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**HOUSING NEEDS ASSESSMENT STUDY:
ZIMBABWE**

JUNE 1985

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HOUSING NEEDS ASSESSMENT STUDY

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Note to the Reader

This study was carried out in Zimbabwe in early 1985. At that time only limited preliminary and provisional data from the 1982 census were available. Data from the 1969 census were considered to be too out of date to be of value for the analytical requirements of the study. Many of the major inputs to this analysis, such as the number and condition of dwellings in the existing building stock, household income levels, income distributions, and household sizes have been estimated from secondary sources. While the reliability of these estimates is unknown, wherever possible they have been checked against other independent sources and discussed with knowledgeable individuals.

The findings of this analysis should be treated as indicative rather than directive. Nonetheless, we believe that the major conclusions that are drawn are sound. When more complete tabulations from the 1982 census are made available, validation of the data inputs and assumptions is recommended.

Many of the concepts and calculations in this analysis are of a rather technical nature. We have attempted to describe briefly in the text the central features of the methods underlying the analysis. Nevertheless, some readers may want to refer to Preparing a National Housing Needs Assessment (USAID, 1984) for a detailed explanation of this technique.

A detailed study of existing housing finance systems in Zimbabwe has been conducted by the National Council of Savings Institutions. The EXECUTIVE SUMMARY of that study, Housing Finance in Zimbabwe, is included as Annex 1 to this report. For this complete report see Housing Finance in Zimbabwe, prepared for The Office of Housing and Urban Programs, Agency for International Development, by the National Council of Savings Institutions, April 1985.

Throughout this report, monetary amounts are stated in 1984 Zimbabwe dollars.

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EXECUTIVE SUMMARY

Zimbabwe confronts the large and challenging task of providing adequate housing for its population. The economic disruptions of the recent war of independence and the investment requirements for other development make the task of providing adequate housing especially difficult. Yet within these constraints there are opportunities to make great progress towards providing adequate shelter for all households. With affordable standards and a plan that takes an incremental approach, the goal of providing adequate housing should be attainable. But to move ahead too fast, or to establish standards that are not generally affordable, is to run the risk of hindering the creation of new jobs and unduly limiting other social development programs.

The scope of what we believe can be accomplished may disappoint some who have visions of moving ahead quickly with an ambitious housing development program, but Zimbabwe's current capacity to provide housing at a high standard to all is limited. Recognizing these limitations and working within them offers the greatest hope of providing acceptable housing with equity to all. Zimbabwe's economic potential is great; with economic growth higher housing standards will be forthcoming.

The methodology that has been applied in this analysis is the "Basic Needs" approach described in Guidelines for the Preparation of a Housing Needs Assessment (USAID, 1984). Using data on the demographic and economic characteristics of the population, along with estimates of the cost of constructing housing units that meet acceptable standards, this methodology estimates the annual production and investment requirements needed to provide adequate housing to the country within a

given planning period. These investment requirements are compared to the total housing investment that households can afford to make. Where there is a shortfall, this gap represents the amount of subsidies or other additional resources that must be mobilized to achieve the objectives of the housing plan. Throughout this analysis, estimates of required housing production and investment are predicated on the assumption that the goals of the housing program are fully met in every year of the plan.

Our analysis indicates that the costs of an ambitious housing program in Zimbabwe are currently not affordable. Providing every family in Zimbabwe with at least a four-room core dwelling within the next few decades would require massive resources that are not now available. Given projected rates of population growth and rural-to-urban migration, providing acceptable housing to all urban family households alone within 15 years will require an initial annual production rate of approximately 60,000 units. By the end of the period, more than 90,000 units will be needed annually. An additional 67,000 units per year initially will be required to accommodate rural population growth and to begin the task of completely replacing the rural housing stock within 30 years. By 1999, the yearly production required to meet rural housing objectives will climb to nearly 87,000 units.

The investment levels required to accomplish such a plan are staggering. In 1989, for example, a total investment of \$688 million (in 1984 prices) will be required. This would consume more than 9 percent of gross domestic product (GDP). As the population grows over

time, larger investments will be needed, though roughly the same share of GDP will be invested in housing as economic growth keeps pace with the demand for new housing.

The cost of four-room core units exceeds what is affordable by a majority of Zimbabwe's family households. At least half of the households in urban areas, and virtually all of the rural area households, cannot afford dwellings of this type without varying degrees of assistance. Given expected levels of future income -- even assuming that households devote an unusually large 27.5 percent of their earnings to housing expenses -- subsidies of nearly \$200 million would be required in 1989.

Simply housing the new households formed out of Zimbabwe's growing population will consume more than half of the total housing production requirements. Unfortunately, there will be no early relief from the pressure of population growth. Even an immediate decline in the rate of growth will offer only a limited reduction in housing investment requirements. This occurs because the population that will form the expected new households over the next two decades or so is already living. Some limited savings might arise if smaller households could be housed in less costly units.

Continued rural-to-urban migration is likely to decrease average urban household incomes and increase the need for urban housing. Falling incomes will create a situation of deteriorating affordability and a requirement for greater subsidies. Successful development of planned growth points in rural areas should help to

alleviate the growth pressure on major urban centers, and thereby lower the investment requirements for urban housing.

The enormous investment and subsidy requirements of a program that provides at least a four-room dwelling for all households suggests that a modest and incremental approach should be taken. While this will mean some reduction in planned housing standards, adequate capital must be available for the creation of new jobs and for other social investments.

Strategies aimed at providing affordable housing are critically needed. The Long Term Plan for the Construction and Housing Sectors of the Zimbabwe Economy: 1985-2000 represents a correct and constructive step in the necessary direction. We agree with its recommendation that "policies in investment need to be adopted to help increase the flow of funds into the housing sector, spread the distribution of these resources over a large number of households, minimize the subsidies and emphasize affordable and improvable shelter" (MCNH, 1984a; p. 34). To this end, our analysis shows that affordable major improvements in Zimbabwe's shelter situation can be accomplished if building standards in urban areas are revised and if households in rural areas are initially provided with improved sanitation and safe drinking water supplies. This represents an incremental approach to housing development. Over time, as resources permit, urban housing units constructed under a low-income housing program could be expanded, and existing dwellings in rural areas could be upgraded and replaced in accordance with rural development policy.

Two alternative approaches to the urban housing problem have been examined in our analysis. In essence, both approaches require high levels of occupancy in new dwelling units in order to attain affordability. The first approach is based on the standard four-room core unit solution, but requires accepting a continuation of the current practice of lodging. The second approach is also based on high levels of occupancy, but it provides for expandable two-room units for family households without the presence of lodgers. In the first alternative, where lodging is a requirement to achieve affordability, investment levels, subsidy requirements, and the required capital formation in housing begin to approach manageable levels. Housing investment in 1989 would be \$341 million and require under 6 percent of GDP, and subsidy requirements would be \$9 million. In the second alternative, investment and capital formation requirements are similar to those in the first alternative, but subsidy requirements rise sharply to \$32 million, indicating that this program would fall short of achieving the goal of full cost-recovery. Under any of these scenarios, a massive increase in construction activity will be necessary to provide adequate housing in urban areas alone. At least a tripling of recent maximum rates of production will be needed.

For the time being, all possible efforts should be made to retain what can be salvaged from the rural housing stock. There are indications that a significant portion of the existing stock could be classified as permanent and acceptable. A still larger share includes elements of modern construction, and could possibly be upgraded to meet

an acceptable standard. This represents an enormous standing investment that should be retained until other housing needs are met.

The goal of full cost-recovery will be difficult to attain if all households in Zimbabwe are to be adequately housed. Under any plan, very low-income households will require some assistance to afford adequate housing. Subsidy requirements under a plan that accepts lodging in minimum standard four-room core units are the smallest among the three scenarios.

Currently the formal sector does not provide housing that is affordable to low- and moderate-income households. Unless greater private sector involvement in housing production can be generated, the scope of government activity will be immense. Without more participation from the private formal sector, the required public budget allocations and production levels will greatly exceed those indicated in the Transitional National Development Plan. Steps should be taken to draw the private sector into the production of housing that is affordable to these groups. There are indications that, under the right conditions, the formal sector private construction industry could develop housing costing as little as \$6,000. Reducing the size of the public sector responsibility in this way offers handsome rewards to government in terms of a greatly reduced management burden. If private developers produce housing at this price, public sector involvement would approach the investment and production levels identified in the Public Sector Investment Program.

I. INTRODUCTION

The purpose of this report is to assist with the development of a long-term plan for Zimbabwe's housing sector. The first elements of a housing policy were set forth in Volumes 1 and 2 of the Transitional National Development Plan: 1982/83-1984/85 (Republic of Zimbabwe, 1982 and 1983). These early documents established principles that are reflected in the present housing policies of the Ministry of Construction and National Housing (MCNH). A strong emphasis is placed on achieving equity between socio-economic groups and geographic regions. Progress in improving housing for all of the population is expected to occur "at a rate commensurate with the rate of economic development and their self-reliant efforts." (Republic of Zimbabwe, 1982; p. 26). In addition, increased efficiency in the provision of housing is to be achieved through family and community involvement, the coordination of governmental bodies, and the development of cost-effective building technologies.

These broad principles have been translated into policies which have been implemented in the last three years. Nowhere is this more evident than in the three methods of housing construction encouraged by MCNH: aided self-help; the hiring of local building brigades; and, cooperative building efforts. The principle of self-reliance is evident in MCNH's policy of full cost-recovery in all housing projects. The MCNH has a policy of providing fully-serviced stands for new housing. The cost of much of the infrastructure and community facilities is recovered through local fee/rate schemes; the remaining costs, including the cost of the structures, are recovered directly from beneficiaries.

Although many policies are set at the Ministry level, Local Authorities and other agencies are charged with the task of implementing them. Thus, under this decentralized system, the responsibility for providing low-income housing mainly rests with Local Authorities. These bodies are responsible for servicing loans, as well as collecting rents and housing-related fees. Housing costs not recovered through these means must be met through general revenue funds. Since only the largest cities have public agencies equipped to plan and manage housing programs, various Ministries offer technical assistance to most places.

The Government of Zimbabwe appears to be especially committed to achieving equality between the urban and rural sectors. Rural development is an important theme that has been translated into several key programs. Foremost are the resettlement schemes, which are under the direction of the Ministry of Lands, Resettlement and Rural Development. These schemes include "village settlements with individual allocations of arable land and common grazing; settlements with communal living quarters and cooperative farming; [and] individual allocations of arable land around a central estate operated on a cooperative basis." (House, House, and Salt, 1983; p. 74). In resettlement areas, plots are carefully laid out by the Ministry of Lands, Resettlement and Rural Development, and the Ministry of Construction and National Housing assists in the construction of houses.

Housing is a key element in the government's overall resettlement strategy; however, resettlement has been a slow process largely due to the difficulty of acquiring land and organizing people to move. The problems being encountered are reflected in the low level of

activity in MCNH's Rural Housing Programme; only about 500 units were produced last year, and the construction of only about 1,000 units is anticipated in the upcoming year.

The housing problems facing Zimbabwe over the next two decades are immense. Accommodating rapid urban growth and rural development are equally challenging tasks that cannot be confronted separately. Neighboring countries provide harsh examples of what can happen to Zimbabwe if it fails to cope with these challenges. Fortunately, few countries in the developing world are better situated than Zimbabwe to handle their housing problems. The urban areas of Zimbabwe possess a high level of infrastructure with nearly complete water and sewerage reticulation. The vast majority of the dwellings in these areas, including those in poor areas, have waterborne sewage and individual water taps. With few exceptions (notably Epworth), squatter settlements have not been permitted to form; urban growth has manifested itself in the form of overcrowding rather than squatting. Although it could become a problem in the not-too-distant future, a shortage of land is not currently a constraint on housing development. Finally, the country's financial institutions are extremely well-developed and have extensive networks that reach most cities and towns. Thus, Zimbabwe is in a better situation to address its housing problems than most other countries with similar levels of income.

While the Government of Zimbabwe has assumed an active role as a producer of housing in recent years, the private sector construction industry has largely been inactive in the residential market. The private sector in the past has primarily served higher-income

households. With purchase prices of existing homes for this group hovering around sixty percent of replacement cost, the construction of new homes has been unprofitable (MCNH, 1984a; p. 8). The middle-income prospective homebuyer has been particularly affected by this building slump and finds himself either trying to purchase a unit beyond his means or competing with lower-income households for the remaining housing. In the end, low-income households bear the brunt of the housing shortage as they must double-up to compete for scarce housing.

Although there has been little housing production overall in recent years, the urban housing stock generally remains in good condition. Standards for new construction in both urban and rural areas are high, and homeownership is encouraged in urban areas. There remains, however, a wide disparity between the quality of the rural and urban housing stocks.

Description of the Housing Needs Assessment Procedure

Adequate shelter--along with nutrition, health services, and education--is a basic human need. Nonetheless, it is unrealistic to believe that all members of a country's population can be provided in one step with dwellings that conform to standards of industrial nations. Rather, the process of meeting housing needs must be viewed as incremental, and it must begin with standards that will be affordable both by housing occupants and by society at large.

Some of the housing that is needed can be provided through the improvement of existing dwelling units, since it is often not necessary to construct new replacement units to satisfy shelter

requirements. Upgrading programs can contribute measurably to bridging an existing housing deficit and greatly reduced financial and social costs.

The methodology applied in this study has been prepared to assist policymakers, planners, and analysts to develop a range of estimates of housing needs. Estimates of current and future housing needs are clearly a prerequisite for the formulation of an effective national housing policy. This methodology highlights the two central aspects of need: the projected need for housing (i.e., the number of dwelling units required over the planning period to house the population adequately) and the level of investment required to bring the entire housing stock to a minimum level of quality commensurate with projected requirements.

This housing needs assessment begins with an analysis of current housing needs and then projects future housing needs taking into account demographic, social, and economic changes likely to occur over the course of the planning period. Two components of needs are identified: (1) current needs for housing upgrading, replacement, or construction based on the condition of the existing housing stock; and (2) future needs reflecting population growth, household formation, urbanization trends, and decay of the existing stock.

In this methodology, the physical needs are projected in the form of units per income group and location over the planning period at five-year increments. The projections include separate estimates for the number of new dwelling units required to meet population growth, the number of upgradable units, the number of substandard units that are not

upgradable and therefore require replacement, and the number of additional dwelling units required to alleviate overcrowding. The incremental investment requirement of a housing program designed to meet these needs is computed. The investment requirement is further examined in terms of the portion of investment that will be recoverable through payments affordable by households, and the subsidy required to bring all households up to a minimum standard housing level determined by the policymaker.

To provide for the implementation of the housing needs assessment methodology, a relatively simple mathematical model and a computer program to solve the model have been used. Like all models, this one is based on certain assumptions that should be clearly understood both in structuring the scenarios to be analyzed with the methodology and in interpreting the results that it provides.*

The most important aspect of the methodology to be kept in mind is that the model does not have the capacity to handle the meeting of incremental targets. All calculations are based on the assumption that the total housing needs projected for each time period will be fully met with housing that satisfies minimum standards. In calculating investment, the model assumes that no future increments to the substandard housing stock will take place at any time following the base year chosen for the analysis.

*The assumptions and limitations embodied in the methodology and the model which implements it are fully described in Preparing a National Housing Needs Assessment (USAID, 1984). These are summarized in Chapter II of that report, "Overview of the Methodology," which is reproduced here as Annex 2.

The model uses disaggregations for metropolitan, other urban, and rural areas to project housing needs and specify the housing program. Housing needs for these three areas are projected for each five-year period within the planning period on the basis of population growth, interregional migration, household formation trends, and the program to upgrade or replace substandard units.

The total cost of new housing units and upgrades of existing housing units required to meet total projected housing needs are calculated on the basis of estimated unit costs. Key factors affecting the total cost of the housing program include growth in total household numbers, growth in the rate of urbanization and, especially, the minimum design standards and corresponding unit costs specified for the housing program.

The affordability of alternative housing packages is determined by current and projected incomes of the various sectors of the population requiring housing, and by the costs of these alternatives. The model projects household incomes for subsectors of the population by income distribution subgroupings. Housing affordability is based on household incomes, housing expenditure patterns, and the terms of housing finance.

On the basis of total shelter needs and the housing standards that are affordable by various segments of the population, the model determines national housing investment requirements, identifies segments of the population which make up the target group for housing programs, and estimates the level of direct subsidy required to bring all housing to the chosen standard.

Area Classification Scheme

Housing construction costs, income levels and distributions, rates of population growth, and possibly design standards are likely to vary among geographic areas of the country. To account for these differences, the population must be divided into groups that have relatively similar characteristics. Although any method of classifying areas into such groupings will be somewhat arbitrary, divisions should be made that generally correspond to the available data sources that are used to group like areas together.

Data on population and population growth rates for the municipalities reported in the preliminary publications of the 1982 census are shown in Table 1.1. From these statistics, a clear break-point appears between the largest areas, Harare (defined here to include Chitungwiza) and Bulawayo, and the other smaller municipalities. Each of the two largest areas exceeds the size of the next largest municipality, Gweru, by a margin of over five times. Population growth rates in these two areas also generally exceed those of the other smaller municipalities. In addition, building supplies, expertise, and administrative support systems that are directly available in Harare and Bulawayo may have to be brought into municipalities of smaller size.

Considering these factors together, Harare (including Chitungwiza) and Bulawayo are defined as "metropolitan areas" for the purpose of this analysis. The remaining municipalities and all other places defined as urban by the Central Statistical Office are classified together as "other urban areas." All other areas are considered to be "rural." It is important to note that these classifications are based on

Table I.1
Population Growth Rate by Urban Area
[Population and Average Earnings by Municipality]

Municipality	Population 1982	Annual Rate of Population Growth 1969-1982
Harare-Chitungwiza ¹	828,567	6.2%
Bulawayo	413,814	4.4
Gweru	78,918	4.2
Mutare	69,621	4.0
Kwekwe	47,607	3.3
Kadoma	44,613	4.6
Hwange	39,202	5.2
Masvingo	30,642	7.9
Zvishavane	26,758	4.1
Chinhoyi	24,322	4.7
Redcliff	22,015	7.5
Marondera	20,263	4.9
Chegutu	19,621	6.5

Sources: Central Statistical Office, 1982 Population Census: A Preliminary Assessment, February 1984, and Central Statistical Office, Quarterly Digest of Statistics, August/September 1984.

1. The separate jurisdictions of Harare municipality and Chitungwiza Town Council are linked here for economic purposes. In 1982, the population of Harare Municipality was 656,011 and the population of Chitungwiza Town Council was 172,556. As one economic entity, their combined population was 828,567.

economic considerations that are central to the methodology, and that cities and towns which are similar in an administrative sense, may possess characteristics that place them in different area classifications for the purpose of this analysis.

The remainder of this paper is made up of three chapters. The next two chapters, Chapters II and III, describe the data and assumptions that underly the "reference case" analysis, which is a scenario that incorporates the government's present housing policies. In Chapter II, estimates of housing needs are generated taking into account demographic factors and the size and condition of the existing housing stock. Chapter III builds on Chapter II, and explores the economic consequences of pursuing the "reference case" housing policies. The fourth and final chapter contains alternative scenarios that offer different interpretations of the available data, and examine the impact of alternative housing policies.

II. HOUSING PRODUCTION REQUIREMENTS, 1984 TO 2004

Estimating the number of dwellings needed in the future is probably the most familiar of the computations performed in this analysis, and there is a substantial literature on the subject. In this chapter, the number of dwellings required to accommodate increases in the number of households, to replace losses from the existing stock, and to reduce overcrowding are estimated. In addition, the number of units requiring an upgrade to reach an acceptable standard is determined.

Population Growth

The rate of population growth in Zimbabwe is very rapid in comparison with other countries of the world, and is among the highest for countries on the African continent. This rapid growth creates immense demands for new housing construction.

Certain indicators of recent population growth in Zimbabwe may not provide a reliable basis for projecting the future size of the country's population. The census that was conducted during 1982 has not yet been fully analyzed, although some provisional tabulations are available (CSO, 1984). These analyses show an annual rate of growth of 3.1 percent between 1969, the year of the previous census, and 1982. In the previous intercensal period, 1961 to 1969, the annual rate of growth was estimated at 4.05 percent. It is extremely unlikely that the rate of growth has declined as sharply as indicated by these growth rates. The Central Statistical Office has noted that the intercensal period was a time of upheaval, with a state of war prevailing over much of the country for much of the time. The impact of this on the accuracy of the census count in 1982 is difficult to assess at present,

but it is generally thought that there was a significant undercount. More accurate estimates of the rate of population growth will have to await a full analysis of vital statistics.

As an alternative to using intercensal growth rates as a basis for projecting population, this analysis draws on projected growth rates from sources published by organizations engaged in international population analysis. The International Bank for Reconstruction and Development (World Bank) projects population growth at 4.4 percent annually between 1980 and 2000 (World Bank, 1984). This is based on Zimbabwe's estimated current high rate of growth and its strong potential for continued rapid growth because of its high level of population momentum. Projections by the United Nations also suggest continued rapid population growth, but at rates that are more modest than the projections by the World Bank. Between 1980 and 2000, the U.N. projects that the population of Zimbabwe will grow at an annual rate of 3.5 percent, based on middle range estimates of fertility and mortality levels (United Nations, 1982). The United States Bureau of the Census also expects the population of Zimbabwe to grow rapidly. In 1983 it projected that the annual rate of growth was between 3.0 and 3.5 percent (U.S. Bureau of the Census, 1983).

Tabulations from the 1982 population census of Zimbabwe show that rapid urbanization occurred between 1969 and 1982 (CSO, 1984; p. 9). In 1982, 25.7 percent of the population was living in urban areas, compared with 18.4 percent in 1969. These tabulations also show that the most rapid urban growth has occurred in the largest urban places, indicating that metropolitan areas experience the heaviest rural-to-urban migration. Urban areas with at

least 20,000 inhabitants grew at a rate of 6.07 percent annually, while the remaining urban areas grew at a slower rate of 4.00 percent per year.

The United Nations projects continued rapid urbanization, such that by 2000, 38.2 percent of Zimbabwe's population is expected to be living in urban areas. This implies a substantial degree of rural-to-urban migration and an average annual urban growth rate of 6.17 percent over a twenty-year period. Under these conditions, the rural population is expected to grow at a rate of 2.37 percent per year. Other sources project substantially higher annual rates of urban growth, ranging as high as 11 percent.

An analysis of housing needs requires a projection of the size of the population that will require shelter at future points in time. In addition, because of differences in income levels and construction costs between rural and urban areas, separate projections of the population expected to be living in the metropolitan, other urban, and rural areas must be made. For this analysis, it is assumed that rapid rural-to-urban migration will continue into the future, though the extremely rapid rate of migration to metropolitan centers will decline somewhat over time. Several factors account for this. First, continued migration to urban centers will eventually satisfy the pent-up demand for rural-to-urban migration generated by pre-independence restrictions on movement into urban areas. Second, the government's policy of rural development around growth points should eventually reduce the pressure on metropolitan areas. These growth points are intended to be focal centers for urban activities in provinces with large rural populations. Third, it is doubtful whether the metropolitan areas will be able to generate employment at a rate that provides enough jobs for everyone seeking work. High rates of

migration to metropolitan areas would eventually be dampened by the difficulty of finding employment.

Considering these factors, we project that metropolitan areas will grow at an annual rate of 7.0 percent between 1984 and 1989, and then decline steadily over the remainder of the twenty-year analysis period to a rate of 5.2 percent per year in 2004 (see Table II.1). Other urban areas, including growth points, will also experience migration from rural areas and grow more rapidly than the country as a whole. Throughout the analysis period, the population in these areas is assumed to grow at a rate of 5 percent annually. Growth rates in rural areas will be less than the national average due to out-migration to urban areas, and will range between 2.30 and 2.40 percent per year. Combined together, the growth of metropolitan, other urban, and rural areas will produce an annual growth rate of 3.5 percent for the country as a whole throughout the twenty-year planning period.

Estimates of household size are required to translate population size into the number of households that will require shelter. Previous estimates of housing needs in Zimbabwe have generally relied on an estimated household size of 6.00 persons (USAID, 1981; and MCNH, 1984a). These earlier studies were conducted prior to the release of the 1982 census figures. Calculations made from provisional tabulations of the 1982 census indicate that there are 3.90 persons per household in metropolitan areas, 4.22 in other urban areas, and 5.08 persons per household in rural areas (CSO, n.d.1). These estimates are shown in Table II.1, and are based upon CSO statistics for a household size which does not necessarily reflect reality in some of the ongoing housing projects in the metropolitan areas, e.g. Kuwadzana. CSO household size tends

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REF. CASE - CSO STATISTICS (CURRENT) 6 FEB
POPULATION AND HOUSEHOLD FORMATION

Table II.1

	1984	1989	1994	1999	2004
	-----	-----	-----	-----	-----
Metropolitan Area					
Population (1000s)	1442.00	2022.00	2757.00	3655.00	4710.00
Annual Growth Rate %	0.00	6.99	6.40	5.80	5.20
Average Household Size	3.90	3.90	3.90	3.90	3.90
Total Households (1000s)	369.74	518.46	706.92	937.18	1207.69
New Households per Year	0.00	29.74	37.69	46.05	54.10
Other Urban Areas					
Population (1000s)	801.00	1022.00	1305.00	1665.00	2125.00
Annual Growth Rate %	0.00	4.99	5.01	4.99	5.00
Average Household Size	4.22	4.22	4.22	4.22	4.22
Total Households (1000s)	189.81	242.18	309.24	394.55	503.55
New Households per Year	0.00	10.47	13.41	17.06	21.80
Rural Areas					
Population (1000s)	5861.00	6585.00	7378.00	8273.00	9314.00
Annual Growth Rate %	0.00	2.36	2.30	2.32	2.40
Average Household Size	5.08	5.08	5.08	5.08	5.08
Total Households (1000s)	1153.74	1296.26	1452.36	1628.54	1833.46
New Households per Year	0.00	28.50	31.22	35.24	40.98
Country					
Population (1000s)	8104.00	9629.00	11440.00	13593.00	16149.00
Annual Growth Rate	0.00	3.51	3.51	3.51	3.51
Average Household Size	4.73	4.68	4.63	4.59	4.56
Total Households (1000s)	1713.29	2056.90	2468.53	2960.27	3544.71
New Households per Year	0.00	68.72	82.33	98.35	116.89

to reflect the single family situation and not the dwelling-group concept (which is discussed later), and hence there is a need for the alternative scenarios presented in Chapter IV.

Estimates of the Current Housing Stock

This section provides an estimate of the number of housing units in Zimbabwe and describes the condition of the existing stock. At the time of this study, no housing data were available from the 1982 census, and no complete and reliable estimates of the total housing stock could be found after consultation with knowledgeable sources. To overcome this limitation, it was necessary to generate estimates of the number of units and their condition for metropolitan, other urban, and rural locations. Units are classified as being: (1) permanent and in acceptable condition; (2) upgradable to an acceptable condition; or (3) so deficient as to be not upgradable, and therefore requiring replacement.

Urban housing stock. A number of assumptions are needed to generate estimates of the size and condition of the existing housing stock. The first assumption, and one that is hardly questionable, is that characteristics of the stocks in urban and rural areas are very different. The urban housing stock is generally believed to be in very sound condition, though it is severely overcrowded. Because of past government policies against the development of squatter settlements, improvised housing is not a significant share of the urban stock. The only major urban squatter settlement is Epworth, which is located on the outskirts of Harare. The sound condition of the urban stock was indicated in the results of a survey of high-density urban areas by Hoek-Smit (Hoek-Smit, 1983). This survey found the level of facilities to be generally very high, except in hostels and squatter

areas. Close to 90 percent of all households had access to waterborne sanitation, and a slightly higher share had water connections either inside or outside of their house (Hoek-Smit, 1983; pp. 17-18).

Preliminary (unpublished) tabulations from a sample of the 1982 census returns tend to confirm the sound status of the urban stock. In the metropolitan areas of Harare, Chitungwiza, and Bulawayo, more than 98 percent of the households questioned indicated that they had access to flush toilet facilities, and more than 99 percent said they had piped water either inside or outside of their house. Differences between the census-based estimates and Hoek-Smit's findings may be due to the latter's exclusive focus on high-density areas. By any measure, the urban housing stock of Zimbabwe is sound. Units without access to piped water or flush toilets can be readily upgraded to an acceptable condition. Based on these estimates, we assume that there are no urban housing units in Zimbabwe that are not upgradeable, and that only 5 percent of the existing metropolitan and other urban housing stock will require upgrading to reach an acceptable condition.

Although the stock in all urban areas is largely sound, migration to urban centers and a stagnant residential construction industry have created severe levels of crowding. Again, the unavailability of tabulations from the 1982 census require that rates of overcrowding be derived from secondary sources of data. Records from Local Authorities and the former Ministry of Local Government and Housing for 1978 indicate that there was a housing backlog equal to 26 percent of the stock (USAID, 1981; p. 29). Continued migration and the depressed level of residential construction since then have exacerbated this condition.

Using a cross-tabulation of households by the number of household members and the number of rooms per household from the Hoek-Smit survey, a more current estimate of the overcrowding rate can be developed. To do this, we have defined an overcrowded household to be one having more than two persons per room or one that shares a room with another household. On this basis, we estimate the rate of overcrowding in metropolitan and other urban areas to be 39 percent. (See Annex 3 for a complete description of the methodology used to derive this estimate.)

Using these assumptions about the condition of the existing stock and the level of crowding, estimates of the housing stock in metropolitan and other urban areas can be derived from the number of households estimated earlier. As shown in Table II.2, there are an estimated 266,000 dwelling units in the metropolitan areas of Zimbabwe, of which 13,300 are upgradable to an acceptable standard, and 103,740 are overcrowded. In the other urban areas of the country, there are an estimated 136,560 dwelling units, of which 6,830 are upgradable, and 53,250 are overcrowded.

Rural housing stock. Estimating the housing stock in rural areas for the purpose of this study is straightforward. According to the current understanding of the Ministry of Construction and National Housing, most units in commercial resettlement and communal farming areas need to be replaced. Although a portion of the rural housing stock is constructed of modern materials, or a combination of modern and traditional materials, the Ministry believes that these units are not properly located with respect to its rural housing development scheme. Accordingly, the entire rural housing stock is classified as non-upgradable in this analysis. Unlike the situation in urban areas, it has been assumed that there is no overcrowding in rural areas

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REF. CASE - CSD STATISTICS (CURRENT) & FEB
HOUSING STOCK AND REPLACEMENT

TABLE II.2

	1984	1989	1994	1999	2004
	-----	-----	-----	-----	-----
Metropolitan Area					
Dwelling Units by Construction Standard					
Acceptable Construction	252.70	440.43	667.91	937.18	1207.69
(Annual Planned Repl.)	0.00	5.05	8.81	13.36	18.74
Non-Upgradable Construct.	0.00	0.00	0.00	0.00	0.00
(Annual Planned Repl.)	0.00	0.00	0.00	0.00	0.00
Upgradable Construction	13.30	8.87	4.43	-0.00	-0.00
(Planned Ann. Upgrading)	0.00	0.89	0.89	0.89	0.00
Total Dwelling Units	266.00	449.30	672.34	937.18	1207.69
Total Overcrowded Units	103.74	69.16	34.58	0.00	0.00
Planned Annual Construction to					
Relieve Overcrowding	0.00	6.92	6.92	6.92	0.00
New Households/Year	0.00	29.74	37.69	46.05	54.10
Construction New Units/Yr	0.00	41.71	53.42	66.33	72.85
Total Construction/Year	0.00	42.60	54.30	67.21	72.85
Other Urban Areas					
Dwelling Units by Construction Standard					
Acceptable Construction	129.73	202.13	289.21	394.55	503.55
(Annual Planned Repl.)	0.00	2.59	4.04	5.78	7.89
Non-Upgradable Construct.	0.00	0.00	0.00	0.00	0.00
(Annual Planned Repl.)	0.00	0.00	0.00	0.00	0.00
Upgradable Construction	6.83	4.55	2.28	0.00	0.00
(Planned Ann. Upgrading)	0.00	0.46	0.46	0.46	0.00
Total Dwelling Units	136.56	206.68	291.49	394.55	503.55
Total Overcrowded Units	53.25	35.50	17.75	0.00	0.00
Planned Annual Construction to					
Relieve Overcrowding	0.00	3.55	3.55	3.55	0.00
New Households/Year	0.00	10.47	13.41	17.06	21.80
Construction New Units/Yr	0.00	16.62	21.00	26.40	29.69
Total Construction/Year	0.00	17.07	21.46	26.85	29.69

REF. CASE - CSO STATISTICS (CURRENT) 6 FEB
HOUSING STOCK AND REPLACEMENT (CONTINUED)

TABLE II.2
(Continued)

Rural Areas

Dwelling Units by Construction Standard

Acceptable Construction	0.00	334.81	683.20	1051.67	1448.88
(Annual Planned Repl.)	0.00	0.00	6.70	13.66	21.03
Non-Upgradable Construct.	1153.74	961.45	769.16	576.87	384.58
(Annual Planned Repl.)	0.00	38.46	38.46	38.46	38.46
Upgradable Construction	0.00	0.00	0.00	0.00	0.00
(Planned Ann. Upgrading)	0.00	0.00	0.00	0.00	0.00
Total Dwelling Units	1153.74	1296.26	1452.36	1628.54	1833.46
Total Overcrowded Units	0.00	0.00	0.00	0.00	0.00
Planned Annual Construction to					
Relieve Overcrowding	0.00	0.00	0.00	0.00	0.00
New Households/Year	0.00	28.50	31.22	35.24	40.98
Construction New Units/Yr	0.00	66.96	76.37	87.36	100.48
Total Construction/Year	0.00	66.96	76.37	87.36	100.48

TOTAL COUNTRY

New Construction/Year	0.00	125.29	150.80	180.08	203.01
Total Construction/Year	0.00	126.64	152.14	181.42	203.01

because of the relative ease with which simple traditional shelters can be built. Using the number of households estimated above, we estimate that there is a total of 1,153,740 rural dwelling units.

Recognizing the position of MCNH with respect to rural housing, it is nonetheless interesting to develop a picture of the rural housing situation. Currently there is only very sketchy information by which estimates of the condition of the rural stock can be developed. The Permanent Sample Survey Unit of the Central Statistical Office has conducted surveys in the communal lands that have recorded the number of dwellings by type of construction (CSO, Permanent Sample Survey Unit, 1984 and 1984a). Units were classified as being traditional, mixed, detached, semi-detached, or other. Detached and semi-detached dwellings were constructed of modern materials, and mixed units had elements of both modern and traditional construction. If the survey results for the communal lands in Manicaland and Masvingo provinces are representative of rural housing conditions in general, then there are an estimated 59,000 permanent units in rural areas that may be in acceptable condition. To the extent that units of mixed construction have salvageable features and can be improved, another 493,000 dwellings could be raised to an acceptable level through upgrading. Most of these, however, are located such that they do not fit into the current rural development scheme.

The Housing Program

The MCNH has indicated that it would like to provide adequate housing to all urban area residents within a period of 15 years, and to all rural residents within 30 years. The housing production requirements needed to reach these goals are shown in Table II.2. For the country as a whole, an annual production rate of 126,640 housing solutions is required between 1985

and 1989. Of this amount, 125,290 new units must be constructed since the existing stock provides limited opportunities for upgrading. Rural areas will require 66,960 new units annually during the period, exceeding the total urban requirements for new unit construction by a margin of nearly 9,000 units. In addition to the construction of more than 58,000 new units, urban areas will need to upgrade 1,350 units annually.

The Central Statistical Office monitors the number of houses and flats included in municipal building plans from time to time. These figures are based on plans approved rather than on the number of units actually completed, and as such, are likely to represent an upper bound for the number of units actually constructed. At its peak, the largest number of units included in building plans was 15,718 in 1978 (CSO, 1984a; tables 15.3 and 15.4). Clearly, historical levels of housing production in urban areas fall far short of the more than 58,000 new units per year that will be required between 1985 and 1989.

Out of the new construction that is required in the period from 1985 to 1989 under the prospective program, more than half (55 percent) of the units are required to accommodate new households that will be formed out of Zimbabwe's rapidly growing population. The remaining new construction is needed to eliminate the existing housing backlog in urban areas, and to replace the entire rural housing stock. A modest amount of production, which will increase over time as the size of the stock increases, will be needed to replace units that deteriorate to an unacceptable condition or otherwise drop out of the stock. These units are assumed to leave the stock at an annual rate of 2 percent in both urban and rural areas.

III. HOUSING AFFORDABILITY AND INVESTMENT REQUIREMENTS

This section identifies the annual levels of investment that are required over a twenty-year analysis period to provide adequate housing for Zimbabwe under the national housing plan described earlier. Separate estimates are made for: (a) households who are in the target group, i.e., households that are unable to afford the cost of private formal sector housing, and (b) households who are not in the target group because they can afford to purchase housing from the private formal sector.

Total investment requirements are determined as the product of the number of dwellings that are needed to meet the goals of the housing program and the design cost of the dwellings produced. Not all households, however, will be able to afford the cost of minimally adequate shelter. Thus, this section also identifies the level of subsidy needed to close the gap between the cost of providing minimally adequate housing and what households can afford to pay. This capital shortfall is referred to as a subsidy which could be found in either the public or private sector, or both.

In the discussion that follows, the design standards and costs of the units to be constructed under the program are described first. This is followed by a short description of Zimbabwe's economic environment which, in turn, serves as a background for developing estimates of household income levels in each quintile and geographic area. Based on these estimates and on expenditure patterns for housing, affordability levels are established. Subsidy requirements are then estimated as the difference between the investment needed to provide

adequate housing and the total affordable payments that households can make.

Housing Design Standards and Unit Costs

Improvements in the housing stock can be achieved by new construction and through improvements to existing upgradable units. The total investment necessary to provide adequate housing for the nation depends on both the number of housing solutions needed and their unit cost. At higher costs fewer households are able to afford the total cost of new or upgraded units without some degree of assistance. For these households, subsidies are needed to close the gap between what they can afford and the cost of a solution that provides them with adequate housing. With lower, but still acceptable design standards and costs, more households will be able to afford adequate housing out of their own resources, and the total housing investment and subsidy requirements will be correspondingly reduced. Thus, a critical variable in determining both total housing investment and the subsidy needed to meet this required investment is the cost of minimum standard housing provided to low-income families.

Housing standards. For the purposes of this study, we have adopted two standard public housing solutions: one for metropolitan and other urban areas, and another for rural areas. The analysis for the reference case assumes that target group households living in metropolitan and other urban areas will occupy what MCNH calls a "standard core house." In rural areas it has been assumed that the housing solution for target group households will be a standard multi-structure unit comprised of a core house, a kitchen, and a toilet and

washing facility. Table III.1 displays the design criteria established by MCNH, as well as cost information for housing units in urban and rural areas. The MCNH only has a few standard plans for low-cost housing, but allows other designs if they meet the basic criteria described in the table. (The city of Harare, for example, has about a dozen plans for its Parkridge-Fontainbleau low-income housing project.) Table III.2 shows the components of housing cost attributable to land, infrastructure, and superstructure. Design and cost information for urban housing was drawn from the USAID-sponsored Parkridge-Fontainbleau low-income shelter project in Harare (MCNH, 1984 and 1984b). Similar data for rural housing was largely based on MCNH's Rural Housing Programme experience in Tokwe.

Both the metropolitan/other urban and rural housing schemes employ the aided self-help concept. Under this system, beneficiaries may perform all of the construction work themselves or, alternatively, employ small-scale builders. Another method available, though seldomly used, is the use of Local Authority building brigades. Brigade labor is estimated to be about 50 percent more expensive than labor hired directly by a beneficiary, largely because of higher administrative and overhead costs (MCNH, 1984). In urban areas, the program requires that 4 rooms be completed within 18 months of the date of stand allocation.

In practice, a large portion of the construction in urban areas is performed by small-scale builders. This is consistent with findings in other countries where self-help methods are encouraged (World Bank, 1980). In rural areas, where the experience of MCNH is somewhat more limited, there are also indications that households have hired small-

Table III.1 Public Housing Solutions for Metropolitan/Other Urban and Rural Areas: Reference Case

Metropolitan/Other Urban Areas

Standard Core House

Cost (1984):	\$5,348
Stand size:	300.0 square meters
House Area:	49.7 square meters

Construction characteristics: According to MCNH policy, houses in urban areas must be single-story detached units constructed of burnt brick, stabilized soil/cement block or concrete block masonry. Floors are concrete. Roofing materials may include metal, tile, or cement asbestos. Each house must have at least a kitchen, bathroom, and three other rooms (e.g., a living/dining room and two bedrooms). The bathroom must have a flush toilet and shower with separate drains. The toilet and shower can occupy the same space, but there must be room for a future bathtub. In addition, the unit must be expandable to seven rooms, and be designed so as to permit phased construction that minimizes the destruction of finished work.

Infrastructure: Units feature individual water and sewer connections; electrical connections are optional. Tower security lighting is provided along with paved roads and stormwater drainage. The above estimate does not include the cost of off-site infrastructure and certain other non-residential costs (e.g., community facilities).

Rural Areas

Standard Core House + Kitchen + Toilet and Washing Area

Cost (1984):	\$2,966
Stand size:	0.25 hectare
Core house area:	31.50 square meters
Kitchen area:	5.75 square meters (variable)
Toilet and washing area:	5.00 square meters
Total unit area:	42.25 square meters

Construction characteristics: Housing units in rural areas are made up of three separate structures: a core house, a kitchen, and a toilet and washing facility. These structures are arranged so as to form a right angle with the core house situated at the vertex. The kitchen is at least five meters from the core house whereas the toilet and washing facility is at least ten meters away. Walls are constructed of burnt brick, and are coated with cement wash. Floors are made of cement and have a smooth finish. Roofs usually consist of corrugated asbestos sheets; thatch roofing is allowed in some

instances. Kitchens may be traditionally-styled (i.e., they may have circular walls), but must be constructed of permanent materials. The toilet and washing facility utilizes a Blair ventilated pit latrine. The area of the stand not occupied by structures is used as a garden.

Infrastructure: An estimate of the cost of providing access to a safe primary water supply (defined here to be a borehole, well, or other protected source) was included in the cost of the unit stated above. MCNH anticipates the installation of individual water and electrical connections in the future once rural infrastructure is more developed.

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Table III.2 Breakdown of Standard Core House Cost for
Metropolitan/Other Urban and Rural Areas: Reference Case

Metropolitan/Other Urban Areas

<u>Component</u>	<u>Cost</u>	
	<u>Dollars</u>	<u>Percent</u>
Land	90	1.7
Infrastructure /1		
Roads and Stormwater Drainage (includes professional fees)	645	
Land Survey	60	
Water and Sewer Connect Charge	60	
Total	765	14.3
Superstructure		
Materials	3116	
Labor	1065	
On-costs	312	
Total	4493	84.0
Total Unit Cost	5348	100.0

Rural Areas

<u>Component</u>	<u>Cost</u>	
	<u>Dollars</u>	<u>Percent</u>
Land	0	0.0
Infrastructure		
Cost of providing access to a borehole/well /2	75	2.5
Superstructure		
Materials /3	1580	
Labor	1200	
Implementation and contingency charges	111	
Total	2891	97.5
Total Unit Cost	2966	100.0

Notes:

- 1) Does not include the cost of off-site infrastructure and certain other non-residential costs (e.g., community facilities).
- 2) Assuming 250 persons per borehole and 150 persons per well.
- 3) Includes transportation cost to site and \$196 for brickmaking equipment.

Source: Unless otherwise indicated, all figures on housing costs for metropolitan/other urban areas were derived from information included in the following documents: MCNH (1984), MCNH (1984b; Tables 1.3 and 1.4). Data for rural areas was provided by MCNH officials, and included estimates of the value of labor and homemade bricks, and building materials transportation cost. The cost of providing access to a borehole/well was based on preliminary unpublished data provided by Interconsult A/S.

scale builders to construct their homes. However, under the Rural Housing Programme, a key self-help component is the production of bricks. The MCNH sells brickmaking equipment to groups of ten households who, in turn, begin to produce bricks before they receive the other materials they need to build their homes (i.e., materials not available in rural areas). The total value of the bricks and labor for the entire unit is believed to be around \$1,200, and we have used this figure as an assumption in our analysis.

Two final design standards and cost estimates are needed for each region in the base case scenario. One is the cost of upgrading sub-standard units to meet the adequacy standards set by MCNH. There is no prototypical description of the rehabilitation required, since this depends on the original condition of a housing unit. In urban areas, the overall condition of the housing stock is believed to be quite good. Although little data are available on the quality of the housing stock (in both urban and rural areas), preliminary estimates from the 1982 census suggest that more than 99 percent of all metropolitan area households had piped water either inside or outside of their houses, and that as many as 98 percent had access to a flush toilet. Because other indicators of the physical condition of the housing stock are unavailable, the cost of an upgrade is assumed to be equal to the cost of adding a bathroom with a flush toilet, shower, and a sink. In 1984 prices, this upgrade in metropolitan and other urban areas would cost approximately \$1,334.

In rural areas, MCNH views virtually all housing as unacceptable. Even in instances where housing is of high quality and

sound construction, it is considered inadequate if it is not properly located in rural villages. Thus, in rural areas, upgrading will not occur, and all new construction by MCMH will be located in planned villages.

To project the magnitude of public involvement in housing investment, an estimate of the minimum cost of housing units provided through the formal private sector also is needed for each geographic region. Such figures are difficult to obtain in Zimbabwe because the private sector housing industry has been severely depressed for several years. With existing homes reportedly selling for as little as 60 percent of replacement cost, residential construction is not profitable. According to some construction industry officials, \$18,000 is the lowest price at which they are willing to build housing. As a result, we have used this amount as the cost of a formal private sector housing unit in all areas.

Table III.3 below summarizes the estimated costs in metropolitan/other urban and rural areas of upgrading units to an acceptable standard and constructing new units that meet the minimum standard. It also displays estimates of the cost of housing units available from the formal sector.

Table III.3 Design Standards and Unit Costs

	Metro/Other Urban	Rural
Upgrade unit	\$ 1,334	\$ 2,966
Minimum new unit	5,348	2,966
Formal sector unit	18,000	18,000

For households with affordable costs that are lower than the cost of units available through the formal sector, housing units meeting the minimum standard are unavailable. While less expensive acceptable units can be built, the formal sector is not currently active in this market. For this reason, households with affordable costs lower than the cost of formal sector housing are defined as being in the target group. Some target group households have affordable costs that are higher than the cost of the minimally acceptable unit, and could purchase adequate housing without a subsidy if it were available. For others, a "capital gap" exists between what they can afford and the cost of providing them with minimally acceptable housing. For example, if a household in the metropolitan area has an income that will allow it to afford a unit costing \$5,000, a subsidy of \$348 is required to cover the capital gap.

Housing Affordability

This section provides estimates of the housing cost affordable by households based on their income levels and the share of income that they devote to housing. Separate estimates are made for each income quintile in each region. The section begins with a brief discussion of Zimbabwe's economic environment and the prospects for future income growth.

Economic Environment. The economy of Zimbabwe faces a difficult period ahead. The war of independence has left the country with a disrupted economy and a large debt to finance. Although Zimbabwe has a well developed industrial sector, its manufacturing industries are unlikely to hold the key to the country's future economic growth.

Manufacturing grew substantially before independence as international trade sanctions forced an expansion of the manufacturing base to produce for import substitution. These industries developed in a "protected" environment, and though domestic production may help to preserve needed foreign exchange holdings, Zimbabwe's manufacturing industries are generally considered not to be internationally competitive and are unlikely to serve as a basis for economic growth.

Agricultural production is a more likely source of future growth, though the recent drought has been partly responsible for declining real per capita income. A return to weather conditions more favorable for agricultural production should lead to future growth. Nonetheless, like other industries, this sector of the economy generally suffers from a lack of capital investment. Without major improvements in investment levels future real economic growth will continue to be stifled. In the near term, economic conditions will always be linked to uncontrollable factors affecting agricultural output and commodity prices.

Although there is a scenario by which economic growth could be very strong as a result of favorable commodity earnings, most observers expect modest real economic growth with little likelihood for an improvement in per capita income for some time into the future. Zimbabwe's GDP in 1984 was estimated to be \$6.142 billion (see Annex 4 for the derivation of this estimate). Acknowledging that there is substantial uncertainty as to Zimbabwe's economic prospects, we have assumed that real economic growth over the next twenty years will occur at an annual rate of 3.5 percent. This is just equal to the rate of

population growth, so real per capita income for the country as a whole is projected to remain constant.

Household income. Overall economic growth is a major determinant of how household incomes will change over time, and the distribution of total national income between urban and rural areas determines how the households in each of these areas will be affected. Although rural-to-urban migration is projected to continue at a high rate throughout the twenty-year period, most migrants to urban areas can be expected to arrive with few skills in demand by the modern sector. Without productivity gains for this component of the labor force, the urban share of the total national income will not grow as rapidly as the urban population, and average income levels in urban areas are likely to fall as more and more unskilled workers dilute the pool of total urban income. At the same time, rural-to-urban migration may lead to rising average household incomes in rural areas.

Estimates of household income levels by income quintile are necessary to determine the amount of housing that households can afford to purchase. However, official sources do not have current direct estimates of household income levels, or the distribution of income among households in urban and rural areas of the country; as a result, these must be estimated indirectly from available data until better information becomes available. (A description of the estimation procedure can be found in Annex 5.) The estimated income levels are shown in Table III.4.

For the metropolitan areas, average household incomes by quintile correspond closely with independent estimates developed from

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REF. CASE - CSO STATISTICS (CURRENT) 6 FEB
NATIONAL AND HOUSEHOLD INCOMES

TABLE III.4

	1984	1989	1994	1999	2004
	----	----	----	----	----
National Income (Constant Units)					
GDP (Millions of units)	6142.00	7294.77	8663.89	10289.99	12221.28
GDP Ann. Growth Rate %	0.00	3.50	3.50	3.50	3.50
Agricultural GDP (Mill.)	859.88	1003.03	1169.63	1363.42	1588.77
Non Agri. GDP (Mill.)	5282.12	6291.74	7494.27	8926.56	10632.51
Metropolitan Area					
Mean Annual Disposable Income					
All Households (1000s)	6.15	5.22	4.56	4.10	3.79
Annual Growth Rate of Mean Household Income %	0.00	-3.21	-2.67	-2.12	-1.56
Quintile Mean Incomes (1000s)					
1	1.26	1.07	0.94	0.84	0.78
2	1.88	1.60	1.39	1.25	1.16
3	2.42	2.05	1.79	1.61	1.49
4	3.77	3.20	2.80	2.51	2.32
5	21.42	18.19	15.89	14.28	13.20
Other Urban Areas					
Mean Annual Disposable Income					
All Households (1000s)	5.54	5.17	4.82	4.50	4.20
Annual Growth Rate of Mean Household Income %	0.00	-1.37	-1.38	-1.37	-1.37
Quintile Mean Incomes (1000s)					
1	1.14	1.06	0.99	0.93	0.86
2	1.69	1.58	1.47	1.38	1.28
3	2.18	2.03	1.90	1.77	1.65
4	3.40	3.17	2.96	2.76	2.58
5	19.30	18.02	16.81	15.69	14.64
Rural Areas					
Mean Annual Disposable Income					
All Households (1000s)	0.60	0.63	0.65	0.68	0.70
Annual Growth Rate of Mean Household Income %	0.00	0.75	0.80	0.78	0.69
Quintile Mean Incomes (1000s)					
1	0.11	0.11	0.12	0.12	0.13
2	0.20	0.20	0.21	0.22	0.23
3	0.39	0.41	0.42	0.44	0.46
4	0.74	0.76	0.80	0.83	0.86
5	1.58	1.64	1.71	1.78	1.84

household income information on the waiting list for the Parkridge-Fontainebleau low-income housing project. Household income levels in other urban areas were assumed to be lower by the difference between average wage earnings in metropolitan areas and average wages in other urban areas. The distribution of income among other urban area households was assumed to follow the same pattern as that for households in the metropolitan areas. No independent confirmation of average household incomes by quintile for rural areas was available.

Housing expenditure. The amount of money that households spend on housing depends not only on their income, but also on the share of income that they devote to housing expenditures. Evidence from income and expenditure surveys in the late 1970s indicates that urban households spend a relatively low proportion of their incomes on housing. Urban area households in the lowest income quintile devoted the greatest share of their income to housing expenditures--23.1 percent. For higher-income households there was a steady decline in the share of income that goes to housing expenses. Among urban area households in the second through fourth income quintiles, housing expenditure shares were respectively, 18.1 percent, 17.3 percent, and 15.0 percent (CSO, n.d.2). Urban households in the highest income quintile spent 13.1 percent of their earnings on housing (CSO, n.d.3).

For the lower-income groups expenditure patterns are based on housing that is largely occupied by renters. Reliable data on occupancy tenure status are currently limited, though one source estimates that at least 80 percent of the low-income urban population resided in rental housing in 1978 (USAID, 1981; p.29). A survey during 1982 of high-

density areas in Harare indicated that tenants with incomes near the median devoted 13 percent of their income to housing (Hoek-Smit, 1983; pp.42-48), an amount somewhat lower than the shares indicated by the income and expenditure survey noted above. The 1982 survey also found that homeowners in high-density areas devoted a higher share of their income to housing than did renters. Median income homeowner households spent 18 percent of their income on housing, while the share for households with lower incomes was 19 percent.

The survey by Hoek-Smit also found among high-density area residents a willingness to pay more for improved housing conditions (Hoek-Smit, 1983; p.51). One-quarter of the owners, nearly half of the renters, and over four-fifths of the lodgers indicated that they would pay more for better housing. Households with incomes near the median level indicated that they would be willing to pay housing expenses that were in the range of 16 to 19 percent of their gross incomes. Lower-income households said they would be willing to devote 21 percent of their income to housing.

Sixty percent of high-density area residents in Harare showed a preference for home ownership, according to the 1982 survey (Hoek-Smit, 1982; p.52). This preference, coupled with the higher expenditure patterns of owner-occupants, leads MCNH officials to believe that low-income households under a national housing program would devote as much as 27.5 percent of their income to housing. Accordingly, as shown in Table III.5, we have assumed that urban area households in the lowest four income quintiles will devote 27.5 percent of their income to housing. Urban area households in the highest income quintile are

assumed to spend 13 percent of their income on housing, as reported in the income and expenditure survey for higher-income households. Because there is a paucity of information on the housing expenditure patterns of rural households, these households are assumed to devote 25 percent of their incomes to housing in all income quintiles.

Recurring expenses. Not all of the income that households spend on housing is available for investment (debt service payments in the case of owner occupants). Part of housing expenditures must cover the costs of recurring expenses such as fees, tariffs, and the like. Since these do not contribute to housing investment, they must be eliminated from total housing expenditures when determining housing asset affordability.

Recurring expenses as a share of total housing expenditures for urban area households in the lower-income quintiles were derived from the service charge schedule for the Parkridge-Fontainebleau low-income housing project (USAID, 1984). Each household during 1984 paid a \$14.47 monthly service charge for loan administration, sewerage, refuse removal, water supply, and other supplementary services. Since the payment required to amortize the cost of a loan on a fully-financed core house at the project was about \$46 monthly, recurring expenses comprised about one-quarter of total housing expenditure. Recurring expenses for urban area households in the highest income quintile were 12 percent of total housing costs, based on the amounts reported in the income and expenditure survey.

In rural areas recurring percent of total housing expenses were estimated to be about 15 percent. In deriving this estimate it was

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REF. CASE - CSO STATISTICS (CURRENT) 6 FEB
AFFORDABLE CAPITAL COSTS

TABLE III.5

Metropolitan Area

Interest Rate (%)	9.75
Loan Term (Years)	30.00
Downpayment Required (%)	5.00

	1984	1989	1994	1999	2004
	----	----	----	----	----
Thousands of Currency Units					
Quintile 1					
Mean Annual Income	1.26	1.07	0.94	0.84	0.78
% Available for Housing	27.50				
% Needed for Recurr. Exp.	25.00				
Monthly Income for Mortg.	0.02	0.02	0.02	0.01	0.01
Affordable Dwelling Cost	2.66	2.26	1.97	1.77	1.64
Quintile 2					
Mean Annual Income	1.88	1.60	1.39	1.25	1.16
% Available for Housing	27.50				
% Needed for Recurr. Exp.	25.00				
Monthly Income for Mortg.	0.03	0.03	0.02	0.02	0.02
Affordable Dwelling Cost	3.96	3.36	2.94	2.64	2.44
Quintile 3					
Mean Annual Income	2.42	2.05	1.79	1.61	1.49
% Available for Housing	27.50				
% Needed for Recurr. Exp.	25.00				
Monthly Income for Mortg.	0.04	0.04	0.03	0.03	0.03
Affordable Dwelling Cost	5.09	4.32	3.78	3.39	3.14
Quintile 4					
Mean Annual Income	3.77	3.20	2.80	2.51	2.32
% Available for Housing	27.50				
% Needed for Recurr. Exp.	25.00				
Monthly Income for Mortg.	0.06	0.06	0.05	0.04	0.04
Affordable Dwelling Cost	7.94	6.74	5.89	5.29	4.89
Quintile 5					
Mean Annual Income	21.42	18.19	15.89	14.28	13.20
% Available for Housing	13.00				
% Needed for Recurr. Exp.	12.00				
Monthly Income for Mortg.	0.20	0.17	0.15	0.14	0.13
Affordable Dwelling Cost	25.01	21.25	18.56	16.68	15.42

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REF. CASE - CSO STATISTICS (CURRENT) 6 FEB
AFFORDABLE CAPITAL COSTS

TABLE III.5
(Continued)

Other Urban Areas

Interest Rate (%) 9.75
Loan Term (Years) 30.00
Downpayment Required (%) 5.00

	1984	1989	1994	1999	2004
	----	----	----	----	----
Thousands of Currency Units.					
Quintile 1					
Mean Annual Income	1.14	1.06	0.99	0.93	0.86
% Available for Housing	27.50				
% Needed for Recurr. Exp.	25.00				
Monthly Income for Mortg.	0.02	0.02	0.02	0.02	0.01
Affordable Dwelling Cost	2.40	2.24	2.09	1.95	1.82
Quintile 2					
Mean Annual Income	1.69	1.58	1.47	1.38	1.28
% Available for Housing	27.50				
% Needed for Recurr. Exp.	25.00				
Monthly Income for Mortg.	0.03	0.03	0.03	0.02	0.02
Affordable Dwelling Cost	3.56	3.33	3.10	2.90	2.70
Quintile 3					
Mean Annual Income	2.18	2.03	1.90	1.77	1.65
% Available for Housing	27.50				
% Needed for Recurr. Exp.	25.00				
Monthly Income for Mortg.	0.04	0.03	0.03	0.03	0.03
Affordable Dwelling Cost	4.58	4.28	3.99	3.73	3.48
Quintile 4					
Mean Annual Income	3.40	3.17	2.96	2.76	2.58
% Available for Housing	27.50				
% Needed for Recurr. Exp.	25.00				
Monthly Income for Mortg.	0.06	0.05	0.05	0.05	0.04
Affordable Dwelling Cost	7.15	6.68	6.23	5.81	5.43
Quintile 5					
Mean Annual Income	19.30	18.02	16.81	15.69	14.64
% Available for Housing	13.00				
% Needed for Recurr. Exp.	12.00				
Monthly Income for Mortg.	0.18	0.17	0.16	0.15	0.14
Affordable Dwelling Cost	22.54	21.04	19.63	18.33	17.10

REF. CASE - CSO STATISTICS (CURRENT) & FEB
AFFORDABLE CAPITAL COSTS

TABLE III.5
(Continued)

Rural Areas

	1984	1989	1994	1999	2004
Interest Rate (%)	9.75				
Loan Term (Years)	30.00				
Downpayment Required (%)	1.00				
	<u>1984</u>	<u>1989</u>	<u>1994</u>	<u>1999</u>	<u>2004</u>
Thousands of Currency Units					
Quintile 1					
Mean Annual Income	0.11	0.11	0.12	0.12	0.13
% Available for Housing	25.00				
% Needed for Recurr. Exp.	15.00				
Monthly Income for Mortg.	0.00	0.00	0.00	0.00	0.00
Affordable Dwelling Cost	0.23	0.24	0.25	0.26	0.27
Quintile 2					
Mean Annual Income	0.20	0.20	0.21	0.22	0.23
% Available for Housing	25.00				
% Needed for Recurr. Exp.	15.00				
Monthly Income for Mortg.	0.00	0.00	0.00	0.00	0.00
Affordable Dwelling Cost	0.41	0.42	0.44	0.46	0.47
Quintile 3					
Mean Annual Income	0.39	0.41	0.42	0.44	0.46
% Available for Housing	25.00				
% Needed for Recurr. Exp.	15.00				
Monthly Income for Mortg.	0.01	0.01	0.01	0.01	0.01
Affordable Dwelling Cost	0.82	0.85	0.88	0.92	0.95
Quintile 4					
Mean Annual Income	0.74	0.76	0.80	0.83	0.86
% Available for Housing	25.00				
% Needed for Recurr. Exp.	15.00				
Monthly Income for Mortg.	0.01	0.01	0.01	0.01	0.02
Affordable Dwelling Cost	1.53	1.59	1.66	1.72	1.78
Quintile 5					
Mean Annual Income	1.58	1.64	1.71	1.78	1.84
% Available for Housing	25.00				
% Needed for Recurr. Exp.	15.00				
Monthly Income for Mortg.	0.03	0.03	0.03	0.03	0.03
Affordable Dwelling Cost	3.29	3.42	3.56	3.70	3.83

assumed that rural households would be assessed for loan administration and supplementary charges at the same rate as urban households. These two components make up 58 percent of recurring expenses in urban areas. Thus, recurring expenses for loan administration and supplementary charges in rural areas were estimated at 14 percent of total housing expenditures. An additional 1 percent was added to allow for charges to cover the operation and maintenance of water supplies.

Housing affordability. The asset value of housing that households can afford to purchase is determined as the capitalized amount of the total housing expenditure available for investment. These affordable asset levels are determined in much the same way as the affordable loan size of a conventional mortgage. Given household income levels, housing expenditure patterns, and recurring expenses, asset values have been determined using the prevailing government loan terms of 9.75 percent annual interest and a 30-year repayment schedule. It has been assumed that households in urban areas will be required to make down payments of 5 percent, while households in rural areas will only be required to place down payments of 1 percent.

Based on these terms and the level of income available for housing investment, the affordable dwelling costs for households in the three geographic areas are shown in Table III.5. A significant feature of this table is the pattern of affordability over time. In metropolitan and other urban areas, where average household incomes decline because of in-migration, affordability levels by quintile fall over the twenty-year period. Conversely, in rural areas, where incomes are expected to rise, affordability levels increase.

The affordability levels of metropolitan area households that are shown in Table III.5 correspond well with current conditions. Metropolitan area households in the third income quintile (an approximation of the median income) can afford units with a cost of \$5,090. This is slightly below the cost of units in the Parkridge-Fontainbleau development, where households at the median income level or below form the beneficiary group. The difference between affordability and the cost of the Parkridge-Fontainbleau units is due primarily to average loan sizes that were considerably smaller than the 95 percent of affordable dwelling cost that is assumed in this analysis. The implication of this, of course, is that households mobilized additional resources, including savings, to reduce the loan size needed to purchase a home.

Another confirmation of the reasonableness of the estimated affordability levels is shown by the affordable dwelling cost of households in metropolitan and other urban areas in the top income quintile. In 1984, the base year, these households could afford to purchase housing from the formal sector. Although formal sector housing production in Zimbabwe is currently at a virtual standstill, this appears to correspond well with general expectations.

Affordability compared to construction costs. Households unable to afford housing from the formal sector are defined to be in the target group. While some of these household may be able to afford the cost of housing built to an acceptable minimum standard, institutional constraints and a perception of low profitability on the part of the construction industry have limited private housing construction to much

more costly units. Currently, new construction costing less than \$13,000 is generally not available through the formal sector.

In Table III.6 households have been classified according to the type of housing solution they can afford. Only a small share of households can afford formal sector housing (Affordable Level 3), and these are confined to the highest income quintile households in the metropolitan and other urban areas. Households unable to afford formal sector housing are in the target group. Those at Affordable Level 2 can afford the full cost of a new minimum housing unit produced under the housing program. Households in Affordable Level 1 can afford to pay for improvements needed to bring an upgradable unit to the acceptable standard, but they are unable to afford the full cost of a new minimum housing unit without a subsidy. Households in Affordable Level 0 cannot afford the cost of any housing solution without assistance.

Although more than 12,500 households in metropolitan and other urban areas can afford the cost of upgrading a unit in 1989, (a number that increases over time), there are only 20,130 upgradeable housing units in the existing housing stock of these areas. If these units are to be upgraded over the 15-year period of the plan, then only 1,340 units will be upgraded in any given year. New housing units will have to be constructed for those target group households who can afford the cost of an upgrade, but who do not live in upgradable units. However, these households will require a subsidy to meet the cost of buying a new unit.

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REF. CASE - CSO STATISTICS (CURRENT) & FEB
TARGET GROUP IDENTIFICATION

TABLE III.6

	1984	1989	1994	1999	2004
	----	----	----	----	----
Thousands of Households					
Metropolitan Area					
Affordable Level 0	0.00	17.82	22.50	26.88	43.71
Affordable Level 1	0.00	8.91	11.25	26.88	14.57
Affordable Level 2	0.00	8.91	11.25	13.44	14.57
Subtotal, Target Group	0.00	35.64	45.00	67.21	72.85
Affordable Level 3	0.00	6.96	9.30	0.00	0.00
Total	0.00	42.60	54.30	67.21	72.85
Other Urban Areas					
Affordable Level 0	0.00	7.23	8.98	11.14	11.88
Affordable Level 1	0.00	3.61	4.49	5.57	5.94
Affordable Level 2	0.00	3.61	4.49	5.57	11.88
Subtotal, Target Group	0.00	14.46	17.97	22.28	29.69
Affordable Level 3	0.00	2.61	3.49	4.57	0.00
Total	0.00	17.07	21.46	26.85	29.69
Rural Areas					
Affordable Level 0	0.00	53.57	61.10	69.89	80.38
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	13.39	15.27	17.47	20.09
Subtotal, Target Group	0.00	66.96	76.37	87.36	100.48
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	66.96	76.37	87.36	100.47

Housing Investment and Subsidy Requirements

This section provides estimates of the annual rate of housing production and the level of investment required to accomplish the goals of the housing program. These estimates are based on the population growth, housing stock, design costs, and household affordability levels already discussed. For every year of the program it is assumed that the annual housing production requirements needed for new household formation and replacement of units that leave the stock are met, and that the schedule for improving upgradable units and replacing those that cannot be upgraded is maintained. Subsidy requirements are estimated as the difference between program costs and the affordable payments that are recoverable from target group households.

Households are assumed to invest in housing up to their affordable level. In some cases this will be enough so that a household can afford acceptable housing without a subsidy; in many others, additional resources will have to be supplied in order to provide households with acceptable housing. The total investment and subsidy requirements that are needed to meet the goals of the housing program are shown in Table III.7. Total housing investment is broken down into target group investment (recoverable investment), subsidy requirements, and the investment in housing made by households outside of the target group. Earlier it was noted that between 1985 and 1989, 126,640 housing solutions would be required annually to meet the housing needs of Zimbabwe. Of these, 125,290 solutions would have to be new units. Out of the total number of households nationwide requiring a housing solution in 1989, 117,060 will be in the target group and 90,810 will

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REF. CASE - CSD STATISTICS (CURRENT) 6 FEB
HOUSING INVESTMENT IN RELATION TO GDP

TABLE III.7

	1984	1989	1994	1999	2004
	-----	-----	-----	-----	-----
(Millions of Currency Units)					
Country					
Total Housing Expend.	620.89	735.92	872.26	1033.85	1225.37
Non-target Group Invest.	0.00	202.89	241.17	93.74	0.00
Target Group Investment	0.00	292.98	334.13	600.89	728.91
Subsidy Required	0.00	192.46	243.71	300.13	351.75
Total Housing Investment	0.00	688.33	819.01	984.75	1080.66
Metropolitan Area					
Total Housing Expend.	323.43	385.24	458.88	546.58	651.03
Non-target Group Invest.	0.00	147.89	172.64	0.00	0.00
Target Group Investment	0.00	146.88	162.20	398.44	400.93
Subsidy Required	0.00	53.25	81.56	110.47	135.33
Total Housing Investment	0.00	348.01	416.39	506.91	536.26
Other Urban Areas					
Total Housing Expend.	149.61	178.21	212.27	252.84	301.16
Non-target Group Invest.	0.00	55.00	68.53	83.74	0.00
Target Group Investment	0.00	58.82	68.32	79.24	181.30
Subsidy Required	0.00	21.83	30.20	40.97	47.76
Total Housing Investment	0.00	135.65	167.06	203.94	229.06
Rural Areas					
Total Housing Expend.	147.85	172.47	201.11	234.43	273.18
Non-target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	87.29	103.61	123.21	146.67
Subsidy Required	0.00	117.38	131.95	148.69	168.66
Total Housing Investment	0.00	204.66	235.56	271.90	315.33
Total Housing Investment in the Base Year	67.49				
Subsidy as a Percent of Public Expenditures	0.00	67.24	71.69	74.33	73.35
Total Housing Investment as a Percent of GDP	1.10	9.44	9.45	9.57	8.84

require subsidies to afford housing at the proposed minimum standard. Because of the rapid urban growth resulting from rural-to-urban migration, 42 percent of the target group households will be in urban areas, even though only 37 percent of all households in Zimbabwe will be urban dwellers.

The total investment needed in 1989 to reach the goals of the proposed housing program amounts to \$688 million for that year, and climbs steadily through 2004 to more than \$1 billion annually as the population of the country grows. Of the total investment required in 1989, \$485 million is needed to provide housing for target group households, while households able to afford housing from the formal sector can be expected to invest another \$203 million. Among households in the target group, 60 percent of the required investment, or \$293 million, can be recovered in affordable payments. The remaining \$192 million of required investment are subsidies that must come from other sources.

In urban areas, where incomes are relatively high, the share of total housing investment required by the target group that must come from subsidies is just over one-third, compared with more than one-half for households in rural areas. However, the subsidy going to households in rural areas accounts for only 61 percent of the total subsidy required nationwide, while the rural population makes up 68 percent of the total national population. Thus, on a per capita basis, rural households require a smaller average subsidy. This, of course, is attributable to the large difference in the cost of new housing units

between urban and rural areas, and the smaller size of urban area households.

Housing investment and economic capacity. It is extremely doubtful that the economy of Zimbabwe has the capacity to produce the level of investment needed to reach the goals of such a massive housing program. The investment required to meet the goals for the proposed housing program is staggering in relation to the size of Zimbabwe's economy. Compared to probable public resources, the subsidy required to assist needy households is daunting. By any measure, the level of resources required for the housing program seems well beyond reach under current and projected economic conditions.

As the program is currently planned, for the next fifteen years more than 9 percent of Gross Domestic Product would have to be directed towards housing investment. In the subsequent five years, when the program for metropolitan and other urban areas is planned to have reached completion, investment as a share of GDP declines by just two-thirds of one percent, a nearly imperceptible change. This level of investment exceeds by two or three times the share of GDP that economies in developing countries are generally able to direct to housing. To go beyond that level requires foregoing other consumption and investment needed to maintain quality of life and sustain economic growth.

Another indicator of the constraints that confront the proposed housing program is evident when housing investment is compared against the total level of expected gross fixed capital formation. In the period prior to independence, when Zimbabwe was making major investments in domestic production facilities to counter the loss of imports due to

international trade sanctions, as much as 23 percent of GDP went to investments in fixed capital formation. Following independence, fixed capital formation has been about 18 percent of GDP. If the rate of capital formation remains at this level, investments in housing would consume more than half of gross fixed capital formation under the proposed program. Clearly, this is unacceptable in the face of other investments that must be made to generate the jobs necessary to provide employment for the rapidly expanding population (Whitsun Foundation, 1981). In as much as Zimbabwe has a high capital-output ratio and has had difficulty in attracting foreign investment, it is all the more doubtful that the required level of housing investment could be attained without serious damage to other sectors of the economy.

Finally, the subsidy requirements that would be needed to provide the planned housing for the target group under the projected levels of affordability can be measured as a share of central government capital spending. If public capital spending continues at its recent rate of better than 5 percent of GDP, requirements for housing subsidies to the target group would amount to more than two-thirds of total central government capital expenditures. Considering the other publicly-funded development programs in areas such as health and education that have been called for, this level of subsidy is bound to be unattainable.

The next chapter of this report examines alternative strategies to provide housing to the population of Zimbabwe. In doing so, it departs from the housing program developed by MCNH in favor of less-costly alternatives. It also re-interprets the data on household size

and applies estimates of affordability that are based on historical data for housing expenses as a share of household income. Under the assumptions of these alternative scenarios there is a more promising outlook for housing development in Zimbabwe.

IV. ALTERNATIVE SCENARIOS

The reference case analysis should be considered a somewhat blind examination of the housing plan of Zimbabwe that accepts the implicit assumptions embodied in it and that is based to the extent possible on currently published data. The findings of that analysis should be re-examined in light of two basic data inputs that are of doubtful accuracy. These are the share of income that households devote to housing, and the average household size of metropolitan area and other urban area households.

The assumption in the reference case that households devote 27.5 percent of their income to housing is questionable on the basis of existing data from several studies. Income and expenditure surveys in the late 1970s (the most recent period for which these data are available) found that households devote considerably smaller shares of their income to housing expenditures. Households in the lowest income quintile devoted 23 percent of their income to housing, and this share declined steadily with increasing household income. Households in the highest income quintile directed only 13 percent of their income to housing.

While it might be argued that households would spend more of their income to obtain better housing, there is little evidence to support such an expectation. Among homeowners, Hoek-Smit found that only 25 percent would be willing to increase their housing expenditures to do so (Hoek-Smit, 1983; pp. 43-44). Among renters, the proportion was less than half. On net, the data suggest that better housing would induce no more than a 2 percent rise in housing expenditures among low-

income households. Given the historical spending patterns among this group, it is doubtful that households would in fact devote 27.5 percent of their income to housing.

The average size of urban households used in the reference case (as computed from provisional tabulations of the 1982 census) is also questionable. Given the rapid rate of population growth and the degree of crowding that is generally believed to exist in the urban areas of Zimbabwe, a household size of 3.90 in metropolitan areas and 4.22 in other urban areas would appear to be too small. These small household size estimates may be linked to the way households were identified in the census. Following United Nations guidelines, a household was defined as a group of individuals who live together and eat from the same table. If this definition was strictly followed in urban areas with high levels of crowding, a low estimate of household size could result, since many lodgers and persons living alone or in small groups would be defined as a household.

An apparent paradox then arises in that households do, in fact, manage to afford and occupy units resembling the four-room core units in the reference case scenario. Yet if median income households of the reported size were not devoting 27.5 percent of their incomes to housing they would be unable to afford such units. We believe that the practice of lodging provides an explanation for this. A lodger, while not technically part of the primary occupying household, does live in the same basic dwelling unit as part of what might be called a "dwelling-group." Collectively, this dwelling-group has a substantially higher income and a larger household size. Lodging fees obtained from tenants

are used by the primary occupants to offset the payments they make on the dwelling. This greatly reduces the share of income that primary occupants devote to housing. Thus, the affordability of four-room core units by median income households is achieved by increasing occupancy rates through lodging.

Without a specific study, the household size of dwelling-groups can only be determined from sketchy and isolated data. A sample of more than 3,600 bona fide families allotted stands at the Parkridge-Fontainbleau housing project provides a source of data to estimate average family size. In this instance, the applicant and his direct dependents constitute a family. Based on this sample, average family size is estimated at 5.23 persons. The average household size of a dwelling-group is determined by adding an estimate of the average number of lodgers per non-lodger household to this average family size. Based on survey data for Harare (Hoek-Smit, 1983; pp. 21, 30), there is an average of 1.22 lodgers per non-lodger household, giving an average size of 6.45 for dwelling-group households.

Two Scenarios: Dwelling-groups and Expandable Two-Room Core Units

Two alternative scenarios are presented here that examine affordability and investment requirements based on a more realistic interpretation of the data. For these analyses, the shares of income that households have historically devoted to housing are used to estimate total housing expenditures. In the first scenario, household sizes based on the previously described concept of a dwelling-group are used. In the second, the standard household definition and size of 3.9

(see table II.1) is applied, but an expandable core unit serves as the standard housing unit. Under this scenario we assume that lodging does not occur throughout the planning period, but room occupancy rates are increased by reducing the size of the standard unit.

In the latter scenario, newly-constructed units in metropolitan and other urban areas are of a quality similar to the four-room units, but are much smaller and consist of only a single room, plus a kitchen and a bathroom. The 29.2 square meter, \$3,253 unit described in Table IV.1 can be expanded, however, and could eventually incorporate most of the features of the current standard four-room unit. Infrastructure costs for these units are reduced through the introduction of earthwork roads and smaller, 200 square meter lots.

Under both alternative scenarios, upgrading costs in metropolitan and other urban areas would remain the same as in the reference case in order to provide adequate water and sanitation facilities for households in these areas. In rural areas, the emphasis under these scenarios is on upgrading. That is, instead of being replaced by newly constructed units, most existing units are upgraded. An upgraded rural unit would receive a Blair ventilated pit latrine and access to a protected water supply (a borehole or well) at a cost of about \$175 in 1984. New construction needs in rural areas would continue to be met through traditional and other building methods used in the past. However, all new units would receive upgrades as described here. Finally, the programs to upgrade dwellings and discharge the backlog of overcrowded units in metropolitan and other urban areas are

Table IV.1 Hypothetical Two-Room Public Housing Solution
for Metropolitan and Other Urban Areas

Core House

Cost (1984):	\$3,253
Stand size:	200.0 square meters
House area:	29.2 square meters

Construction Characteristics: The unit uses the same construction materials as the standard core house described in Table III.1, but only has a bathroom with a flush toilet and shower, a kitchen with a sink, plus one other 14.6 square meter room. The unit is expandable and could eventually incorporate most of the features of the current standard unit.

Infrastructure: Stands have individual water and sewer connections, and stormwater drainage. In addition, they are served by tower security lighting and earthwork roads. Electrical connections are optional.

assumed to be spread over a period of 30 years, rather than the 15-year period used in the reference case.

Comparisons among the reference case and the two alternative scenarios are shown in Table IV.2, which displays required annual levels of production, investment, and subsidies needed to achieve the goals of these housing programs. The impact of program changes under the alternative scenarios is dramatic, bringing the investment requirements within the realm of possibility.

Under the assumptions of the reference case, the investment requirement needed to provide separate four-room core units to all urban area households (including current lodger households) while providing all households in rural areas with four-room \$2,966 units is unquestionably beyond the capacity of Zimbabwe's economy. The statistics in Table IV.2 clearly demonstrate this. To accomplish the goals of the program in the reference case would require that 9.44 percent of GDP be devoted to housing investment, a level that is approximately twice what is generally accepted as feasible. Perhaps even more convincing is that the reference case housing program would consume more than half of gross fixed capital formation, leaving an unrealistically low amount of capital available for job creation and other investment requirements. Finally, given expected income levels and the capacity of households to pay for housing--even assuming that they devote an unrealistic 27.5 percent of income to housing expenses--unit costs are too high to be generally affordable and subsidies of nearly \$200 million would be required. This amount would roughly equal two-thirds of all public capital spending.

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Table IV.2 Annual Production, Investment, and Subsidy Requirements,
by National Housing Scheme: 1989

Housing Unit Scheme	Units Needed	Investment (Z\$ mil.)	Investment % of GDP	Investment % of GFCF	Subsidy (Z\$ mil.)	Subsidy % of PCE
All Urban						
Ref. Case	59,670	483.66	6.63	36.8	75.08	26.2
Lodging Accepted	33,260	340.97	4.67	26.0	9.06	3.2
Smaller Unit	53,770	353.49	4.85	26.9	32.30	11.3
Rural						
Ref. Case	66,960	204.66	2.81	15.6	117.38	41.0
Lodging Accepted	66,960	87.29	1.20	6.6	0.00	0.0
Smaller Unit	66,960	87.29	1.20	6.6	0.00	0.0
Total Zimbabwe						
Ref. Case	126,640	688.33	9.44	52.4	192.46	67.2
Lodging Accepted	100,220	428.25	5.87	32.6	9.06	3.2
Smaller Unit	120,730	440.79	6.04	33.6	32.30	11.3

Note on definitions:

Housing unit scheme: The reference case scheme reflects current government policy. The lodging scheme allows two or more households to share a unit in urban areas; safe water supplies and pit latrines are provided in rural areas. The smaller unit scheme represents a policy that gives every urban household a separate, but low-cost, unit; in rural areas, safe water supplies and pit latrines are provided. In the reference case, adequate housing is assumed to be achieved within 15 years in urban areas, and 30 years in rural areas. In the other two schemes, fully adequate housing is assumed to occur within 30 years in both urban and rural areas.

GDP = Gross Domestic Product
GFCF = Gross Fixed Capital Formation
PCE = Public Capital Expenditures

The two alternative scenarios provide some hope that adequate housing can be achieved in Zimbabwe, although at standards that are less desirable than those of the reference case. In the first alternative, which openly accepts lodging as a requirement to reach affordability, investment levels, subsidy requirements, and capital formation in housing begin to approach manageable levels. In the second alternative, investment and capital formation requirements are similar to those in the first alternative, but subsidy requirements rise sharply to \$32 million, indicating that this program would fall far short of achieving the goal of full cost-recovery.

The scenario based on dwelling-group households occupying four-room units as the minimum standard dwelling comes closest to being within the likely capacity of Zimbabwe's economy. Under this plan, the required investment in housing remains at about 5.87 percent of gross domestic product throughout the plan period. Although this level of housing investment would generally be considered high, it may be achievable. If households in the higher income quintiles can be encouraged to make housing investments that are less than their affordability levels by devoting less of their income to housing, this will reduce the share of GDP that must be devoted to housing investments.

Complete cost recovery is unlikely to be achieved if all households in Zimbabwe are to be adequately housed. Under any plan, very low income households will require some assistance to afford adequate housing. Subsidy requirements under the dwelling-group concept are the smallest among the three scenarios presented, amounting to just

over \$9 million in 1989. Given the assumed pattern of rural-to-urban migration that leads to declining real urban household incomes, subsidy requirements show steady growth over time.

The scenario based on expandable two-room core units to provide housing for family households without the intrusion of lodgers has socially appealing aspects. This scheme, however, requires a somewhat larger total housing investment and has a subsidy requirement that is more than three times larger than that of the dwelling-group scenario. Investment in housing will consume one-third of projected gross fixed capital formation in each of these two alternative scenarios--an amount that is probably higher than that which is desirable. Again, incentives that encourage high-income households to redirect part of their income to other productive investments and away from housing will reduce the demands that housing places on capital formation.

It is essential to bear in mind that this analysis assumes that households invest fully up to their affordability levels. Thus, while the standard housing solutions defined in these programs describe only minimally adequate housing, households that have affordability levels in excess of the basic unit cost are assumed to occupy larger units whose costs are equal to their levels of affordability.

All of these scenarios, of course, assume prototypical housing units. In reality, housing programs would employ a blend of several house designs that meet the various shelter requirements of different households. The important elements of these designs are their cost and the amenities that they provide. The results of this analysis will also

be applicable to other housing design schemes that have similar basic features.

Size of the public sector housing program. An underlying assumption of this analysis is that all households unable to afford housing through the formal sector fall into the target group served by the public housing program. The number of units to be constructed and the investment required for households in this group determine the magnitude of public sector involvement in housing provision.

In the analysis presented up to this point it has been assumed that the minimum housing unit available through the formal sector costs \$18,000 in 1984. This amount immediately prevents all urban area households except those in the highest income quintile, and virtually all households in rural areas from obtaining housing through the formal (private) sector. The implication of this is that, unless greater private sector involvement in housing production can be generated, the scope of government activity in housing must be enormous.

Indeed, the scope of required public sector activity is well beyond that which is called for in the Public Sector Investment Program (PSIP) described in the Transitional National Development Plan (Republic of Zimbabwe, 1983; pp. 15-16). For 1984/85, this plan called for the construction of 44,000 housing units at a cost of \$158 million. Due to a lack of low-cost and moderate-cost housing production by the private sector, the required public sector housing production identified in this analysis greatly exceeds the amount set out in the PSIP.

Moreover, requirements for public sector involvement dwarf the annual number and total cost of units which have actually been

constructed under the PSIP. If the private sector can be engaged to develop units of moderate cost--in the range of \$6,000 to \$13,000--government's burden for housing production can be greatly reduced. The number of target group households and the investment levels that government would be required to manage under a national housing program are shown in Table IV.3. The figures in the first two columns indicate government's responsibility when the formal sector produces only units costing at least \$13,000. The greatly reduced responsibility of government for production and financial management is shown by the figures in the third column. These assume that moderate-cost units are produced through the formal sector.

Formal sector production of housing units with costs as low as \$6,000 reduces the size of the target group to 80,920 households in 1985, compared to a target group size of 112,840 in the base case, and 91,570 in the dwelling-group scenario. All rural households are in the target group in each scenario due to low levels of money income, so that the entire reduction in the size of the target group occurs in urban areas. As the table shows, government's responsibility for housing production in urban areas can be reduced to only 14,310 units if the formal sector produces units costing as little as \$6,000. This is a level of activity consistent with the number of low-cost units constructed in the late 1970s.

The burden of financial management also shows a dramatic decline. Two indicators of the magnitude of responsibility are shown in Table IV.3. "Target group minimum cost" is the total cost of producing the required number of housing solutions at the minimum standard for

Table IV.3 Impact on Housing Program of Private Sector
Production of Moderate-Cost Housing /1, 1985

	Reference Case	Dwelling- Group /2	Dwelling-Group /2 with Moderate-Cost Formal Sector Housing
Units Needed for Target Group			
All Urban	46,230	24,960	14,310
Rural	66,610	66,610	66,610
Total Zimbabwe	112,840	91,570	80,920
Target Group Minimum Cost (\$ millions)			
All Urban	242	132	75
Rural	197	12	12
Total Zimbabwe	439	144	87
Target Group Total Investment (\$ millions)			
All Urban	268	172	78
Rural	202	84	84
Total Zimbabwe	470	256	162

Notes: /1 Moderate-cost housing encompasses units costing between \$6,000 and \$18,000. The formal sector currently produces only units costing more than \$18,000.

/2 Housing solutions in rural areas consist of only providing sanitation and protected water supplies.

target group households. "Target group investment" assumes that target group households who are able to afford at least the full cost of a minimum standard unit make additional housing investments up to their affordability level. Assuming that a government housing program would leave any additional construction beyond the minimum standard as the responsibility of owners, the former indicator of target group minimum cost best measures the government's level of responsibility.

Again, formal sector production of moderate-cost housing greatly reduces the burden on government for program management. With this level of private sector involvement in housing production, a housing program embracing the concepts in the dwelling-group scenario would have a construction budget of \$87 million in 1985. Without private production of moderate-cost, units the corresponding budget amount would be \$144 million.

Reducing the size of the target group by securing the participation of the private sector in the production of moderate-cost housing offers handsome rewards to government in terms of a greatly reduced management burden. Increased private sector involvement in housing production is clearly needed. There are indications that under the right conditions, the formal private sector construction industry could develop housing costing as little as \$6,000. If private developers could produce housing at this price, public sector involvement would approach the investment levels identified in the PSIP.

Additional Scenarios

The impact of other factors that can affect investment and subsidy requirements, such as construction cost escalation and the rate of economic growth is briefly described here.

Construction cost escalation. Embarking on a major housing program, such as any of those envisaged in this analysis, is likely to tax the capacity of the construction industry to the point where bottlenecks and shortages appear which, in turn, lead to price increases that raise the cost of construction. Without a detailed study, it is difficult to anticipate the price effects in the Zimbabwe construction industry under a massive housing development program. To illustrate the possible consequences, the impact of a 2 percent annual increase in the real cost of construction over a five-year period has been analyzed. The choice of this rate of increase and period are both somewhat arbitrary, but they serve to illustrate the effects of rapidly increasing housing construction activity.

Price increases in the construction industry affect both the private and public sectors. Higher private sector construction costs mean that fewer households can afford formal sector housing; as a result, the size of the target group increases. Housing constructed under a public sector program will also increase in cost. This necessitates higher levels of subsidy to cover the gap between the affordable costs of lower-income households and the cost of minimum solution housing units. Under this scenario of cost escalation, subsidy requirements in 1989 for the target group under the dwelling-group scenario would increase from \$9 million to nearly \$16 million. Costs

will remain at a higher level throughout the program period as long as the construction industry continues to pay higher prices to bid factors of production away from other sectors. In the long run, however, higher profits are likely to attract new firms. The resulting increased industry capacity and greater competition that will occur over time will partially offset the initial cost escalation.

More robust economy. The macroeconomic picture that underlies the analyses that have been discussed so far assumes that the economy of Zimbabwe expands at the same rate as the population, with the result that there is no real growth in national per capita income. In metropolitan and other urban areas, real per capita income actually declines as job formation in these areas does not keep up with population growth and the relative number of low-income households in these areas increases. Because of these declines, affordability levels drop, and required subsidies increase.

It is possible that Zimbabwe faces a brighter economic future than the one presented. Under an optimistic scenario, it is possible that the economy could sustain an overall level of real growth of 5 percent annually. Assuming that the population grows at 3.5 percent, this translates into real annual increases in per capita income of approximately 1.5 percent. Under this rather optimistic scenario, incomes and affordability levels in urban areas would remain approximately constant (assuming that no changes in migration patterns from the reference case occur). As a result, increases in required subsidies arising from population growth would be matched by economic growth and an ability to generate the required transfers. At the same

time, affordability levels in rural areas would show advances even greater than those in the reference case as household income grows even more rapidly.

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Annex

- 1 Housing Finance in Zimbabwe
- 2 Overview of the Methodology
- 3 Methodology to Estimate Overcrowding
- 4 1984 Gross Domestic Product Estimate
- 5 Household Income Estimation

Annex 1
Housing Finance in Zimbabwe
Executive Summary*

Zimbabwe has a sophisticated and well-developed financial sector, including three building societies which have been the country's major source of housing finance. To a large extent, the majority of the institutions comprising the financial sector have existed primarily to serve the needs of the private sector, especially the commercial and corporate entities. However, since independence, the financial sector has been called upon to serve the growing financial needs of the public sector. This has been occasioned by soaring expenditures (and concomitant revenue shortfalls) of the Government of Zimbabwe's (GOZ) large-scale social services and other programs and the growth of state-owned enterprises. The GOZ's dependence on the financial sector and the imposition of a myriad of operational controls to supplement these revenue shortfalls (primarily domestic savings) have had serious ramifications among financial intermediaries. The resultant highly regulated financial system has significantly hampered the building societies' ability to mobilize resources for housing finance. As such, the ability of the building societies to meet the need and demand for housing is severely constrained.

The housing finance market can generally be segmented into two groups with respect to urban areas. Loans to purchase housing for middle and upper income families are obtainable from the building

*This is a copy of the "Executive Summary" from Housing Finance in Zimbabwe, by the National Council of Savings Institutions, April 1985. Field work for both studies was conducted during January/February 1985.

societies while access to financial assistance by lower income families has been principally through government channels.

As of the end of fiscal year (FY) 1984, the three building societies collective loan portfolio consisted of 29,500 mortgages with a value of Z\$416 million. During FY 1984, collective profits were less than Z\$870,000. Although the spread between the societies average cost of money and average return on investment exceeds 4 percentage points, administrative and operational costs consume the spread. These costs are primarily attributed to the cost of maintaining thousands of small savings accounts. Since 1980 mortgage loans have grown very slowly relative to preindependence primarily, the result of minimal growth of deposits and share capital which in turn is attributable to the tax advantage available to savers at the GOZ's Post Office Savings Bank. Other GOZ policies have also contributed to the downward trend in mortgage loans. The building societies ability to provide more housing finance is therefore contingent upon GOZ regulatory changes.

A number of GOZ agencies intervene directly and indirectly in the provision of finance to the housing sector. Although the GOZ's financial resources have been strained over the past five years, the GOZ has provided Z\$152 million in loans below market rate for the development of housing schemes. The Ministry of Construction and National Housing administers two major programs which have directed these GOZ funds to the housing sector: The National Housing Fund (NHF) and the Housing and Guarantee Fund (HGF).

The NHF functions as a financial intermediary for GOZ and other loans to local government authorities for the development and sale of

low-income housing solutions. While in the past loans were made to the NHF by private sector financial institutions and the City of Harare, the GOZ is presently the sole source of funds. Although the NHF is mandated to be self-sufficient, total income in the past two years was inadequate to cover expenses. As a result, the GOZ has made annual contributions to the NHF to cover the deficit. Local government authorities are in arrears to the NHF and, although some of this debt is being rescheduled, the weak financial position of local government suggests that this problem is likely to grow. The effectiveness of the NHF is significantly constrained by its dependence on GOZ funds, and until it can generate additional resources, its effectiveness as a primary supplier of low-cost housing funds will continue to be constrained.

The HGF operates a guarantee scheme, whereby a portion of a mortgage loan obtained from a private financial institution is guaranteed for repayment, as well as a rental housing ownership and management scheme. During the 1980-1984 period, the HGF guaranteed nearly 11,000 building society loans, almost evenly divided between public servants and the general public. The value of the HGF is that the guarantee scheme has helped assure the flow of building society funds to the relatively soft housing market. Since the inception of the HGF, the fund has accumulated real properties presently valued at Z\$7.2 million, primarily the result of foreclosures on guaranteed loans. Rental (and occasionally the sale) of these properties to GOZ employees has generated a surplus for the HGF.

The mobilization of domestic resources which can be channelled to housing credit is the key to a viable housing development program.

Zimbabwe's domestic savings can only be additionally tapped as a source of housing finance if the GOZ institutes policy changes. These changes relate to present policies which inhibit the flow of savings to the building societies and the various funds which would in turn make resources available in the form of housing credit. In order to enable the housing funds to maintain their value, GOZ's loans for low-cost housing should reflect an interest rate closely in line with the rate of inflation so as not to decapitalize the funds. Additionally, housing loans made to the NHF in perpetuity would insure a steady flow of resources for low-income housing. The redirection of a portion of the assets of life insurance companies and pension and provident funds, now invested in government and quasi-government securities, to the housing market would permit a steady and reliable source of resources. Although the GOZ has recently begun to rely on external loans for housing development, this source is quite limited. The GOZ's principal source of external funds to date, the IBRD and USAID, have made it clear that it is not within their mandate to provide all housing requirements. The potential for raising new funds for housing through the sale and purchase of existing mortgages is limited only by the demand for housing finance. Since an institutional framework already exists in Zimbabwe which could be adapted to oversee a secondary mortgage operation, a secondary mortgage market operation could, in theory, be established under the auspices of the discount houses.

Since existing housing finance institutions cannot presently cater to the needs of all Zimbabweans, the team poses several recommendations in an attempt to provide policymakers with a concrete

agenda whereby through a public and private joint effort, many of Zimbabwe's housing finance problems can be overcome. The building societies are the country's only specialists in housing credit, must be competitive in their ability to attract savings in order to generate mortgages. Therefore, it is recommended that the tax free status and/or allowable ceilings of POSB accounts be modified. Assuming that the demand for housing is sufficient to warrant the establishment of a secondary mortgage market system to generate additional housing funds, it is recommended that the GOZ study the possibility of allowing the building societies to raise funds through the sale of its mortgage portfolio or of participations thereof. Besides Harare and Bulawayo, 15 other urban councils are trying to meet their constituents' demands for an expanded level and range of municipal services, especially housing. As such, it is recommended that loans to all urban councils be included in the list of approved assets required to be held by financial institutions. Finally, the team recommends that GOZ budgetary loans for housing for low-income families be directed to district and rural councils which would enable housing credit to be extended to an even lower income segment of the Zimbabwean population.

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Preparing a National Housing Needs Assessment 7

CHAPTER II OVERVIEW OF THE METHODOLOGY *

The housing needs assessment methodology presented in this report addresses two fundamental issues:

- o Physical housing needs in terms of numbers of dwelling units
- o The investment necessary to provide the required number of units and its financing.

Any housing needs assessment must begin with an analysis of current housing needs and then project future housing needs taking into account demographic, social, and economic changes likely to occur over the course of the planning period, in this case twenty years. A simplified view, therefore, identifies two components of need: (1) current needs for housing upgrading, replacement, or construction based on the condition of the existing housing stock with the objective of providing a minimum acceptable level of housing to all the nation's people; and (2) future needs reflecting population growth, household formation,

*Reproduced from "Preparing a National Housing Needs Assessment Occasional Paper Series," by Robert A. Nathan Associates, Inc. and The Urban Institute. Office of Housing and Urban Programs, Agency for International Development, March 1984.

urbanization trends, and the rate of decay of the existing stock.

In this methodology, the physical needs are projected in the form of units per income group and location over a twenty-year period at five-year increments. The projections include separate estimates for the number of new dwelling units required to meet population growth, the number of upgradable units, the number of substandard units that are not upgradable and therefore require replacement, and the number of additional dwelling units required to alleviate overcrowding. The incremental investment requirements of a housing program designed to meet these needs is then computed. The investment requirement is further examined in terms of the portion of investment that will be recoverable through affordable payments by households, and the subsidy required to bring all households up to a minimum standard housing level determined by the policymaker.

To provide for the implementation of the housing needs assessment methodology, a relatively simple mathematical model and a computer program to solve that model have been prepared. The computer program has been written in BASIC to permit its easy adaption to almost any microcomputer system meeting the modest storage requirements described in the accompanying user's manual. In fact, the model has already been implemented on two microcomputers, the Hewlett-Packard and Wang Personal Computers. It is a flexible program that allows use of detailed, disaggregated projections when these are available or generates some indicative results on the basis of less complete data and simplifying assumptions. Similarly, the mathematical and other calculations that make up the model can be complex if the values of a large number of the variables included in it change over time, region, or income category; but these can

also be reduced to fairly simple form and solved by hand if a number of simplifying assumptions are made.

Discussion of the housing needs assessment methodology will be presented with reference to the microcomputer model and for the simplest case that can be used to illustrate the basic principles of its operation. Review of the user's manual will enable the reader to appreciate more fully the computer model's extended capabilities.

A. Summary of the Calculations

The microcomputer program that has been developed is oriented primarily toward providing estimates of housing needs and investments, thus permitting evaluation of alternative housing strategies and identification of affordable options. A model of household formation and housing expenditures provides the logical framework for the calculations performed by the microcomputer. Like all models, this one is based on certain assumptions that should be clearly understood both in structuring the scenarios to be analyzed with the methodology and in interpreting the results it provides.

The most important aspect of the methodology to be kept in mind is that all calculations are based on the assumption that the total housing needs projected for each time period will be fully met with housing that satisfies minimum standards. In calculating investment, the model assumes that no future increments to the substandard housing stock will take place at any time following the base year chosen for the analysis.

If the methodology were oriented primarily toward forecasting and prediction, its

applicability would be limited in some countries where future increments to the substandard stock--the continuing proliferation of squatter settlements--may be inevitable. However, since the model is in fact structured to facilitate the comparative evaluation of alternative approaches toward the satisfaction of projected housing needs, the stipulation that all housing programs analyzed meet minimum shelter needs, and therefore provide a common standard for strategy evaluation, is entirely appropriate.

The model is designed to accept up to three regional disaggregations for the projection of housing needs and the configuration of appropriate housing programs. In Kenya, the most important disaggregations were "metropolitan" (including the two largest cities, Nairobi and Mombasa), "other urban" (including all other towns having at least 2,000 in population as of the latest census), and "rural." In Sri Lanka, a more appropriate disaggregation was defined by the categories "urban," "rural," and "estate."

Housing needs for these three areas are projected for each five-year period within a twenty-year planning period on the basis of population growth, interregional migration, household formation trends, and a program defined by the user to upgrade or replace substandard components of the base-year housing stock at a rate which the user determines.

The total cost of new housing units and upgrades of existing housing units required to meet total projected housing needs are calculated on the basis of unit costs provided by the user in accordance with the design standards specified for each strategy. To determine what level of public subsidy, if any, would be required to implement the program that has been specified, the planner

compares these costs with the maximum housing values that households in each quintile of the income distribution are estimated to be able to afford.

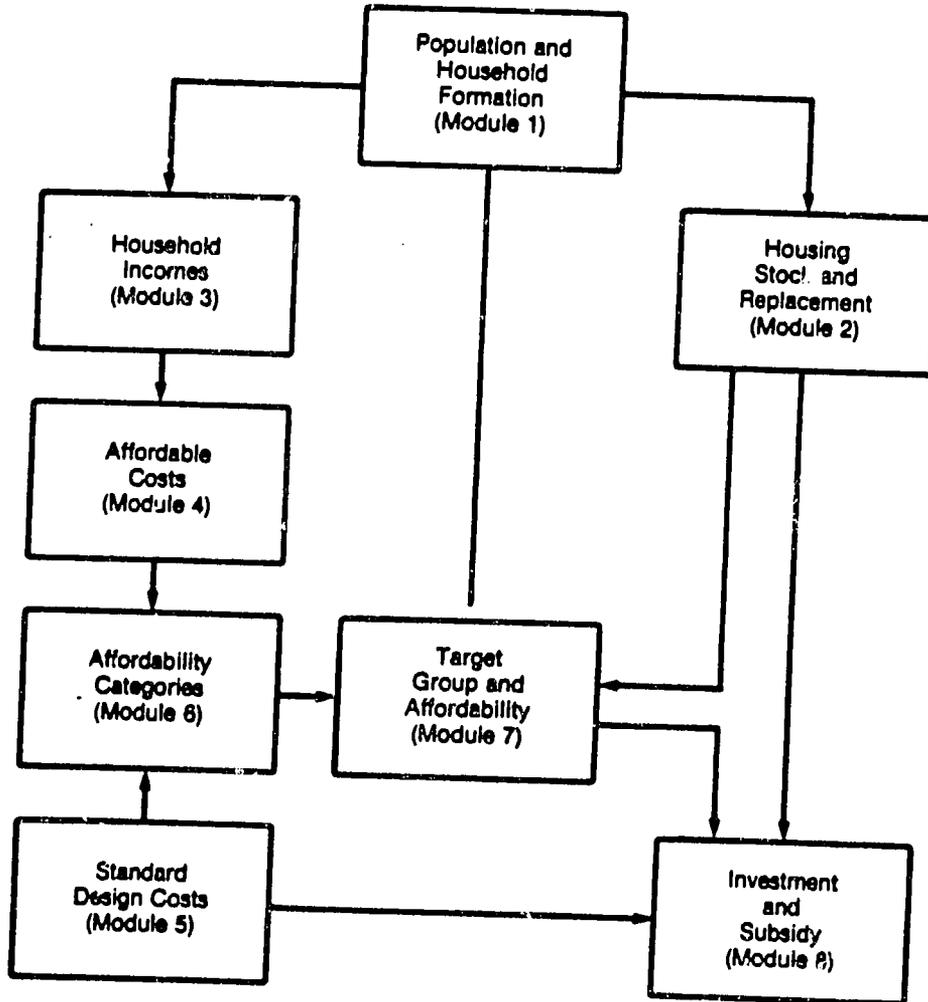
Key factors affecting the total cost of housing programs defined in this manner include growth in total household numbers, growth in rate of urbanization,² rates of escalation in construction costs and, especially, the minimum design standards and corresponding unit costs specified for the housing program.

Housing affordability increases (and subsidy requirements decrease) as household income increases, shares of income devoted to housing increase, financial lending terms become more favorable, and housing costs fall.

Of these variables, minimum housing design standards and costs lend themselves most directly to public policy intervention. The interplay of housing design standards, program costs, and housing affordability through successive iterations of the model can help housing planners and policy analysts structure a realistic approach that will satisfy basic needs through the adoption of standards which, while offering real improvement over informal sector living conditions, are also affordable by most low-income households.

Figure 1 identifies the main components of the model in somewhat greater detail.

Figure 1. Main Components of the Housing Needs Assessment Model



As has already been discussed, the major determinants of projected physical needs for shelter are future population growth, household formation trends, and the adequacy of the existing housing stock to meet the needs of the current population. As shown in figure 1, these estimates and projections are developed through modules 1 and 2 of the model. Together, these determine the

scale of the housing program to be analyzed through subsequent calculations.

The affordability of alternative housing packages is determined by current and projected incomes of the various sectors of the population requiring housing, and by the costs of these alternatives. These elements of a housing needs assessment are considered in modules 3, 4, 5, and 6 of the model in the following manner:

- o Module 3 projects household incomes for subsectors of the population by income distribution subgroupings.
- o Module 4 calculates housing affordability for subsectors of the population based on household incomes, housing expenditure patterns, and terms of housing finance.
- o Module 5 specifies the current and future costs of alternative shelter solutions defined on the basis of the dwelling standards established by planners.
- o Module 6 classifies all households according to the housing standards that they can afford.

On the basis of total shelter needs and the housing standards that are affordable by various segments of the population, modules 7 and 8 are then used to--

- Determine national housing investment requirements;
- Identify those segments of the population which, on the basis of their inability to afford currently available, minimum

standard, formal sector housing, make up the target group for housing programs; and

- Estimate the level of direct subsidy, if any, that would be required to bring all housing to the chosen standard.

The information provided through these last two modules enables planners to evaluate the implications of alternative housing programs in relation to macro-level projections of investment and savings, public sector expenditures, formal sector loan volume, and other indicators.

B. Limitations of the Model

Although the model has been demonstrated to provide genuine insight on a variety of housing policy issues, several distinct limitations of the methodology must also be clearly kept in mind.

One limitation, already mentioned, is that the calculations do not permit future additions to the substandard stock. That is, the model assumes that there will be no lag in developing the capacity required to build enough units that conform to the minimum standards to satisfy incremental housing needs. In reality, it may take some time to bring formal sector building capacity up to the level required to meet 100 percent of needs, and additions to the substandard stock may be expected to make up the shortfall in the interim. Although this feature of the methodology may appear to be a limitation for forecasting purposes, it has no relevance to the comparative evaluation of alternative housing strategies. And, as the user's manual explains, more realistic forecasts can be made by manually adjusting the composition of the total projected housing stock and "restarting" the model at some future year when it is estimated that

building capacity can realistically be brought up to the required 100 percent level.

Second, the logic behind the capitalization³ of housing expenditures should be clearly understood. Although the analogy to mortgage financing is used throughout the discussion of the methodology, some households may not find the financing necessary to enable them to immediately acquire housing assets up to the full amount they can afford. Some households will secure mortgage financing at these levels, while others may gradually build up their housing assets through investments expended over a long period. By capitalizing these investment expenditures, we can estimate the present value of the assets these households will eventually command. As already noted, however, the fact that the incomes of these households will support their eventual acquisition of housing of a certain value does not necessarily imply that the financing to make this housing immediately available will be necessarily forthcoming. Financing to support the housing programs formulated with the assistance of the needs assessment methodology must be dealt with separately.

Third, because only five income groups per sector are represented in the model, it is difficult to simulate policies that affect less than very large parts of the population. The viewpoint of the methodology is distinctly macro and cannot substitute for more detailed project and subsector level studies.

Finally, in calculating estimated subsidy requirements to implement the various housing programs that may be analyzed, the methodology assumes that all government resources go only to households in the deficit groups, in exactly the required amounts, and that there is no substitution

of government expenditures for expenditures that would, in the absence of subsidies, have been undertaken anyway by recipient households. In effect, the model presumes perfect targeting efficiency in the estimation of subsidy requirements, and therefore understates the resources needed to implement a real-world program where some leakage and waste are inevitable. The methodology is neutral in this respect between alternative housing strategies, but it still provides important evaluative guidance in a comparative sense. Also, the degree of understatement of subsidies is likely to be small, particularly when the estimated number of households needing subsidy under the housing program in question is small. In general, the larger a subsidy program, the larger the fraction of total subsidies that ends up going to those who don't need them. Therefore, the degree of subsidy underestimation in the model because of neglecting targeting inefficiencies is likely to increase with the size of the estimated subsidy program.

Annex 3
Methodology to Estimate
Overcrowding

Achieving a condition of adequate housing for the country requires that overcrowding be eliminated. Definitions of overcrowding vary, and no single indicator can completely measure overcrowding levels. Two commonly used indicators of crowding are the number of persons per room in a unit, and the number of households living in a dwelling. For this analysis, we have defined overcrowded households as those which have more than two persons per room or share a room with one or more households. Based on a 1982 survey of households in Harare (see Table A3.1), 39 percent of all households fell into one of these categories. Note that in the context of this study the number of households did not exactly correspond to the number of housing units since a housing unit could be occupied by more than one household. Nevertheless, we have used 39 percent as an estimate of the rate of overcrowding for metropolitan and other urban areas. The Whitsun Foundation (1981, pp. 14-15) in 1980 estimated that the housing backlog stood at roughly 35 percent of the total housing stock in the major urban centers of Zimbabwe. This figure was based on local authority housing waiting lists, and, as a result, probably understates the housing backlog. It does, however, lend support to the 39 percent crowding rates used here for metropolitan and other urban areas. In rural areas, it was assumed that there was no overcrowding; households requiring more space were assumed to build additional traditional structures.

Table A3.1 Households /₁ by Number of Rooms per Household and Size of Household, High-Density Low-Income Areas of Harare, 1982

Number of Rooms per Household / ₂	Number of Household Members										
	1	2	3	4	5	6	7	8	9	10+	Total / ₃
1	119	65	54	50	25	18	18	4	-	4	360
2	22	25	22	27	29	23	16	11	4	2	180
3	8	18	24	28	26	30	24	22	12	8	201
4	13	11	16	16	29	31	33	31	25	18 / ₄	223
5	1	-	4	5	6	5	3	-	2	6	32
6	-	1	1	3	2	2	3	1	3	3	21
Share 1 room with 1 other Household	5	1	2	-	5	-	4	2	-	2	21
Share 1 room with 2 other households	5	1	5	-	-	-	-	-	-	-	11
Share 1 room with 3 other households	7	1	1	2	-	-	-	-	-	-	11

Notes: /₁ The number of households does not exactly correspond to the number of housing units, since a housing unit can be occupied by more than one household.

/₂ Livingrooms, bedrooms, and kitchens if they are used for living or sleeping.

/₃ Total sample size equals 1050. Totals may not equal sums of parts due to rounding.

/₄ This cell entry was assumed to be incorrect on the original Hoek-Smit table. A value was imputed for this cell based on the values contained in the other cells in this row.

Source: Marja C. Hoek-Smit, Housing Preferences and Potential Housing Demand of Low Income Households in Harare, Zimbabwe. October 1982. Derived from Table II/a, p. 9.

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Annex 4
1984 Gross Domestic Product Estimate

The Standard Chartered Bank Zimbabwe Limited (1984; p. 2) estimated that in 1984 real GDP would be 3% above its 1980 level. According to the Central Statistical Office (1984a; p. 11), the GDP was \$3,291 million in 1980 (1980 dollars). Thus based on the Standard Chartered Bank prediction, GDP would have been about \$3,390 million in 1984 (1980 dollars). Because a GDP inflator was not available, we used an average of the CPI for higher income urban families and the CPI for lower income urban families to inflate this amount to 1984 dollars.

Annex 5
Household Income Estimation

To overcome the lack of household income data, we have used a "top-down" approach to distribute total earnings in the country among households. This entailed apportioning 1984 total wages and salaries (CSO, 1984; p.10) between urban and rural areas. Added to the amount of wage and salary earnings assigned to rural areas was an estimate of income derived from the traditional sector (USAID, 1982). Average household incomes in urban and rural areas were then determined by dividing the number of households in each area into its corresponding income pool. Recent data on average earnings by workers in selected urban centers were then used to establish separate estimates of average household earnings for metropolitan and other urban areas (CSO, 1984; p. 7).

The total earnings in each of the geographic areas was distributed among households according to estimates of the share of income earned by each income quintile in the area. Estimates of quintile income distributions for urban households were derived from separate income and expenditure survey data for low income urban households (CSO, 1976/1977) and higher income urban households (CSO, 1977/1978). Income distributions for rural area households were based on preliminary findings from a 1984 survey conducted by Interconsult, A/S for a rural water supply and sanitation plan being sponsored by the Norwegian Agency for International Development (Interconsult, A/S, 1985; unpublished tabulations), and on the average earnings of agricultural workers in the formal sector (CSO, 1984; p. 6).

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