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RHUDO LEVEL SHELTER AND URBAN DEVELOPMENT DATABASE REPORT AND MANUAL

Contract No. PDC-1008-1-00-9069-00
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Prepared for
Office of Housing and Urban Programs
Agency for International Development

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PREFACE

This document presents a brief report on experiences gained in developing a simple Lotus-based database for RHUDO/NENA that can serve as a prototype RHUDO database. The purpose of this database is to enable RHUDOs to monitor changes in housing and urban development, measure the impacts of Housing Guaranty activities, and track progress in implementing policy changes and programs. The document also serves as a manual for the use and operation of this database.

This assignment was carried out under Delivery Order 14 of Contract No. PDC-1008-1-00-9069-00 with the Office of Housing and Urban Programs of the US Agency for International Development. Jerry Erbach, of PADCO's permanent staff, has been responsible for designing the database and producing all related documents. A concept paper was developed prior to actual work on the database and presented under a separate cover.

The author wishes to thank all those who provided valuable and much appreciated assistance to him during the assignment. In Tunisia, this includes Lane Smith, Doug Heisler, Fathi Kriem, and the support staff of RHUDO/NENA. In Washington, it includes Sonia Hammam and Caryl Ersenkal of the Office of Housing and Urban Programs. Very special thanks is given to Rami and Jamala Smith for the use of their computer during a very critical time in the development of the database.

Field work for the assignment was carried out during December and November of 1990.

RHUDO Level Shelter and Urban Development Database

I. INTRODUCTION

The RHUDO level database has been developed as a "stand alone" system using Lotus 1-2-3 Version 3. It also can serve as the "front end" to a more sophisticated and/or powerful RHUDO database to be developed in the future, or as the "receiving end" for a host country-supported data management system such as the one currently under development by Tunisia's Ministry of Plan. While databases built on electronic spreadsheets are limited in their size and reporting capabilities, they are considerably easier to operate, encourage greater user involvement, and provide analytical and graphing capabilities that are not found in most relational database programs.

Basic operations of the RHUDO level database have been kept simple in order to facilitate its use and make it easy to master by RHUDO professional staff. Only a very basic knowledge of spreadsheet programs is required to access and manipulate the database. There should be little difficulty in adding and sorting data, working with different worksheets in a data file, adding data fields and/or records, and so on. Potential users of the database, however, are encouraged to review the manual for Lotus 1-2-3 Version 3 in order to enhance their ability to work with this program.

Lotus 1-2-3 Version 3 was the most up-to-date spreadsheet program available in the RHUDO/-NENA office in Tunis. It has two capabilities that are particularly important to the RHUDO database and not found in earlier versions of the program. The first is that a file can include several worksheets that are all in the computer's active memory at the same time. This has led to the development of a database using a series of smaller-sized worksheets as opposed to a single large one. The second is that Version 3 allows notes to be attached to individual cells. These notes appear on the data line at the top of the computer screen but not in the worksheet itself. They have been used to identify the source of each item of data in the database.

As currently structured, therefore, the RHUDO database will not work on earlier versions of Lotus 1-2-3 that do not have the multiple worksheet and note-making capabilities of Version 3. If the database is to be used with early versions of Lotus 1-2-3, it will have to be restructured using macro commands to link together worksheets in separate files. Data sources also would have to be identified in a different manner.

II. DESCRIPTION OF THE DATABASE

The primary consideration in setting up the RHUDO database has been to make it as straightforward and easy to use as possible. To achieve this, the database has been segmented into smaller and more manageable worksheets. Smaller worksheets reduce the possibility of getting "lost" in a very large worksheet and making inadvertent mistakes in data entry or manipulation as a result.

The RHUDO database is set-up so that data for different countries is kept in separate files that can be developed and used independently. Suggested file names for countries in the NENA region are: TUNISDB, RABATDB, AMMANDB, LISBONDB and ALGIERSDB. Each country file includes a total of 26 worksheets that are organized and numbered in a similar fashion. This common format will make it easier for RHUDO staff to use country data files and to link together data from different countries in the region. Consolidation worksheets can be established that summarize key country data at the national and policy/program levels. Figure II.1 provides a graphic representation of the way in which worksheets are arranged in the database. Major components of the database include worksheets for data analysis, background data, annual data, Housing Guaranty policy and program indicators, and the description of sources, definitions and range names.

A. DATA ANALYSIS WORKSHEETS

Two worksheets are included at the beginning of each country data file to assist the user in working with the data. The first worksheet can be used for data extraction and analysis in creating reports. It provides several basic formats and formulas for building indicators related to "gap filling", per capita distributions, and proportional changes. The user can develop his own indicators by selecting different data variables to be compared. Similar data can be compared for two different geographic areas or two different data can be compared for the same area. The user is free to determine each variable. This open approach to "user defined indicators" should encourage RHUDO staff to become more familiar with the contents of the database and lead to a better understanding of its significance.

The analysis worksheet also includes several pre-defined indicators that are considered important to the Office of Housing's worldwide monitoring activities. These concern cost recovery for housing finance and infrastructure, private sector investment in infrastructure, acceptable housing, housing with access to water and sewer, and donor assistance. The user decides the geographic areas and years to be considered in each analysis.

The final part of the analysis worksheet provides a simple means for the user to extract individual items of data from the database. One simply has to indicate the geographic area and year for the variable to be extracted.

The second worksheet provides space for the criteria and output ranges that are used in querying and extracting data. Because information in this worksheet relates to macro commands, care should be taken to avoid making any alterations. Putting criteria and output ranges in a separate worksheet minimizes the risk of erasing data in the database. An open-ended criteria range, for example, will erase everything in the worksheet below the output range. A list of field names has been put at the top of this worksheet that can be used as a reference when working with data extraction and analysis.

B. DATA WORKSHEETS

Data worksheets are divided into background data (15 worksheets), annual updates (5 worksheets), and policy and program indicators (1 worksheet).

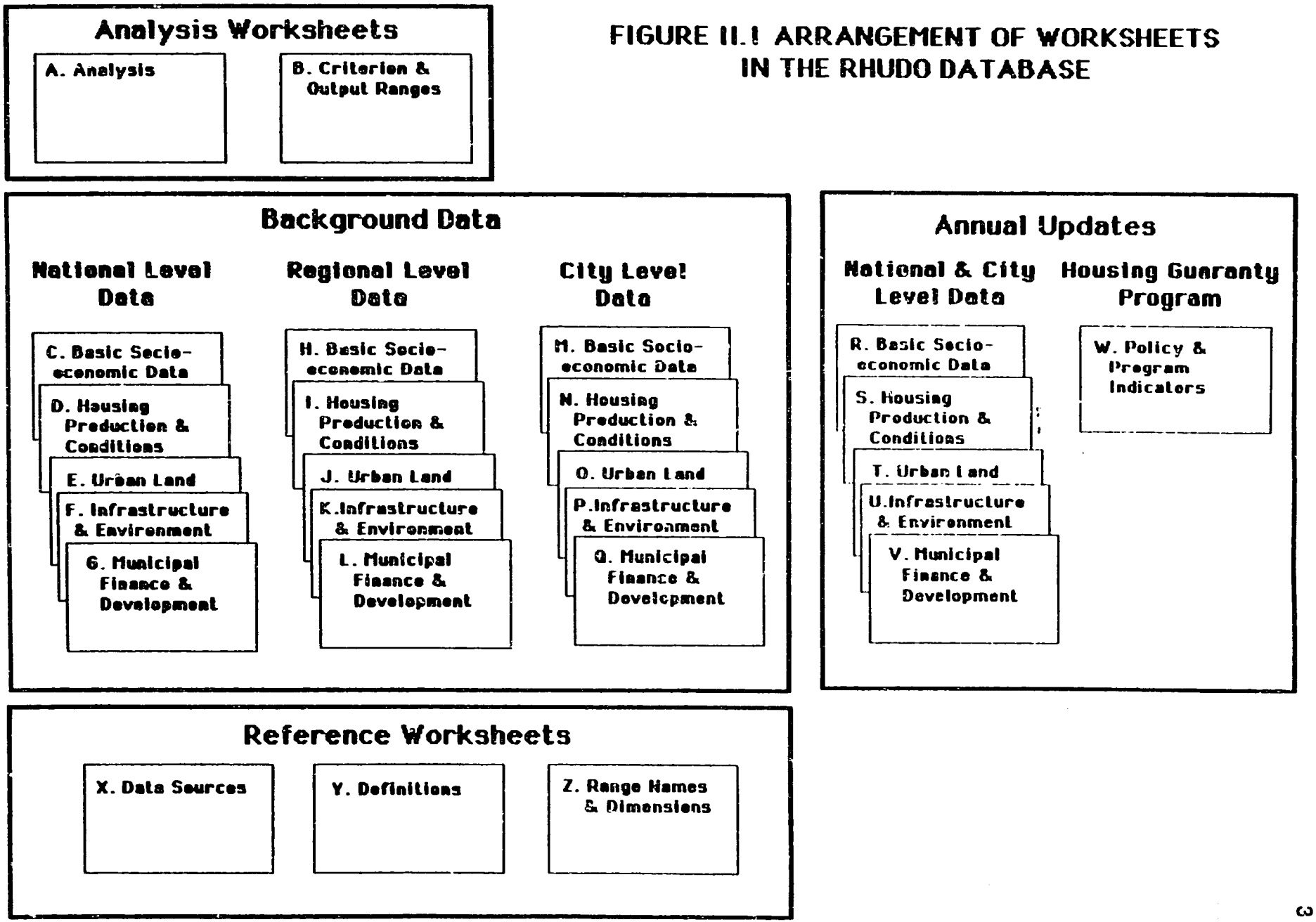

FIGURE II.1 ARRANGEMENT OF WORKSHEETS IN THE RHUDO DATABASE

1. Background Data

Each country file contains 15 spreadsheets for "background data". There are five worksheets for each of three geographic levels: national, governorate (or regional) and city. Data at the national and governorate levels is presented for the entire area as well as for its urban and rural components. The city level worksheet includes those cities that are considered most important in the country's economic and spatial development and/or have a particular interest for USAID programs and activities. Additional cities can be included in the database as desired. Background worksheets for each geographic or spatial level cover data variables grouped according to five categories: 1) basic socio-economic data; 2) housing production and conditions; 3) urban land; 4) infrastructure and environment; and 5) municipal development and finance.

Background data, or "snapshot" data, is to be collected only for specific time periods related to national censuses and/or major surveys. An appropriate interval for these periods is around five years. Macro commands are included within each of these worksheets to assist users in sorting data.

A complete list of data variables and their location in the background and annual data worksheets is presented in Table II.1.

2. Annual Updates

In addition to background data, five worksheets are included in the database for national and city level data that will be updated on an annual basis. These worksheets provide a way to "hold" annual data until it can be cumulated over a given period as well as a place to keep data of special interest. Separate worksheets are established according to the same five data categories mentioned above for background data. Annual update worksheets focus on national level data concerning macro economic conditions, population, and overall municipal performance and finance. They also include detailed data on the financial performance and development of individual municipalities.

3. Housing Guaranty Policy and Programs

Indicators concerning policy change and outputs from the implementation of Housing Guaranty Programs are grouped in a separate worksheet. Policy indicators are based on the Office of Housing's overall policy agenda for shelter and urban development. The database will indicate the status of policy dialogue and change (e.g., "no action", "under study", "approved", "legislation enacted", and "implementation"). Policy objectives apply to all countries in the NENA region in varying degrees.

Program indicators will provide the quantifiable measures of the impact of these changes in policy and the outputs of Housing Guaranty supported activities. This information can be used for reporting to PRE/H, carrying out Mission PIR reviews and internal communications, conducting policy and program strategy reviews, and dialoguing with host country agencies.

Policy and program data also can be compared across countries. Table II.2 presents the basic objectives and list of policy and program indicators.

TABLE II.1. LOCATION OF VARIABLES IN THE RHUDO DATABASE

No.	DATA ITEMS OR VARIABLES	FIELD NAME	BACKGROUND DATA							ANNUAL UPDATES		
			NATIONAL			REGIONAL			CITY			
			TOT.	URB.	RUR.	TOT.	URB.	RUR.	CITY	TOT.	URB.	CITY
	Basic Socio Economic Data											
1	Total population	POPUL	●	●	●	●	●	●	●		●	●
2	Population Growth Rates	AVAN%GRO	●	●	●	●	●	●	●		●	●
3	Number of Households	NBHH	●	●	●	●	●	●	●		●	●
4	Number of Female Headed Households	NBWOMHHH	●	●	●	●	●	●	●			
5	Annual Median Household Income	MEDHHINC		●					●			
6	Active Population	ACTIVPOP	●	●	●	●	●	●	●			
7	Unemployment Rate	%UNEMPLY	●	●	●	●	●	●	●			
8	Employed in Non-Agricultural Activities	NNAGREMP	●	●	●	●	●	●	●			
9	Gross National Product in Current Prices	GNPCR	●							●		
10	Gross Domestic Product in Current Prices	GDPCR	●							●		
11	Gross Domestic Saving in Current Prices	DOMSVCR	●							●		
12	Fixed Capital Formation	FXCPFORM	●							●		
13	Total Annual Investment	TINVSTCR	●						●	●		
14	Annual Investment in Housing	INVSTHCR	●						●	●		
15	Average Annual Inflation Rate	AVANINFL	●							●		
16	External Debt in Current Prices	XTDEBTCR	●							●		
17	Total Credit	TOTCREDT	●							●		
18	Housing Guaranty Financing of Development	HGASSIST	●	●	●	●	●	●	●	●	●	●
19	Total Donor Financing of Development	DONORAID	●	●	●	●	●	●	●	●	●	●
	Housing Production and Conditions											
20	Total Number of Housing Units	TOTNBHU	●	●	●	●	●	●	●			
21	Number of Occupied Housing Units	NBOCUPHU	●	●	●	●	●	●	●			
22	Number of Rooms per Housing Unit	NBRMS/HU	●	●	●	●	●	●	●			
23	Number of Acceptable Housing Units	NBACPTHU	●	●	●	●	●	●	●			
24	Number of Improvable Dwelling Units	NBIMPRHU	●	●	●	●	●	●	●			
25	Number of Substandard Housing Units	NBSBSTHU	●	●	●	●	●	●	●			
26	Number of Owner Occupied Housing Units	OWNOCUHU	●	●	●	●	●	●	●			
27	Number of Housing Units Owned by Women	WOMOWNHU	●	●	●				●			
28	Number of Rental Units	RENTALHU	●	●	●	●	●	●	●			
29	Number of Building Permits Issued	PRMT/PRD	●	●	●	●	●	●	●		●	●
30	Investment in New Housing Units	INVSTNHU	●	●	●	●	●	●	●		●	●

TABLE II.1. (Cont.) LOCATION OF VARIABLES IN THE RHUDO DATABASE

No.	DATA ITEMS OR VARIABLES	FIELD NAME	BACKGROUND DATA: NATIONAL TOT.	NATIONAL URB.	NATIONAL RUR.	REGIONAL TOT.	REGIONAL URB.	REGIONAL RUR.	CITY CITY	ANNUAL UPDATES TOT.	ANNUAL UPDATES URB.	ANNUAL UPDATES CITY
No.	**Housing Production and Conditions**											
31	Number of Units Built by Public Sector	NBPUBHU	●	●	●	●	●	●	●		●	●
32	Number of Units Built by Developers	PRVDEVHU	●	●	●	●	●	●	●		●	●
33	Amount of Housing Loan from Banks	CRDPVBNK	●	●	●	●	●	●	●		●	●
34	Number of Housing Loans from Banks	LNSPVBNK	●	●	●	●	●	●	●		●	●
35	Number of Housing Bank Loans to Women	LNSWOM	●	●	●	●	●	●	●		●	●
36	Number of Housing Loans in Default	NBLNDEFT	●	●	●	●	●	●	●		●	●
37	Total Value of Housing Loans in Arrears	VARREARS	●	●	●	●	●	●	●		●	●
38	Number of Housing Loans in Arrears	NBARREAR	●	●	●	●	●	●	●		●	●
39	Number of Households per Housing Unit	NBHH/HU	●	●	●	●	●	●	●			
40	Number of Persons per Room	NBPER/RM	●	●	●	●	●	●	●			
No.	**Urban Land**											
41	Number of Formal Land Titles during Period	LTIT/PRD		●			●		●		●	●
42	Average Size of Land Titles during Period	AVM2/TIT		●			●		●		●	●
43	Residential Area Planned/Zoned during Period	RESAPLND		●			●		●		●	●
44	Developed Residential Area at End of Period	RESADEV		●			●		●		●	●
45	Vacant Developed Residential Area	VRESADEV		●			●		●		●	●
46	Formally Subdivided Area during Period	ASUBDIV		●			●		●		●	●
47	Informal Residential Areas	INF4RESA		●			●		●		●	●
48	Residential Areas Developed by Public Sector	PUBRESA		●			●		●		●	●
49	Residential Areas Developed by Developers	PRVRESA		●			●		●		●	●
50	Number of Informal Units Regularized	INFHUREG		●			●		●		●	●
	Infrastructure and Environment											
51	Housing Units with Piped Water Connections	HUPIPH2O	●	●	●	●	●	●	●		●	●
52	Housing Units with Sewer Connections	HUSEW	●	●	●	●	●	●	●		●	●
53	Housing Units with Electricity	HUELEC	●	●	●	●	●	●	●		●	●
54	Households with Solid Waste Collection	HHWASTE	●	●	●	●	●	●	●		●	●
55	Investment in Urban Roads	INVSTRDS	●	●	●	●	●	●	●		●	●
56	Investment in Water Supply	INVSTH2O	●	●	●	●	●	●	●		●	●
57	Investment in Sewers	INVSTSEW	●	●	●	●	●	●	●		●	●
58	Investment in Electricity	INVSTELEC	●	●	●	●	●	●	●		●	●
59	Private Sector Infrastructure Finance	AMTPRVINF		●			●		●		●	

TABLE II.1. (Cont.) LOCATION OF VARIABLES IN THE RHUDO DATABASE

DATA ITEMS OR VARIABLES		FIELD NAME	BACKGROUND DATA							ANNUAL UPDATES		
			NATIONAL			REGIONAL			CITY			
No.	Muncipal Development and Financing		TOT.	URB.	RUR.	TOT.	URB.	RUR.	CITY	TOT.	URB.	CITY
60	Budgetted Municipal Revenues	MREVBDGT		●			●		●		●	●
61	Actual Municipal Revenues	MREVACT		●			●		●		●	●
62	Revenues from Property Related Taxes	REVPRPTX		●			●		●		●	●
63	Revenues from Other Local Taxes	REVLOCTX		●			●		●		●	●
64	Revenues from Services and Fees	REVSVFEE		●			●		●		●	●
65	Amount of National Grants to Municipalities	NATGRNTS		●			●		●		●	
66	Amount of Subsidized Loans to Municipalities	AMTSBLNS		●			●		●		●	
67	Number of Market Rate Municipal Loans	NBMKTLNS		●			●		●		●	
68	Amount of Market Rate Municipal Loans	AMTMKTLN		●			●		●		●	
69	Number of Municipalities Borrowing	NBMUNBOR		●			●				●	
70	Debt Ratio	DBTRATIO		●			●		●		●	●
71	Debt Service	DBTSERV		●			●		●		●	
72	Amount of Capital Expenditures	CAPEXP		●			●		●		●	●
73	Amount of Operating Expenses	OPEREXP		●			●		●		●	●
74	Amount of Reserves	RESERVFS		●			●		●		●	●
75	Own Source Financing of Development	AMTOWNDEV		●			●		●		●	●

DATA ITEMS OR VARIABLES		FIELD NAME
No.	Policy and Program Indicators	
1	Description of the Indicator	HGPPIND
2	Policy or Program Indicator	TYPE
3	Housing, Land, Infrastructure or Municipal	SECTOR
4	Year of Data	1989,ETC.
etc.		

TABLE 11.2
LIST OF POLICY AND PROGRAM INDICATORS DIRECTLY RELATED TO HOUSING GUARANTY PROGRAMS AND ACTIVITIES

1. SHELTER

OBJECTIVES

- Improve access to formal housing finance
- Increase formal private sector development of housing for low-income families

POLICY INDICATORS

- Institutionalization of market interest rates
- Reduction of institutional barriers to formal credit for low-income families
- Elimination of constraints to private developer production of low-cost housing

PROGRAM INDICATORS

- Nominal interest rates
- Amount and number of mortgages made by the Housing Bank
- Amount and number of mortgages made by the Housing Bank to below-median income families
- Amount and number of mortgages made by the Housing Bank to female-headed households
- Number of low-cost housing units developed by private sector developers working with the Housing Bank and AFH
- Amount and number of mortgages made by the Housing Bank to finance the purchase of low-cost housing units built by private sector developers
- Amount and number of construction loans made to private developers for the construction of low-cost housing units

2. URBAN LAND

OBJECTIVES

- Create more efficient residential land markets and improve affordability of building plots to low-income families
- Reduce the financial burden on the public sector for the provision of serviced urban residential land
- Increase access to formal tenure for low-income families

POLICY INDICATORS

- Enactment of legislation and zoning requirements to provide a greater number of smaller plots affordable to low-income families
- Establishment of mechanisms for public/private sector partnerships in urban residential land development

Table II.2 List of Policy and Program Indicators, continued

2. URBAN LAND, continued

PROGRAM INDICATORS

- Area of residential land newly zoned or rezoned for plots affordable to families with below median incomes
- Number of plots provided by AFH to low-income families
- Area of sites wholesaled by AFH to private developers
- Number of low-cost units built by private developers on plots provided by AFH
- Area of regularized informal subdivisions

3. URBAN INFRASTRUCTURE AND ENVIRONMENT

OBJECTIVES

- Improve urban services and environmental conditions for low-income families by increasing their access to essential services such as water supply, solid waste, drainage, etc.

POLICY INDICATORS

- Establish upgrading policies and procedures for informal neighborhoods
- Enable private sector provision of some urban services
- Improve cost recovery procedures for urban services
- Improve management and maintenance of urban services

PROGRAM INDICATORS

- Number of secondary cities served by ONAS
- Number of household connections completed by ONAS
- Number of household connections completed by SONEDE
- Number of hectares supplied with essential infrastructure through the program
- Number of households benefitting from upgraded services

4. MUNICIPAL FINANCE AND DEVELOPMENT

OBJECTIVES

- Increase the capacity of municipalities to finance their own urban development by increasing financial resources available to them for capital improvements

POLICY INDICATORS

- Institutionalization of market rate loans for municipal development
- Increased municipal control over the use of "own source" revenues for local development

PROGRAM INDICATORS

- Number of municipalities benefitting from loans through the Housing Bank
- Number and amount of market rate loans made to municipalities
- Number of households benefitting from improved infrastructure and urban services under the HG-004d program

C. SOURCES, DEFINITIONS AND DATA RANGES

Three additional worksheets are included at the end of the database that: 1) list all sources of data and briefly describe the methodologies used to obtain the data; 2) provide definitions of specific data variables; and 3) indicate the name and dimensions of all data ranges used in the database. Range names have been used extensively in the database in order to reduce the risk of error in data entry, sorting and extraction.

III. DATA QUALITY AND UPDATING

A. DATA QUALITY

Data quality is an important concern in the development of any database. For this reason, the majority of data in the RHUDO database should come from "official" sources. This includes the National Census, regular publications of the Department of Statistics, data related to the preparation of Five Year Development Plans, Ministry of Plan reports, and the official publications of other Ministries and agencies. In Tunisia, for example, the Ministry of Plan's future database on housing and urban development may become the single most important source of data in the Tunisia database.

It is important to identify all sources of data in the database so that future users, who have not been responsible for gathering or entering data, will be able to use this data with confidence. Notes will be attached to individual worksheet cells to provide a source reference for each data item. A description of these sources and the methodologies used to obtain data will be provided at the end of the database.

B. DATA AND SOURCE UPDATING

1. Background Data

Data in background data worksheets will be based primarily on the National Census, national level surveys by the Department of Statistics, and other sources of "official" data. The general frequency of the national census and/or major surveys in Tunisia is roughly five years. This interval should be adequate for keeping background data up-to-date.

In many countries, the preparation of each Five Year Development Plan provides a good opportunity to generate a considerable amount of background data. The growing emphasis on national economic planning means that census-taking and/or major surveys increasingly will be linked to data needs for national planning. A basic decision to be made for each country concerns the most appropriate years and intervals for this type of data.

2. Annual Update Data

Data in the annual update worksheets should begin with the first year following the most recent year for background data. A primary consideration in selecting data variables in these worksheets is that data be available on an annual basis. A number of data variables will have to be cumulated over the period to provide necessary background data. Once the period between dates for background data has been completed, the annual update files should be saved separately for future reference and new ones started within the database. Annual update worksheets also provide a way to "hold" useful recent data in the database.

3. Policy and Program Data

Policy and program data in the RHUDO database will be updated on an annual basis. If reporting on Housing Guaranty activities requires a more frequent updating of data, this can be done separately and the yearly totals entered into the RHUDO database. Most of this information will be obtained from host country agencies participating in Housing Guaranty programs.

4. Sources and Definitions

Sources and definitions can be added easily to the database and updated as needed. In cases where data is obtained from a secondary source, both the primary and secondary sources of data should be referenced. New sources of data can be inserted into the list of sources according to the appropriate category. A preliminary list of data source categories for Tunisia is shown in Table III.1. Major categories are: National Census data; official Government data; local agency data; USAID documents and studies; and other sources.

IV. USING THE DATABASE

A. BASIC SUPPORT REQUIREMENTS

The RHUDO database uses Lotus 1-2-3 Version 3 (or higher) as its software support. With varying degrees of modification, the database will run on other worksheet programs that permit the linking of worksheets and notes to be attached to individual cells (e.g., QuattroPro). Data in the RHUDO database also can be transferred to full-scale relational databases such as dBaseIV, Paradox, etc.

Hardware requirements to run Version 3 of Lotus 1-2-3 include an IBM PC/AT, or compatible, having an 80286 or 80386 microprocessor and at least one megabyte of conventional or extended memory. A hard disk storage capacity of at least 5 megabytes is required. The operating system should be DOS 3.0 or later, or OS/2 1.0 or 1.1.

B. BASIC CONSIDERATIONS

The RHUDO database is a simple example of a relational database. It is made up of records and fields that are respectively arranged in rows and columns. Records are distinguished by identification numbers based on geographical locations (e.g., national including total, urban and rural; governorate including total, urban and rural, city, etc.) and the year for which data is presented. Fields include the different data variables related to these geographic areas and time periods.

1. Field Names

Very specific rules govern the way in which field names are to be written. For example, field names must be written in capital letters, have less than 16 characters and contain no blank spaces. Table IV.1 once again presents a list of the actual field names used in the RHUDO database, as well as their full descriptive names. Field names have been kept shorter than the maximum of 16 letters in order to minimize the width and size of the worksheet and economize active memory. While at first they may be difficult to read, these names should become more familiar as one continues to use the database.

TABLE III.1
SAMPLE DATA SOURCE CATEGORIES FOR TUNISIA

1.0 National Census Data

- 1.1 National Census of 1975
- 1.2 National Census of 1984
- 1.3 Intercensal Survey of 1989

2.0 Official Government Data

- 2.1 Annual Statistical Review
- 2.2 Annual IEQ Reports (Institute for Quantitative Economy)
- 2.3 Ministry of Plan Documents
  - 2.3.1 Five Year Development Plan and Review
  - 2.3.2 Ministry of Plan Database
- 2.4 Ministry of Interior
  - 2.4.1 Municipal Reporting
  - 2.4.2 IBRD Sponsored Municipal Development Project
- 2.5 Ministry of Finance
- 2.6 Ministry of Public Works and Housing
  - 2.6.1 Annual Activity Reports
  - 2.6.2 ARRU Survey of Neighborhoods to Upgrade, 1985

3.0 Tunisian Agency Studies

- 3.1 STEG Annual Reports
- 3.2 ONAS Annual Report
- 3.3 SONEDE Annual Reports
- 3.4 Housing Bank Annual Reports

4.0 USAID Documents and Studies

- 4.1 HG Project Documentation
- 4.2 Reports and Consultancies
  - 4.2.1 Urban Implications Study

5.0 Other Sources

- 5.1 Economist Intelligence Service, IMF

TABLE IV.1
LIST AND DESCRIPTION OF FIELD NAMES USED IN DATABASE

DATA CATEGORY	FIELD NAME	DESCRIPTION
DATA "KEYS"	IDNB	Record Identification Number
	LOCATION	Geographic Location
	YEAR	Year of Data
SOCIO ECONOMIC DATA (Category Identifier: ECDEM)	POPUL	Total Population
	AVAN%GRO	Average Annual Population Growth during Period
	NBHH	Number of Households
	NBWOMHHH	Number of Female Headed Households
	MEDHHINC	Average Median Household Income at End of Period
	ACTIVPOP	Active Population
	&UNEMPLY	Unemployment Rate at End of Period
	NNAGREMP	Non-agricultural Employment
	GNPCR	Gross National Product at Current Prices
	GDPCR	Gross Domestic Product at Current Prices
	DOMSVCR	Domestic Savings at Current Prices
	FXCPFORM	Fixed Capital Formation
	TINYSTCR	Total Investment at Current Prices
	INVSTHCR	Total Amount of Housing Investment in Current Prices
	AVANINFL	Average Annual Inflation Rate over Period
	XTDEBTCR	External Debt in Current Prices
	TOTCREDT	Total Credit
	HGASSIST	Housing Guaranty Financing of Capital Development
	DONORAID	Total Donor Agency Financing of Capital Development
HOUSING PRODUCTION AND CONDITIONS (Category Identifier: HOUSPC)	TOTNBHU	Total Number of Housing Units
	NBOCUPHU	Number of Occupied Housing Units
	NBRMS/HU	Number of Rooms per Housing Unit
	NBACPTHU	Number of Acceptable Housing Units
	NBIMPRHU	Number of Improvable Housing Units
	NBSBSTHU	Number of Substandard Housing Units
	OWNOCUHU	Number of Owner Occupied Housing Units
	WOMOWNHU	Number of Housing Units Owned by Women
	RENTALHU	Number of Rental Housing Units
	PRMT/PRD	Number of Building Permits Issued During Period
	INVSTNHU	Annual Investment in New Housing Units
	NBPUBHU	Number of Housing Units Built by Public Sector
	PRVDEVHU	Number of Housing Units Built by Private Developers
	CRDPVBNK	Amount of Housing Loans from Private Banks
	LNSPVBNK	Number of Housing Loans from Private Banks
	LNSWOM	Number of Housing Loans to Women
	NBLNDEFT	Number of Housing Loan Defaults
	VARREARS	Total Value of Housing Loans in Arrears
	NBARREAR	Number of Housing Loans in Arrears
	NBHH/HU	Number of Households per Housing Unit
	NBPER/RM	Number of Persons per Room

TABLE IV.1
LIST AND DESCRIPTION OF FIELD NAMES USED IN DATABASE

DATA CATEGORY	FIELD NAME	DESCRIPTION
URBAN LAND (Category Identifier: URBLAND)	LTIT/PRD	Number of Formal Land Titles Issued During Period
	AVM2/TIT	Average Size of Land Titles Issued During Period
	RESAPLND	Residential Area Planned or Zoned During Period
	RESADEV	Developed Residential Area at End of Period
	VRESADEV	Vacant Developed Residential Area at End of Period
	ASUBDIV	Formally Subdivided Area During Period
	INF4RESA	Informal Residential Areas
	PUBRESA	Residential Areas Developed by Public Sector
	PRVRESA	Residential Areas Developed by Private Developers
	INFHUREG	Number of Informal Housing Units Regularized
INFRASTRUCTURE AND ENVIRONMENT (Category Identifier: INFENV)	HUPIPH20	Housing Units with Piped Water Connections
	HUSEW	Housing Units with Sewer Connections
	HUELEC	Housing Units with Electrical Connections
	HHWASTE	Households Benefitting from Solid Waste Collection
	INVSTRDS	Investment in Urban Roads
	INVSTH20	Investment in Water Supply
	INVSTSEW	Investment in Sewers
	INVSTELEC	Investment in Electricity
	AMTPRVINF	Amount of Private Sector Finance for Infrastructure
MUNICIPAL FINANCE AND DEVELOPMENT (Category Identifier: MUNDF)	MREVBDGT	Budgeted Municipal Revenues
	MREVACT	Actual Municipal Revenues
	REVPRPTX	Revenues from Property Related Taxes
	REVLOCTX	Revenues from Other Local Taxes
	REVSVFEE	Revenues from Services and Fees
	NATGRNTS	Amount of National Grants to Municipalities
	AMTSBLNS	Amount of Subsidized Loans to Municipalities
	NBMKTLNS	Number of Market Rate Loans to Municipalities
	AMTMKTLN	Amount of Market Rate Loans to Municipalities
	NBMUNBOR	Number of Municipalities Borrowing
	DBTRATIO	Municipal Debt Ratio
	DBTSERV	Municipal Debt Service
	CAPEXP	Amount of Capital Expenditures
	OPEREXP	Amount of Operating Expenses
	RESERVES	Amount of Reserves
	AMTOWNDEV	Amount of Own Source Financing of Development

Field names must remain in the row immediately above the first row of data in order for the computer to perform database operations correctly. They may be hidden, however, by striking "/wfh" and indicating the columns in which the field names are to be hidden. More descriptive names can be written in the rows directly above the hidden field names, if desired. These can be used when printing reports directly from the database. Keeping the actual field names visible, however, will help increase their familiarity to the user and make them easier to work with in defining criterion and output ranges.

Entire fields (or columns) also can be hidden as desired by using "/wch". Columns to the right of hidden columns will shift to the left to fill the empty space. This technique can be useful for data entry because it reduces the width of the worksheet and makes both record names and the data for any field visible on the screen at the same time. It also can be useful in designing printouts directly from the database. Data in hidden columns will not be printed.

Hidden columns can be restored to the visible worksheet by using the command "/wcd" and indicating the range of columns (or, in this case, fields) to be restored. It is easy to know which columns are hidden because their identifying letters have been skipped, or there will be an "*" next to the letter identifier in the column heading when the worksheet is fully extended.

2. Records

The only records that need to be added to the database are those containing data for new time periods (e.g., each year for the annual update worksheets, or roughly 5-year "snapshots" for background data). New records can be added to the bottom of each worksheet and then sorted into the database as desired. The date (Field Name: YEAR) and geographic area (Field Name: LOCATION) can be copied directly to the new records.

Care should be taken, however, in establishing the unique identification numbers for each record (Field Name: IDNB). This number acts as a "counter" in the database and enables records to be restored to their original order. The IDNB field also serves as the "key" field in linking worksheets within a country file. Correct identification numbers are necessary to create an output range that incorporates data from different worksheets. Database operations will not be executed correctly if there are mistakes in these numbers.

The method for creating identification numbers is as follows:

- The first digit indicates whether the record is in a data worksheet for the national level (1), governorate (or regional) level (2) or city level (3).
- The next two digits indicate the number assigned to the particular geographic area. At the national level, this corresponds to countries (e.g., Tunisia 01; Jordan 02; etc.). At the regional level, it corresponds to governorates or regions (e.g., Tunis 01; Tozeur 23; etc.). At the city level, it corresponds to individual cities (Tunis 01, ...etc.).
- The fourth digit indicates whether the data is for the entire geographic area (1); its urban component (2); or its rural component (3).
- The final two digits indicate the last two digits of the year to which the data applies (e.g., 75 for 1975, 84, for 1984, etc.).

C. BASIC DATABASE COMMANDS AND OPERATIONS

Worksheets in the RHUDO database operate exactly like any Lotus 1-2-3 worksheet. The same menus are used and accessed by striking the"/" key. A list of commands then appears on the menu line at the very top of the screen. The user can move the highlighted area across the menu with the arrow keys or simply strike the appropriate combinations of keys to obtain the desired result. Typing "/dsg", for example, corresponds to commands for data, sort, go.

The Analysis Worksheet also makes use of macro-based menus to extract data from the database and enter it into predetermined cells for analysis. The user only has to type the geographic location, years and, in some cases, the data variable "field names" into certain worksheet cells and then use the menus to carry out the analysis. Pressing the "Alt" key at the same time as "A", "B" or "C" activates a set of menus for each group of analyses. This "menu" approach makes the database easier to use and reduces the possibility of making mistakes or damaging data. Annex II includes more detailed instructions on operating the RHUDO database.

1. Setting Up and Taking Precautions in the Use of the Database

A particular advantage of using Lotus 1-2-3 as database support is that it is very responsive to user inputs and commands. This also means, however, that it is easy to modify or erase data from the database accidentally . For this reason, care always should be exercised in working with the database. Two simple precautions can be taken. The first is to enable cell protection when reading or browsing through the data. This is done by the typing "/wgfpe". The second is to turn on the "undo" command when entering data or carrying out any important database operation. This is done by typing "/wgdoue". The "undo command" will undo only the very last operation or command and should be used immediately to redress any mistake. Unfortunately, the "undo" command also requires a considerable amount of memory and may not be usable as the database grows in size.

2. Moving About Worksheets in a File

Under Lotus 1-2-3 Version 3, all worksheets within a file are in the computer's active memory at the same time. Each worksheet has an identifying letter at the left end of the data line at the top of the screen. The RHUDO database includes 26 worksheets with identifying letters "A" through "Z". A list of these worksheets and their identifying letters are shown in Table IV.2.

There are several commands to help the user browse through the worksheets. Pressing keys for "Ctrl" and "Pg Up" at the same time activates the succeeding worksheet and brings it to the screen. Pressing "Ctrl" and "Pg Dn" at the same brings up the preceding worksheet. Pressing "Ctrl" and "Home" at the same time returns the screen to the first worksheet in the file.

Windows also can be used to split a worksheet into two components. The commands "/wwh", for example, will split the screen horizontally, while "wwv" will divide it vertically. Pressing the key "F6" moves the cursor from one window to the other and activates the window in which the cursor is located.

TABLE IV.2
WORKSHEETS IN THE DATABASE

WORKSHEET IDENTIFIER LETTER	WORKSHEET TITLE
A	Analysis Worksheet
B	Criteria and Output Ranges
C	Tunisia National Level: Basic Socio-Economic Data
D	Tunisia National Level: Housing Production and Conditions
E	Tunisia National Level: Urban Land
F	Tunisia National Level: Infrastructure and Environment
G	Tunisia National Level: Municipal Development and Finance
H	Tunisia Regional Level: Basic Socio-Economic Data
I	Tunisia Regional Level: Housing Production and Conditions
J	Tunisia Regional Level: Urban Land
K	Tunisia Regional Level: Infrastructure and Environment
L	Tunisia Regional Level: Municipal Development and Finance
M	Tunisia City Level: Basic Socio-Economic Data
N	Tunisia City Level: Housing Production and Conditions
O	Tunisia City Level: Urban Land
P	Tunisia City Level: Infrastructure and Environment
Q	Tunisia City Level: Municipal Development and Finance
R	Tunisia Annual Updates: Basic Socio-Economic Data
S	Tunisia Annual Updates: Housing Production and Conditions
T	Tunisia Annual Updates: Urban Land
U	Tunisia Annual Updates: Infrastructure and Environment
V	Tunisia Annual Updates: Municipal Development and Finance
W	Housing Guaranty Policy and Program Indicators
X	List of Sources and Descriptions of Methodologies
Y	Defintions of Variables
Z	List of Range Names and Dimensions

The user can divide the screen into two windows and view separate parts of the same worksheet, or parts of two worksheets at the same time. The "Ctrl" "Pg Up" or "Ctrl" "Pg Dn" can be used to move each window on the screen through other worksheets in the database. This can be a useful tool in browsing through different worksheets and becoming familiar with the data.

3. Data Entry

Experience with entering data into the RHUDO database has shown that this is a relatively slow process. It is made even more tedious by the need to attach source references to each item of data. The most efficient approach has been to first enter the data and then use the edit line (Key: F2) to add information about the source of the data. A ";" must be typed right after the data to indicate that information to the right of the semicolon involves the note. Although time-consuming, this procedure provides an opportunity to view data a second time and to make sure that there are no obvious errors. Unfortunately, there is no way to copy source notes to a range of cells without erasing the data already entered in those cells.

4. Sorting Data

Sorting is very useful in entering, viewing, and analyzing data. Three fields or data "keys" will be used for most sorting operations. These are "YEAR", "LOCATION" and "IDNB". Using different combinations of these three keys will produce the following results:

Primary Key	Secondary Key	Result
YEAR	LOCATION	Data grouped by year according to total area, urban, rural
IDNB	YEAR	Data grouped by governorate or city for total, urban and rural with ascending or descending years
LOCATION	YEAR	Data grouped by total, urban and rural and by year

Macro commands have been written into each worksheet to run three basic sorts using the above mentioned combinations, i.e, by year, place, and original order of entry. The user only has to press the keys "Alt" and "F3" at the same time and select the macro that will run the desired sort. The names of these macros include the identifying letter for the worksheet (i.e., "C" through "W") and the brief description of the sort (i.e., SORTYEAR, SORTPLACE, AND SORTENTER).

Detailed analytical work may require additional sorting that uses other field names as primary and secondary sort keys. There are, in fact, many ways in which the data can be sorted. The combinations indicated here, however, should prove to be the most common and useful in working with the database.

There are a few important rules to be kept in mind when manually specifying the range to be sorted. The first is to "RESET" the range before each sort. The computer will remember the previous range that was sorted and will sort it again unless "/dgr" command is used. To safeguard against improper sorting, maximum use has been made of range names in identifying the range to be sorted. A list of names for preset ranges can be found in the last worksheet of the database. This will assist the user in specifying the range to be sorted.

Preset ranges have been determined for sort and input ranges and their names and macro commands indicated on each worksheet. Sort ranges begin with "SRT" and do not include the row for field names. Field names will be distributed at the bottom of the worksheet if they are included in the sort range.

A principal function of sorting data in the RHUDO database will be to facilitate the entry of new data. New records can be added at the bottom of existing worksheets and then sorted into their correct places. There is no need to try to enter individual lines throughout the database.

As new data is entered into the worksheet, however, it is important that the sort and input ranges be updated so that all data will be sorted and queried correctly. Sorting only part of the data mixes it up and makes it virtually impossible to restore data to its proper location.

5. Extracting Data

The analysis worksheet is set up to extract and analyze data from the database in several different ways. Menu-driven operations make this easy to do while preventing any damage to the database itself. Table IV-3 presents a printout of this analysis worksheet.

a. User Defined Indicators

The first part of the worksheet extracts data for user-defined indicators. Three different operations are built into the worksheet that include percentage change over time, per capita distribution over time, and the proportion of a base variable over time. Comparisons can be made between two variables in the same geographic area, between two geographic areas using the same variable, or between variables for the city, regional, and national levels. Four time periods can be included.

The user determines the geographic area, data variable and years to be compared and types these into cells designated for this purpose. Years should be entered in ascending order for either background or annual data analysis. Information will be presented incorrectly if years are entered into the worksheet that are not included in the database.

Pressing "Alt" and "A" at the same time produces a menu at the top of the screen for the geographic level of the selected variable (i.e., National, Regional, City, Annual). The user moves the highlighted area with the arrow keys until the geographic level that corresponds to his entry is highlighted. Pressing "Enter" produces a second menu that includes the five major categories of data variables (i.e., Basic Socioeconomic Data, Housing Production and Conditions, Urban Land, Infrastructure and Environment, and Municipal Development and Finance). The category in which the data variable is located is highlighted and "Enter" pressed again. A third menu then appears at the top of the screen that indicates the location in the analysis worksheet of the variable under consideration. There are two variables in the "gap filling" section, two in the "per capita section" and three in the "proportion of base" section. Highlighting the correct indication and pressing "Enter" once again completes the operation.

TABLE IV.3
SAMPLE PRINTOUT OF ANALYSIS WORKSHEET

ANALYSIS WORKSHEET

A. USER DEFINED INDICATORS

1. GAP FILLING {GAP1, GAP2}
   Comparison of percentage change in two data variables

	Location	Year	Year	Year	Year
V1	Urban Sfax	1975	1984	1989	---------
V2	Tunisia Urban	1975	1984	1989	---------
V1	TOTNBHU	53750	75400	0	0
	% Change Variable 1	---------	40.3	-100.0	0.0
V2	TOTNBHU	456150	725800	0	0
	% Change Variable 2	---------	59.1	-100.0	0.0

2. PER CAPITA DISTRIBUTION {CAPITA1, CAPITA2}
   Comparison of per Capita Distribution of Two Variables

	Location	Year	Year	Year	Year
V3	Urban Kairouan	1975	1984	1989	---------
V4	Tunisia Total	1975	1984	1989	---------
V3	INVSTNHU	0	0	0	0
	Population	73260	103041	124200	0
	Per Capita Distribution	0.0	0.0	0.0	0.0
V4	GNPCR	1.7E+09	0	0	0
	Population	5577250	6966173	7599800	0
	Per Capita Distribution	312.4	0.0	0.0	0.0

3. PROPORTION OF BASE COMPARISON {BASE, BASE1, BASE2}
   Proportion of Variable Compared to Base Variable

	Location	Year	Year	Year	Year
V5	Sfax	1985	1986	1987	1988
V6					
V7					
V5	**Base Variable**	0	0	0	0
V6	**Variable 1**	0	0	0	0
	% of Base Variable	0.0	0.0	0.0	0.0
V7	**Variable 2**	0	0	0	0
	% of Base Variable	0.0	0.0	0.0	0.0

TABLE IV.3, continued

B. COMMON OFFICE OF HOUSING INDICATORS

1. OWN SOURCE MUNICIPAL DEVELOPMENT {OWNSOURCE}
Own Source Municipal Financing as Proportion of Total Capital Expenditures

Location Urban Gafsa	Year 1975	Year 1984	Year 1989	Year ---
Total Capital Expenditures	0	0	0	0
Amount Own Source Financing	0	0	0	0
% Own Source Financing	0.0	0.0	0.0	0.0

2. COST RECOVERY IN HOUSING FINANCE {LOANS}
Loan Default Rates, Value of Housing Loans in Arrears as Proportion of Total Value of Loans, Number of Loans in Arrears as Proportion of Total Number of Loans

Location Urban Tunis	Year 1975	Year 1984	Year 1989	Year ---
Number of Housing Loans	0	0	0	0
Number of Loan Defaults	0	0	0	0
Housing Loan Default Rate (%)	0.0	0.0	0.0	0.0
Total Value of Housing Loans	0	0	0	0
Value of Loans in Arrears	0	0	0	0
% Total Loan Value in Arrears	0.0	0.0	0.0	0.0
Number of Loans in Arrears	0	0	0	0
% Total Loans in Arrears	0.0	0.0	0.0	0.0

3. PRIVATE SECTOR INVESTMENT IN BASIC MUNICIPAL INFRASTRUCTURE {INVEST
Private Sector Financing of Infrastructure as Proportion of Investments in Municipal Roads, Water, Sewer and Electricity

Location Tunisia Rural	Year 1975	Year 1984	Year 1989	Year ---
Investment in Roads	0	0	0	0
Investment in Water Supply	0	0	0	0
Investment in Sewers	0	0	0	0
Investment in Electricity	0	0	0	0
Total Investment	0	0	0	0
Private Sector Investment	0	0	0	0
% Private Sector Investment	0.0	0.0	0.0	0.0

TABLE IV.3, continued

4. ACCEPTABLE HOUSING UNITS {HOUSING}
Percentage Change in Acceptable Housing Units Compared to Percentage Change in Number of Households

Location Tunisia Urban	Year 1975	Year 1984	Year 1989	Year ---
Total Number of Housing Units	456150	725800	0	0
Acceptable Housing Units	317970	0	0	0
% Acceptable Housing Units	69.7	0.0	0.0	0.0
Total Number of Households	486580	694100	0	0
Households/Housing Unit	1.1	1.0	0.0	0.0
% Change Number of Households	---	42.6	-100.0	0.0
% Change Acceptable Housing	---	-100.0	0.0	0.0
Ratio Units/Households	---	-2.3	0.0	0.0

5. WATER AND SEWER CONNECTIONS {CONNECTIONS}
Percentage Change in Housing Units with Water Connections Compared to Percentage Change in Number of Households; Percentage Change in Housing Units with Sewer Connections Compared to Percentage Change in Number of Households

Location Urban Tunis	Year 1975	Year 1984	Year 1989	Year ---
Total Number of Housing Units	137190	144900	0	0
Units Connected to Water	102890	0	0	0
% Units Connected to Water	75.0	0.0	0.0	0.0
Units Connected to Sewers	95820	0	0	0
% Units Connected to Sewers	69.8	0.0	0.0	0.0
Number of Households	167280	162970	0	0
% Change Number of Households	---	-2.6	-100.0	0.0
% Change Units with Water	---	-100.0	0.0	0.0
Ratio Change Units/Households	---	38.8	0.0	0.0
% Change Units with Sewers	---	-100.0	0.0	0.0
Ratio Change Units/Households	---	38.8	0.0	0.0

TABLE IV.3, continued

6. HOUSING GUARANTY AND DONOR ASSISTANCE (ASSISTANCE)
Housing Guaranty Assistance as Percentage of Total Housing Investment; Housing Guaranty Assistance per Capita; Total Donor Assistance in Housing and Urban Development as Percentage of Total Investment in Housing; Total Donor Assistance per Capita

Location Urban Kairouan	Year 1975	Year 1984	Year 1989	Year
Total Investment in Housing	0	0	0	0
Population	73260	103041	124200	0
Housing Guaranty Assistance	0	0	0	0
% of Total Housing Investment	0.0	0.0	0.0	0.0
HG Assistance per Capita	0.00	0.00	0.00	0.00
Total Donor Assistance	0	0	0	0
% of Total Housing Investment	0.0	0.0	0.0	0.0
Donor Assistance per Capita	0.00	0.00	0.00	0.00

C. QUERY FOR INDIVIDUAL DATA ITEMS

Location Tunisia Urban	Year 1975	Field Name LNSPVBNK
		50000

b. Common Office of Housing Indicators

The second group of indicators concern general Office of Housing interests in housing and urban development. They are divided into six categories that include own source financing of municipal development, cost recovery in housing finance, private source financing of infrastructure, growth in the percentage of acceptable housing, growth in the percentage of water and sewer connections, and the distribution of Housing Guaranty and other donor assistance.

Once again, the geographic location and years are typed into designated cells in the analysis worksheet. Care should be taken to make sure that years correspond to those for background or annual data depending on the analysis to be done. Pressing the keys "Alt" and "B" at the same time produces a menu that indicates the above-mentioned categories (**Own Source, Loans, Investment, Housing, Connections,** and **Donor Assistance**). Once the appropriate category is highlighted, "**Enter**" is pressed and a second menu appears indicating the four geographic levels (i.e., **National, Regional,** etc.). The appropriate level is highlighted, "Enter" is pressed again and the operation completed.

c. Individual Data Items

The final part of the worksheet permits the user to extract any item of data from the database. Again, the user enters the geographic area, year and field name for the variable in the designated cell locations. Pressing "**Alt**" "**C**" at the same time brings the menu for geographic levels to the top of the screen. Once the correct level is highlighted, "Enter" is pressed and a second menu for data categories appears at the top of the screen. The appropriate category is highlighted, "**Enter**" is pressed again and the operation completed.

6. Creating Reports

Reports can be created by printing the data analysis worksheet, parts of the active database, or a temporary worksheet inserted into the database file for this purpose. The user can split the screen and copy data into the temporary worksheet to create the needed reports. In copying data from one worksheet to another, it is important to incorporate the worksheet identifier letter into cell references so that data will not be copied incorrectly into the active worksheet. Activating the "**undo**" command before copying any data and/or creating reports can provide a necessary measure of security.

D. USING THE DATABASE FOR ANALYSIS

One of the most important reasons for using an electronic worksheet program as support for the RHUDO database is to provide a direct link between the mass of data contained in the database and its analysis. The analysis worksheet has been set up to help do much of this work. It is anticipated that users of the database will have very different needs and will want to develop and track their own indicators. For this reason, a large number of predetermined indicators have not been built into the database itself. This approach keeps the database small while allowing a wide range of "user defined indicators" to be created by comparing data and executing various calculations.

V. COMPLETING THE DATABASE AND MANAGING ITS USE

A. COMPLETING THE DATABASE

Each country database includes some 75 data variables for three geographic levels (i.e. national, governorate and city). Depending on the number of governorates (or regions), cities and time periods to be considered, the amount of data needed to complete the initial phase of the database can be quite substantial. Between 15,000 and 20,000 data entries would be required for Tunisia for three "snapshot" periods. Entering just a few hundred items of data leads to concerns about the utility and worth of such a large database. The significant advantage of the RHUDO database, however, is that—once all the data is entered—it will no longer be necessary to search through diverse and scattered documents to obtain desired information. A great amount of data can be recalled very quickly and easily.

1. General Approach

Experience in setting up the database for Tunisia has indicated, however, that a good period of time will be required to gather and enter all the necessary data. This is due not only to the unforseen size of the database, but also to the limited immediate availability of data. Practically all the required data exists, although much of it is unpublished or in a format that cannot be entered directly into the database (e.g., percentages instead of numbers, etc.). Close cooperation is required with host country agencies in collecting necessary data.

The Ministry of Plan in Tunisia currently is working with other government and private sector agencies to establish a wide-ranging database and networking capacity that includes information on housing and urban development. When completed, direct access to this database will prove very useful to RHUDO and to the USAID Mission. This Tunisian database effort merits USAID support, even though it may require more time and effort than originally envisaged for the establishment of RHUDO's own database. An active lead host country agency is essential to the long-term success of the RHUDO database.

RHUDO should establish realistic time limits to set up the initial databases in all countries of interest within the region. Six months appears reasonable for Tunisia, the country in which the RHUDO/NENA is located and has many of its programs. One year may be required for countries in which there are active Housing Guaranty Programs but limited RHUDO presence or involvement (e.g., Jordan, Portugal, Morocco). A longer time period may be necessary for countries in which RHUDO has only limited interest and/or activities (e.g., Algeria).

Once appropriate timeframes have been established, RHUDO should orient its efforts towards completing an initial database in each country. Several activities and approaches can be used to accomplish this task. These include:

- ***Hiring local expertise to input basic census data.*** This task could be simplified by requesting the Department of Statistics, for example, to provide printouts of data from previous censuses that meet the needs of the database. In Tunisia, for example, 1984 census publications give much of the data as percentages. The actual numbers from which these percentages were calculated have not been published. A formal request, therefore, is needed in order to obtain the original numbers.
- ***Including database requirements in consultant scopes of work.*** Consultants working on municipal finance, for example, should be requested to obtain data on municipal revenues and expenses that would complete part of the database. Similarly, consultants working on

projects in specific cities could be asked to obtain a broad range of data on those particular cities.

- ***Formally requesting more-difficult-to-obtain data from both government and private sector agencies.*** This step should be taken once all readily available data has been entered into the database and areas of missing data identified. At this time, re-evaluation can be made of the actual need for this missing data, given the difficulty in obtaining it.
- ***Using the expertise and local knowledge of individual RHUDO staff to identify and gather data from a wide-range of sources.*** Each RHUDO officer should be responsible for a particular part of the database; either by sector (e.g., shelter, infrastructure and environment, municipal development, etc.) or by geographic location (e.g., specific cities or regions). It is essential that RHUDO staff be involved in the development of the database and responsible for maintaining its overall quality. An active contribution by professional staff will increase the likelihood that the database will be used as an analytical tool in everyday activities.
- ***Actively seeking Mission support for the database by sharing information with Mission staff and encouraging contributions by the economist, population officer, etc.*** Many USAID Missions are in the process of establishing baseline data for a wide range of programs. Opportunities for cooperation and collaboration in data gathering should be pursued actively.
- ***Specifying that project evaluations make use of the database and contribute to its further development.*** This is particularly true for impact evaluations. The RHUDO database should be used to monitor the impact of specific policies, programs and projects on the shelter sector and urban development.

2. Country Recommendations

Local conditions and the resources available to carry out the database will vary from one country to another. It is important to coordinate RHUDO data gathering efforts with similar activities carried out by host country agencies. Maximum use should be made of ongoing and planned activities to obtain data for the database. Consensus should reached on data variables that will be useful to both RHUDO and host country agencies. Table V.1 gives a very rough estimation of the time and costs for additional assistance in completing initial databases for Tunisia, Jordan, and Morocco.

a. Tunisia

RHUDO and the USAID Mission actively should support efforts by the Tunisian government to better organize, manage and share data between various government ministries and agencies. This includes making a positive contribution to current efforts by the Ministry of Plan to establish a multi-user database network. Once established, this data network can provide RHUDO and the Mission with timely and easy access to a wide-range of useful information on macro-economic conditions and individual sectors. Background data will be linked to census data collected in 1975 and 1984, and a major household survey conducted in 1989. An important effort will be needed to enter 1989 data into the database.

b. Jordan

The RHUDO database for Jordan should be incorporated into the monitoring process for the HG-004 sector program. The Housing Strategy Group of the Ministry of Public Works and Housing would be the lead agency in gathering and entering data, and for maintaining the database over time. The last census in Jordan was held in 1979, although several

TABLE V.1
ESTIMATION OF TIME AND COSTS TO COMPLETE THE INITIAL PHASE OF AN URBAN DATABASE FOR TUNISIA, JORDAN AND MOROCCO

WORK ACTIVITIES	TUNISIA	JORDAN	MOROCCO
CONCEPTUAL FRAMEWORK (US Consultant) ■ Identify Host Country Lead Agency ■ Establish Appropriate Time Frames for Background Data ■ Modify Data Base Setup for Specific Country ■ Verify Data Variables to be Included in Database ■ Identify Primary Sources of Data and Arrange for Provision of Data by Host Country Agencies ■ Assist RHUDO in Making Formal Requests for Data ■ Train Host Country Agencies in Basic Operations of the Database .	One Week $7,000	Two Weeks $10,500	Two Weeks $9,500
DATA SEARCH AND ENTRY (Local Assistance) ■ Locate and Enter Data for Initial Database ■ Attach Source References and Update Source Index ■ Identify and Research Additional Data as Needed ■ Enter Additional Data	Eight Weeks $7,000	Six Weeks $7,000	Eight Weeks $7,000
TOTAL TIME AND COSTS	Nine Weeks $17,000	Eight Weeks $18,000	Ten Weeks $17,500

Notes:
US consultant costs include salary/overhead, airfares and per diem.
Savings could be made by combining trips to at least two countries.

national level surveys have been carried out more recently. The National Housing Survey, for example, was implemented in 1986 and includes a large amount of data that could be included in the database. Local consultants could be hired to assist the Housing Strategy Group in this task.

c. Morocco

Morocco is also a well-studied country. Obtaining data for the RHUDO database, therefore, should not be overly difficult. The ANHI has a good knowledge of housing and urban development, and may be interested in taking responsibility for all or part of the database as lead agency. This may also be true for the Ministry of Interior. In addition, a local consulting firm or research institution could be hired to identify relevant data sources and gather data. The last census occurred in 1982 and several master plans have been developed for major cities in the late 1970s and early 1980s. A large amount of information already exists for the city of Tétouan, which is the site of a large-scale Housing Guaranty Project.

d. Portugal

RHUDO currently is considering the development of a municipal level database concerning housing market conditions. Considerable overlap in data would exist between this database and that proposed for RHUDO. Background data, for example, would respond in many ways to the needs of both. A modest amount of additional local technical assistance may be required to complete the RHUDO database.

e. Algeria

Little data exists in the RHUDO office concerning Algeria. As a result, the database for this country would be the most difficult and time-consuming to set up. Ongoing consultant missions to Algeria should try to obtain at least some of the needed data.

3. RHUDO Commitment

The above assessments are very summary and reflect the difficulties in estimating both the effort and cost required to complete the RHUDO database in each of the five NENA countries.

What is really needed is a conscious decision and effort by RHUDO staff to implement and use the database. In the short-term, this means completing information on the proposed indicators related to Housing Guaranty policies and programs, and entering into the database as much background data as possible. In the longer term, it means identifying and working with those host country agencies that can take the lead in developing and maintaining a useful database for housing and urban development.

B. CONTROLLING THE USE AND INTEGRITY OF THE DATABASE

As the database becomes a useful RHUDO tool, consideration of practical procedures to access and use the database will become increasingly important. The basic choice is between a database that is highly controlled, and perhaps little used, and one that is more accessible to RHUDO staff and encourages everyday consultation. In either case, clear responsibilities and procedures are needed concerning its use.

While all RHUDO professional staff should be able to browse through the database and use it for analysis, only a limited number of people should be responsible for entering or changing

the data. All changes or additions made to the database should be noted in a log that shows the date, nature and extent of changes, and the person making the changes.

Master and backup copies of each country file should be made, dated and kept in a safe place. As the size and use of the database grows, care and effort should be taken to keep all copies of the database up-to-date. One person within the RHUDO can be assigned responsibility for overall management of the database.

VI. CONCLUDING REMARKS AND OBSERVATIONS

This assignment has been one of the first efforts to set up an actual prototype database at the RHUDO level. In essence, it has been a learning-by-doing experience. A very encouraging aspect of the assignment has been the interest shown by Tunisian Government agencies in developing a central database for housing and urban development that will improve data coordination and access.

A. EXPERIENCE OBTAINED IN SETTING UP THE RHUDO/NENA DATABASE

Results of this assignment can be expressed in terms of its accomplishments and the lessons that have been learned.

1. Accomplishments

In carrying out the assignment, initial steps were taken with the Tunisian Ministry of Plan to establish a host country database for housing and urban development. Discussions were held with interested agencies concerning how such a database would work, the data it should contain, and the responsibilities of different agencies in providing data. A preliminary list of variables was developed and distributed to Tunisian agencies for their review and comment. Subsequent discussions were held with the same agencies concerning the appropriateness of the proposed data variables. At the end of the fieldwork, the Tunisian Ministry of Plan had made good progress in developing consensus support for a central database. Concern subsequently was focused on the logistics and financing of this database.

A very quick review of potential data sources in Tunisia also was carried out as part of the assignment. In general, more data exists than can be used. Much of the data, however, is held by individuals and not easily accessible. The libraries for the Department of Statistics and Ministry of Public Works and Housing, for example, are not well stocked nor very up-to-date. For this reason, some form of formal request will be required to obtain data. The situation in other countries in the region is probably very similar to that of Tunisia.

The major part of the assignment involved designing the actual structure of the database and setting it up. Some delays were encountered at the start in determining the exact software package to use and obtaining a computer that would run Lotus 1-2-3, Version 3. Only by borrowing Lane Smith's personal computer could work on the actual database be carried out.

Roughly one third of the required census data for 1975 and 1984 has been entered into the Tunisia database. Very little data was found concerning the Department of Statistics' survey of 1980, and this data "snapshot" was not included in the database. Results from the 1989 survey are not yet available.

An initial concept paper and this report also were completed as part of this assignment.

2. Lessons Learned

One lesson that has been reaffirmed during this assignment is that building a viable database is more than just a short-term effort. It involves engaging host country agencies in the process, encouraging them to accept the role of lead agency, and helping them identify and organize useful data. Considerable time is required for study, reflection, and action.

While compromises must be made to keep the number of data variables and entries manageable, the size of any meaningful and useful country level database will be substantial. Within each country, data is required for separate geographic or spatial levels, and time periods. This adds considerably to the size of the database.

Data gathering and entry takes more time than anticipated. It is not simply a matter of typing a large amount of data into a computer. A considerable amount of time is needed to find data related to the "snapshot" dates for background data. The active cooperation and involvement of host country agencies is required not only to acquire this data, but also to maintain the database and keep it up-to-date.

Perhaps the most important conclusion is that the database cannot be done by RHUDO alone. While individual host country agencies will require more data about certain aspects of the proposed database than others, it is important that a consensus be reached on essential data variables to be included in a common database. This requires a change in perspective from acting independently to working as a team. Additional time will be required for implementing agencies to execute this change.

3. Final Comments on Data Acquisition and Evaluation

The basic impression is that a great amount of data exists but that it is not always easy to find. Much of the existing data, for example, is not published or widely distributed. Census publications include only selected parts of the total amount of data that is collected. Changes in the presentation of data from one census to another or between surveys makes comparisons between data sources difficult.

The database is set up so that the majority of required data is based either on official host country data or on information that is, at a minimum, consistent with official data. Users of the database should use their knowledge of the situation and professional judgment to question inconsistent data in a way that will contribute to maintaining the overall quality of the database. Questionable or inconsistent data should become apparent as the database is used. While there may be little to guaranty that one source of data is more accurate than another, the consistency of the database should be maintained. Any difficulties with data, or words of caution about data, can be included in the notes attached to individual data items.

Annex I.

Rationale for Individual Data Variables Within the Database

Data variables in the RHUDO database have been grouped according to five major categories: basic economic and demographic data; housing production and conditions; urban land; infrastructure and environment; and municipal finance and development. Each of these categories applies to three geographic levels: national (total, urban and rural), regional (total, urban and rural), and city. National level data can be compared across countries in the region and/or communicated to the PRE/H Base database in Washington.

A. BASIC ECONOMIC AND DEMOGRAPHIC DATA

Most of the economic data variables in this part of the database are relevant only at the national level. They provide a means to compare changes in housing and urban development with those in the overall economy. Basic population data is important in establishing a range of indicators that can help determine both the distribution of program/policy benefits and their impacts.

1. Population
(Field Name: **POPUL**)

Basic population data is essential to the development of any database. Population data in the RHUDO database will be limited to "official" sources that include the national census and Department of Statistics publications. Background data "snapshots" will be established at roughly five-year intervals. This data can be used in impact monitoring and determining the significance of changes in selected indicators over time. Annual population data for recent years will be included for the total, urban, and rural populations at the national level and for individual cities. Population data is regularly produced and available in most countries.

2. Population Growth Rates
(Field Name: **AVAN%GRO**)

Average annual rates of population growth can be obtained from official statistics or calculated using data from successive censuses or surveys. Background data on growth rates is included in the database for all three geographic levels, i.e. national, regional, and city. Annual data will be included for the national level rate of urban population growth and for certain cities.

3. Number of Households
(Field Name: **NBHH**)

The number of households within different geographic areas is also essential to any database. It is a key data item in published census and survey data, and can be used in setting up a number of indicators. Based on supplementary data on population growth and household formation, there should be little difficulty in projecting the number of households

for any year. Data on the number of households is included in the database as background data for all geographic levels. Annual updates are kept on the total number of households in urban areas and the number of households in specific cities.

4. Number of Female-Headed Households
(Field Name: **NBWOMHHH**)

Data on female-headed households is generally obtainable but not always readily available. Published data from Tunisia's 1975 census, for example, clearly indicates the number of women-headed households. Publications from the 1984 census, however, do not. Data on women-headed households contributes to a gender-disaggregated database and is important in monitoring "women in development" issues related to housing and urban development. A special request to the Department of Statistics may be required to obtain specific data related to women. This data is largely census-driven and is included in the database as background data at the national, regional, and city levels.

5. Annual Median Household Income
(Field Name: **MEDHHINC**)

Accurate data on household income is difficult to obtain. Data on median household income is included in the database primarily as a means of documenting and keeping track of the median household incomes used by USAID in determining eligibility for Housing Guaranty assistance. It will be entered as background data for the national level and specific cities.

6. Active Population
(Field Name: **ACTIVPOP**)

The active population is defined as the working age population who either are employed or looking for work if unemployed. Background data on the active population for different geographic levels can be found in the national census and official statistics. Data on the active population is useful in evaluating incomes and establishing policies/programs that will have a positive effect on employment and economic development. This data is included in the database as background data at the national, regional, and city levels.

7. Unemployment Rate
(Field Name: **%UNEMPLY**)

The unemployment rate is defined as the percentage of the labor force that is out of work and looking for work at a particular time. This data is reported and published on an annual basis for different geographic locations. Averaged over the reporting period, it is included in the database as background data at the national, regional, and city levels.

8. Population Employed in Non-Agricultural Activities
(Field Name: **NNAGREMP**)

Agricultural employment often is defined to include activities in agriculture, forestry, hunting and fishing. These are all primary sector activities. Non-agricultural employment, therefore, concerns workers in the secondary and tertiary sectors. The number of people employed in non-agricultural activities is included in basic employment data. It is included in the database as background data at the national, regional, and city levels.

9. Gross National Product in Current Prices
(Field Name: **GNPCR**)

Gross National Product measures total domestic and foreign output by residents. It is calculated without deductions for depreciation. This information is a well-accepted indicator of the general health of national economies. As a result, it is monitored and published on a regular basis. It can be used to assess the significance of changes in other data and indicators. It is included in the database as both background and annual data at the national level.

10. Gross Domestic Product in Current Prices
(Field Name: **GDPCR**)

Gross Domestic Product measures the total final output of goods and services produced by an economy regardless of the allocation to domestic or foreign claims. It is another indicator of the general economic health of a country that can be compared with other indicators. It is monitored and published regularly. It is included in the database as both background and annual data at the national level.

11. Gross Domestic Savings in Current Prices
(Field Name: **DOMSVCR**)

Gross domestic savings is another macro economic indicator that is monitored and published on a regular basis. It can be expressed in per capita terms and compared at the national level with other economic data (e.g., total investment, credit, investments in housing, etc.). It is included in the database as both background and annual data at the national level.

12. Fixed Capital Formation
(Field Name: **FXCPFORM**)

Gross fixed capital formation provides an indication of the nature of investments within an economy. It is a well accepted and important economic indicator that is monitored and published on a regular basis. Comparing housing investment to gross fixed capital formation for example, will give a good idea of the importance of housing within the overall economy. It is included in the database as background and annual data at the national level.

13. Total Annual Investment in Current Prices
(Field Name: **TINVSTCR**)

Data on total annual investment in the economy is also monitored and published on a regular basis. Changes in total investment can be compared, for example, to those in gross fixed capital formation in order to obtain a better understanding of the behavior of an economy. Total annual investment is expressed in current prices. It is included in the database as background data at the national and city levels, and as annual data at the national level.

14. Annual Investment in Construction
(Field Name: **INVSTHCR**)

Annual investment in construction can be compared with total annual investment to assess the importance of construction within the overall level of investment. Since housing makes up the majority of construction, it also provides a good indication of the expected outputs of the housing sector. This data is regularly monitored in most countries. It is

included in the database as background data at the national and city levels, and as annual data at the national level.

15. Average Annual Inflation Rate
(Field Name: **AVANINFL**)

Annual inflation is closely monitored and published on a regular basis. There may be some differences, however, between official data and actual market conditions. Comparison of this data over time will provide a reasonable indication of trends within an economy and changes in prices. This data can be useful in updating housing costs and determining the affordability of a range of housing types to different population target groups.

16. External Debt In Current Prices
(Field Name: **XTDEBTCR**)

Data on external debt is important in determining the success of a country in managing its financial resources. It also is used to indicate a country's ability to borrow additional funds from external markets. Data on the external debt is monitored and published on a regular basis. It is used by USAID to assess the ability of a country to assume the debt related to a Housing Guaranty loan. It is included in the database as both background and annual data at the national level.

17. Total Credit
(Field Name: **TOTCREDT**)

The total amount of credit in a country is another closely watched macro-economic indicator. Changes in the amount of total credit over time, for example, can be compared to changes in the amount of credit available for housing. This data is included in the database as both background and annual data at the national level.

18. Housing Guaranty Assistance
(Field Name: **HGASSIST**)

The amount of financial assistance provided under Housing Guaranty programs will be included in the database and disaggregated according to geographic areas at the national, regional, and city levels. This information will help evaluate the distribution and impacts of Housing Guaranty assistance. It will be included in the database as background data at the national level and for specific cities. These amounts will include only the direct financing of capital improvements.

19. Total Donor Assistance
(Field Name: **DONORAID**)

USAID is not the only donor agency involved in financing shelter and urban development. Information will be included in the database concerning total donor agency financing of shelter and urban development. Technical assistance will not be included in this amount. Data will be included in the database as background data for geographic areas at the national, regional, and city levels and annual data at the national and city levels.

B. HOUSING PRODUCTION AND CONDITIONS

During the last two decades, USAID has been very active in working to improve housing conditions for low-income families. Continued monitoring of housing production and conditions is important in gauging the overall success of Housing Guaranty activities and their impact on local conditions. Housing will continue to be a very important component of both urban and economic development in the future.

1. Total Number of Housing Units
(Field Name: **TOTNBHU**)

The total number of housing units is a key data item in almost all national censuses and surveys. It is important in developing an idea of basic housing production and conditions. Because accurate data on the number of housing units is difficult to obtain on an annual basis, it is included in the database only as background data for the national, regional, and city levels.

2. Number of Occupied Housing Units
(Field Name: **NBOCUPHU**)

Data on the number of occupied housing units also can be found in most censuses. It is important in determining housing densities (eg. the number of households per housing unit) and the efficiency of the housing sector in meeting actual housing needs. Occupied housing units, for example, can be compared to the total number of units to give an indication of housing vacancies. Data on occupied housing units is difficult to obtain on an annual basis. It is included in the database as background data for the national, regional, and city levels.

3. Number of Rooms per Housing Unit
(Field Name: **NBRMS/HU**)

The number of rooms per housing unit is given considerable attention in census publications. It can be used in analyzing dwelling densities and overcrowding. Monitoring this data over several years can indicate significant changes in the size of housing units as well as improvement or deterioration in overall housing conditions. Because it is difficult to obtain on an annual basis, this data is included in the database only as background data.

4. Number of Acceptable Housing Units
(Field Name: **NBACPTHU**)

Acceptable housing units are those solidly built and fully serviced. In most countries, the number of acceptable housing units can be determined from census data and/or from agency records and building permits. Because this data is difficult to obtain on an annual basis, it is included in the database only as background data for the national, regional, and city levels.

5. Number of Improvable Housing Units (Field Name:NBIMPRHU)

Improvable housing units are those solidly built but without basic infrastructure and services (eg. piped water, sewer connection etc.). Data on the number of improvable housing units is derived from census information and included in the database as background data for the national, regional, and city levels.

6. Number of Substandard Housing Units (Field Name:NBSBSTHU)

Substandard housing units generally are defined as those that are not built of solid materials. They can include shacks, caves, tents etc. Census data frequently groups all types of substandard units into a single category. This data is used as background data for the national, regional, and city levels in the database.

7. Number of Owner-Occupied Housing Units (Field Name: OWNOCUHU)

The number of owner-occupied housing units also can be determined from census data for different geographic areas. This data includes housing units that are inhabited solely by the owner and those in which part of the housing unit is rented out. It is included in the database as background data for the national, regional, and city levels.

8. Number of Housing Units Owned by Women (Field Name: WOMOWNHU)

With some difficulty, perhaps, data on the number of housing units owned by women also can be obtained from census data. Cross tabulations between female headed households and owner-occupied housing units can be made to determine the number of housing units owned by women. This information, however, most likely will have to be requested from the Department of Statistics. It is included in the database as background data at the national and city levels.

9. Number of Rental Units (Field Name: RENTALHU)

Data on the number of rental units also can be found most easily in census data. Rental units do not include those owner-occupied units that are partially rented out. In many countries, data on the number of rental units is difficult to obtain an annual basis. It is included in the database as background data for the national, regional, and city levels.

10. Number of Building Permits Issued during Period (Field Name: PRMT/PRD)

The number of building permits issued by municipalities generally is monitored on an annual basis with the Ministry of Housing and/or individual municipalities keeping track of these permits. While this data will not directly indicate the number of housing units produced, it does provide a relative indication of housing production by the formal housing sector. This data will be collected on an annual basis and cumulated according to periods defined in the database. It will be included as background data for urban areas at the three

geographic levels and annual update data for urban areas at the national level and specific cities.

11. Investment in New Housing Units
(Field Name: **INVSTNHU**)

Although considerable interest exists in determining investments related to new housing units, very precise data may be difficult to obtain. In many cases, it will be useful to have at least a good estimate of investment in new housing. Monitoring this information over a period of several years can provide insights into the production and quality of new housing. This data is included in the database as background data for the national, regional, and city levels. Annual updates for urban areas at the national level and specific cities also are included in the database.

12. Number of Housing Units Built by the Public Sector
(Field Name: **NBPUBHU**)

Data on the number of housing units built by the public sector generally is available on an annual basis. This information can be used to monitor the importance of new housing units provided by the public sector and/or changes in the output and roles of public sector housing agencies. It is included in the database as both background data for the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

13. Number of Housing Units Built by Private Developers
(Field Name: **PRVDEVHU**)

The number of housing units built by formal private housing developers also can be obtained on an annual basis. This information is important in measuring the success of policies and programs aimed at increasing formal private sector provision of housing. It is included in the database as both background data for the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

14. Amount of Housing Loans from Private Banks
(Field Name: **CRDPVBNK**)

The total amount for housing loans made by private banks can be obtained from their annual reports. In many developing countries, there are only a limited number of banks that make loans for housing. Once these banks are identified, it is relatively easy to obtain detailed information on their lending activities. This data is included in the database as both background data at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

15. Number of Housing Loans from Private Banks
(Field Name: **LNSVPBNK**)

The number of loans made by private banks can be obtained from the same annual reports. It can be used with the amount for loans to determine the average loan size and any changes in lending patterns. It is included in the database as background data for the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

16. Number of Housing Loans to Women
(Field Name: **LNSWOM**)

Data on the number of housing loans made to women most likely will require a special request to private banks for this information. One solution would be to include this information in the regular reporting requirements by local banks that benefit from Housing Guaranty funds. This data is included in the database as general background data. It should be updated on an annual basis for urban areas at the national level and specific cities.

17. Number of Housing Loan Defaults
(Field Name: **NBLNDEFT**)

The number of housing loans in default is a good indicator of cost recovery performance in housing finance. This data is particularly important to the establishment of appropriate housing finance conditions for low-income families. Data on defaults will be included in the database as background data for geographic areas at the national, regional, and city levels and as annual data for urban areas taken together at the national level and for specific cities.

18. Total Value of Loans in Arrears
(Field Name: **VARREARS**)

The value of loans in arrears is another good indication of overall cost recovery performance in housing finance programs. It can be used with the number of loans in arrears to determine the average size of loans in arrears. This data can provide insights into the nature and location of problems in the repayment of housing loans. Data will be included in the database as background data for geographic areas at the national, regional, and city levels, and annual data for urban areas at the national level and for specific cities.

19. Number of Loans in Arrears
(Field Name: **NBARREAR**)

The number of loans in arrears completes the series of data on housing finance cost recovery. Attention should be given to developing consistent definitions of loans that are in arrears. Data will be included in the database as background data for geographic areas at the national, regional, and city levels, and annual data for urban areas at the national level and for specific cities.

20. Number of Households per Housing Unit
(Field Name: **NBHH/HU**)

The number of households per housing unit is an indicator that is often included in census data and used to measure overcrowding. It can be calculated by dividing the number of households by the number of occupied housing units. It is included in the database as background data at the national, regional, and city levels.

21. Number of Persons per Room
(Field Name: **NBPER/RM**)

Data on the number of persons per room also involves combining two data items into a single indicator. The result frequently is used as another measure of overcrowding. Changes in this indicator over time will show whether basic housing conditions are improving

or deteriorating. It is included in the database as background data at the national, regional, and city levels.

C. URBAN LAND

The provision of serviced and affordable residential land is very important to low- and medium-income urban families. It is also important for orderly urban growth and the efficient delivery of services. Data on urban land development, therefore, is very useful for planning and policy formulation. Data within this section of the RHUDO database can be obtained from land registry offices, planning agencies and municipalities. Special efforts will be required to obtain some of the data.

1. Number of Formal Land Titles Issued During the Period (Field Name: LTIT/PRD)

Data on the number of land titles issued in urban areas can be obtained from land registry offices and/or municipalities. This information will provide an indication of land market activity and the level of control that local authorities exercise over urban development. This data is included in the database as both background data at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

2. Average Size of Land Titles Issued During the Period (Field Name: AVM2/TIT)

The average size of newly-titled residential land parcels provides a further indication about the nature of land available for formal development. Changes in the average plot size over time can indicate trends in land markets and the affordability of urban residential land to different population groups. This data is included in the database as background data for urban areas at the national, regional, and city levels, and annual data for urban areas at the national level and specific cities.

3. Residential Area Planned or Zoned during the Period (Field Name: RESAPLND)

Data on the total residential area that has been planned or zoned during a particular time period can be obtained from local planning agencies and/or government ministries. This data provides an indication of public sector planning efforts to manage urban development. In some cases, such as Jordan, there has been an over-zoning of residential land that has encouraged land speculation and resulted in haphazard and scattered development. This data is included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

4. Developed Residential Land Area (Field Name: RESADEV)

Satellite imagery, aerial photographs and maps can be used to obtain data on the extent of developed residential land area in urban areas. This data does not need to be extremely precise and can be updated on a periodic basis through remote sensing and on-site inspection. Monitoring this data over several years will provide a useful indication of trends

in residential development and overall urban growth. It is included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

5. Vacant Developed Residential Area
(Field Name: **VRESADEV**)

Vacant developed residential land also can be determined through remote sensing, municipal records and visual inspection. Vacant developed land is equipped with trunk infrastructure, even though very little or no housing development has occurred. Windshield surveys and maps can be used to estimate the extent of vacant residential land areas. This data is included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

6. Formally Subdivided Residential Area during the Period
(Field Name: **ASUBDIV**)

Data on formal residential subdivisions can be obtained by reviewing both public and private sector subdivisions that have been approved and are currently being implemented. Municipalities generally maintain detailed information on the nature and size of these subdivisions. This data provides indication of the formal supply of serviced residential land and its impact on urban growth. It is included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

7. Area of Informal Residential Neighborhoods
(Field Name: **INF4RESA**)

Informal residential areas have been well documented in many developing countries. Information on the land area covered by these neighborhoods is useful in monitoring their growth, determining densities (both in terms of population and housing units), and establishing requirements for urban infrastructure and services. The amounts of land covered by many of the older informal residential neighborhoods are known, although they need to be verified and updated to include any new development. Data on informal neighborhoods is included in the database as background and annual data for urban areas at the national level and specific cities.

8. Residential Area Developed by Public Sector
(Field Name: **PUBRESA**)

Data on the residential land area developed by public sector agencies is relatively easy to obtain. In most cases, public sector land development agencies monitor and publish their activities on a regular basis. This data is used to monitor public sector effectiveness in actual land development. It is included in the database for urban areas at the national level and specific cities.

9. Residential Area Developed by Private Developers (Field Name: PRVRESA)

The amount of residential land area formally developed by the private sector can be obtained from records kept by major land developers and/or municipalities. Visual inspections also may be needed to determine the nature and status of these subdivisions. The degree to which residential land is formally developed by the private sector will vary considerably from one country to another. This data is included in the database for urban areas at the national level and specific cities.

10. Number of Informal Housing Units Regularized (Field Name: INFHUREG)

The regularization of informal housing units in recent years has been emphasized by both donor agencies and host country governments. Specialized agencies have been created to carry out upgrading programs in many developing countries. Published data concerning these activities, therefore, should be available on a regular basis. The regularization of informal housing units is a good indication of the ability of local authorities to respond to urban problems and better manage their own growth. This data is included in the database for urban areas at the national level and specific cities.

D. INFRASTRUCTURE AND ENVIRONMENT

Data in this category concerns the provision of urban infrastructure and services, all of which have a direct impact on the urban environment. Most of the data included in this part of the database can be found in national censuses, annual reports by utility agencies and municipal records.

1. Housing Units with Piped Water Connections (Field Name: HUPIPH20)

Data on the number of housing units served by piped water connections is included in national censuses. Data also may be expressed in terms of the number of households having access to piped water. Connections to housing units are used in this database in order to avoid problems in defining exactly what is meant by "access". In addition, the number of housing unit connections can be updated easily from the records of utility agencies. This data is included in the database as background data for all geographical levels and as annual data for urban areas at the national level and specific cities.

2. Housing Units with Sewer Connections (Field Name: HUSEW)

Data on the provision of sewage facilities is expressed in terms of the number of connections to housing units. Again, this avoids definitional problems and makes it easier to update data. Sewage data is a key data element in determining urban environmental quality at the household and neighborhood level. Basic information can be obtained from national censuses, utility company reports and documents, and/or municipalities. Data on new connections should be available from utility companies on an annual basis. This information is included in the database as background data for the three geographic levels and annual data for urban areas at the national level and specific cities.

3. Housing Units with Electricity Connections
(Field Name: HUELEC)

A baseline number of housing units with electrical connections can be obtained from census data and updated with information from electricity companies (e.g., SONEDE in Tunisia). Documenting the number of housing units newly connected to electricity provides another indication of changes in housing quality and environment. This data is included in the database as background data for the three geographic areas and annual data for urban areas at the national level and specific cities.

4. Households Benefitting from Solid Waste Collection
(Field Name: HHWASTE)

Data on solid waste collection is important in monitoring neighborhood environmental conditions. Precise data on the number of households benefitting from this service, however, is difficult to obtain. Estimates would have to be made based on the population densities of the neighborhoods serviced by solid waste collection. In some cases, households are taxed for these services. Their number would provide a potential source of data. This data is included in the database as background data for urban areas and annual data for urban areas at the national level and specific cities.

5. Investment in Urban Roads
(Field Name: INVSTRDS)

Local road networks are important for orderly residential development and the promotion of economic activity. Investment in local level roads is a good indication of a city's ability to promote and direct urban growth. Balanced investment programs are built on adequate funding for new roads. This data is included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

6. Investment in Water Supply
(Field Name: INVSTH2O)

Investment in piped water supply indicates the importance given to this element of infrastructure and the ability of utility companies to meet demand generated by urban growth. Monitoring the level of investment will provide an idea of trends in the provision of services. This data is included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

7. Investment in Sewers
(Field Name: INVSTSEW)

Investments in sewers is also an important indicator of potential improvement in housing conditions and environmental quality. On a per capita basis, it provides a simple way of measuring the effective distribution of this service and whether the situation can be expected to improve or decline in the near future. This data is included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

8. Investment in Electricity
(Field Name: **INVSTELEC**)

Electricity supply is another indicator of living conditions and environmental quality. Investment in electricity will provide an indication of how this service is meeting demand. This data is included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

9. Amount of Private Sector Infrastructure Finance
(Field Name: **AMTPRVINF**)

Currently, only a small amount of urban infrastructure is directly financed by the private sector in most developing countries. It is anticipated, however, that the role of the private sector in providing urban infrastructure and services will increase to a significant degree in the future. While initial data from municipalities on private sector involvement in infrastructure financing would be difficult to obtain, this is an area of future interest to USAID. Data would be included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

E. MUNICIPAL FINANCE AND DEVELOPMENT

The last group of data variables in the database will increase their importance in the future as USAID and host country governments continue their efforts to strengthen municipal development. Variables included in this section of the database should provide a means to adequately monitor this development.

1. Budgeted Municipal Revenues
(Field Name: **MREVBDGT**)

Data on budgeted municipal revenues is included in the database as a planning reference against which actual municipal performance can be compared. It can be compared to a number of other variables. This data is included in the database as background data for urban areas at the national, regional, and city levels, and as annual data for urban areas at the national level and specific cities.

2. Actual Municipal Revenues
(Field Name: **MREVACT**)

Actual municipal revenues can be compared with budgeted municipal revenues to provide an idea of how well municipalities have performed. Actual revenues also can be compared to individual components of this revenue to monitor improvements in tax collection, the development of own source financing of capital expenditures. This data is included in the database as background information for urban areas at the national, regional, and city levels, and as annual data for urban areas at the national level and specific cities.

3. Municipal Revenues from Property Related Taxes (Field Name: REVPRPTX)

Property related taxes are an important source of municipal revenue. All municipalities for example, have some taxable real estate within their boundaries. In most cases, the property tax base is quite broad, a situation that allows the tax burden to be distributed across a large segment of the population. In addition, property values are enhanced by the provision of infrastructure and local government services. This makes taxes on property a very appropriate means to recover the costs of improvements. In addition, cross subsidies can be developed that will avoid overburdening the poor. Municipal revenues from property taxes include taxes on both developed and undeveloped land. These taxes are separated from other local taxes in the database because they relate directly to residential growth and development. This data is included in the database as background data for urban areas at the national, regional and city levels and as annual data for urban areas at the national level and specific cities.

4. Municipal Revenues from Other Local Taxes (Field Name: REVLOCTX)

Other local taxes include business taxes, hotel taxes and miscellaneous. Business taxes are assessed on gross receipts/turnover from industrial, professional or commercial establishments. Hotel taxes are assessed on the gross receipts from hotels and tourist operations, and passed on as costs to hotel guests. This data is included in the database as background data for urban areas at the national, regional, and city level and as annual data for urban areas at the national level and specific cities.

5. Municipal Revenues from Services and Fees (Field Name: REVSVFEE)

Examples of revenues from fees and service charges include: slaughterhouse and market fees; land transaction fees; permits for building or renting; fees for services rendered; and other miscellaneous fees. This data is included in the database as background data for urban areas at the national, regional, and city levels and annual data for urban areas at the national level and specific cities.

6. Amount of National Grants to Municipalities (Field Name: NATGRNTS)

This data provides an indication of central government activity in providing grant funds to local authorities, the distribution of these funds, and the extent to which local governments are dependent on them for financing. It includes both general and function specific grants. This data is included in the database as background data at the national, regional, and city levels and as annual data for urban areas at the national level and specific cities.

7. Amount of Subsidized Loans to Municipalities (Field Name: AMTSBLNS)

In many developing countries, a limited number of subsidized loans are offered to local governments. Such loans can be an important source of financing for development projects. Because they are subsidized, however, they are generally unsuccessful in providing adequate funding to meet the needs of municipalities. The indiscriminate use of subsidized

loans also inhibits sound financial management at the local level and reduces the imperative to develop own source revenues. This data is included in the database as background data at the national, regional, and city levels and as annual data for urban areas at the national level and specific cities.

8. Number of Market Rate Loans to Municipalities
(Field Name: **NMKTLNS**)

The number of market rate loans to municipalities indicates the confidence and ability of the financial sector in lending to municipalities. It is anticipated that both supply and demand for these loans will grow in the near future as the need for local level resources and decentralization increase. This data is included in the database as background data for urban areas at the national, regional, and city level and as annual data for urban areas at the national level.

9. Amount of Market Rate Loans to Municipalities
(Field Name: **AMTMKTLN**)

The total amount of market rate loans to municipalities can provide an indication of their financial health. Municipalities should be better able to meet their needs for infrastructure and other capital improvements as their access to market rate loans becomes better. This data is included in the database for urban areas at the national, regional, and city levels and as annual data for urban areas at the national level and specific cities.

10. Number of Municipalities Borrowing
(Field Name: **NBMUNBOR**)

The overall number of municipalities borrowing market rate loans provides a good indication of their success in developing the financial capability and strength to be able to borrow. This data is included in the database as background data for urban areas at the national and regional levels and annual data for urban areas at the national level.

11. Debt Ratio
(Field Name: **DBTRATIO**)

Debt ratio compares the actual annual debt incurred by municipalities with that allowed under ceilings imposed by central government regulations. In Tunisia, for example, many municipalities are borrowing much less than their legislated limit. This data is included in the database for urban areas at the national, regional, and city levels and as annual data for urban areas at the national level and specific cities.

12. Debt Service
(Field Name: **DBTSERV**)

Debt service involves the annual amount of money that municipalities must pay back on outstanding loans. It is the sum of actual repayments of principal and interest made on publicly guaranteed debt. This is an obligatory expenditure in municipal budgets. It is included in the database as background data for urban areas at the national, regional, and city levels and as annual data for urban areas at the national level and specific cities.

13. Amount of Capital Expenditures
(Field Name: **CAPEXP**)

Capital expenses include direct investments for municipal building, roads, street lighting and facility/vehicle purchase. This data is included in the database as background data for urban areas at the national, regional, and city levels and as annual data for urban areas at the national level and specific cities.

14. Amount of Operating Expenses
(Field Name: **OPEREXP**)

Operating expenses include both obligatory expenses that municipalities are required to include in their budgets, and optional expenses that may be incurred if funds permit. Obligatory expenses would include: debt service on outstanding loans, compensation of personnel and other remuneration; rents, taxes and expenses for water, light and telephone etc.; maintenance of a meeting place for the government; maintenance and repair of municipal buildings; maintenance, alignment and rehabilitation of roads, watercourses, canals, reservoirs, evacuation canals, drainage or stormwater facilities; expenses necessary to carry out civil acts, provide documents etc.; and other activities required by law. This data is included in the database as background data for urban areas at the national, regional, and city levels and as annual data for urban areas at the national level and specific cities.

15. Amount of Reserves
(Field Name: **RESERVES**)

Municipal funds that are unexpended at the end of the fiscal year are included as reserves. Reserves, in Tunisia, generally are used to finance municipal facilities and/or to cover future deficits. This data is included in the database as background data for urban areas at the national, regional, and city levels and as annual data for urban areas at the national level and specific cities.

16. Amount of Own Source Financing of Development
(Field Name: **AMTOWNDEV**)

The ability of local municipalities to finance their own development is a sign of successful decentralization policies. Own source financing includes all locally obtained revenues that are used for financing capital development. Data on own source revenues will be monitored on an annual basis. It is cumulated over specified periods and entered into the database as background data for urban areas at the national, regional, and city levels. It also is included as annual data for urban areas at the national level and specific cities.

Annex 2.

Basic Instructions for Operating the Database

1. OPENING LOTUS 1-2-3 VERSION 3

In most cases, Lotus 1-2-3 Version 3 will be installed in one of the drives in the hard disk. When the prompt for the appropriate drive is shown on the screen, type "**cd 123R3**" and press the key for "**Enter**". When a new prompt appears, type "**123**" and press "**Enter**". A Lotus logo should appear on the screen followed by a blank worksheet.

2. RETRIEVING THE DATABASE FILE

Once a blank worksheet is on the screen, type "**/**" to open up the main menu and then "**fr**" (File, Retrieve) to obtain a menu across the top of the screen that lists worksheet files in the active drive. If the desired database is stored in this drive, use the arrow keys to move the cursor and highlight its name (eg. TUNISDB.WK3, RABATDB.WK3, etc.) Once highlighted, press "**Enter**". After a brief period, the database should come to the screen. If the desired database is not in the active drive as shown by the list of files in the menu, use the "backspace" key to erase the data line information that includes the identifying letter of the drive. Type the desired drive letter, followed by ":" and press "Enter". For example, if the desired database file is on a disk in drive "A", type "**A:**" and press "**Enter**". The list of worksheet files on the disk will appear at the top of screen. Select the file by highlighting and press "**Enter**".

3. MOVING THROUGH THE DATABASE

Moving through the 26 worksheets in the database file is very simple. Press the keys for "**Control**" and "**Page Up**" at the same time to move to the next worksheet and "**Control**" and "**Page Down**" to return to the previous one. Press keys for "**Control**" and "**Home**" at the same time to return the screen to the first or Analysis Worksheet.

It is also possible to split the screen with the "**/wwh**" or "**/wwv**" commands followed by "**Enter**". This divides the screen into two distinct parts. In this way, two parts of the same worksheet can be viewed or parts of two different worksheets. The key "**F6**" moves the cursor from one window to another and activates that window. Commands to move through the database can be used separately for each window. Windows can be cleared by typing "/wwc" followed by "**Enter**".

4. SORTING DATA

Sort ranges have been created to facilitate the sorting of data and reduce the possibility of making mistakes and/or mixing data. Care should be taken while updating and/or modifying these ranges.

There are three procedures that can be followed to sort data. The first is to use the macro commands that have already been written into each worksheet for this purpose. When keys for "Alt" and "F3" are pressed at the same time, a list of macro ranges will appear at the top of the screen. Highlighting the appropriate name and pressing "Enter" will run that macro.

In selecting the macros to run, it should be remembered that each macro name begins with the identifying letter of the worksheet (i.e. "M" through "W") followed by "SORTYEAR", "SORTPLACE" or "SORTENTER", according to the type of sort to be carried out. Using these macros is the easiest and safest way to sort data. They are written in each spreadsheet and can be changed once the user has developed greater familiarity with the way in which they are written. Subsequent sorting can be carried out using any field.

A second way to sort data is to type "**/ds**", the name of the sort range (shown on each worksheet) and the key "Enter".

A third way is to establish a new sort range using Lotus database commands. Before doing this however, the user should be fully familiar with the way in which Lotus sorts data.

5. EXTRACTING DATA

The Analysis Worksheet uses three approaches to extract data from the database that relate to: user defined indicators; PRE/H monitored indicators; and individual data items.

a. User Defined Indicators

The worksheet is set up to create user defined indicators for 1) the comparison of percentage change over three periods of time, 2) the per capita distribution for four periods of time, and 3) the comparison with a base variable, also for four periods of time. A common variable can be compared for two geographic locations, or two different variables compared for the same geographic location. The geographic location, years and data variable are determined by the user and must be entered into the appropriate cells in the worksheet. Care should be taken to spell names correctly and enter dates that correspond to periods in the database. Years should be entered from left to right in ascending order.

Pressing keys for "Alt" and "A" at the same time produces a menu at the top of the screen that indicates the geographic level for which a data variable is desired (i.e. "NATIONAL", "REGIONAL", "CITY" or "ANNUAL"). Once the appropriate level is highlighted by the cursor, the key "Enter" is pressed and a new menu appears that indicates the category in which the data variable is located (i.e. "BASIC", "HOUSING", "LAND", "INFRASTRUCTURE" and "MUNICIPAL"). The desired category is highlighted and the key "Enter" is pressed again.

A final menu then appears at the top of the screen that refers to the seven variables found in this first part of the Analysis Worksheet ("GAP1", "GAP2", "CAPITA1", "CAPITA2", etc.). These essentially determine where the data should go in the worksheet. The appropriate variable is highlighted and "Enter" pressed once again to complete the operation.

b. PRE/H Indicators

The second part of the Analysis Worksheet is divided into six sections for PRE/H monitored indicators. These include: own source financing of municipal development; cost recovery in housing financing; private sector financing of infrastructure; percentage change in acceptable housing units; changes in water and sewer connections; and the distribution of Housing Guaranty and other donor assistance.

Establishing these indicators is done in a way similar to that for the user defined indicators described above. The desired geographic location and years are entered into the worksheet, and a series of menu commands employed to extract data.

The keys "**Alt**" and "**B**" are pressed at the same time to start the process. The first menu indicates the section of the worksheet to be involved (i.e. "**OWNSOURCE**", "**LOANS**", "**INVESTMENT**", "**HOUSING**", etc.). Selection is made by highlighting one of these choices and pressing the key "Enter".

A second menu appears at the top of the screen related to the geographic level of the data (i.e. "**NATIONAL**", "**REGIONAL**", etc.). A selection is highlighted and "**Enter**" is pressed again to complete the operation. Once again, care should be taken that names are correctly spelled and the correct years are entered into the worksheet.

c. Extracting Individual Data

Similar menu-driven procedures are used to extract individual items of data from the database. Again, the geographic location, year and variable "field name" must first be entered into the worksheet.

Pressing keys for "Alt" and "C" at the same time will bring up a menu for the geographic level (i.e. "**NATIONAL**", "**REGIONAL**", etc.). Selecting the appropriate level and pressing "**Enter**" will bring up a second menu concerning the category of the data (i.e. "**BASIC**", "**HOUSING**", "**LAND**", etc.). Selecting the correct category and pressing "**Enter**" will complete the operation.