiry form to ensure that a complete answer is obtained from the suppliers (also non response). In some cases it will be feasible to have longer meetings with the suppliers. In the long run the goal is to establish a good regular communication with suppliers (who are often also users) to ensure timelines, quality and a current feed back on changes in the primary statistical sources.

Research for available and expected source data 2002q1

This process is similar to 4.1 and should be organized the same way but will also comprise the planned production of statistics in the years to come. This material will help the future planning of the implementation of QNA.

Designing Input database (consistent with annual)

The data sources in time-series will be organized in a database covering the period from 1996q1 and will comprise all types of relevant information to describe the variation of the ANA within the year to facilitate the QNA compilation. Main types of information will be on current values, prices and volumes. The database is best kept in the format of quarterly changes (qt/qt-1).

Drafting plan of delivery, incomplete areas, responsibility and contacts.

Based on the results of 4.1 and 4.2 a plan for timeliness of the future deliverance of quarterly indicators will be drafted. This plan will include the responsible persons and whom to contact in the supplier organizations and departments. The areas where no data is available will also be listed here. This plan will facilitate point 4.7 below and will facilitate the assessment of the timeliness of the future production of QNA.

Collecting incomplete Quarterly unadjusted time-series of indicators for v, p and q

The data obtained in 4.1 and 4.2 will be collected in the database from activity 4.3.

Substitution and estimation (Filling in missing values)

Some areas will lack data, and the expectations in advance of obtaining sufficient data is very low especially for the early part of the period. To be able to develop the system it is however necessary to continue with a balanced (full) dataset. In the areas where data is lacking substitutes will be used with an expected development similar to the indicator missing. In cases where substitutes are not available either mathematical methods like 'Denton-smoothing' or repetition of seasonal patten can be used.

Specify demands for primary statistics

Based on results from 4.4-4.6 a list of specific wishes/demands to primary statistical producers regarding content and timeliness will be drawn up.

Calculations

Special calculations

Some calculations have special definitions in the SNA i.e. the cost-approach for Consumption of general government and should be treated separately. Both for special and general calculations in 5.2 computer programs must be established to facilitate calculation procedures with few or no errors.

Work in progress

Changes in stocks is a special problem in both annual and quarterly accounts mainly because it is a result of small changes in large figures in both current and constant prices. In quarterly accounts the subject is complicated further by the inclusion of work in progress, which for quarterly accounts means that vegetable production is calculated as the increase in the value of crops while growing in fields before harvesting.

Trade- and transport-margins

Trade and transport margins lack sufficient sources but the recommended calculation method gives support estimation.

Production and consumption of General Government

The cost approach and the volume of this figure makes it necessary to treat these figures in a separate system.

Taxes and subsidies on products

Especially the constant price value of IVA, which is a direct component of GDP makes it important to treat these figures separately, but also the possibilities of making good estimates in case of missing data makes it desirable.

FISIM

FISIM is what is called 'imputed value' in NA, and consequently have to be calculated separately.

General calculations (extrapolation of $v=p*q$)

Most variables can be calculated by using simple extrapolation and the simple relationship: Change in value = price change * volume change. When available sources are known in greater detail it might be necessary to establish more special calculations than the above mentioned in 5.1.1-5.1.5.

Designing analytical tables for control of results

When the initial QNA is calculated and error-correction procedure must be undertaken. The timeliness calls for a very efficient, automatic and prioritized error-correction procedure and consequently it is very important to have well designed tables for control.

Compiling Initial QNA estimates

After programming the applications for 5.1 and 5.2 the first calculations of the national accounts variables are performed.

The result of this operation is unbalanced QNA which still does not have time-consistency with ANA.

Error correction

By means of the tables from 5.3 a manual analyses and checking procedure ensures correction of errors.

The result of this operation is error corrected unbalanced QNA, which does not have time-consistency with ANA.

Programming time-consistency procedure

Consistency with ANA is ensured through mathematical procedures. Two-step Denton is proposed for practical reasons. The time-consistency calculations are rather complicated and will not change consequently they best performed in a computer program.

Compiling time-consistent estimates

After programming the estimates will be compiled.

The result of this operation is annually consistent but quarterly unbalanced QNA.

Manual final balancing

The time consistency ensures that the sum of the four quarters in each year equals the ANA value but supply does not equal use for each quarter and consequently the QNA for each quarter has to be adjusted.

The result of this operation is consistent balanced QNA.

Dissemination

Designing results database

The final results should be kept in a separate database, which forms the basis for dissemination and further internal calculations. MS Access is suggested, as this software is standard for INE.

Designing publishing tables (pdf examples)

Publishing can be made very cheap through pdf-files. Word documents with tables and text can be transformed to pdf-format and can be published through Internet or e-mail. Pdf-files can also be a basis for printed publications. Pdf-files have the advantage that users cannot change them.

Design could be done in a word-document, which will be the working document. When finalized it can be converted to pdf-format.

Evaluation of results and final approval

Results should be evaluated by a group of National Accountants to ensure the quality of the figures and protect against errors. Results should be reasonable or have a reasonable explanation.

Designing and writing press release (pdf example)

A press release is an efficient way of announcing compilation of new figures. For these experimental calculations an example should be made (but not published) for the evaluation of the complete project.

Appendix 9: Task description and qualifications, National Accounts Advisor

*** General responsibilities and tasks**

The Advisor shall be responsible to assist INE in the elaboration of plans, guidelines and procedures for consolidation of the National Accounts compilation and the continued implementation of the UN System of National Accounts (SNA93) in respect to annual accounts as well as quarterly accounts.

He/she 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 of INE, providing overall assistance, guidance, advice and training related to program-supported activities in order for INE to achieve the timely outputs of the Program.

*** Specific tasks**

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

- Support the improvement of the input data to the National Accounts.
- Consolidate and improve the current production of annual accounts, in order to strengthen their reliability.
- Prepare for the establishment of Quarterly National Accounts after the year 2003.
- Prepare for the production of Quarterly Accounts.
- Assist in the updating the benchmark year from 1996 to 2002 based on the current Household Budget Survey.
- Support the improvement and further development of Integrated Accounts for Non-Financial Corporate Sector.
- Assist to improve the links between national accounts and basic data and also the links between national accounts and policy analysis.
- Assist in developing a Human Resources (Satellite) Accounts as an extension of the Household sector accounts of the SNA;
- Assist in the extension of National Accounts to Financial Accounts and Balance Sheets of the sectors: Financial Corporations (banks and insurance), Government and Rest of the World.
- Assist in developing Social Accounting Matrices (SAM)

*** Qualifications**

- A Master's degree in Economics.
- Working experience within National Accounts corresponding to minimum 10 years experience
- Substantial experience about statistical systems and the development of NA systems in particular.
- Substantial experience with SNA93
- Experience from advisory positions and/or training.
- Adaptability, social sensitivity and respect for a variety of cultures.
- Familiar with Scandinavian development assistance in general.

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

* **Working language**

Portuguese and English

* **Duty Station**

Instituto Nacional de Estatística (INE) Maputo with possible travel up-country to Provincial offices