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**JAMAICA SHELTER SECTOR STRATEGY
PHASE 1 - FINAL REPORT
February 1987**

by

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EXECUTIVE SUMMARY

The Current Housing Deficit

Jamaica faces severe housing problems today. As many as 194 thousand households lack adequate water and sanitary facilities, and more than 26 thousand dwelling units (about 5 percent of the stock) are estimated to be in such bad repair that they cannot reasonably be renovated. Moreover, the total number of households exceeds the stock of dwelling units in the country by at least 9 thousand, yielding substantial overcrowding.

Most of Jamaica's households have extremely limited resources to devote to housing investment. Currently, even the average household in the most affluent income quintile cannot reasonably afford the formal private sector's cheapest new construction. This helps explain the magnitude of Jamaica's housing deficit, and suggests that future population growth and household formation will surely exacerbate existing housing problems unless constraints on housing production and housing affordability are resolved by public policy.

Future Housing Needs and Investment Levels

The Housing Needs Assessment Model has been applied to forecast Jamaica's needs for new units and upgrades over the next two decades. These forecasts include the following factors:

New Units

1. Eliminate overcrowding by the year 2006 by building enough new units annually to accommodate 5 percent of the households that are currently doubled up -- 0.5 thousand units annually.

2. Replace non-upgradable units by the year 2006 by building enough new units annually to accommodate 5 percent of the households currently living in non-upgradable dwellings -- 1.3 thousand units annually.

3. Replace adequate units that drop out of the stock (through demolitions, natural disasters, and gradual depreciation) at an estimated rate of 1.5 percent each year -- an average of about 5.7 thousand units annually.

4. Accommodate population growth by building units for all new households formed each year -- approximately 7 to 8 thousand units annually.

Upgrades

5. Provide piped water and limited site amenities to all dwellings by the year 2006, extending services to 5 percent of the households currently living in acceptable or upgradable dwellings -- 9.7 thousand units annually.

Altogether, about 15.5 thousand new units and 9.7 thousand upgrades are required annually to meet Jamaica's housing needs by the year 2006. More than half of all the new units are needed in the Kingston metropolitan area, while most of the upgrades are required by rural households, very few of whom now enjoy piped water.

For each year, the Housing Needs Assessment Model approximates the total investment necessary to produce the required number of new units and upgrades. Money to pay for these units can come from a combination of sources, including the formal financial sector, household savings, and the informal financial sector. The portion of this total investment that households can support themselves is based on the share of income they devote to housing.

The Model has been used to estimate the investment levels implied by three alternative planning scenarios. Each scenario is characterized by a target for the year 2006, and by the public and private sector solutions that would be deployed to achieve

the target. Under scenarios one and two, even the average household in the most affluent income quintile cannot afford the least expensive housing produced by the formal private sector. Therefore, the vast majority of households are in the public sector's target group. Scenario one assumes that the public sector sponsors the development of start-a-home units on fully serviced sites, while under scenario two, the public sector sponsors core units on serviced sites.

Scenario three establishes a considerably more modest planning target for the year 2006; rather than attempting to ensure that all households can obtain permanent, formal sector units, this scenario focuses on the provision of serviced sites. Moreover, scenario three assumes that the private sector can be induced to supply considerably less expensive units than under scenarios one and two, thereby reducing the size of the public sector's target group.

The three scenarios range in total investment level from about J\$1 billion annually under scenario one to about J\$715 million annually under scenario three. By relying on contributed labor and incremental upgrading of core housing units, scenario two yields a total investment bill that is about 25 percent lower than the cost of scenario one. Scenario three, with its more modest planning target, is almost one third less expensive than scenario one.

The variation between scenarios in affordability levels is even more dramatic. Households can only afford about 70 percent of scenario one's total investment requirement, compared to over 95 percent for scenario two, and 100 percent for scenario three.

Thus, the total subsidy -- computed as a one-time capital grant -
- that would be required annually to achieve the planning targets
of the three alternative scenarios ranges from an average of
J\$285 million under scenario one to J\$29 million under scenario
two and virtually nothing under scenario three.

Performance of the Formal Housing Sector

Throughout the last decade, Jamaican housing policies have consistently sought to boost the volume of housing production, especially the volume of units affordable for low income households. Since the mid-1970s, production targets have been set at roughly the same level as suggested by the Housing Needs Assessment results outlined above. But production in the formal housing sector has never come close to target levels.

To a large degree, the low production levels of Jamaica's formal housing sector are attributable to the limited availability of funds for financing home building and home ownership. The private sector has contributed considerably less than half of all interim financing for housing construction. The private sector plays a somewhat more significant role in long-term mortgage financing, generally providing more than half of the total volume. But private sector mortgages are generally obtained by affluent households, so that middle and lower-income households rely primarily on the very limited pool of public sector resources.

Framework for a Shelter Sector Strategy

Three major changes need to occur to achieve significant and lasting gains in the performance of Jamaica's housing sector, and its capacity to meet the needs of households at all income levels:

The formal private sector must be induced to serve a much larger segment of the income distribution, building and financing housing for households with average incomes and above.

Public sector housing schemes need to be targetted to households with incomes below average, and such schemes should supplement people's efforts to produce housing informally rather than attempting to replace these efforts.

The existing capacity of non-governmental organizations and social service agencies needs to be marshalled to enhance the quality of the informal housing already being built by the poorest households.

Key Constraints on Housing Sector Performance

Despite the best intentions of a decade of housing sector strategies and plans, the formal sector has produced only a small fraction of the new housing required by Jamaica's households each year. Most observers agree that Jamaica's formal construction sector has the capacity for much higher production volumes, but that this capacity has been systematically under-utilized. While the formal private sector may never be induced to incur the risks associated with serving very low income households, it is unrealistic to expect the Ministry of Construction (Housing) to finance and develop the units required by all but the most affluent Jamaican households. Private sector developers and financing institutions must become more extensively involved in serving households with average incomes and above if Jamaica is to come close to addressing its current and future housing needs.

To stimulate greater participation by the formal private sector, government will need to take the initiative for creating conditions within the housing sector that make housing production feasible and profitable for the formal private sector. What conditions are required for private sector developers and financing institutions to serve the needs of all households with above-average incomes? First, it will be necessary to develop design solutions that satisfy the demands of households in the fourth and fifth income quintiles at prices they can afford. At the same time, however, interim financing has to be available to developers. But commercial banks cannot be expected to lend for housing construction in the absence of guaranteed take-out financing from the Trust Companies and Building Societies that provide long-term mortgage financing.

Several avenues offer the potential for reducing housing costs:

Develop more economical design standards for the formal sector. The full range of formal sector solutions sought by Jamaican households need to be made more affordable. Without endangering health and safety, it should be possible to modify some of the existing standards for formal construction and infrastructure so as to reduce development costs.

Remove bureaucratic impediments to efficient housing construction, so that developers will not risk long and costly delays over which they have no control. A centralized inventory of vacant land, and an efficient system for land transfers could reduce delays in land acquisition, and coordinated procedures are needed for review and approval by the Town Planning Department and the National Water Commission.

Transfer and sales taxes also play a significant role in inflating housing costs. Consideration should be given to the possibility of waiving or reducing taxes on the construction and sale of housing for low and middle income households.

Low cost construction technologies should be exploited for potential development cost reductions.

In conjunction with reduced costs, interim financing will need to be provided by private lending institutions -- commercial banks or insurance companies. Clearly, interim financing will not be forthcoming unless mortgage lenders -- the Trust Companies and Building Societies in particular -- expand their volume. The problem is not, however, lack of loanable funds. At least in the immediate short-term there is actually an excess of funds available for mortgage financing.

If the primary impediment to expanded mortgage lending activity is the perceived credit risk, the newest HG loan, which will be funnelled through private lenders to households with median incomes and below, may provide building societies and trust companies with the opportunity to gain experience with middle income borrowers. However, Government needs to explore additional avenues for expanding private mortgage lending activities. One option may be to revitalize the mortgage insurance function of the Jamaica Mortgage Bank. Another would be to review the underwriting practices of the Trust Companies and Building Societies to identify criteria that may be unnecessarily restrictive.

If the government can induce the formal private sector to substantially expand its production, then public sector schemes can focus on the needs of households with below average incomes. Today, two major problems stand in the way of effective public sector schemes for low income households. First, the housing solutions being offered by the Ministry of Construction (Housing) are unaffordable for households with below average incomes, and second, the Ministry's production capacity is severely limited.

There is an urgent need to design very low cost solutions that households near the bottom of the income distribution can afford. The Ministry of Construction (Housing) should focus on solutions that offer the basic essentials required for safety and health -- solutions such as serviced sites. Individual households can then build temporary shelters that they gradually expand and improve.

Another way of thinking about serviced sites is that they raise the quality of the construction being undertaken by the informal sector. In other words, by making serviced sites available to low income households who would otherwise have squatted on unserviced land, the public sector is not displacing the informal private sector, but rather enhancing its capacity to produce minimally adequate housing.

Even if the public sector focuses its schemes on the lowest cost solutions, the need for units far exceeds the current capacity of the Ministry of Construction (Housing). Efficient management of the construction process should be a priority for government financed schemes, and the capacity of various public and private developers to complete projects on time and within budget should be evaluated. One strategy for eliminating cost overruns and delays would be to shift some of the management responsibility and risk of development to the private and parastatal developers.

Very little is currently known about how low income Jamaicans provide housing for themselves, using informal mechanisms for construction and finance. However, there is evidence of tremendous ingenuity and initiative in finding

housing solutions. This initiative should be fostered to yield the best possible living conditions among those who rely on the informal sector. Interventions of this kind would involve very small expenditures, but could substantially improve the quality of informal sector housing.

Summary of Issues

This report identifies two classes of issues that should be addressed in the second phase of Jamaica's National Shelter Sector Strategy -- information issues and policy issues.

Several serious gaps in the body of information available about housing conditions and household behavior have inhibited efforts to address Jamaica's housing needs. In some cases, lack of crucial information can lead to badly designed programs or unintended side effects. In others, information gaps simply immobilize the policy making process. Four major types of data are desperately needed for the development of effective housing programs for Jamaica:

Household composition and household formation.

Share of income available for housing investment.

Condition of the housing stock.

Informal housing production and finance mechanisms.

The National Shelter Sector Strategy will have to identify specific mechanisms for removing the constraints that inhibit housing production in Jamaica, and establish priorities for implementation. On the basis of our analysis of Jamaica's housing needs and the recent performance of its formal housing sector, we have identified five key policy issues. In our view,

these issues must be addressed and resolved if Jamaica's National Shelter Sector Strategy is to be effective.

The need for additions to the existing housing stock. To meet the demands of newly forming households over the next two decades, the production of the formal housing sector -- both public and private -- needs to expand substantially, and the quality of housing provided by the informal sector needs to be improved.

Reduction of costs and risks inhibiting formal private sector production. The major costs and risks of formal, private sector housing development need to be identified and reduced through government initiatives so that the formal private sector can serve a much large segment of the population.

Reduced public sector housing solutions. Production sponsored by the public sector should focus on solutions that provide the basic requirements for health and safety, leaving the construction of shelters up to the private sector -- formal and informal. These solutions should be as inexpensive as possible, so that direct subsidies are only required by the poorest households.

Expanded public sector production capacity. The capacity of the public sector to produce (or sponsor) a significant volume of units annually needs to be enhanced. One strategy for accomplishing this objective is to transfer more of the responsibility and risk for Ministry schemes to private and parastatal developers in return for profit.

Enhanced informal sector housing production. Public sector schemes should focus on minimal solutions that supplement informal sector efforts. In addition, residents of informal settlements should be systematically aided in improving the quality of their housing by channeling information, equipment, technical assistance through non-governmental organizations and social service agencies.

SECTION 1: BACKGROUND AND PURPOSE

Jamaica faces severe housing problems. As of 1986, as many as 121 thousand households lack adequate water and sanitary facilities, and more than 26 thousand dwelling units (about 5 percent of the stock) are estimated to be in such bad repair that they cannot realistically be renovated. Moreover, the total number of households exceeds the stock of dwelling units in the country by at least 9 thousand, yielding substantial overcrowding. In the years ahead, all of these problems will intensify unless strategies can be devised for reducing the current housing deficit while accommodating the pressures of population growth.

In May 1986, the Jamaican government embarked on the development of a National Shelter Sector Strategy for meeting the nation's housing needs. This effort is being undertaken with support from the United Nations Commission on Human Settlements (HABITAT) and the United States Agency for International Development in conjunction with the International Year of Shelter for the Homeless.

A National Steering Committee has been appointed as the formal organizational structure to guide the development of the National Shelter Strategy. A Focus Committee -- composed of Steering Committee members -- has been created to provide a leadership role, and to direct the work of local and international consultants retained to provide technical assistance to the Steering Committee. Finally, four substantive

Sub-Committees -- each composed of Steering Committee members -- are responsible for preparing papers that review key issues and discuss possible solutions in the areas of housing finance, access to land, technology and standards, and legislation.

1.1: Approach to Task

Formulation of Jamaica's National Shelter Strategy is being undertaken in two phases. The goal of Phase I is to document the size of the gap between housing needs and housing sector performance, and to identify the key constraints inhibiting the performance of Jamaica's shelter sector. A strategy for removing these constraints and closing the gap between needs and performance will be devised under Phase II.

This report presents the findings of work completed under Phase I, which consisted of the following research tasks performed by a team of international and local consultants:

Collection of data necessary to implement the Housing Needs Assessment Model for Jamaica.

Forecasts of the magnitude of housing needs in Jamaica and the capacity of households at different income levels to afford required levels of housing construction and upgrading.

Interviews with the heads of major housing sector institutions about the recent performance of Jamaica's housing sector and about key constraints inhibiting performance.

Review of the existing literature and published data on the performance of the housing sector.

Description of binding constraints on the performance of the housing sector.

Identification of issues that need to be addressed in Phase II of Jamaica's National Shelter Sector Strategy development.

1.2: Organization of Report

The remainder of this report consists of three sections. Section 2 describes the magnitude of current and future housing needs in Jamaica, using forecasts generated by the Housing Needs Assessment Model. Further, the section evaluates the implications of several alternative planning scenarios for meeting Jamaica's housing needs by the year 2006. Section 3 reviews the institutions involved in Jamaica's housing sector, summarizes planning efforts for the sector since the mid-1970s, and analyzes the performance of the housing sector in recent years. Finally, Section 4 discusses the key constraints preventing the housing sector from meeting Jamaica's housing needs, concluding with a summary of the critical issues that will need to be addressed in the formulation of a housing strategy for Jamaica.

SECTION 2: HOUSING CONDITIONS AND HOUSING NEEDS

2.1: Jamaican Households and Housing Conditions

In this section, we review the salient information currently available regarding Jamaica's households and their housing circumstances. We examine trends in the size and urbanization of Jamaica's population, data available on household composition and household size, the quality of the existing housing stock, and the resources households can afford to devote to housing investment.

2.1.1 Population Trends

About 2.3 million people live in Jamaica today, and by the year 2006 population is projected to reach about 2.9 million -- an increase of roughly one fourth over two decades, or about 1.1 percent per year on average.* This forecast reflects three key assumptions:

- 1) that the fertility rate will gradually decline from its current level of 3.36 children per woman, reaching replacement level fertility between 1995 and 2000;
- 2) that life expectancies will continue to increase very moderately over the next twenty years;
- 3) that emigration will decline from about 11,000 annually to about 8,000 annually by 2006.

* Based on the total population in private dwellings, 1982 Census; and The Statistical Institute of Jamaica's 1980-2015 "medium projection" series.

Exhibit 2.1
Total Population: 1986-2006

Year	Population (1000s)	Avg. Annual Growth
1986	2,314.5	1.5%
1991	2,484.8	1.3%
1996	2,642.8	1.0%
2001	2,770.7	1.0%
2006	2,909.1	1.0%

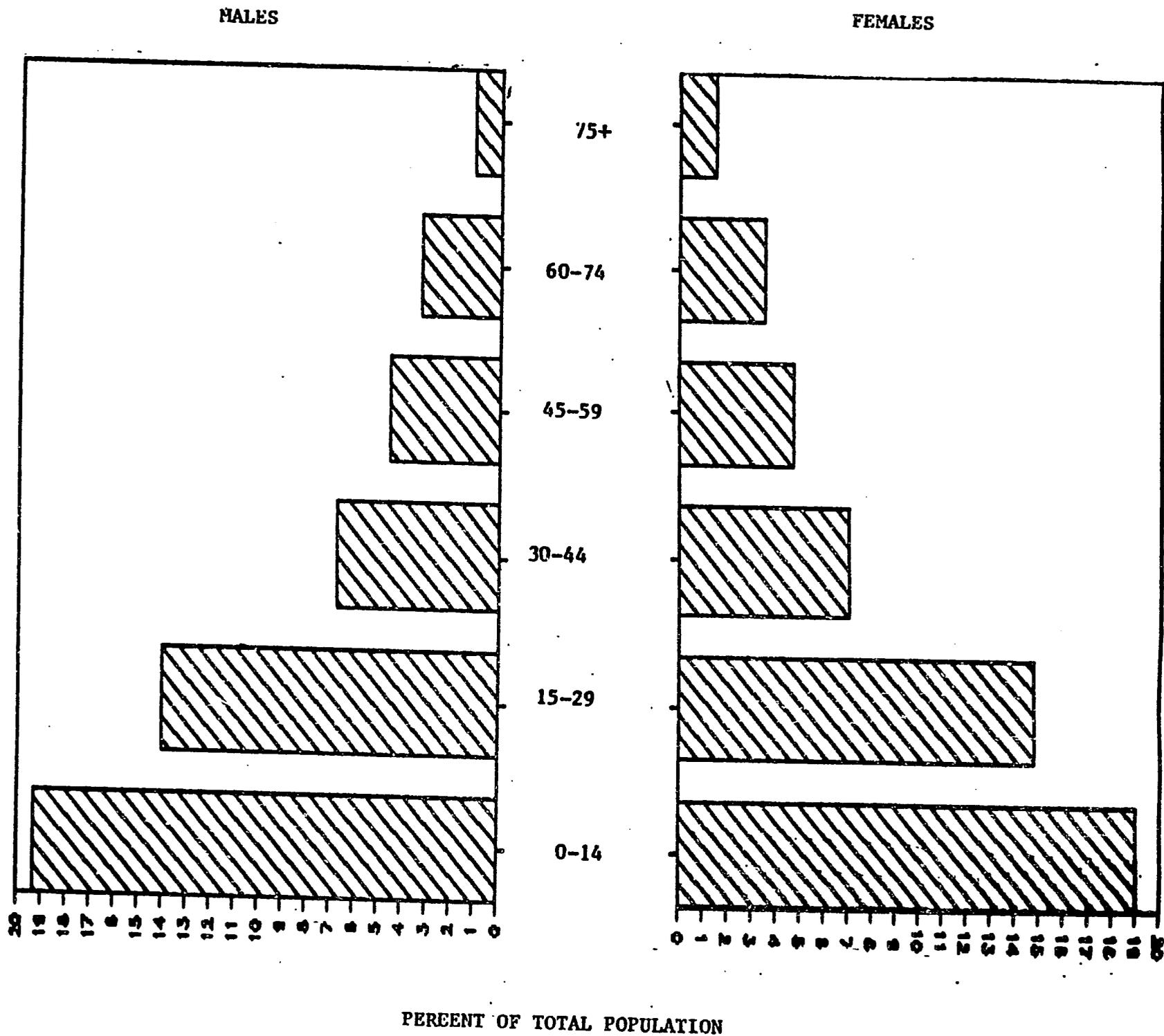
As illustrated by Exhibit 2.1, these assumptions imply that Jamaica's fastest population growth can be expected during the next decade, with average annual growth rates of less than one percent anticipated for 1996 to 2006.

Jamaica's population is very young, as illustrated by the simplified population pyramid in Exhibit 2.2. Almost 40 percent of all Jamaicans are under 15 years old, and another 40 percent are between 15 and 45 years old. Only about 15 percent are between 45 and 75, and fewer than 5 percent are over 75. During the next two decades, the share of Jamaicans who are under 15 will gradually decline from 40 percent to about 25 percent, but the share who are elderly will remain very small.*

Over half of all Jamaicans still live in rural areas, but if recent trends toward urbanization are sustained, the majority

* 1982 Census and The Statistical Institute of Jamaica's 1980-2015 "medium projection" series.

EXHIBIT 2.2
POPULATION BY AGE AND SEX



will live in urban areas by the year 2006.* Exhibit 2.3 identifies Jamaica's population centers. By far the largest of these is the Kingston Metropolitan Region, which includes the city of Kingston, the urban portion of the parish of St. Andrew, and the cities of Portmore and Spanish Town. While the older parts of Kingston actually lost population in recent years, Spanish Town more than doubled in population during the 1970s and Portmore grew by a factor of almost 15.** Thus, between 1970 and 1982, the Kingston Metropolitan Region as a whole grew from about 29 percent of the nation's population to about 31 percent. The population of other urban areas grew somewhat more rapidly, from 12 percent of total population to about 17 percent.

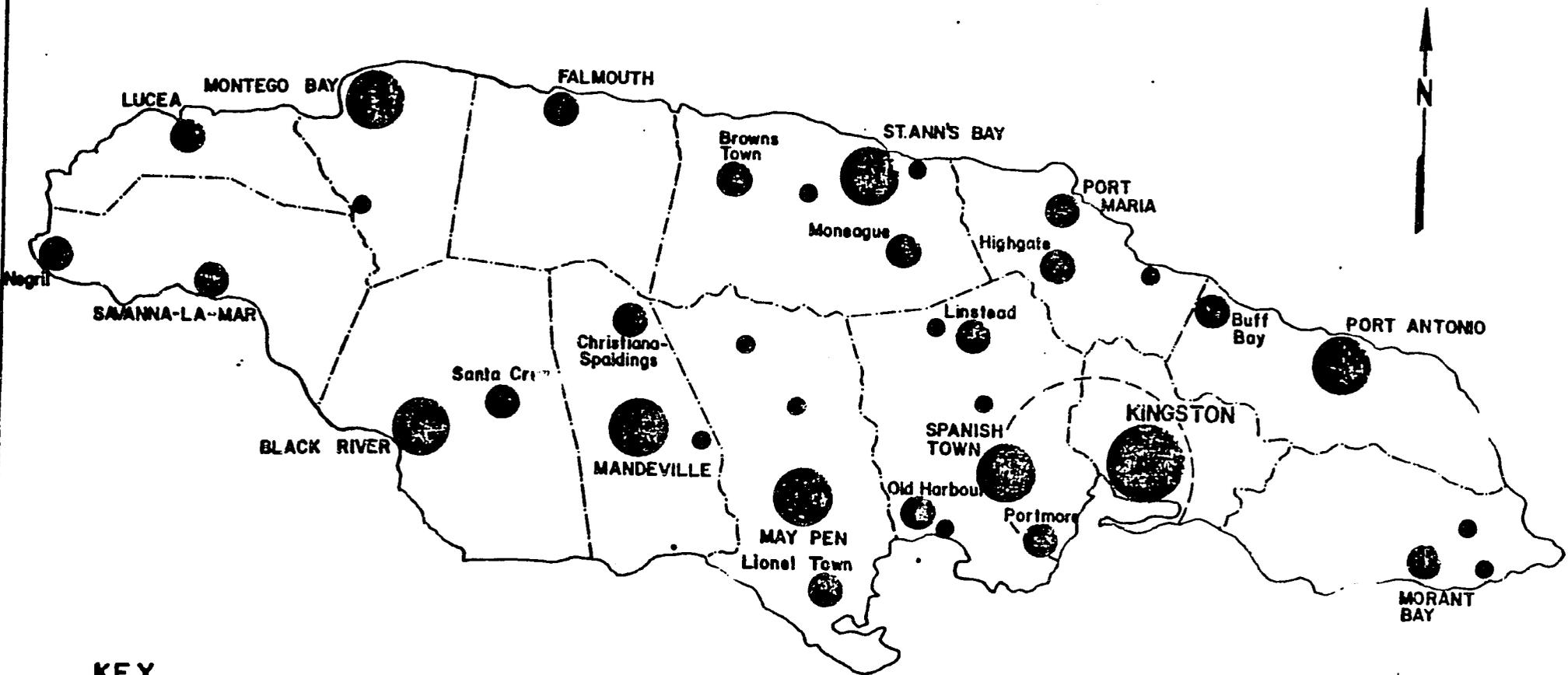
Exhibit 2.4 presents the share of population likely to be living in the Kingston Metropolitan Region, in other urban centers, and in rural areas over the next twenty years, assuming that recent patterns of urbanization are sustained. The share of population living in rural areas falls to about 42 percent by 2006, with the Kingston Metropolitan Region growing slowly at an average rate of about 1.6 percent annually, and other urban centers growing more rapidly at an average annual rate of about 2.4 percent.

* The Census defines an urban area as one with population of at least 2,000 and offering facilities such as banks, electricity, schools, libraries, post offices, and police stations that "indicate some degree of modern living." Jamaica's seven largest cities account for 84 percent of the total urban population and the Kingston metropolitan area alone accounts for almost two thirds.

** 1970 and 1982 Census.

EXHIBIT 2.3

SETTLEMENT CATEGORIES



KEY

 Metropolitan Area.

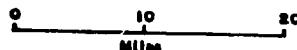
 Regional Centres

 Sub-Regional Centres.

 Other Towns.

 Rural Areas.

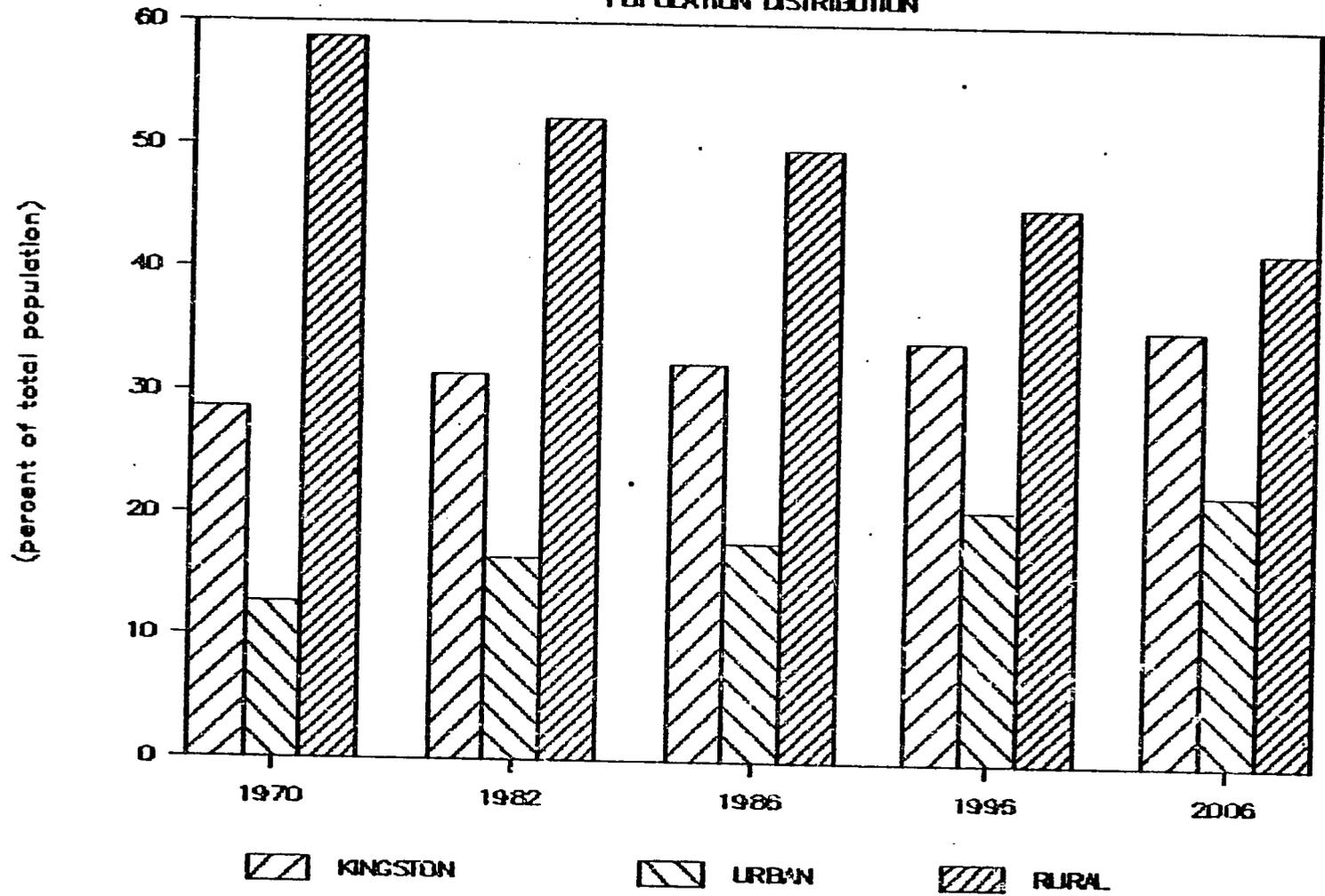
} OTHER URBAN AREAS.



- 2 -

EXHIBIT 2.4

POPULATION DISTRIBUTION



Is this forecast reasonable? Population growth generally occurs where people expect to find jobs. This may mean that given the decline of the bauxite industry, rural areas will retain a greater share of population than in the past. Alternatively, urban growth may be more concentrated if Kingston appears to offer greater hope of employment than other urban centers. Thus, the next two decades may bring either a more gradual decline in the share of rural population or an acceleration in the growth of the Kingston Metropolitan Region. However, until evidence is available to document current trends in population growth, it is reasonable to assume a continuation of past patterns.

2.1.2 Household Formation

Housing needs are determined not only by trends in population growth but also by patterns of household formation, and in Jamaica today there is considerable uncertainty about both actual and desirable household sizes. The Census defines a household as a group of people who share accommodations and who generally eat together. Thus, a household might consist of a nuclear family along with extended family members, but it might also include servants or other non-family members who contribute to the family's economic well-being.

According to the Census definition, most dwellings (98 percent in urban areas and 99 percent in rural areas) are occupied by only one household. However, these households tend

to be quite large, as illustrated in Exhibit 2.5. The average household size for the nation as a whole is 4.2, with a sizeable minority of very large households. In Kingston 8 percent of households have more than seven members, while in other urban centers and rural areas 11 percent and 16 percent of households respectively are composed of eight or more members.

Exhibit 2.5
Distribution of Households by Size

	Kingston	Other Urban	Rural
1 Person	26.46%	18.68%	19.24%
2 People	17.24%	15.91%	14.28%
3-4 People	27.23%	28.90%	24.52%
5-7 People	20.85%	26.00%	26.17%
8-11 People	6.94%	8.87%	13.08%
12+ People	1.27%	1.64%	2.71%
Average	3.83	4.37	4.38

Given the Census definition, we do not know whether households are large because a lack of housing opportunities has encouraged doubling up, or because of other economic or social pressures. Earlier estimates of Jamaica's housing needs have employed a target household size of 4.0.* But this may not represent a realistic goal for the nation's housing policy if current household sizes are large for compelling economic or social reasons. It is essential to learn more about household composition in Jamaica and the factors that influence household formation before setting policy targets.

* 1982 National Housing Policy.

Unfortunately, the Census tells us very little about the composition of households. But data collected from a small sample of low and moderate income households in 1983 and 1984 provide several useful insights.* It is important to note that this sample is very small (145 households altogether) and appears to over-represent large households. Nevertheless, these data -- summarized in Exhibit 2.6 -- suggest that a large share of households are female-headed -- about half in urban areas and over one third in rural areas. In urban areas, female headship is clearly associated with poverty, while in rural areas, female-headed households appear to enjoy slightly higher incomes, possibly because these households have a male wage earner sending money from the city.

The average household in the survey consists of three to four adults and two to three children, confirming that nuclear families frequently share their accommodations with either extended family members or non-relatives. Larger households are associated with higher income levels in both rural and urban areas, suggesting that adults join together to form large households for economic reasons. However, not all the adults in an average household are earners. In fact, on average, fewer than half the adults per household earn income. Still, in higher income households, a larger share of the adults work than in

* Barbara D. Miller and Carl Stone, "The Low-Income Household Expenditure Survey: Description and Analysis," Jamaica Tax Structure Examination Project, Metropolitan Studies Program, Syracuse University, November, 1985.

Exhibit 2.6
 Distribution of Low and Moderate Income Households

	Urban Households			Rural Households		
	Very Low Income	Low Income	Moderate Income	Very Low Income	Low Income	Moderate Income
	26	26	15	29	30	19
	65%	46%	33%	28%	40%	42%
	5.9	7.0	7.6	5.0	6.0	7.7
	2.6	3.0	3.5	2.1	3.4	3.6
	3.3	4.0	4.1	2.9	2.6	4.1
	1.1	1.5	1.7	0.9	1.2	1.7

households. Thus, the more affluent households in
 consist of more adult members and a larger share of
 earners.

by no means resolve the issue of why Jamaica's
 is so large, or whether a shortage of affordable
 housing facilities is a major contributor to large household
 sizes. They do suggest that lower income Jamaicans may
 live in large households in order to enhance their incomes. If this
 is due to the unavailability of more housing units would
 increasing household sizes and might not be a desirable policy
 option. For the time being we assume that the average
 household sizes presented in Exhibit 2.5 are acceptable from the
 point of view of housing policy, and that they will not decline
 significantly over the next two decades.

Even given this assumption, however, there are more households than dwellings in Jamaica. Exhibit 2.7 compares the estimated number of households to the number of dwellings in the Kingston Metropolitan Region, other urban centers, and rural areas for 1986.* The biggest gap is in the Kingston Metropolitan Region, where households exceed dwellings by almost 3 percent. In the nation as a whole, there are about 9.4 thousand more households than dwellings.

Exhibit 2.7
Incidence of Doubling-Up
(1000s)

	Kingston	Other Urban	Rural
Total Dwellings	190.4	92.8	260.6
Total Households	195.7	94.4	263.2
Difference	5.3	1.6	2.6

2.1.3. Housing Conditions

In 1986 Jamaica's housing stock consisted of about a half million dwelling units. The vast majority of dwelling units in Jamaica (about 85 percent) are single-family detached houses; fewer than 5 percent are units in apartment buildings. About half of all households own the dwellings they live in, while about one third rent from private landlords and almost 10 percent occupy their units rent free. Most dwellings are small. In fact, despite the large household sizes typical of Jamaica, more

* 1982 Census ratios of private population to households and ratios of dwellings to households applied to 1986 private population estimated and presented in Exhibits 2.1 and 2.4.

than half of all households live in units of only one or two rooms, and fewer than 15 percent of households occupy more than four rooms.*

Exhibit 2.8 characterizes the housing stock of Kingston, other urban centers, and rural areas in terms of vintage and construction materials.** The vast majority of dwelling units are constructed of concrete, stone, or brick. Most were built before 1970, although the housing stock in other urban centers includes a large number of units built during the 1970s -- many of which are probably located in Spanish Town and Portmore. Nog and wattle and daub houses represent only a small share of the total housing stock, particularly among newer units and in urban centers. Most nog and wattle and daub houses are in rural areas and were built before 1960. The majority of recently built housing units are made of concrete, stone, or brick, with a significant minority constructed of wood.

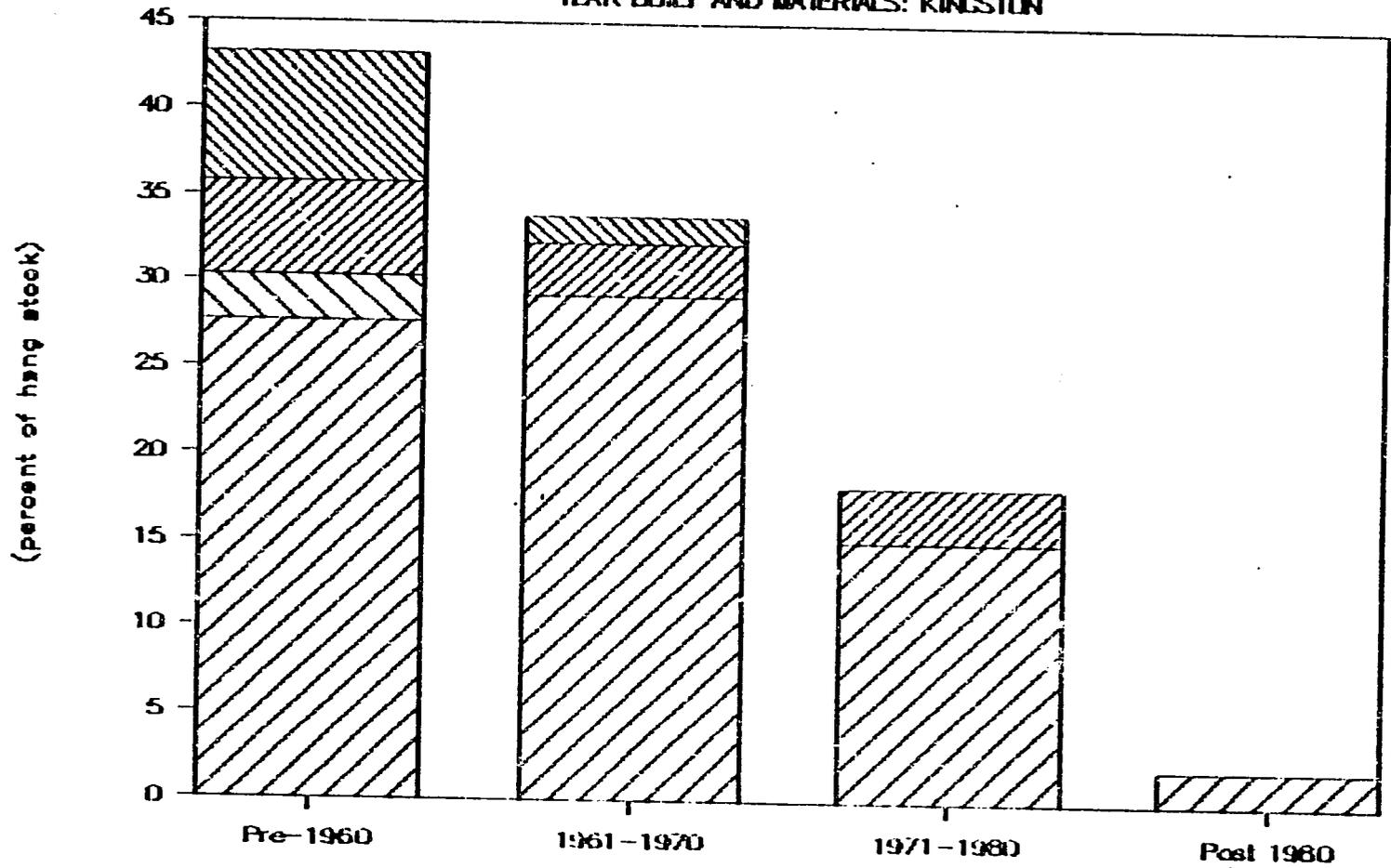
Experts generally reject the proposition that the condition of a structure can be inferred from data on its age and construction materials, because of the importance of ongoing maintenance. Unfortunately, no data are collected by the Census on structural conditions or degree of dilapidation. However, several independent sources suggest that roughly 5 percent of Jamaica's housing stock is in such bad condition that it cannot

* 1982 Census provides distribution of households by tenure, type of structure, and number of rooms.

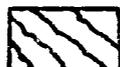
** Special tabulations of 1982 Census data performed by The Statistical Institute of Jamaica. It is important to note that in both Exhibits 9 and 10, Portmore and Spanish Town are included with other urban centers rather than with Kingston.

EXHIBIT 2.8a

YEAR BUILT AND MATERIALS: KINGSTON



 Conc., Stone, or Brick

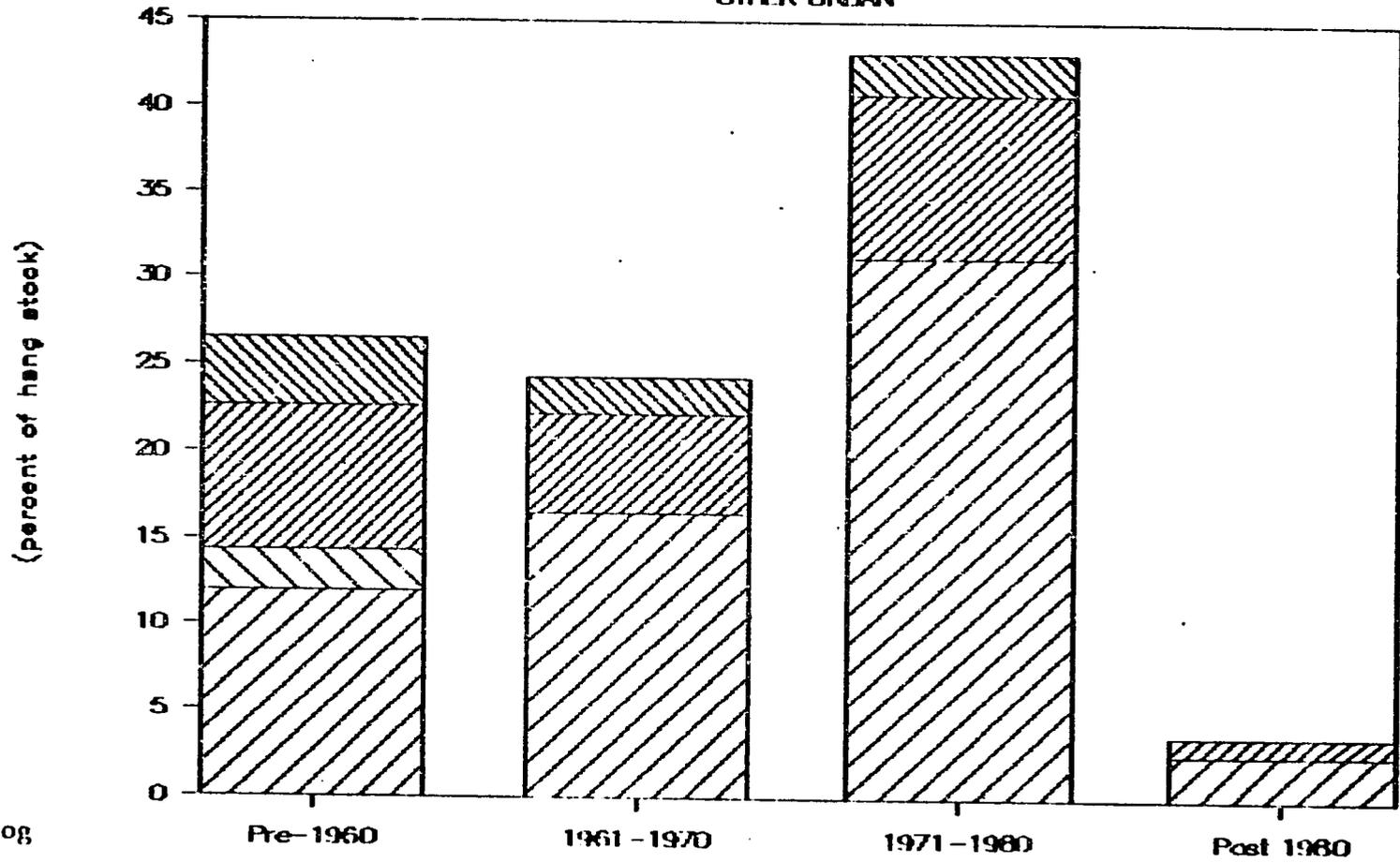
 Nog

 Wood

 Wood and Conc., or Brick

EXHIBIT 2.8b

OTHER URBAN

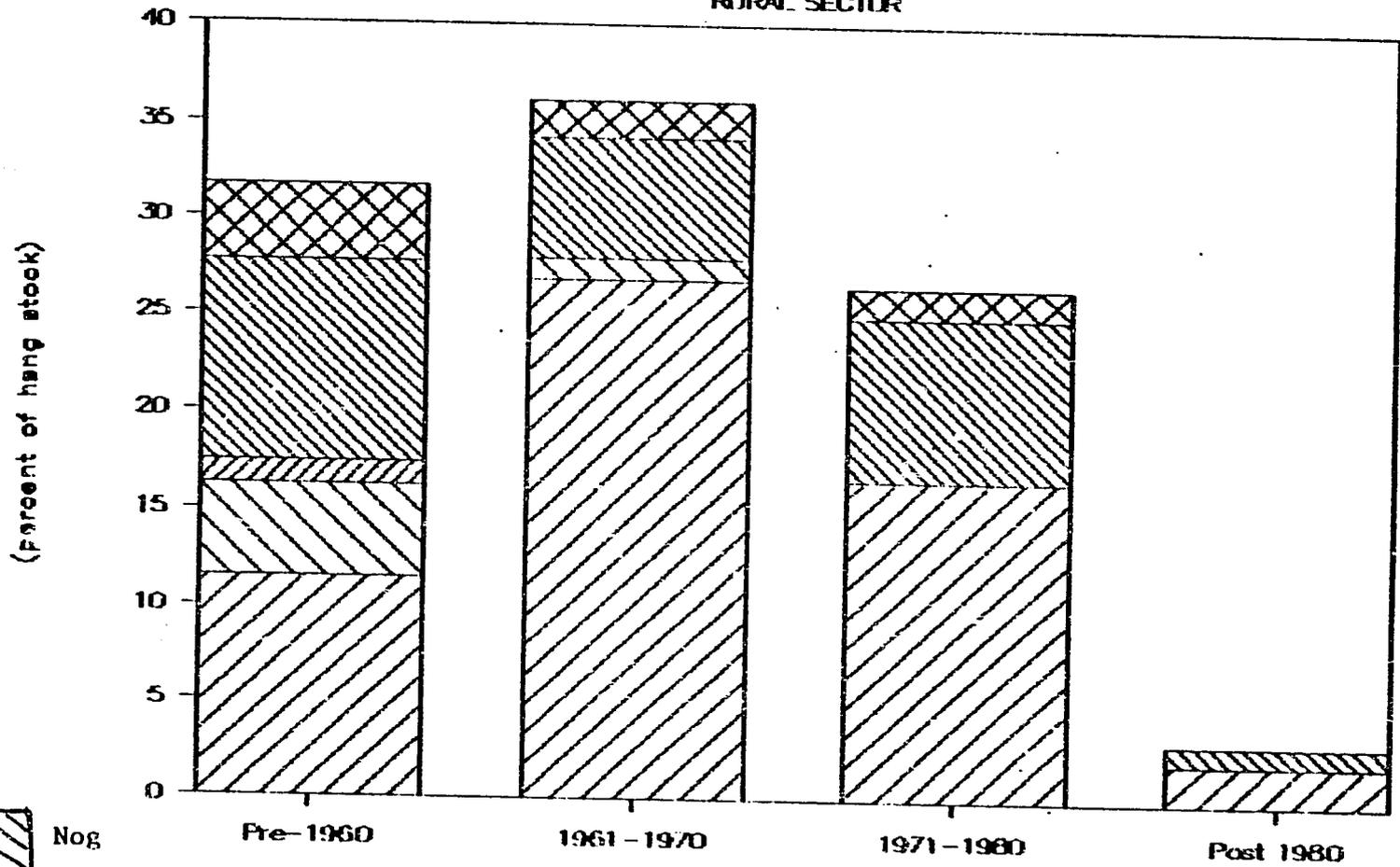


- Conc., Brick, Stone
- Wood
- Nog
- Wood and Conc., or Brick

1600

EXHIBIT 2.8c

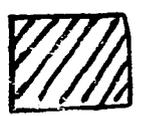
RURAL SECTOR



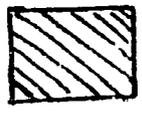
Conc., Stone, or Brick



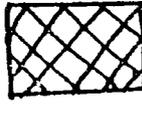
Nog



Wattle and Daub



Wood



Wood and Conc., or Brick

reasonably be renovated. We have estimated that the incidence of such "non-upgradable" housing is highest in the Kingston metropolitan area (8 percent) and lower in other urban centers (4 percent) and rural areas (3 percent).* The remainder of Jamaica's housing stock is either in acceptable condition or could reasonably be renovated to a fully acceptable condition.

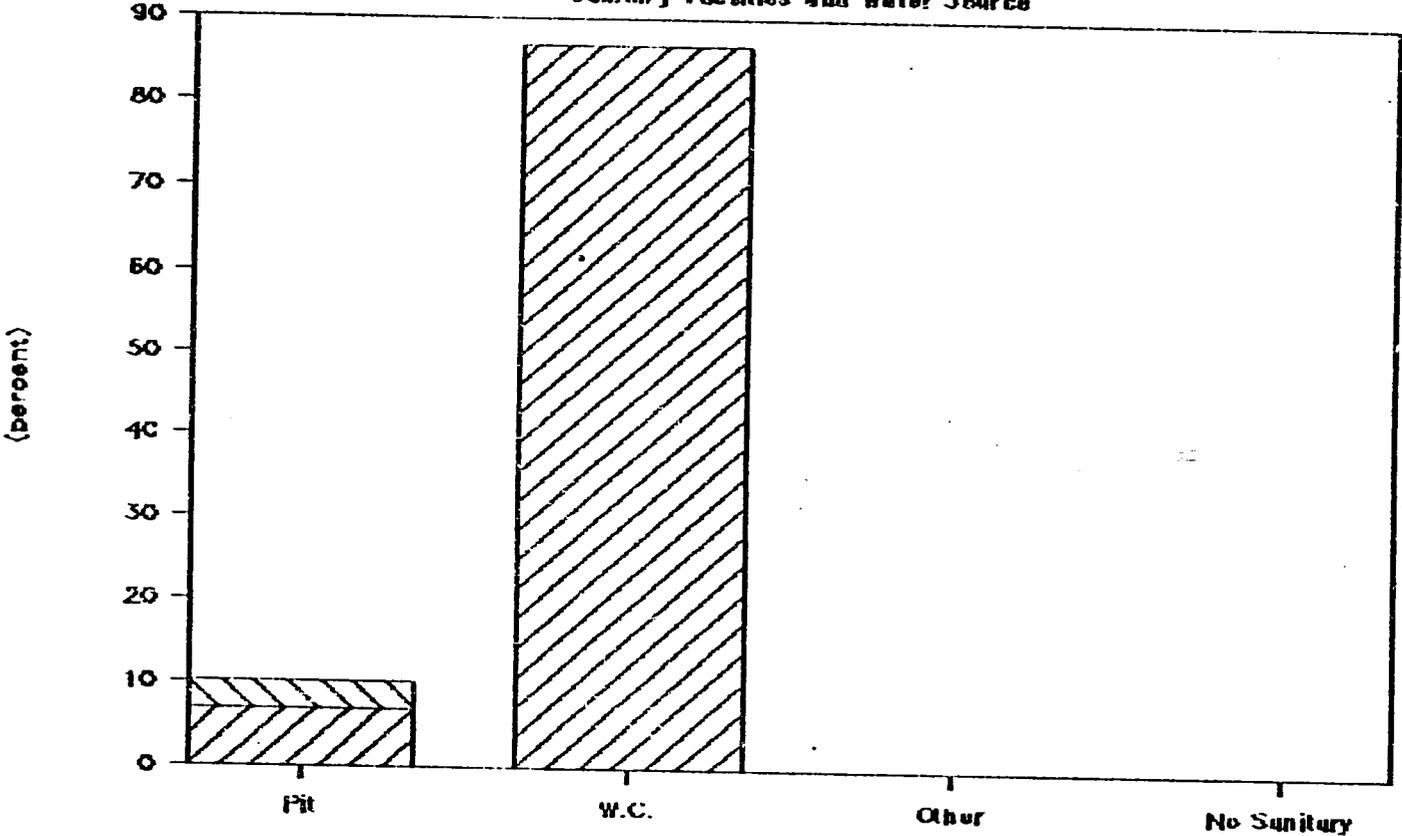
One important indicator of the condition of the remainder of the housing stock is the adequacy of water and sanitary services. Exhibit 2.9 presents distributions of households by type of sanitary facilities and source of water.** In Kingston, almost all households (87 percent) enjoy both piped water and a W.C. Only about 10 percent have pit latrines, less than 6 percent lack piped water, and less than 1 percent lack any sanitary facilities. In other urban centers, water and sanitary services are considerably less widely available. Less than half (46 percent) of all households enjoy both piped water and a W.C. Almost half use pit latrines and about 20 percent obtain water from catchment, standpipes, tanks, or other sources. Rural households receive the lowest levels of infrastructure services. Eighty percent of these households use pit latrines, and only about one third enjoy piped water.

* Based on interviews with Pauline McHardy (MOCH), Cherry Lee (MOCH), Ruth McLeod (CRDC) and Bob Olsen (USAID).

** Special tabulations of 1982 Census data performed by The Statistical Institute of Jamaica. It is important to note that in Exhibits 2.8 and 2.9, Portmore and Spanish Town are included with other urban centers rather than with Kingston.

EXHIBIT 2.9a - Kingston

Sanitary Facilities and Water Source



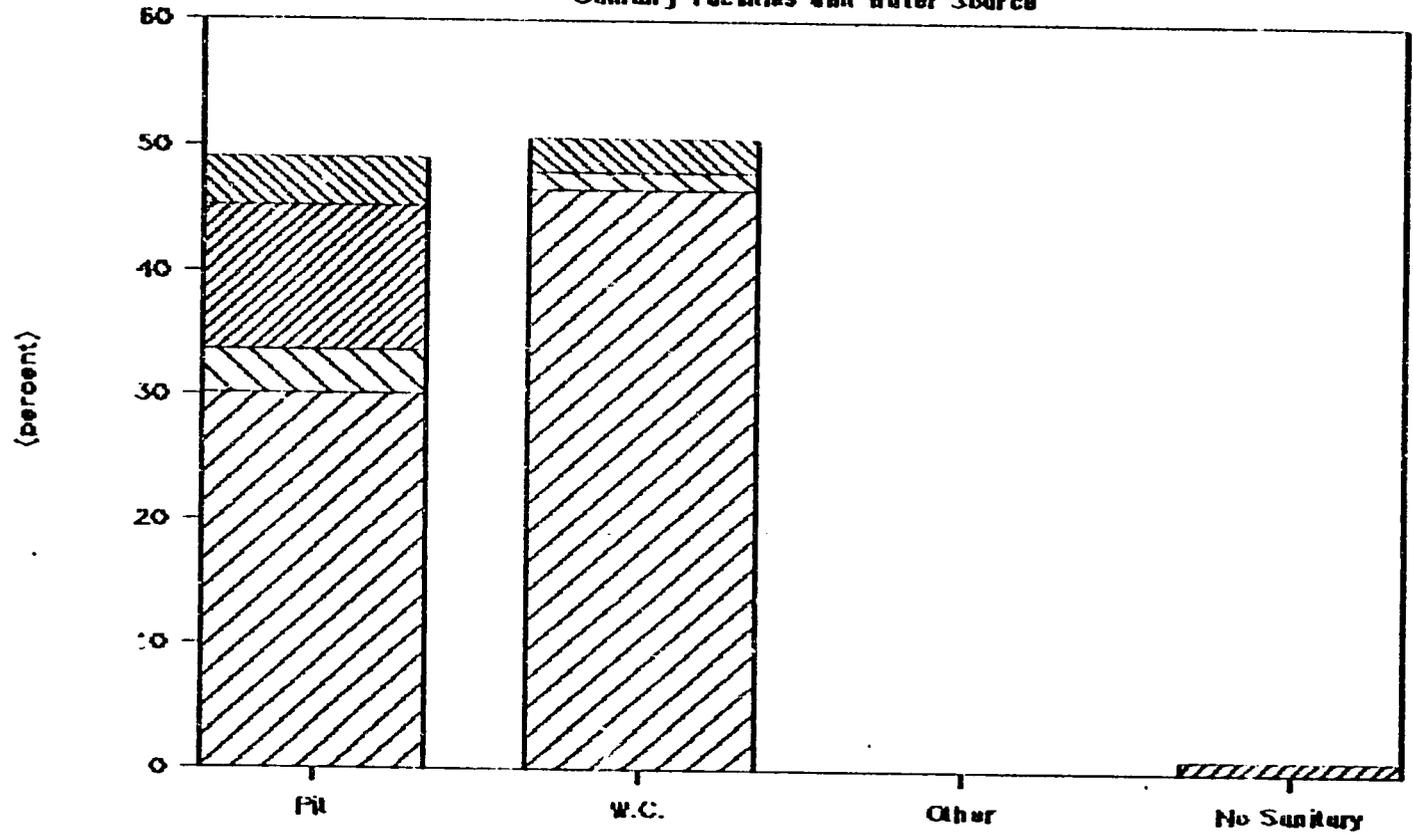
 Piped water

 Standpipe or tank

17a

EXHIBIT 2.9b - Other Urban

Sanitary Facilities and Water Source



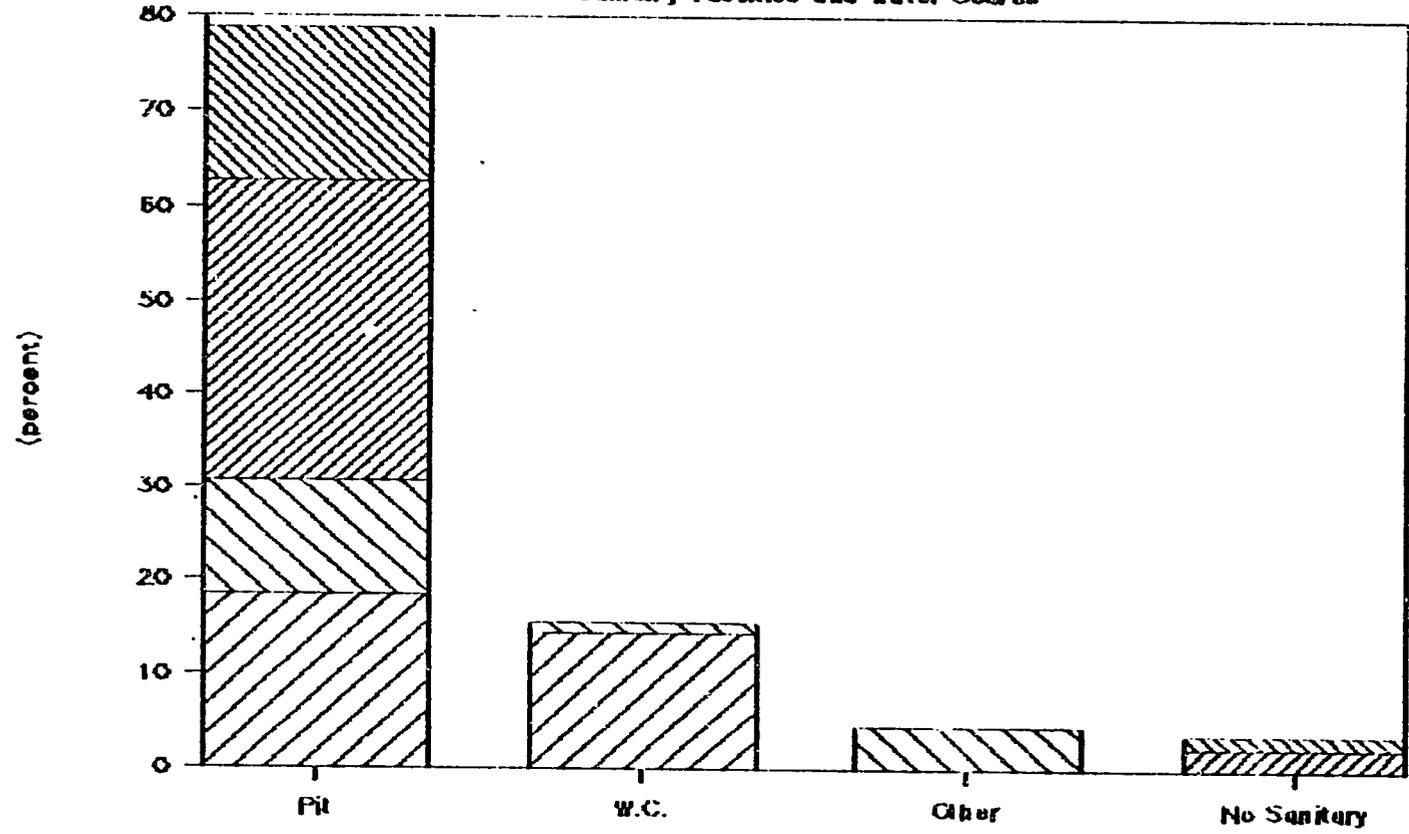
 Piped

 Catchment

 Standpipe, tank

 Other

EXHIBIT 2.9c – Rural Sector
Sanitary Facilities and Water Source



 Piped  Catchment

 Stand pipe, tank

 Other

What is the appropriate standard for infrastructure services in urban and rural Jamaica? It may not be feasible in the immediate future to extend piped water and indoor sanitary facilities to all households in both urban and rural areas, and given the low densities of rural development, properly designed pit latrines and standpipes may provide safe and accessible services to rural households. Therefore, we have assumed that Jamaica's target for the next twenty years is to provide piped water in the dwelling unit for urban households, and piped water on the lot (or in the dwelling) for rural households.

As indicated earlier, the adequacy of infrastructure services may provide as good an indication as any of the quality of a dwelling unit. Informed sources suggest that about three quarters of the households that enjoy adequate water and sewer services (and the security of tenure that effectively accompanies these services) are able to improve or maintain their dwellings to meet some reasonable standard of permanence and acceptability.* Better data on the condition of housing units is clearly needed, but until such data are available, we have applied the estimate that 75 percent of the units with acceptable water and sanitary services (as defined above) provide acceptable and reasonably permanent shelter.

* Based on interview with Cherry Lee (MOCH).

2.1.4 The Housing Deficit

Exhibit 2.10 provides an inventory of Jamaica's current housing deficit. This inventory suggests that, as of 1986, Jamaica needs to build approximately 9.4 thousand dwellings to eliminate overcrowding and 26.8 thousand dwellings to replace units that are non-upgradable. In addition, about 194 thousand units lack piped water, with the vast majority of these in rural areas. Finally, approximately 80 thousand more units have adequate infrastructure but require structural renovations to achieve permanent, fully adequate status.

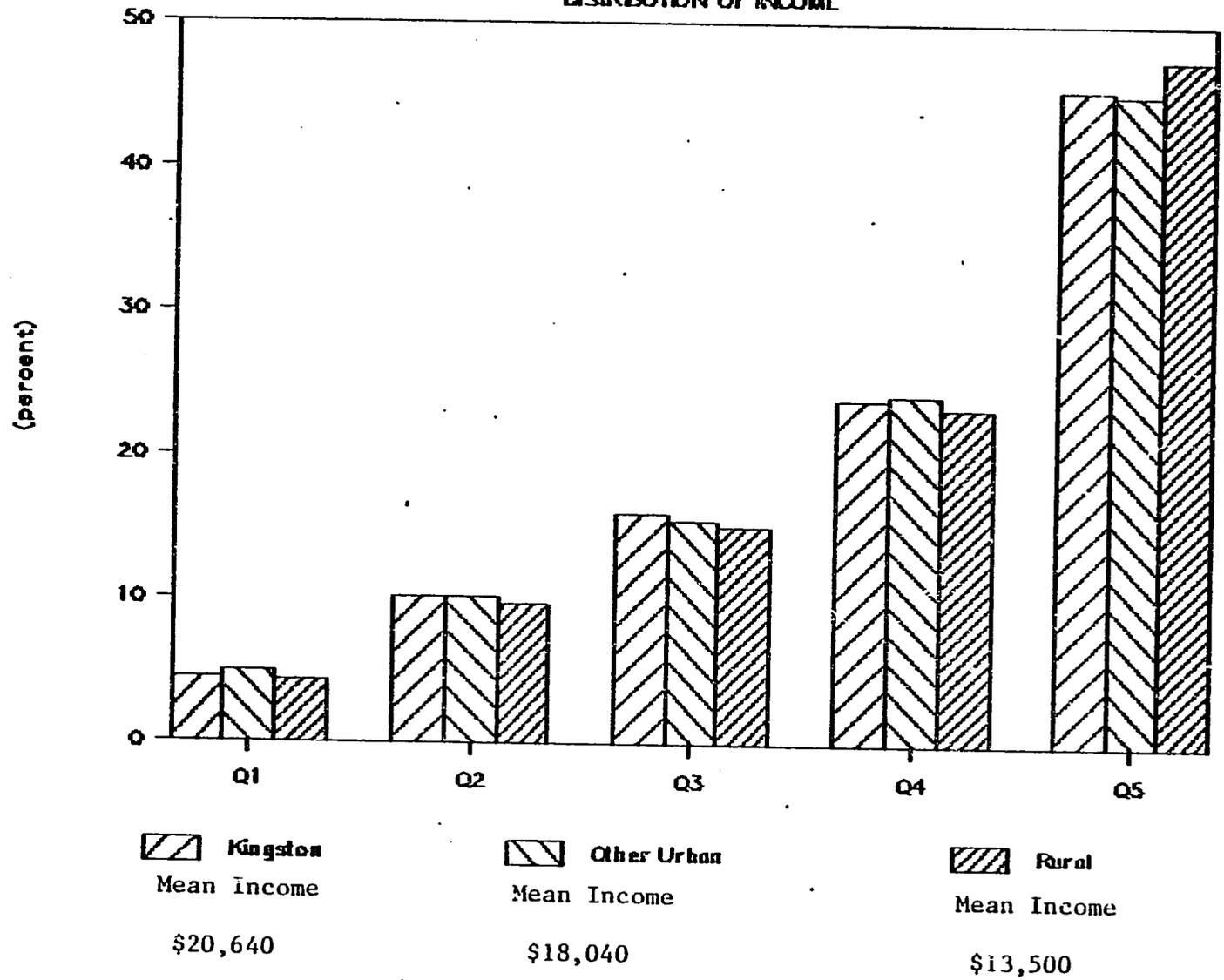
Exhibit 2.10
Existing Housing Deficit

	Kingston	Other Urban	Rural	Total
Total Households	195,670	94,387	263,158	553,215
Total Dwellings	190,396	92,809	260,655	543,860
Crowding (excess of hhs over dws)	5,274	1,578	2,503	9,355
Non-Upgradable Dws % of stock	15,232 8.0%	3,712 4.0%	7,820 3.0%	26,764 4.9%
Adequate & Upgradable Dws Lacking Services % of stock	9,520 5.0%	17,634 19.0%	166,819 64.0%	193,973 35.7%
Upgradable Dws Lacking Srvcs or Requiring Renovation % of stock	51,407 27.0%	35,267 38.0%	187,672 72.0%	274,346 50.4%

2.1.5 Housing Expenditures and Investment

What resources can Jamaica's households mobilize to address this housing deficit? As illustrated in Exhibit 2.11, household incomes are quite low and quite inequitably distributed. Average

EXHIBIT 2.11
DISTRIBUTION OF INCOME



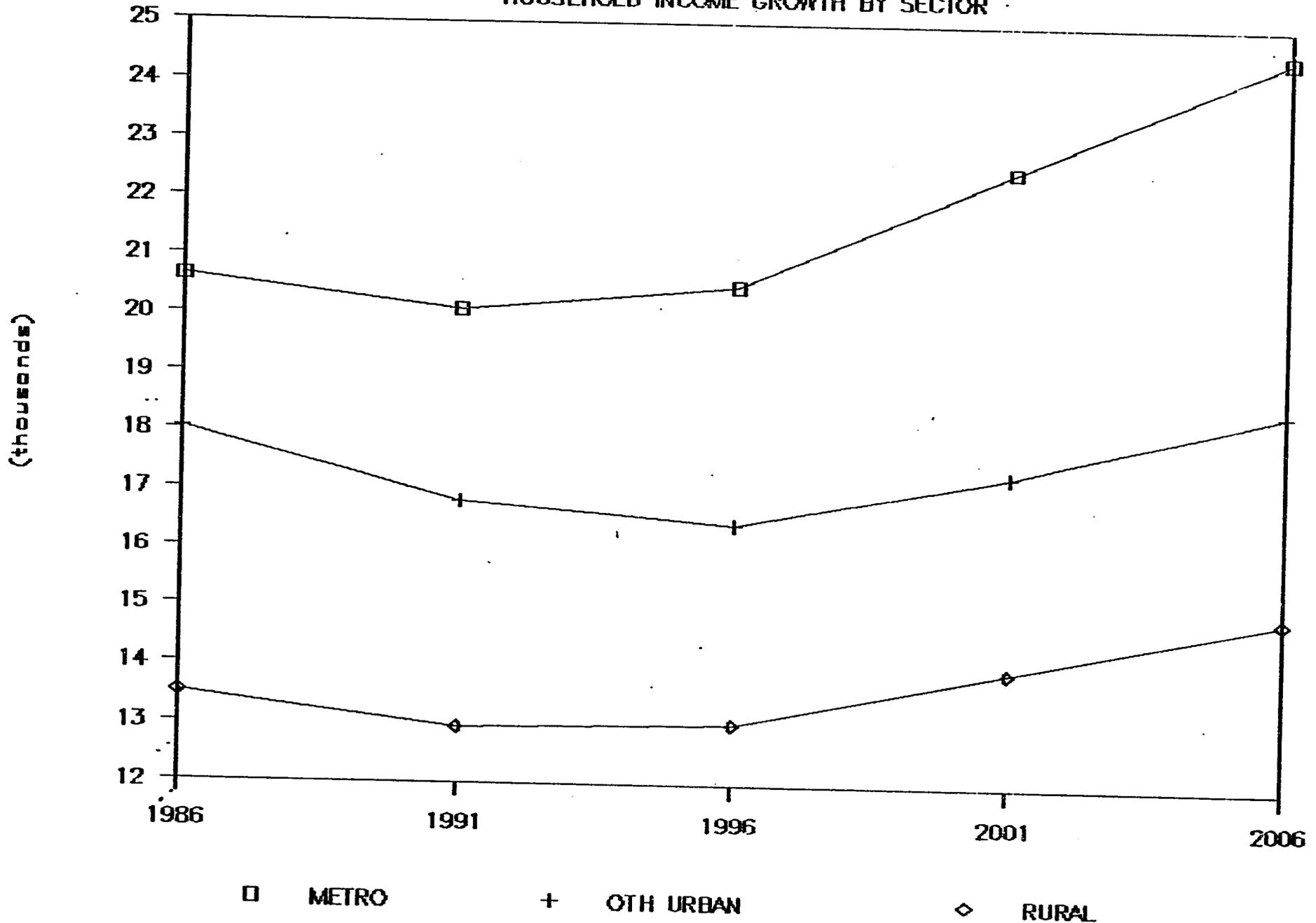
1986 incomes for households in the lowest quintile are only about J\$4,500 in urban areas and less than J\$3,000 in rural areas. Households in the highest quintiles enjoy average incomes that are roughly ten times higher.* Over the next two decades it is reasonable to expect that real household incomes will increase slightly in conjunction with the positive GDP growth anticipated by the World Bank and AID. We do not, however, expect the distribution of income to change substantially in the next two decades. Exhibit 2.12 presents anticipated trends in average incomes for households in the Kingston Metropolitan Region, other urban centers, and rural areas.

It is difficult to determine what share of their incomes Jamaican households can make available for housing investment. Published data from household expenditure surveys -- which report quite low housing expenditure to income ratios -- do not include the imputed cost of equity invested in owner-occupied houses or the value of contributed labor and materials. Analysis of the 1975-1978 housing expenditure data indicates that renters in Kingston spent an average of 26 percent of their incomes for rents, and that for every one percent change in household income, housing expenditures changed by about 0.7 percent. This analysis suggests that housing expenditure to income ratios may actually be very high (over 35 percent) among low income urban households in Jamaica and somewhat lower (perhaps 20 percent) among higher

* Preliminary tabulations from the 1984 Household Expenditure Survey, with average incomes adjusted to 1986 by applying the annual GDP growth rate plus inflation.

EXHIBIT 2.12

HOUSEHOLD INCOME GROWTH BY SECTOR



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income urban households. The same analysis suggests that housing expenditure to income ratios should be systematically lower among rural households, since rural income levels are so low.*

Using these indicators, we have developed a plausible set of assumptions about the share of household income that Jamaicans at different income levels can reasonably be expected to make available for housing investment. These are presented in Exhibit 2.13. However, the design of effective housing strategies for

Exhibit 2.13
Affordable Capital Values

KINGSTON Quintile	Mean Inc	% for Hsng Invest	Max Affrdble Value
1 - low	\$4,550	30%	\$19,980
2	\$10,560	30%	\$37,860
3	\$16,550	28%	\$46,330
4	\$24,610	25%	\$51,250
5 - high	\$46,940	25%	\$71,590

OTHER URBAN Quintile	Mean Inc	% for Hsng Invest	Max Affrdble Value
1 - low	\$4,440	30%	\$19,480
2	\$9,240	30%	\$33,130
3	\$13,960	28%	\$39,080
4	\$21,840	25%	\$45,470
5 - high	\$40,730	25%	\$62,120

RURAL Quintile	Mean Inc	% for Hsng Invest	Max Affrdble Value
1 - low	\$2,890	25%	\$10,570
2	\$6,540	25%	\$19,550
3	\$10,170	22%	\$22,370
4	\$15,770	20%	\$26,280
5 - high	\$32,120	20%	\$39,200

* Stephen Malpezzi and Stephen K. Mayo, "Housing Demand in Developing Countries," Water Supply and Urban Development Department, Operations Policy Staff, The World Bank, 1985.

Jamaica will require better estimates than these of households' capacity to invest in housing. Such estimates should be forthcoming from the market demand studies being conducted under Phase II of the National Shelter Sector Strategy effort.

Along with our provisional estimates of housing expense to income ratios, Exhibit 2.13 presents estimates of the capitalized value of these payments over a 30 year term. There are two ways of interpreting these capitalized values. First, they can be interpreted as the value of the unit a household could support given a mortgage based on the expenditures it can afford to make for housing investment. Alternatively, they can be interpreted as the capitalized present value of the incremental investments made by a household over 30 years. Subsequent sections of this report discuss constraints on the availability of mortgage financing in Jamaica, and the prevailing interest rates and financing terms for capitalizing current housing investments. In brief, we have made the following assumptions:

The highest income quintile receives formal sector, market-rate mortgage financing, at interest rates of 17 percent.

The fourth income quintile is most likely to take advantage of mortgage loans offered by the National Housing Trust, at 12 percent.

The lowest three income quintiles are unlikely to obtain mortgage financing, although they qualify for loans from the National Housing Trust and the Ministry of Construction (Housing) at interest rates ranging from 6 to 10 percent, depending on income.

Few low income households deposit their savings in formal sector institutions, but if they did, they would probably earn interest rates between 6 and 10 percent. Thus, their opportunity cost of capital is about the same as the interest rates offered by NHT and the Ministry.

It is clear from Exhibit 2.13 that regardless of how the capitalized values of monthly housing investments are interpreted, the vast majority of Jamaica's households are extremely limited in what they can afford. Currently, the least expensive housing being built by the formal private sector in Jamaica is a two-bedroom house sold to the Ministry of Construction (Housing) under the Turnkey program, which costs J\$85,700. In other words, even the average household in the most affluent income quintile cannot reasonably afford the formal private sector's cheapest new construction. This helps explain the magnitude of Jamaica's current housing deficit, and suggests that future population growth and household formation will surely exacerbate existing housing problems unless constraints on housing production and housing affordability are addressed by public policy.

2.2: Jamaica's Housing Needs and the Costs of Meeting Them

This section forecasts the number of new housing units and unit upgrades needed annually to house all Jamaicans adequately by the year 2006. We then present three alternative policy scenarios for meeting these long-term housing needs, and estimate the annual investment levels implied by each scenario. These forecasts are based on results of the Housing Needs Assessment Model, which is summarized in Annex A. Annex B describes sources and procedures used to generate the data required by the Housing Needs Assessment Model, and Annex C provides complete listings of the Model's results for Jamaica.

Before launching into a discussion of the Model results, it is important to clarify some basic terminology. The Housing Needs Assessment Model is designed to estimate the annual number of new houses (additions to the stock) and upgrades (improvements to units already in the stock) needed to accommodate all households by the end of twenty years. New units can be produced by the public or private sector -- formal or informal. A serviced site with an improvised shelter can qualify as a new housing unit, for example. Later in this section, we discuss three alternative definitions of a minimally adequate unit appropriate for Jamaica over the next two decades. Upgrades refer to the extension of basic infrastructure services to units that already exist.

Once the Model has projected future needs for new units and upgrades, it estimates the total level of investment required to meet these needs. Investment levels encompass not only government expenditures, but private loans and owners' equity as well. Investment levels depend on what households can afford, but also on what the new construction and upgrading solutions cost. We have generated three alternative estimates of investment requirements for Jamaica, based on different definitions of minimally adequate housing, each of which has a different design cost.

Finally, it is important to emphasize from the outset that the Model forecasts presented here are illustrative of three alternative scenarios for public and private solutions to Jamaica's housing needs. While these scenarios were developed in

conjunction with members of the National Focus Committee, their particulars -- including the policy scenarios as well as the demographic and economic assumptions underlying the simulations -- remain open to debate and subject to modification.

2.2.1 Projected Housing Needs

Exhibit 2.14 summarizes the key assumptions used by the Housing Needs Assessment Model to estimate the number of new units and upgrades required to accommodate all households. All of these factors were discussed in section 2.1, but we have summarized them here for clarity and convenience.

Exhibit 2.15 presents annual volumes of new units and upgrades required for the next four years (1987-1991) and for every fifth year until 2006 (1996, 2001, 2006). These requirements reflect the sum of the following factors:

New Construction

1. Eliminate overcrowding by the year 2006 by building enough new units annually to accommodate 5 percent of the 9.4 thousand households that are currently doubled up -- 0.5 thousand units annually.
2. Replace non-upgradable units by the year 2006 by building enough new units annually to accommodate 5 percent of the 26.8 thousand households currently living in non-upgradable dwellings -- 1.3 thousand units annually.*
3. Replace adequate units that drop out of the stock (through demolitions, natural disasters, and gradual depreciation) at an estimated rate of 1.5 percent each year -- an average of about 5.7 thousand units annually.

* Our estimate of the share of non-upgradable units is based on informed opinion rather than on empirical data. If only half as many units are non-upgradable, our annual new unit requirement drops by about 5 percent and the annual upgrading requirement rises by about 7 percent. Alternatively, if twice as many units are non-upgradable, annual new unit requirements are 9 percent higher and annual upgrading requirements are 14 percent lower.

EXHIBIT 2.14

SUMMARY OF HOUSING NEEDS ASSESSMENT ASSUMPTIONS

	<u>1986</u>	<u>1991</u>	<u>1996</u>	<u>2001</u>	<u>2006</u>
Population (1,000S)					
Kingston ^a	749.4	832.7	905.8	961.1	1030.5
Other Urban	412.5	478.7	543.5	601.7	658.9
Rural	1152.6	1173.4	1193.5	1207.9	1219.7
Avg. Household Income^b					
Kingston	20.64	20.09	20.52	22.54	24.50
Other Urban	18.04	16.81	16.45	17.32	18.44
Rural	13.50	12.95	13.03	13.94	14.88
	<u>Q₁</u> Low	<u>Q₂</u>	<u>Q₃</u>	<u>Q₄</u>	<u>Q₅</u> High
Income Shares^c					
Kingston	4.4%	10.2%	16.0%	23.9%	45.5%
Other Urban	4.9	10.2	15.5	24.2	45.2
Rural	4.3	9.7	15.1	23.4	47.6
Share of Inc. Devoted to Housing					
Kingston	30.0%	30.0%	28.0%	25.0%	25.0%
Other Urban	30.0	30.0	28.0	25.0	25.0
Rural	25.0	25.0	22.0	20.0	20.0
Terms of Housing Finance					
Interest Rate	6.0%	8.0%	10.0%	12.0%	17.0%
Loan Term (years)	30.0	30.0	30.0	25.0	25.0
Down Payment	5.0	5.0	5.0	10.0	10.0
	<u>Kingston</u>		<u>Other Urban</u>		<u>Rural</u>
Initial (1986) Housing Stock (1,000S)					
Total Units	190.4		92.8		260.7
Non-Upgradable	15.2		3.7		7.8
Requiring Services	9.5		17.6		166.8
Acceptable	165.6		71.5		86.0
Average Household Size	3.83		4.37		4.38

Notes:

- a. Kingston is defined to include the city of Kingston, the urban portion of St. Andrews Parish, and the cities of Portmore and Spanish Town.
- b. Projected values of average household incomes are based on 1986 values, projected GDP growth rates of 1.4% 1986-1991; 2.0% 1991-1996; and 3.0% 1996-2006.
- c. We assume that income distributions will remain stable of the 1986-2006 period.

EXHIBIT 2.15

ANNUAL NEEDS FOR NEW UNITS AND UPGRADES

	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1996</u>	<u>2001</u>	<u>2006</u>
Kingston								
New Units	8.11	8.17	8.22	8.24	7.86	7.76	7.24	8.30
Upgrades	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Other Urban								
New Units	4.35	4.39	4.45	4.52	4.36	4.62	4.62	4.86
Upgrades	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Rural								
New Units	3.00	2.94	2.89	2.82	2.33	2.78	3.01	3.37
Upgrades	8.31	8.31	8.31	8.31	8.31	8.31	8.31	8.31
Total Country								
New Units	15.46	15.49	15.57	15.59	14.55	15.16	14.87	16.53
Upgrades	9.67	9.67	9.67	9.67	9.67	9.67	9.67	9.67

4. Accommodate population growth by building units for all new households formed each year -- approximately 7 to 8 thousand units annually.

Upgrading

5. Provide piped water and limited site amenities to all dwellings by the year 2006, extending services to 5 percent of the 194 thousand households currently living in acceptable or upgradable dwellings -- 9.7 thousand units annually.

Note that the upgrading totals leave out an important category of activity -- improvements to dwellings that may be excessively small or dilapidated, but that already receive piped water. We have omitted home improvements of this nature for three reasons. First, no data are available on the share of the stock that is unacceptably overcrowded or badly in need of major repairs. Second, current and planned public sector upgrading programs provide piped water, not improvements to existing structures. And finally, given the expected rate of new household formation and the share of households lacking basic infrastructure services, it makes sense for public policy to focus on the extension of essential infrastructure rather than on home improvements. Nevertheless, home improvements will continue to be undertaken by households at virtually all income levels, and they represent an important mechanism for improving housing quality. Thus, as noted elsewhere, the construction and investment estimates produced by the Housing Needs Assessment Model should be interpreted as lower bound requirements.

Altogether, about 15.5 thousand new units and 9.7 thousand upgrades are required annually to meet Jamaica's housing needs by the year 2006. More than half of all the new units are needed in

the Kingston metropolitan area, while the vast majority (85 percent) of upgrades are required by rural households, very few of whom now enjoy piped water.

2.2.2 Projected Investment Requirements

How much housing investment (public and private) would be needed to achieve the required volume of new units and upgrades? To a large extent, the answer depends on the definition of minimally adequate housing and on the cost of producing it. Clearly, the total resources required to accommodate every Jamaican household in a start-a-home far exceed the resources that would be required for improvised shelters on serviced sites.

We have used the Housing Needs Assessment Model to estimate the total investment requirements implied by three alternative planning scenarios. These are outlined in Exhibit 2.16. Each scenario is characterized by a target for the year 2006, by the cost of the least expensive housing units supplied by the formal private sector, and by the new unit and upgrading solutions that would be deployed by the public sector.

The first two scenarios both aspire to accommodate all Jamaican households in permanent dwellings with piped water by the year 2006. The private sector's least expensive offering is the J\$85,700 two-bedroom house currently produced through the turn-key program, which -- as noted earlier -- is affordable for fewer than 10 percent of Jamaican households. Thus, under scenarios one and two, 90 percent of the population falls within the public sector's target group. The difference between these

two scenarios is that the second provides a much smaller and more austere structure, relying on the contributed labor of participating households. Under scenario one, the public sector solution is a start-a-home unit on a fully serviced site, while under scenario two, the public sector solution is a core unit on a serviced site.

Exhibit 2.16
Alternative Planning Scenarios

	SCENARIO #1	SCENARIO #2	SCENARIO #3
Planning target for the year 2006	All households in permanent dwellings with piped water	All households in permanent dwellings with piped water	All household sheltered on sites with piped water
Cost of formal prvt sector new houses	Urban: \$85,700 Rural: \$85,700	Urban: \$85,700 Rural: \$85,700	Urban: \$56,00 Rural: \$56,00
Public sector new unit solution	Sale of permanent units on serviced sites; start-a-homes"	Sale of core units on serviced sites	Sale of serviced sites; shelter built by household
Average cost of new unit solution	Urban: \$56,000 Rural: \$56,000	Urban: \$26,000 Rural: \$18,000	Urban: \$16,00 Rural: \$7,000
Public sector upgrade solution	Extension of piped water	Extension of piped water	Extension of piped water
Average cost of upgrade solution	Urban: \$11,000 Rural: \$7,000	Urban: \$9,000 Rural: \$7,000	Urban: \$7,000 Rural: \$5,000

Scenario three sets a more modest planning target for the year 2006. Rather than attempting to provide permanent dwellings for all households, this scenario focuses on the provision of serviced sites with piped water for all households. Many households will be able to purchase or build permanent units on

their serviced sites, others will erect temporary shelters. But the goal for the year 2006 is simply to shelter all Jamaican households on fully serviced sites.* Clearly, the cost of serviced sites is considerably lower than the cost of either permanent units or core units. Moreover, this scenario assumes that the formal private sector can be induced to supply considerably less expensive units than under scenarios one and two -- essentially one bedroom units comparable to today's start-a-homes.

2.2.3 Projected Investment Requirements

Before analyzing the investment implications of the three scenarios, it is helpful to compare the costs of the formal private sector and alternative public sector housing solutions to the levels of capital investment households can afford in 1986 (Exhibit 2.13). As noted earlier, one of the most disturbing findings illustrated by this exhibit is that not even an average household in the highest quintile can afford the formal private sector's current new construction standards. Thus, under scenarios one and two, virtually all of Jamaica's households fall into the public sector's target group. Under scenario three, which assumes that sufficient incentives are provided to induce the formal private sector to build the equivalent of start-a-homes, only the bottom four quintiles fall within the public

* The solution costs reported in Exhibit 2.16 should be interpreted as "entry" costs, and the total investment requirements estimated by the Housing Needs Assessment Model are essentially the lower bound requirements for meeting the alternative planning targets.

sector's target group.

How do the three alternative public sector solutions compare with respect to affordability? In Kingston and other urban areas only the top quintile can afford the public sector's new housing solution under scenario one -- the start-a-home. In rural areas, households in all five quintiles would find this solution unaffordable. Upgrading is considerably more affordable than new construction under both scenarios one and two; all but the lowest quintile can support the cost of an upgrade when the capital costs associated with owning an upgradable units (J\$15,000 in urban areas and J\$7,000 in rural areas) are included. Under scenario two, the core unit is affordable for all but the poorest income quintile. All households can afford to pay for the extension of full water and sanitary services to existing structures. Scenario three offers the greatest levels of affordability; all households can afford a serviced site, and all but the lowest income quintile can support the cost of upgrading an existing unit.

Exhibit 2.17 illustrates the implications of these investment and affordability comparisons, presenting the total investment levels implied by each of the three planning scenarios, and the share of each investment bill that Jamaican households can afford themselves. Before examining these estimates, it is important to review what they include. For each year, the Housing Needs Assessment Model has computed the total investment necessary to produce the required number of new units and upgrades. Money to pay for these units can come from a

variety of sources, including the formal financial sector, household savings, and the informal financial sector. The portion of this total investment that households can support themselves is based on the affordability calculations presented earlier. Thus, the investment levels reported in Exhibit 2.17 represent the total value of all new units and upgrades required in a given year, and the share that is affordable by households reflects the maximum mortgage amounts households can support, given prevailing interest rates.

The three scenarios range in total investment level from about J\$1 billion annually under scenario one to about J\$715 million annually under scenario three. By relying on contributed labor and incremental upgrading of core housing units, scenario two yields a total investment bill that is about 25 percent lower than the cost of scenario one. Scenario three, with its more modest planning target, is almost one third less expensive than scenario one.*

The variation between scenarios in affordability levels is even more dramatic than the variation in investment levels. Households can only afford about 70 percent of scenario one's total investment requirement, compared to over 95 percent for scenario two, and 100 percent for scenario three. Thus, the total subsidy -- computed as a one-time capital grant -- that

* The difference between total investment under scenarios one and two is smaller than one might expect because the Housing Needs Assessment Model includes investment above the entry cost that households can afford to make.

would be required annually to achieve the planning targets of our three alternative scenarios ranges from an average of J\$285 million under scenario one to J\$29 million under scenario two and nothing under scenario three.

Under scenario one, more than half of all the households scheduled for new or upgraded units require assistance; while only about one in five need help achieving the targets of scenario two; and none need subsidies under scenario three.* Exhibit 2.18 presents the distribution of households that would require subsidies by income quintile. Because the public sector's new unit solution under scenario one is so costly, households in all five quintiles would need assistance. In fact,

Exhibit 2.18
Distribution of Subsidy Assistance

Quintiles	Scenario 1	Scenario 2	Scenario 3
1- low	34.54%	100%	0
2	20.73%	0	0
3	20.73%	0	0
4	20.73%	0	0
5-high	3.35%	0	0
Average Subsidy per Recipient	J\$20,270	J\$5,942	J\$0

if sufficient subsidies were provided to achieve scenario one's targets, almost one quarter of the households receiving subsidies would be in the top 40 percent of Jamaica's income distribution. Under scenario two, only households in the lowest income quintile

* Some households will, of course, require assistance, even under scenario three. The Housing Needs Assessment Model uses the mean incomes of each income quintile, thereby obscuring the fact that the poorest households in quintile one may be unable to afford any solution.

would need assistance, while under scenario three all households could, in principle, achieve the planning targets.

How should the Model's subsidy estimates be interpreted? It may be feasible to provide the J\$28 million per year in subsidies implied by scenario two, but the J\$285 million required by scenario one is clearly unrealistic. Moreover, it would not make sense to implement a subsidy program with more than one fourth the beneficiaries in the top half of the income distribution. And finally, a planning scenario that makes virtually all households dependent upon the public sector for formal housing solutions has little hope of success. Even with substantial public resources, the public sector cannot be expected to meet the needs of all households requiring new units over the next two decades.

The large size of the target group (households dependent on public sector solutions) is also a problem under scenario two. Subsidy levels are only 10 percent of what is required by scenario one, but roughly 24 thousand households per year would rely on the public sector for new units or upgrades. Thus, scenario three offers three major strengths. First, by offering serviced sites as the public sector solution, scenario three brings annual subsidy requirements close to zero. Second, by relying on individual households to build their own units on serviced sites, this scenario takes maximum advantage of the capacity of the informal sector. And finally, by inducing the formal private sector to serve the top 20 percent of the income distribution, the number of households in the public sector's target group is reduced by 10 percent.

SECTION 3: HOUSING SECTOR POLICIES AND PROGRAMMES

The results generated by the Housing Needs Assessment Model indicate that to meet the goal of shelter for all by the year 2006, Jamaica will need to add an average of 15,500 units to the housing stock and upgrade another 9,000 existing units annually over the next twenty years. To achieve these levels, a significant volume of investment would be required from both the public and private financial sectors and from individual households. Producing a serviced site for all Jamaican households would require an average of J\$718.9 million annually, while accommodating all households in start-a-homes would require an average of J\$1 billion annually.

These production and investment needs far exceed what the formal sector has achieved to date. The informal sector has played an important role in filling the gap between demand for housing and the number of units made available by the formal sector.* However, informally produced housing often lacks essential infrastructure services, and may be of poor structural quality as well.

This section reviews the performance of Jamaica's housing sector and assesses its ability to achieve the targets estimated

* For purposes of this report, we define informal housing to include units built without legal permits and approvals. In many cases, these units will be located on land to which the household does not possess legal title, will not be financed by formal sector lending institutions, and may be built with some scavenged materials and contributed labor.

by the Housing Needs Assessment Model. The housing sector's performance is in part a reflection of a stated and or implied national housing policy. The national housing policy should establish an appropriate conceptual and institutional framework which can guide the intent, design and implementation of a national housing plan.

Jamaica's current National Housing Policy was prepared in 1982 and has provided a framework for the current thrust in public sector housing programmes. Therefore, this section begins with a brief overview of the 1982 National Housing Policy, and then describes the recent performance of housing developers and the housing finance system.

3.1 National Housing Policies

Housing activity in the 1980s has been guided to some extent by the 1982 National Housing Policy. This policy represents the first single and comprehensive attempt to rationalize and streamline the public housing sector while at the same time advocating a role for the private sector. Much like its predecessors of the mid-1970s, the 1982 National Housing Policy has as its principal objective the provision, by the state, of adequate shelter for low income earners. The 1982 policy document, however, goes further in that it attempts to orchestrate the activities of a myriad of public sector housing finance and development agencies. (See Exhibit 3.1)

(Exhibit 3-1)

CHART No. 1

FUNCTIONAL ROLES OF PUBLIC AND PRIVATE SECTOR HOUSING AGENCIES - PRIOR TO 1982

Institutions	FINANCING						PLANNING & DEVELOPMENT			
	Interim Financing	Long-term Financing	Direct Subsidy	Mortgage Servicing	Secondary Mortgage Financing	Mortgage Insurance	Development	Project Planning	Monitoring	Research
PUBLIC SECTOR										
Ministry of Housing	X	X	X	X			X	X	X	
National Housing Corporation							X	X	X	
Urban Development Corporation	X						X	X	X	
National Housing Trust	X	X	X	X			X	X	X	
Sugar Industry Housing	X	X	X	X			X	X	X	
Sites and Services Division							X	X	X	
Jamaica Mortgage Bank	X	X		X	X	X			X	
Ministry of Social Security & Consumer Affairs			X					X	X	
Ministry of Agriculture			X					X		
Town Planning Department								X		
Caribbean Housing & Finance Corporation								X		X
PRIVATE SECTOR										
Building Societies		X		X						
Insurance Companies	X	X					X	X	X	
Trust Companies		X								
Merchant Banks	X	X		X						
Commercial Banks	X									
Mutual Housing Services										
J.C.C. U.L.	X	X		X						
Private Developers eg W.H.C.O.							X	X	X	

Source: National Housing Policy, 1982

* Quasi Public

3.1.1 Principal Objectives of the 1982 National Housing Policy

In reviewing the 1982 National Housing Policy (NHP) four principal objectives emerge:

Rationalization of the number and levels of intervention by public sector housing developers.

Streamlining of the flow of funds within and to public sector housing finance institutions, ensuring access by the Ministry of Construction (Housing) to non-budgetary construction financing from such sources as the National Housing Trust and the Jamaica Mortgage Bank. (See Exhibit 3.2)

Establishment of the Ministry of Construction (Housing) as the nexus of the housing sector by assigning to it the role of overall development, management, and control of the sector.

Resuscitation of the private housing sector by stimulating the sector's involvement in the provision of housing for all income groups.

3.1.2 The 1982 National Housing Policy -- Institutional Roles

The policy document outlines the role of the public sector in housing construction in detail, with the objective of providing a "...clear definition of institutional roles... to ensure an efficient and integrated approach to housing development....:"

The Ministry of Construction (Housing) (MOCH) will oversee the public sector's construction related agencies and will operate within the broadly defined and expected role of government with respect to housing.

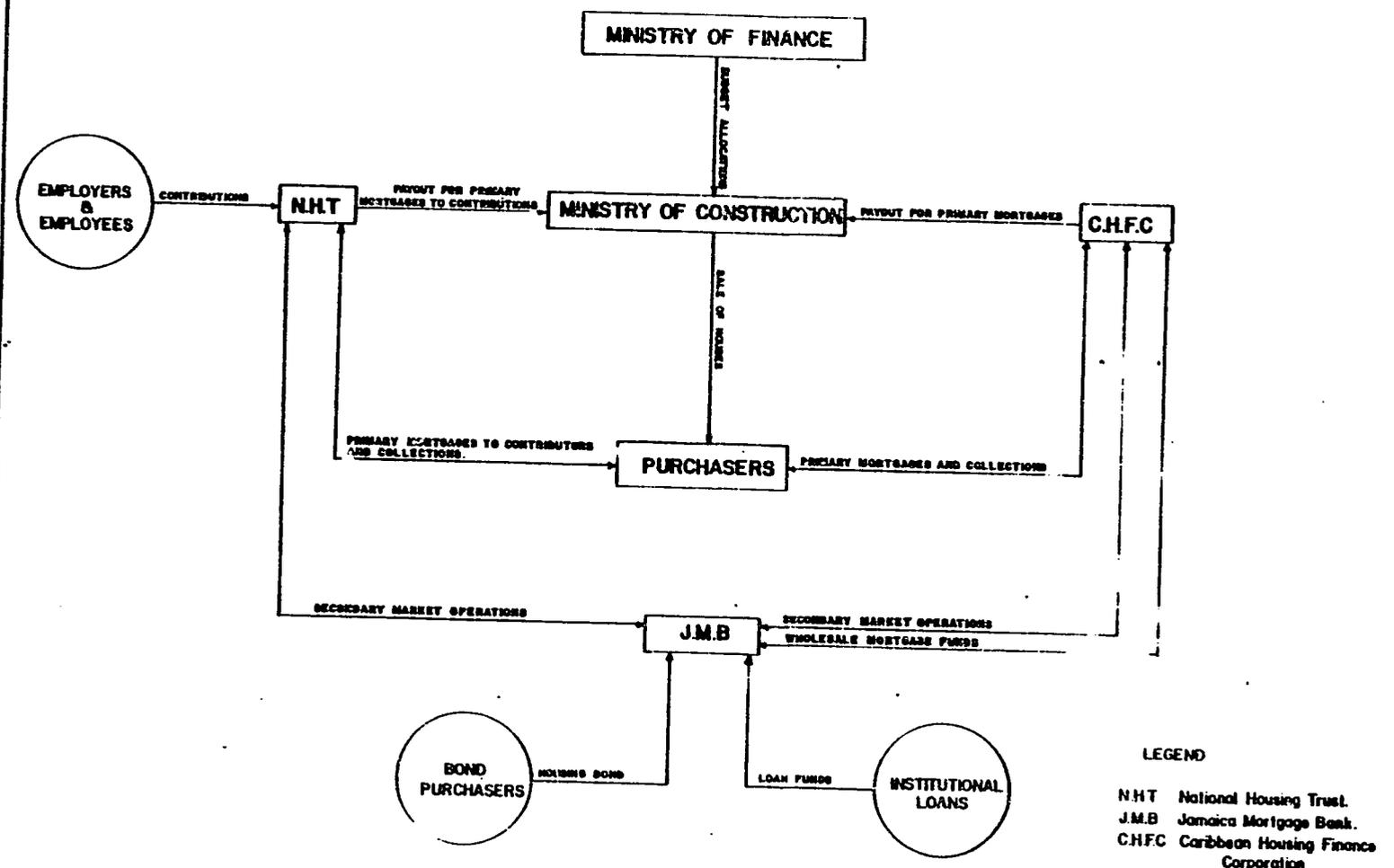
Other public sector agencies involved in the sector also had their roles redefined in keeping with the Policy's objectives:

The National Housing Corporation would provide middle income housing rather than its previous mix of low income and middle income housing.

The Urban Development Corporation would concentrate on overall planning and development of its designated areas.

Exhibit 3-2

FLOW CHART FOR PUBLIC SECTOR HOUSING FINANCE IN (1982) NATIONAL HOUSING POLICY



LEGEND
NHT National Housing Trust.
J.M.B. Jamaica Mortgage Bank.
CHFC Caribbean Housing Finance Corporation.

The Ministry of Agriculture and the Ministry of Local Government (this programme is now with the Ministry of Social Security and Consumer Affairs) would continue to provide subsidized housing for farmers and the indigent respectively.

The National Housing Trust would cease its role as developer and its provision of interim financing to developers. Together with the Caribbean Housing Finance Corporation, the Trust would focus on the provision and servicing of mortgages.

The Jamaica Mortgage Bank would cease to provide primary mortgage and interim financing, but would concentrate on secondary mortgage facilities and the mobilization of loan funds to finance housing development on a wholesale basis.

In addition to redefining institutional roles, the 1982 National Housing Policy recommended the following:

Establishment of a committee to ensure institutional co-ordination;

Establishment of a housing policy secretariat;

Development of a rolling three year national housing plan;

Stabilization of construction costs through adequate and consistent supply of materials, improved procedures for project planning, reduced infrastructure costs and research;

Provision of freehold ownership/tenure to all beneficiaries of public sector programmes.

The 1982 National Housing Policy acknowledges the role that private sector developers and financial institutions have played historically in the housing sector. The role of providers of housing for the "higher income bracket" is ascribed to the private sector. New policy initiatives sought to encourage involvement of the private sector in the National Housing Programme. Provisions were made for:

Mortgage financing by the National Housing Trust to its contributors for the purchase of houses built by private developers (expanded in 1985 to allow for a mix of Trust mortgages with funds from participating private sector financial institutions);

Take-out commitments by the National Housing Trust to private developers of approved projects;

Mortgage insurance by the Jamaica Mortgage Bank to private sector mortgage institutions;

Revitalization of the secondary market operation of the Jamaica Mortgage Bank so as to increase the flow of private sector funds;

Execution of joint venture projects between private developers and government and the use of government lands by private developers for approved housing projects;

Duty concessions on imported construction equipment used on approved projects;

Improvement in the building/subdivision application and approval process.

3.2 Performance of the Housing Developers

The results generated by the Housing Needs Assessment Model indicate that at a minimum some 15,500 new units and a further 9,000 upgrades are needed annually over the next twenty years to provide adequate shelter for all Jamaicans. Available data indicate that over the past decade an average of 4,800 units have been built per annum within the formal sector, with more than half, 2,860, originating in the public sector. Using Census estimates of annual additions to the housing stock and allowing for a further 2,000 formal sector units not recorded, only an estimated 60 percent of housing construction takes place in the formal sector.

This section reviews the performance of Jamaica's housing developers over the past ten years and assesses their ability to increase the level of production significantly.

There is an assumed dichotomy between public and private which tends to blur an assessment of the level of productivity of the various actors in the housing sector, particularly in the case of housing developers. Historical and current data refer to starts and completions of a public sector and a private sector. In reality 95 percent of all formal sector units completed are built by private contractors/developers. The assumption that there is a private/public dichotomy among housing developers is relevant only if we use one of the two following criteria to define public sector development:

Source of financing -- projects financed by the Ministry of Construction (Housing), the National Housing Trust or US/AID Guaranty Loans would be considered public projects. Projects financed by private concerns such as insurance companies and building societies would be deemed private sector.

Project developers -- projects originated in the Ministry and managed by either public or private entities would be considered public. A project designed and implemented by a private developer who has received take-out commitment from the Trust or benefits from the special facilities to be offered under HG12b would be deemed private.

We have adopted the latter criterion in our review and analysis of the performance of housing developers.

3.2.1 Public Sector Developers/Managers

The Ministry of Construction (Housing), along with its parastatal project managers the Sugar Industry Housing Ltd. and the Estate Development Corporation have historically channeled

human and physical resources in one specific area, the provision of low cost housing. Other public agencies such as the Urban Development Corporation (UDC) and the National Housing Corporation (NHC) have also made significant contributions.

Public sector production levels over the past ten years have fluctuated. For the period 1977-79 the number of units completed per annum averaged 4,200. In 1980 and 1981 the average was 1,800 per annum. In 1982 this peaked to 5,019, because 3,121 serviced lots/core units built in 1978/1979 were converted into start-a-homes. (See Exhibit 3.3) During the post-National Housing Policy years the number of units completed has averaged 1,600 per annum.

For the period, 1977 - 86, the Ministry of Construction (Housing) and its managers have not completed more than 2,600 units in any one year, with the exception of 1982. In the years 1980 and 1981 respectively only 495 and 297 units were completed by the Ministry. Although a cutback in the budgetary allocation to the Ministry can be cited as one of the reasons for reduced output, it is also necessary to ascertain the capacity of the Ministry to manage a significantly expanded housing programme. The Ministry may have been without its normal budget allocation, but this is an implied intent of the 1982 National Housing Policy. The Ministry did have access to National Housing Trust financing, but in 1985 MOCH was only able to complete work on 661 units and to start construction of 273 units.

It has been projected that the Ministry will complete 1,568 units in 1986. This significant increase in output is

EXHIBIT 3.3
ANNUAL HOUSING COMPLETIONS - 1977 - 1986

PARTICULARS	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986 ++
A. PUBLIC SECTOR	4384	4601	3653	1959	1838	5019	2406	1265	1005	1707
MOCH+Managers	2608	2564	1078	495	257	3708*	925	765	661	1586
NHC	374	300	555	387	480	257	-	209	231	109
SIH Ltd.	516	278	975	243	463	430	-	-	-	-
Other(UDC, MOA, etc)	886	1459	1045	834	638	624	-	291	113	12
B. PRIVATE SECTOR	2453	275	1320	1284	466	1210	2108	1867	861	224
NHT Financed	-	275	1320	1284	322	848	1614	1475	596	165
NHT Schemes	-	-	204	249	209	135	350	343	413	118
Other	2453	ND	ND	-	144	362	499	392	265 ⁺	59 ⁺
TOTAL	6837	4876	4973	3416	2304	6229	4514	3132	1866	1931

* 3121 converted serviced lots and core units

+ KSAC and only over 7,000 sq. ft.

++ Preliminary

Source: Economic and Social Surveys, National Housing Trust
 Urban Development Corporation
 Ministry of Social Security and Consumer Affairs

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EXHIBIT 3.4

ANNUAL HOUSING STARTS - 1979 - 1986

PARTICULARS	1979	1980	1981	1982	1983	1984	1985	1986
A. PUBLIC SECTOR	2855	1425	4532	2036	3822	1793	333	266
MOC(H)+Managers	931	199	2903	1152	3105	1252	273	192*
NHC	531	154	827	85	246	320	40	
SIH Ltd.	243	8	1	16	16	-	-	-
Other(UDC,MOA etc)	1130	1064	901	783	455	221	20	174
B. PRIVATE SECTOR	1913	1449	795	1327	966	1321	412	ND
NHT Financed	1913	1449	395	794	509	1092	394	ND
1) NHT Schemes	1684	1221	269	556	130	698	-	ND
11) NHT BOL	229	228	126	208	379	394	394	ND
Other	-	-	400	533	457	229	18	-
TOTAL	4768	2874	5327	3363	4788	3114	745	266

ND No Data

* Includes 180 re-starts

BOL Build on Own Land

Source: Economic and Social Surveys of Jamaica

commendable, but it has had a toll on the number of starts. In 1986 there were only 180 starts (See Exhibit 3.4) and these came from the restart of a dormant project. Thus, the Ministry's 1985 and 1986 performance indicates that it would have difficulty implementing and managing an expanded housing programme.

While the number of units being produced by the public sector is insufficient to make a dent in the target figure, the problem is compounded by the increasing cost of public sector solutions. If the public sector continues its current programme, it would require in excess of J\$1 billion annually, including a subsidy of some J\$290 million to accommodate all households by the year 2006.

Exhibit 3.5 indicates that between 1983 and 1986, MOCH has concentrated its energies on the construction of start-a-home

Exhibit 3.5
Approximate Selling Price and Minimum Income Required
for Units Constructed by Ministry of Construction (Housing)

Year	No. of Units	Estimated Price	Required Weekly Income	Required Annual Income
1983	1,690	45,000(SAH)*	223.00**	11,600
1984	661	58,000(SAH)	274.00	14,160
1985	1,319	64,000(SAH)	322.00	16,700
1986	249	75,000(2bdr)	370.00	17,240
		85,000(2bdr)	420.00	21,980

* SAH - Start-a-home approximately 290 sq.ft.

** Assumes a 10% Graduated Payment Mortgage (GPM)

Source: Housing Policy Secretariat, MOCH

units. However, the cost of this solution is gradually moving out of the reach of low income households. Despite well intentioned proposals aimed at lowering construction costs and therefore the cost of completed units, the cost of a 540 sq.ft. two bedroom unit has increased by 187 percent between the years 1980 and 1986. (See Exhibit 3.6)

Exhibit 3.6
Comparative Costs of Low Income House
Approximately 540 sq.ft. 1971, 1980, & 1986

	1971	1980	1986*	%increase 1986/1980
Cost of Developed Lot	\$1,800	\$6,300	\$13,000	
Construction Cost of House	\$3,985	\$21,600	\$67,000	210
Total Unit Cost	\$5,785	\$27,900	\$80,000	187
Deposit 5%	289	1,395	4,000	187
Monthly payment (8% for 25 years)	37	177	** 376	
Monthly Income required	146	707	1,506	61

* unit is approximately 570 sq.ft.

** 10% for 30 years, % GPM

Sources: National Housing Policy, 1982 & MOCH

The other major thrust of public sector production efforts has been the Settlement Upgrading Programme. The programme began in the mid 1970s with the World Bank funding the infrastructure upgrading for two project areas with a total of 1,201 lots. The Dutch government and European Development Fund financed additional settlement upgrading. In the late 1970s the Programme

received a major injection of funds totaling US\$12.35 million through US/AID HG Loans. During the period 1983-86 some 3,008 lots were improved on a total of seventeen sites with the assistance of HG loans.

Under HG10 a total of nine project sites totaling 2,138 lots (of which 1,554 are occupied) were upgraded. In December 1983, seven of the nine projects were fully completed and ready for land acquisition, titling and the sale of improved lots. The remaining two were completed in 1984. The average improved lot cost ranged from J\$2,673 to J\$13,907, with an average cost of J\$7,183. Projects which included sewers had an estimated lot cost of J\$9,200.

Under HG11 there were seven projects with a total of 870 lots. Work was completed on four of these projects (a total of 386 lots) in 1984, with the remaining projects completed in 1985/86. Lot costs ranged from J\$ 5,758 to J\$13,083. The average cost per lot was J\$10,696, an increase of 49 percent between 1983 and 1984 despite modifications in the level of physical infrastructure required. Thus, to maintain affordable costs per lot it will be necessary to further modify standards and to consider incremental upgrading of infrastructure.

Altogether, an average of 752 lots were upgraded per annum over the period 1983-86, all dependent on HG Loans. The requirement under scenario three for some 9,000 upgrades per annum would require not only an increase in the capacity of MOCH but also alternate sources of financing and the direct involvement of the private sector in this housing solution.

3.2.2 Private Sector Developers

With the exception of four projects financed by two major insurance companies there is no record of major private sector schemes. Before 1982, private developers tended to depend on the public sector for financing. As discussed further below, the National Housing Trust was the major source of interim financing for these developers in the 1970s and early 1980s. With this source of funds no longer available after 1982, and given the prevailing high interest rates, developers shifted their focus to commercial and industrial construction. Current government policies have made these sectors attractive for investment and the turnover rate is higher. The few private developers now actively involved in housing construction rely projects that have MOCH, US/AID, or other public sector financing.

The resources of the private developers are significantly underutilized. A survey of five major developers, who offer a range of prefabricated systems, indicated that they had the capacity to produce some 7,500 units annually. However, private sector developers are hesitant to take the risks which they perceive are inherent in the construction of low cost housing.

3.2.3 Housing Construction in the Informal Sector

As discussed earlier, we use the term 'informal housing construction' to refer to units built without legal permits and approvals. In many cases these units are built on land to which the household does not have legal title, are financed by

mechanisms outside of the formal system, and are constructed utilizing family labour or local contractors retained without formal contracts.

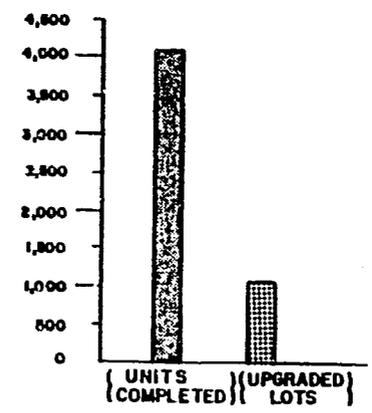
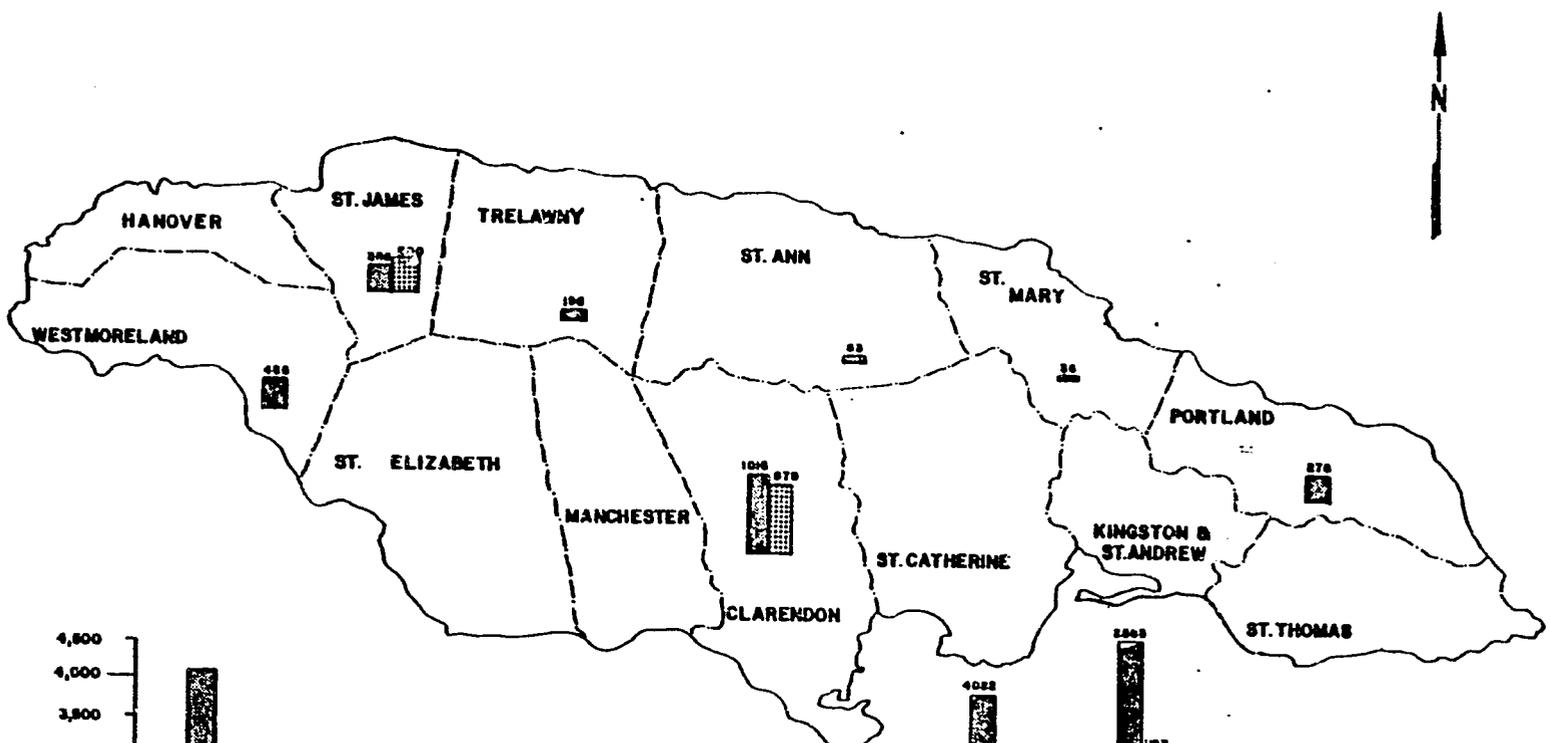
Given the poor performance of the formal housing sector over the past decade, Jamaica's housing dilemma would be even more pronounced were it not for construction activity in the informal sector. Informal sector housing construction is primarily, though not exclusively, a low income phenomenon. Construction activity in this sector is most visible in the gradual takeover of vacant government or private land by squatters. In addition, housing in established informal settlements and in the older residential areas of urban centres undergoes incremental upgrading and extensions. The phases of unit upgrading and expansion are determined by the flow of finances of the household. A large number of these households depend on sporadic and informal sources of financing.

There has been increased discussion of the importance of informal sector housing construction. However, there is to date no quantitative data on the level and pace of upgrading and new construction in this sector. The significance of informal sector production makes it clear that there is need for more systematic analysis of the sector to ascertain its size, its contribution to GDP, and the quality of units.

3.2.4 Assessment

Despite the potential productive capacity of Jamaica's housing producers, the formal sector lacks the capacity to build

(Exhibit 3-7)
NUMBER OF UPGRADED LOTS & HOUSING UNITS COMPLETED BY PARISH (1983-86)



and distribute the volume of units needed to accommodate all Jamaican households. This is in part a result of the low levels of financing available. However, the hesitancy of the private sector coupled with the limitations of the current structure and size of the public sector has also contributed to the low output. Even if the issue of increased financing was resolved, it is hardly likely that the public sector could manage a significantly expanded housing programme. It is also important to note that the geographic distribution of housing construction is biased towards Jamaica's major urban centres. (See Exhibit 3.7)

3.3 Performance of the Housing Finance System

An array of public and private institutions either generate or act as conduits for interim and long term financing to Jamaica's housing sector. Public sector finance institutions received extensive review during the formulation of the 1982 National Housing Policy. It was envisaged that new housing programmes aimed at meeting the targets set by the policy -- 16,000 new units per annum -- would require a level of investment well in excess of that made available in preceding years. The Policy document acknowledged that increased allocations from the budget for housing were not possible. As a result, a "... much broader approach to housing finance should be undertaken and new methods devised to widen the financial base from which housing investment funds are drawn." In keeping with this, a revised flow of public sector housing finance was proposed. (Exhibit 3.2)

Despite the intent of the 1982 National Housing Policy, by 1985 it became apparent that there had been no increase in the quantum of private finance available to the housing sector. A Mortgage Finance Task Force was created to investigate possible mechanisms which would attract private financing for housing. For the most part, the recommendations of this Task Force have not yet been implemented.

This section reviews and analyzes the levels of interim and long term financing advanced to the housing sector over the past decade, highlighting constraints on the flow of formal housing finance. It also looks at efforts to establish a secondary market facility.

One inherent problem with an un-coordinated housing finance system is that it is difficult to assess just how much financing is being advanced to the sector for either interim or long term financing. For this review, the following assumptions have been made:

It was estimated that 25 percent of the loans and advances from commercial banks and trust companies to the construction sector was for housing construction. This assumption was made following consultation with three major banks which gave estimates ranging from 23 to 28 percent of the value of their construction advances.

As a similar sample was not possible with Merchant Banks, their total construction advances have been included.

Data for interim and long term financing were available from two major insurance companies and then only for the period 1982-1986.

Budget allocations for each calendar year were calculated on the basis of actual or projected expenditures for each fiscal year.

EXHIBIT 3.8
LEVEL OF INTERIM FINANCING TO THE HOUSING SECTOR ANNUALLY 1976 - 1986

J. \$ M

INSTITUTIONS	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986 ***
NHT (Public)	-	48.1	ND	22.81	26.0	19.3	38.6	29.0	16.99	16.4**
NHT (Private)	39.40	24.6	ND	31.63	22.2	20.5	60.1	64.0	33.88	-
Commercial Banks	3.15	2.91	-2.91	- 0.88	8.48	17.23	29.52	17.46	3.22	-5.44*
(Public Market)	18.30	17.2	8.5	9.4	10.1	8.4	12.9	5.0	29.0	27.0
Insurance Companies	-	-	-	-	-	-	-	5.58	14.72	ND
Govt. of Jamaica	37.60	37.0	30.03	20.02	29.97	51.75	27.25	8.05	16.21	12.49
TOTAL	92.15	129.81	35.62	82.98	96.75	117.18	168.37	129.09	107.58	49.95

ND No data

* To September 1986

** For MOC(H) only and to September 1986

*** Preliminary

Source: Economic and Social Survey of Jamaica
 Jamaica Mortgage Bank
 Ministry of Construction (Housing)
 Statistical Digest/Bank of Jamaica
 Life of Jamaica

EXHIBIT 3.9

LEVEL OF MORTGAGE FINANCING ADVANCED TO THE HOUSING SECTOR ANNUALLY 1976 - 1986

J \$ M

INSTITUTIONS	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986 ^c
Public Sector National Housing Trust	5.25	18.44	26.74	40.85	28.8	38.56	108.0	115.3	122.6	80.0
CHFC	-	-	-	-	-	1.02	43.23	19.86	4.03	11.96
Private Sector Credit Union	-	-	-	-	-	0.83	1.65	1.73	2.7	2.7
Insurance Companies	-	-	-	-	-	3.26*	6.01*	46.64	31.49	15.47
Trust Companies	6.0	8.43	2.34	5.11	9.86	50.97	63.04	85.11	2.0	-
Merchant Banks	-0.03	-10.61	-2.67	0.23	-1.45	0.01	0.81	1.6	13.67	-
Building Societies	24.32	43.06	45.9	50.28	68.32	105.86	114.6	109.84	84.06	58.36 ^e
TOTALS										168.49

+ Projections

* Mutual Life Insurance Company Only

c To September 1986

Source: Economic and Social Survey of Jamaica
 Caribbean Housing and Finance Corporation
 Mutual Life Insurance Company
 Life of Jamaica
 Building Societies Association of Jamaica

Notwithstanding these assumptions, Exhibits 3.8 and 3.9 give a fairly accurate assessment of levels of interim financing and mortgages within the formal sector during the period 1977-86. No data are available on investment levels in the informal sector.

3.3.1 Levels of Interim Financing

The National Housing Trust is the single largest supplier of interim financing to the public sector housing programme. Prior to the 1982 National Housing Policy it was also the major direct source for private developers. USAID HG Loans, which until recently were channeled through the Jamaica Mortgage Bank, coupled with the Ministry of Construction (Housing) budget allocation constitute the second major source. Advances from private sector finance institutions amount to ONLY approximately 20 percent of total advances. Loans from the private sector have traditionally been used to fund middle and high income housing units.

During the years leading up to the 1982 National Housing Policy, levels of recorded formal sector interim financing fluctuated. The downturn during the period 1979-81 reflected the political and economic instability which Jamaica was experiencing. Commercial Bank participation was minimal and public sector institutions became the principal sources of interim financing.

The National Housing Trust became the major source of interim financing for private developers. In 1979, 25 percent of completed units recorded in the private formal sector were

financed by the Trust. In 1980 this rose to 35 percent with 50 percent of the total starts by the formal private sector being financed by the Trust. With cost overruns and delays in delivery dates the selling price of these units meant that only a small percentage of the NHT contributors could qualify for mortgages.

Data from all institutions are still not available for 1986, so it is difficult to form a complete picture for that year. Where possible projections have been made. Estimated interim financing for 1983 through 1985 averaged \$133.35 million per annum with a high of \$168.37 million in 1983. (See Exhibit 3.8) Between the years 1983 and 1985 there has been a 25 percent decline in the quantum of interim financing made available to the housing sector. This supply of formal interim financing is clearly well below that required to meet the targets estimated by the Housing Needs Assessment Model for any of the three scenarios.

It is undoubtedly still too early into the policy implementation stage to evaluate the wisdom and intentions of the 1982 National Housing Policy. However, data for the first four years do give some insight into the extent to which the housing finance system has been implemented, and its impact on levels of investment available for residential construction.

The National Housing Trust was one of the principal finance institutions which the National Housing Policy sought to reorient. The 1982 Policy effectively cut a major source of interim financing to private developers, and by 1985 disbursements to private developers moved to 20.1 percent of total disbursements from 45.1 percent in 1983. It had been

anticipated that private developers would still have access to National Housing Trust finances as the Trust would be willing to provide take-out commitments to private developers of approved projects, that is projects that would be affordable by the majority of NHT contributors. However, private developers resisted participation in this programme, claiming that it would be impossible to build a 'low-cost' house under the current economic conditions and ensure a profit. Developers have however approached the Trust with proposals for units that would be affordable to households above the median income.

It had also been anticipated that an increasing amount of National Housing Trust funds would become available for the purchase of low cost housing developed for the Ministry of Construction (Housing). In 1982 the Trust disbursed \$3.7 million or 8.6 percent of its total disbursements to the Ministry of Construction (Housing) for interim financing. In 1985 this figure had moved to \$16.25 million or 31.4 percent of total National Housing Trust disbursements for major projects. The Trust's disbursement to Ministry of Construction (Housing) in 1985 was primarily in the form of take-out financing, with USAID HG Loans and the Ministry of Construction (Housing)'s budget allocation funding construction. Although, in instances where bottlenecks occur the NHT has made advances to the Ministry of Construction (Housing) even when units are not completed).

Despite the increase in quantum and share of interim financing to MOCH, NHT total disbursements declined significantly. In 1983 the Trust disbursed \$104.4 million for

housing construction; in 1985 this figure fell to \$50.87 million. One of the reasons for this decline has been the slow pace at which the Ministry of Construction (Housing) has been able to turn over completed units to the Trust. In 1985 MOCH completed work on 661 units. In the preceding years, 1982-1984, private sector housing developers handed over an average of 1,728 units per annum to the Trust. This implies that even given increased financing, the Ministry does not have the capacity to significantly increase the number of units it completes annually.

During the post-1982 period, budgetary allocations have averaged J\$16.0 million per annum. This estimated annual average allocation is 47 percent below the annual average for the years preceding 1983. It reflects an anticipation on the part of government that the private sector finance system will become increasingly involved in the provision of interim finance for housing construction.

Unfortunately, the economic climate has kept private sector institutions out of the housing finance system. The high interest rates which prevailed late in 1984 through to 1985 (29 percent) made the cost of borrowing for residential construction unattractive. The country was at the time experiencing a series of devaluations, and on-site delays coupled with increases in the price of materials could have meant substantial increases in the cost of finished units. Occuring simultaneously with this was a reduction in the number of aspiring home owners who could service mortgages. As a result, estimated interim financing advances by commercial banks for housing construction which had increased by

\$29.52 million in 1983 fell to -\$3.2 million in 1985. Preliminary figures indicate that this decline will be even more significant in 1986.

Insurance companies which have historically displayed minimal interest in investment in housing construction and more specifically in low cost housing have continued to concentrate their financial resources on the construction of commercial space. The J\$14.72 million recorded investment in 1985 financed the construction of 18 townhouses and 30 apartments.

Despite cuts in the budget allocation for housing and a decline in the quantum funds being made available by the National Housing Trust, the public sector, fueled by USAID Loans, remained the dominant source of interim financing for housing construction in the formal sector.

3.4.2 Levels and Affordability of Mortgage Financing

The National Housing Trust has become the principal supplier of mortgage financing. The Trust and MOCH are the sole sources of public sector mortgage financing. The principal private sector finance institutions which provide mortgage financing are the Building Societies, Trust Companies, and Insurance Companies. The Caribbean Housing and Finance Corporation (CHFC) originates a few mortgages and the Credit Unions play an important role in providing financing to middle and low income earners.

For the period 1977-82 there are no data on the value of mortgages originated by CHFC, Credit Unions, or insurance companies. Mortgage financing made available through the

institutions for which data are available increased steadily during the period. In 1977 the value of new mortgages advanced to the sector was J\$35.5 million, while in 1982 new advances totaled J\$195.2 million. (See Exhibit 3.9). Not included in these figures is the large mortgage portfolio which the Ministry of Housing had accumulated by the early 1970s.

The amount of funds disbursed by the National Housing Trust to its contributors is directly related to the number of qualifying units being made available in schemes. It was the slow pace of Ministry production that prompted the Trust to become direct large scale housing developers. While the Ministry of Housing continued its practice of originating sales agreements, holding long term mortgages on its schemes, and making desperate efforts to service mortgages, the CHFC had made steady progress, structuring an efficient and effective collection system. The CHFC serviced JMB mortgages as well as the nominal amount of mortgages which the institution originated itself.

The intent of the 1982 National Housing Policy as it relates to the mortgage finance subsector was more one of restructuring and creating a semblance of rationality rather than of increasing the flow and quantum of mortgage funds. Three major objectives emerge from the policy document:

The need to target resources -- the National Housing Trust should provide mortgages to qualified contributors on a basis which reflects their income distribution.

The need to increase affordability -- the National Housing Trust should structure its lending rates on a basis which allows lower interest rates to be applied to lower income groups.

The need to increase efficiency -- the Ministry of Construction (Housing) should hand over responsibility for its monthly collections on original sales schemes to the CHFC; and the Ministry should no longer originate mortgages.

While the NHT continued with its policy of making a large share of its resources available to its low income contributors, it also attempted to make homeownership more affordable by adopting a favourable interest rate policy. This policy is currently in use on all public sector housing projects. Interest rates range from 6 percent to 10 percent depending on the income of the borrower. (See Exhibit 3.10)

Exhibit 3.10
Chargeable Interest Rates by Income Groups

Weekly Income	Interest Rate
under \$100	6%
\$101.00 - \$200.00	8%
\$201.00 - \$400.00	10%

The 6 percent rate is now rarely used, as households earning below \$100.00 per week cannot afford the lowest cost solution -- a \$55,000 start-a-home. Monthly payments for a start-a-home at 6 percent assuming a down payment of 5 percent and a repayment period of 30 years would initially be \$232.31. (See Exhibit 3.11)

In addition to the low interest rates, a graduated payment mortgage scheme is now being used by both the Trust and the MOCH. This scheme allows beneficiaries to start out with reduced mortgage payments which gradually increase between years seven and nine and then level off.

Exhibit 3.11

Graduated Mortgage Payment

Loan Amount	\$52,250
Loan Term in Years	30
Interest rate per year	8%
Increase in pymt. %	10
No. payment Year increase	7
Monthly pymt. Year 1	\$232.31
Monthly pymt. Year 8	\$452.72

Source: Housing Policy Secretariat, Ministry of Construction(Housing).

Despite these two innovations in mortgage payments for public sector programmes, the number of low income households who are able to benefit continues to decline. A preliminary look at the value of mortgages disbursed by the National Housing Trust indicates that there has been an increase of J\$14.6 million in 1985 over 1983. However the total number of beneficiaries has increased by only 27.

The increase in value is a reflection of the increase in the cost of units. In 1984, 73.8 percent of the National Housing Trust contributors could not afford a housing solution costing over \$48,470.00. (See Exhibit 3.12) In 1984 the average selling price of one bedroom units which the Trust made available to its contributors was \$41,000.00. In 1986, of the estimated 1,165 units available for National Housing Trust contributors none were

affordable to contributors earning under J\$100.00 weekly and 56 percent were affordable only by those earning over J\$200.00 weekly.

Exhibit 3.12

Loan Affordability by Income
Group for National Housing Trust Contributors 1984

Income Group (per week)	Loan Affordability at 25% Debt Service & a 30 Years term	No. by Income group	% of NHT Contributors
\$50 - 100	14,230 - 28,460	101,107	37.1
\$101 - 200	24,479 - 48,470	100,045	36.7
\$201 & over	43,971 & over	71,350	26.2

TOTAL		272,502	100.0

Source: National Housing Trust

Credit Unions play an important role in the provision of loans for new units and home improvement. For the Credit Unions and their umbrella organization the Jamaica Co-operative Credit Union League (JCCUL) performance has been directly related to a one time loan of J\$4.1 million from the HG10 Programme at 10.5 percent interest. Over the period of two and one half years from June 1981 to December 1983, Credit Unions placed 4,817 home improvement loans averaging \$1,000.00. An evaluation of this programme reveals that most borrowers opted for small loans which they repaid within a two year period.

On an ongoing basis the JCCUL has a special 'Housing Fund' to which Credit Unions make set lodgments at rates of 7%. The JCCUL in turn makes mortgage loans of up to \$50,000 to members at an interest rate of 13 percent. A 1984 survey of Credit Union members reveals that their median household income was J\$9,839. At the proposed interest rate this household could only afford a mortgage of J\$17,485. Thus, the average Credit Union family clearly cannot support a J\$50,000 mortgage. Nevertheless, Credit Unions will undoubtedly continue to be an important source for financing upgrading efforts. The JCCUL also provides technical advice that gives applicants alternatives which can reduce the cost of their unit and therefore enable them to qualify for a mortgage which is more in keeping with their income.

Although a role was not prescribed or implied in the 1982 National Housing Policy for Building Societies, they are considered here. Their increasing inability to meet the needs of their traditional target group -- middle income households -- has created a serious gap. Historically, Building Societies have been a principal source of long term financing. In 1985 they accounted for 33 percent of the total mortgage financing advanced to the housing sector. The performance of Building Societies over the past four years has been influenced by prevailing economic conditions and government policies.

Increases in construction costs and the resultant higher prices of new and existing units has meant substantial increases in the size of loans required by Building Society members. Of the 1,190 loans advanced by Building Societies during 1985 36

percent were for loan amounts in excess of \$70,000, compared to only 27 percent in 1984. (See Exhibit 3.13)

Exhibit 3.13

Distribution of Mortgages disbursed by Size for Building Societies 1980, 1984 & 1985

Mortgage Disbursement	1985	1984	1980
Under \$20,000	17	16	43
\$20,001 - 30,000	17	13	32
\$30,001 - 40,000	10	15	18
\$40,001 - 50,000	7	11	2
\$50,001 - 60,000	7	10	-
\$60,001 - 70,000	6	8	-
\$70,001 - 80,000	9	6	-
\$80,000 - 90,000	6	6	-
\$90,001 - 100,000	4	5	-
over \$100,001	17	12	-

Sources: 1) BSAJ Fact Book 1985

2) Housing and Finance, Winter 1981

Occurring simultaneously with this increase in the size of loans is a shift in the income group accessing loans from the Building Societies. Of the qualifying borrowers from Building Societies, 43 percent earned over \$5,000 per month, this compares with 29 percent in 1984. (See Exhibit 3.14)

Exhibit 3.14

Distribution of Mortgage Assistance by Income Group
1985, 1984 & 1980

Income Group per month (individual or joint)	1985	1984	1980
under \$1,000	2	3	22
\$1,001 - \$2,000	12	13	41
\$2,001 - \$3,000	16	22	12
\$3,001 - \$4,000	12	21	19
\$4,001 - \$5,000	14	12	4
over \$5,000	44	29	-

Source: BSAJ Fact Book, 1985.

Less than 10 percent of the mortgages disbursed by the Building Societies went to households with incomes below \$18,000. High interest rates coupled with a 25 to 30 percent debt service ratio has meant that 58 percent of those who received benefits earned at least \$4,000 per month, that is \$48,000 annually.

Recent reductions in the interest rates offered by Building Societies have had little impact on the demand for new mortgages although deposits have increased. Deposits for the period January to August 1985 totaled J\$23 million compared with J\$83 million for the similar period in 1986.

No profiles are available for the recipients of mortgages from other finance institution such as the insurance companies,

Trust Companies and the Merchant Banks. The mortgage rates currently being charged by these institutions range from 18 percent to 20.5 percent and are therefore affordable for only a small percentage of the population. For example, a \$75,000 mortgage at 18 percent interest with a repayment period of 25 years and a debt service ratio of 30% requires a monthly income of \$4,200.

The Caribbean Housing and Finance Corporation (CHFC) was charged with the task of ensuring the efficient collection of mortgages, both new and existing on behalf of the Ministry of Construction (Housing). From its original mortgage portfolio, the Ministry of Construction (Housing) has handed over some 85 percent of its sale agreements for servicing by the CHFC. The CHFC is experiencing a 70 percent repayment rate.

The CHFC's primary mortgage activity is relatively small. (Total accumulated mortgage value at the end of 1985 was J\$6.56 million). The greater percentage of its mortgages are granted to households that do not contribute to the National Housing Trust. It was anticipated that the CHFC would originate mortgages for units completed on Ministry of Construction (Housing) schemes but not sold to the National Housing Trust. Mortgages on these units are still being originated and held by the Ministry because:

The CHFC is not yet financially able to originate a large number of mortgages. The CHFC's major function historically has been servicing mortgages. On the basis of its net profits the CHFC originates mortgages.

With its limited financial resources the CHFC would have to issue promissory notes to the Ministry of Construction (Housing) for finished units. This contravenes the Housing Act which stipulates that "...the Ministry cannot alienate itself from its property...."

The CHFC is, however, responsible for servicing these mortgages and, with an existing mechanism in place, a high level of repayment is expected. The importance of this is that these repayments are critical to the Ministry of Construction (Housing)'s total housing programme.

Overall there has been a decline in the quantum of mortgage financing advanced, although this is by no means as significant as the decline experienced for interim financing. However, the performance does highlight the following problems:

A shift in the target population -- middle income households who once relied on private sector sources are now turning to the more limited but cheaper sources such as credit unions and the National Housing Trust. At the same time low income households are unable to access these cheaper sources and are undoubtedly increasingly turning to the informal sector.

An increasing number cannot afford current solutions -- the high cost of housing solutions coupled with interest rates has meant that the number of households who can access mortgages through traditional private sources has declined significantly.

Current solutions proposed by the National Housing Trust and the Ministry of Construction (Housing), such as lower interest rates and Graduated Payment Mortgage are by themselves not enough to spread the benefits to the poor. The cost of the solutions will need to be revised.

3.4.3 Secondary Markets

The 1982 National Housing Policy recommended that the JMB should discontinue both its primary mortgage and interim finance activities and concentrate its energies on:

mobilizing funds from local and overseas sources to be deployed on a wholesale basis to primary mortgage institutions to facilitate new housing construction;

secondary market operations geared to ensure a steady flow of funds into housing construction;

providing mortgage insurance coverage to facilitate higher levels of investment by private investors;

issuing Housing Bonds aimed at absorbing refundable National Housing Trust contributions mobilizing additional savings and increasing the supply of funds for housing investment.

It was anticipated that the JMB would become a principal mobilizer of finance for the sector and that it would play an important role in ensuring a level of liquidity conducive to housing development. This, however, did not materialize. Instead, the bank has continued on its path of the late 1970s, that is, as borrower of Housing Guaranty Loans.

The following are some of the events which overtook the JMB and rendered it unable to follow up on any of the 1982 National Housing Policy recommendations:

The devaluation of the Jamaican dollar meant that HG010 and HG011 loans borrowed at rates of J\$0.99 and J\$1.78 per US\$1.00 must now be repaid at a rate of J\$5.55. The Government of Jamaica has not yet assumed liability for this exchange rate risk and the JMB has been effectively decapitalized.

Building Societies liquidity has increased significantly in recent years as aspiring home owners while willing to save were unable to qualify for mortgages. In 1985 the ceiling on interest rates payable from Building Societies was lifted and this facilitated an increase in their liquidity. A result of this is that these Societies have little interest in secondary market operations and are in fact buying back mortgages from the JMB.

In addition, as the 1985 Mortgages Finance Task Force concluded, the "...government has not provided the capitalization necessary for the secondary market role.." of the JMB.

The mortgage insurance operations of the JMB has continued to decline significantly. This is due in part to overall reduced activity by the construction sector and also to an increase in the number of agencies directly or indirectly affiliated with the Building Societies and or the insurance companies.

The absence of an active secondary market facility is symptomatic of other problems facing the housing sector. The

inability to attract private sector financing into the sector through this facility is hampered by the extent to which institutions find it more lucrative to invest their funds elsewhere. Alternatively, as in the case of Building Societies, institutions hold on to their mortgage portfolio and collect the service charges that go with maintaining the portfolio.

3.4.4 Assessment

What the performance figures reveal is that the structure and mechanisms which exist today are inadequate to generate a level of financing approaching the targets set by the Housing Needs Assessment Model. Sources of public sector financing have contracted significantly. In the case of the government of Jamaica, this was a result of deliberate government policy, but in the case of the National Housing Trust, this reflected both the absence of an adequate number of low-cost housing units and a credit squeeze which required that the National Housing Trust hold a significant amount of its funds in reserve.

The JMB was unable to get its secondary market facility going, and with increased liquidity among building societies there was little interest in this facility.

Private finance institutions -- commercial banks, insurance companies and the building societies could not be enticed to divert a significant share of their capital to provide needed financing to the housing sector. This resistance was primarily a result of macro-economic circumstances which made investment in other sectors more viable.

3.5 Effectiveness of the 1982 National Housing Policy

To date, the 1982 National Housing Policy has not been fully implemented. Any assessment of its success will therefore be limited. However, if we refer to the four principal objectives outlined at the start of this section and look at the performance of the housing sector over the past five years, some evaluation of the conceptual and institutional framework provided by the policy is possible.

Perhaps the greatest single weakness of the 1982 National Housing Policy is its lack of specificity. Had the policy guidelines been more clearly defined, some of the failings listed below might not have occurred. In highlighting the failings of the policy it is also necessary to realize that the downturn in the national economy was not predicted.

3.5.1 Areas of Measured Success

The levels of intervention and the number of government agencies involved in housing development have been reduced. This may in part be attributed to a slowing down in effective demand rather than a deliberate policy. For example the NHC's activities have been curtailed significantly as the units that it has 'completed' have taken over a year to be sold.

The Ministry of Construction (Housing) has increased its share and quantum of funds from the National Housing Trust pool. The Ministry has however not been able to utilize these funds at a pace and level comparable to that previously achieved when private sector agencies got interim financing directly from the NHT.

Private developers have been weaned from their dependency on low cost money which was once so readily available from the National Housing Trust.

Although the Ministry of Construction (Housing) is still the mortgagor for units not sold to the National Housing Trust it is no longer involved in the tedious task of collection.

3.5.2 Failings of the 1982 National Housing Policy

The reorganization of the public housing finance system did not bring the expected results. The JMB was never able to establish a viable secondary market facility nor was it able to attract financing into the sector. It continued to function primarily as a conduit for USAID HG Loans and has even now lost that function.

The policy never made it clear how private financial institutions would become involved in the sector. These institutions shunned the housing sector, channeling their resources either into other areas of real estate or other sectors of the economy. Subsequent efforts (see especially the 1985 Mortgage Finance Task Force) presented proposals that were never acted on.

Without the 'cheap' financing previously available from the National Housing Trust private developers either closed shop or focused their energies on non-residential and civil works programmes. The policy had anticipated that the offer by the National Housing Trust to provide take-out commitment for qualifying projects would have maintained direct linkages between private developers and the Trust.

As a result of the two preceding points, together with the inability of the Ministry of Construction (Housing) to increase, over the short run, the number of units it constructed there was actually a contraction in the supply of housing from the formal sector.

3.5.3 Policies not implemented

The Ministry of Construction (Housing) while regaining its position of principal public sector housing developers has not yet begun to function as manager of the entire public housing sector. In a sector where resources are limited and bottlenecks in financing and construction are frequent an 'overseer' role is as important as is the task of building units. The need for institutional co-ordination is far too important to be left undone.

A National Housing Plan, which would have been the task of the proposed Housing Policy Secretariat, was never prepared. Although the policy takes cognizance of a calculated housing need of 16,000 units per annum through to the year 2,000 there are no programme targets, nor a breakdown of need by geographic location or income levels. A National Housing Plan could have provided this.

The MOCH still does not have a proper land bank and this reduces the possibility of inviting private developers into joint venture activities as proposed in the policy.

Duty concessions were never granted on imported construction equipment which was to be used on 'approved projects'. The problem here could have been one of definition. It is questionable however just how much of an impact this would have had on the sector when there is at present a high percentage of underutilized plant capacity.

3.5.4 Conclusion

The 1982 National Housing Policy has become for the most part a statement of intent. A limited number of the recommendations have been implemented. Several were non-implementable because they did not reflect the economic realities of the time, or because the implications and bottlenecks were not foreseen. The policy sought to create a coherent public housing sector with the MOCH playing the pivotal role of co-ordinator. However a major drawback of indicative planning is that it does not mandate action but seeks to encourage action.

The revised public finance system did not bear the fruits anticipated but then too much was expected of it and too little was put into place to make it feasible. Public sector housing developers may have been 'rationalized and streamlined' but this had little impact on their performance levels. The private sector was not enticed by the provisions of the policy.

The Policy's limited success can be attributed to some degree to economic climate but a significant amount of the problem is with the Policy itself. The 1982 National Housing Policy lacked economic reality, it tended to imply and or allude to intent and did not prioritize or mandate its recommendations.

SECTION 4: MEETING JAMAICA'S HOUSING NEEDS

The previous two sections of this report have documented the magnitude of Jamaica's current and future housing needs, and the recent performance of the housing sector. Clearly, the gap between housing needs and the performance of the formal sector is large. Substantial numbers of units are being added to the stock every year, but at least half of these are built informally, which means they lack basic infrastructure. Thus, given a continuation of current policies, the share of Jamaican households living in overcrowded or structurally unacceptable housing or lacking water and sanitary services can only be expected to increase in the years ahead.

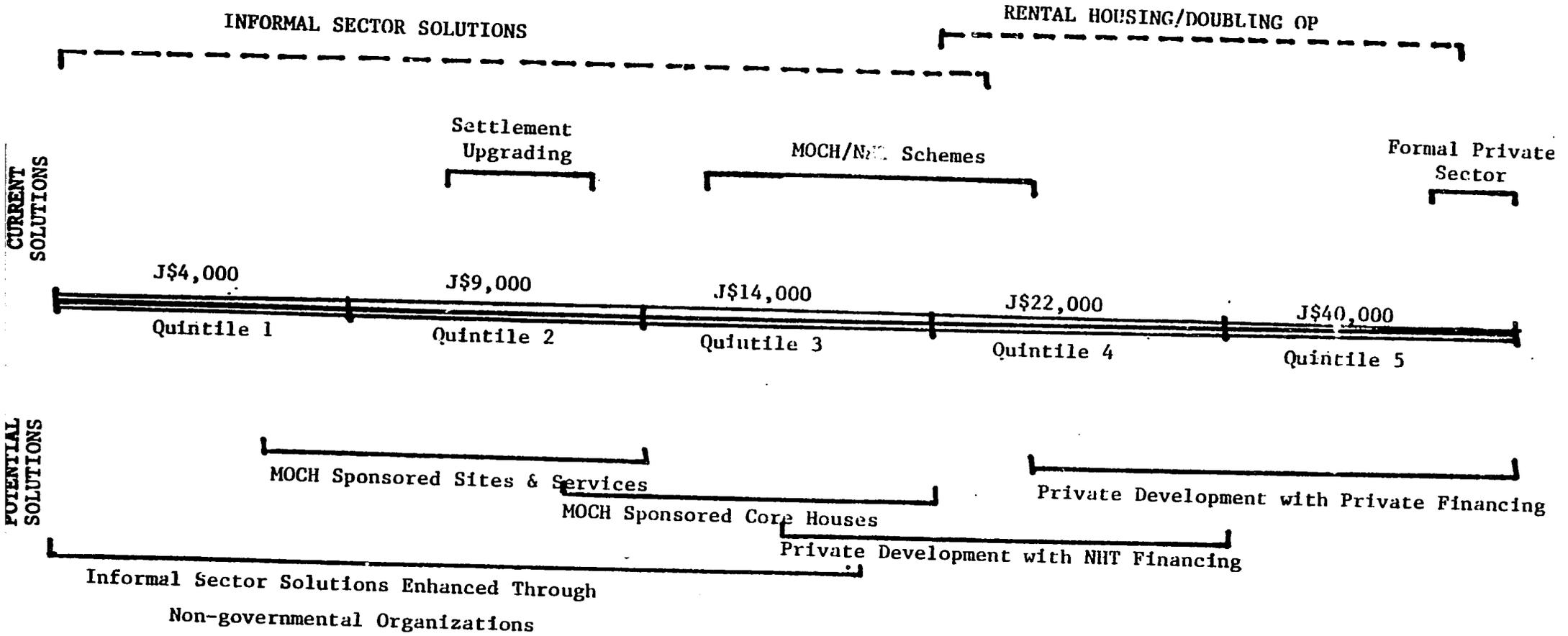
How can this be avoided? This section begins by outlining a framework for Jamaica's shelter sector strategy, focusing on the types of housing solutions and institutional arrangements appropriate for different income levels. Next, the binding constraints preventing the housing sector from meeting the housing needs of the country are identified. Finally, the report concludes with a summary of the critical issues that the National Shelter Sector Strategy will need to resolve to be effective.

4.1: Framework for a Shelter Sector Strategy

Exhibit 4.1 provides a graphic overview of current and proposed housing solutions, arrayed along Jamaica's income distribution. Currently, formal private sector activity is

EXHIBIT 4.1

FRAMEWORK FOR CURRENT AND POTENTIAL HOUSING SOLUTIONS



almost exclusively limited to the top 5 or 10 percent of all households. The schemes produced by the Ministry of Construction (Housing) and financed by the National Housing Trust primarily serve middle-income households, since start-a-homes currently cost about J\$56,000, requiring a household income of at least J\$26,000. The Ministry's settlement upgrading programs, financed through international donor organizations have provided limited assistance to households with below average incomes. However, a substantial share of households in Jamaica either rely primarily on the informal sector to obtain shelter, or rent houses and double-up with extended family and friends.

Three major changes need to occur to achieve significant and lasting gains in the performance of Jamaica's housing sector, and its capacity to meet the needs of households at all income levels:

The formal private sector must be induced to serve a much larger segment of the income distribution, building and financing housing for households with average incomes and above.

Public sector housing schemes need to be targetted to households with incomes below average, and such schemes should supplement people's efforts to produce housing informally rather than attempting to replace these efforts.

The existing capacity of non-governmental organizations and social service agencies needs to be marshalled to enhance the quality of the informal housing already being built by the poorest households.

More specifically, the bottom panel of Exhibit 4.1 identifies five different types of housing solution and shows how these could be deployed to address the housing needs of Jamaicans at all income levels. The remainder of this subsection describes

these solutions more fully.

We recommend that much greater reliance be placed on the formal private sector to build and finance housing for the fourth and fifth income quintiles. Households with incomes as low as J\$28,000 can afford mortgage payments (at 17 percent interest) for a J\$60,000 house. Government needs to identify and reduce the risks that prevent 1) Building Societies and Trust Companies from making mortgage loans at this level; 2) Commercial Banks from providing interim financing; and 3) private developers from building affordable houses. Households with somewhat lower incomes (J\$20,000) can afford National Housing Trust mortgages (at 12 percent interest) for J\$50,000 to J\$60,000 houses. It should be possible, therefore, to induce commercial banks to lend to private developers for the construction of affordable houses for NHT mortgage certificate holders.

Government sponsored schemes should focus on minimal housing solutions for households with below average incomes. Examples include core houses, which appear to be affordable for households with incomes as low as J\$12,000, as well as sites and services and settlement upgrading projects, which can be affordable at income levels as low as J\$6,000. Solutions of this type should supplement informal sector production capacity, raising the quality of the shelter households finance and build for themselves. To illustrate, the purchaser of a core house would improve and expand the unit over time, relying on informal sources of credit as well as on small credit union loans. An even larger share of households buying serviced sites would

probably employ informal financing and building mechanisms to build their houses.

Even with low-cost solutions targetted to households with below average incomes, the Ministry of Construction (Housing) is unlikely to produce enough serviced sites and upgrades to meet demands. Moreover, the poorest households will be unable to qualify for even the most low-cost solutions. However, it may be possible to significantly improve the quality of the housing that poor households produce for themselves by channelling information, technical assistance, and equipment through non-governmental organizations and social service agencies already operating in poor communities.

4.2: Constraints on Housing Sector Performance

Knowledgable participants in Jamaica's housing sector have catalogued a lengthy list of constraints that prevent the sector from functioning effectively. This chapter focuses on the three basic changes we have recommended for Jamaica's shelter sector, discussing the constraints that stand in the way of achieving each. In our view, these constitute the key issues that the National Shelter Sector Strategy will need to resolve if it is to be effective.

4.2.1 Constraints on Formal Private Sector Performance

Despite the best intentions of a decade of housing sector strategies and plans, the formal sector has produced only a small fraction of the new housing required by Jamaica's households each

year. Most observers agree that Jamaica's formal construction sector has the capacity for much higher production volumes, but that this capacity has been systematically under-utilized. While the formal private sector may never be induced to incur the risks associated with serving very low income households, it is unrealistic to expect the Ministry of Construction (Housing) to finance and develop the units required by all but the most affluent Jamaican households. Private sector developers and financing institutions must become more extensively involved in serving households with average incomes and above if Jamaica is to come close to addressing its current and future housing needs.

To stimulate greater participation by the formal private sector, government will need to take the initiative for creating conditions within the housing sector that make housing production feasible and profitable for the formal private sector. Unless the formal private sector is induced to serve households in the top half of the income distribution, it will become extremely difficult politically to focus government schemes on lower income housing needs. The public sector cannot effectively address the needs of the poor, as long as a large segment of the middle and upper class cannot find affordable housing.

What conditions are required for private sector developers and financing institutions to serve the needs of all households with above-average incomes? First, it will be necessary to develop design solutions that satisfy the demands of households in the fourth and fifth income quintiles at prices they can afford. This would ensure a market for fairly large scale

development projects. At the same time, however, interim financing has to be available to developers. But commercial banks cannot be expected to lend for housing construction in the absence of guaranteed take-out financing from the Trust Companies and Building Societies that provide long-term mortgage financing. The remainder of this subsection focuses in turn on the issues of affordable design solutions and increased availability of long term and interim finance for the housing sector.

A critical prerequisite for the design of affordable housing solutions is the availability of reliable data on how much households at various income levels spend for housing and how much they would be willing to spend for various options.

Specifically:

At each income level, how much are households spending per month and how much are they willing to spend for 1) a serviced site, 2) a minimal core house, 3) a one-bedroom house or apartment, and 4) a two-bedroom house or apartment?

How much labor are households willing to contribute to the construction or expansion of their units?

To what degree are households willing to invest in modest units that could be expanded and improved over the long term?

To what degree do households already own or occupy land or informal structures that they would like to retain and upgrade?

Armed with this information, much of which should be generated by the market demand studies planned for Phase II of the National Shelter Strategy development process, the challenge is to design and promote a continuum of housing solutions that are both affordable and desirable to households at almost all income levels. There are several avenues to explore for achieving cost

savings in formal sector housing development, all of which should be considered jointly by government and private sector developers.

The first avenue to pursue in the effort to reduce housing costs is to develop more economical design standards for the formal sector. This approach is reflected in the new options proposed for low-cost housing by the Ministry of Construction (Housing). But modifications to design and construction standards should not be limited to government housing schemes. The full range of formal sector solutions sought by Jamaican households need to be made more affordable. Without endangering health and safety, it should be possible to modify some of the existing standards for formal construction and infrastructure so as to reduce development costs. While it is difficult to abandon requirements that were intended to improve quality of life for Jamaican households, many of these requirements are simply not achievable in the current economic environment, as evidenced by the fact that the two-bedroom houses being built today are unaffordable by all but the most affluent Jamaicans. As demonstrated by the Housing Needs Assessment projections, continued adherence to existing design standards would make it financially impossible to meet the housing needs of all households in the the next two decades, and would actually result in a higher incidence of overcrowding and squatting.

In addition, bureaucratic impediments to efficient housing construction need to be removed, so that developers will not risk long and costly delays over which they have no control. A

centralized inventory of vacant land, and an efficient system for land transfers could reduce delays in land acquisition, and coordinated procedures are needed for review and approval by the Town Planning Department and the National Water Commission.

Transfer and sales taxes also play a significant role in inflating housing costs. Consideration should be given to the possibility of waiving or reducing taxes on the construction and sale of housing for low and middle income households. Since households at this income level currently buy units from the public sector, where most of the transfer and sales taxes do not apply, waiving taxes on units built for these households by the private sector would not really represent foregone revenues. Moreover, tax concessions of this kind might provide sufficient incentives to induce private developers into the middle-income housing market.

Low cost construction technologies offer a third avenue for potential development cost reductions. In particular, the Jamaican government owns three plants -- provided by the Italian government -- for producing pre-cast concrete post and panel wall systems. These plants have never been opened, but analysts at the Ministry of Construction (Housing) estimate that the Italian post and panel system could reduce the overall cost of the current start-a-home by about 10 percent. If savings of this magnitude can be achieved, then one or more of the Italian plants should be sold or leased to a private developer. However, these plants cannot reasonably be opened without the assurance of fairly high production levels (at least 1200 units per

year per plant), which, of course, would require substantial participation by private sector financial institutions, as discussed below.

Lower interest rates on long-term finance are often advocated as a possible remedy for the fact that very few households in Jamaica can afford to assume a mortgage large enough to pay for a one- or two-bedroom house. But reducing mortgage interest rates will not solve the affordability problem. The National Housing Trust is already making loans at interest rates below the prevailing inflation rate, and even at these very low interest rates, households in the bottom two thirds of the income distribution cannot afford the cheapest one- and two-bedroom houses currently available. Only households in the highest income quintile -- borrowing from the building societies -- are actually paying positive real interest rates for mortgages. Lower interest rates on these building society loans would have to be accompanied by reductions in the rates the building societies offer to their depositors, ultimately reducing the pool of funds available for mortgage lending. Thus, lower mortgage interest rates do not offer a workable long-term solution to Jamaica's housing dilemma.

Reducing housing costs is not a new idea, nor is it an easy problem to solve. However, there can be little doubt that high design costs, bureaucratic impediments, and high tax burdens currently stand in the way of both public and private sector housing production. Not only do public sector solutions need to be more affordable in order to serve the lowest income

households, but the private sector needs a range of solutions it can produce in order to meet the needs of middle and upper income households.

In conjunction with reduced costs, interim financing will need to be provided by private lending institutions -- commercial banks or insurance companies. These lenders currently face high reserve requirements and charge high interest rates, but reserve requirements are being gradually removed and short-term interest rates have fallen significantly in recent months. Commercial Banks have participated in housing finance before, and a guaranteed take-out by a Building Society, a Trust Company, or the NHT should reduce their risks substantially. If commercial lenders cannot be induced to increase their volume of interim lending for housing, the government might consider providing some form of default insurance, which would protect lenders from delays and mismanagement in the development process.

Clearly, interim financing will not be forthcoming unless mortgage lenders -- the Trust Companies and Building Societies in particular -- expand their volume. In recent years, private sector mortgage lending fell far short of Jamaica's housing finance needs. To some degree, this may reflect the high cost of current design solutions, or a perception on the part of mortgage lenders that households with annual incomes below J\$50,000 are bad credit risks.

The problem is not, however, lack of loanable funds. At least in the immediate short-term there is actually an excess of funds available for mortgage financing. In fact, Building

Societies had so much excess liquidity in 1985 that they began buying mortgages back from the Jamaica Mortgage Bank, the secondary mortgage market institution. The National Housing Trust also has a pool of excess funds available for mortgage lending. Apparently insurance companies, which are required by law to invest a portion of their fixed assets in home mortgages, have excess funds available.

If the primary impediment to expanded mortgage lending activity is the perceived credit risk, the newest HG loan, which will be funnelled through private lenders to households with median incomes and below, may provide building societies and trust companies with the opportunity to gain experience with middle income borrowers. However, this only represents a one-time infusion of funds, and it does not address the needs of households in the fourth and fifth income quintiles who are most likely to form a viable market for private sector mortgage lenders in the long term.

Thus, government needs to explore additional avenues for expanding private mortgage lending activities. One option may be to revitalize the mortgage insurance function of the Jamaica Mortgage Bank. Another would be to review the underwriting practices of the trust companies and building societies to identify criteria that may be unnecessarily restrictive.

The National Housing Trust's mortgage certificate program represents an important opportunity to involve private sector lenders in the provision of financing to a wider range of households. In effect, the mortgage certificates provide a

guarantee that NHT will refund lenders who provide mortgages to qualified members. This should enable developers to arrange for the guaranteed take-out needed to obtain interim financing for construction. It is essential, however, that as the mortgage certificate program gets underway, the ability of certificate holders to find units they can afford to buy is closely monitored. If this program is effective at stimulating private development, it will need to be expanded considerably in volume.

While the need for new housing production and long-term mortgage financing in Jamaica is great, financing for home improvements should not be neglected. Home improvements preserve and extend the life of the existing stock, bringing marginal units up to acceptable quality, and sometimes adding sufficient space to accommodate additional household members. Since home improvement loans involve smaller balances and shorter terms than conventional mortgages, they offer lenders an attractive mechanism for investing in the housing sector.

4.2.2 Constraints on Public Sector Performance

If the government can induce the formal private sector to substantially expand its production, then public sector schemes can focus on the needs of households with below average incomes. Today, two major problems stand in the way of effective public sector schemes for low income households. First, the housing solutions being offered by the Ministry of Construction (Housing) are unaffordable for households with below average incomes, and

second, the Ministry's production capacity is severely limited.

There is an urgent need to design very low cost solutions that households near the bottom of the income distribution can afford. The Ministry of Construction (Housing) should focus on solutions that offer the basic essentials required for safety and health -- solutions such as serviced sites. Individual households can then build temporary shelters that they gradually expand and improve.

As demonstrated by the Housing Needs Assessment Model, it is beyond Jamaica's current financial capacity to achieve fully adequate, permanent units for all households within the next two decades. A far more realistic target would be a fully serviced site for all with the construction and ultimate expansion of shelter left up to individual households.*

As an interim measure, selling unserviced -- surveyed -- sites to the poorest households also warrants consideration as a mechanism for addressing housing needs. This option provides security of tenure (leasehold or freehold) to households who would otherwise engage in completely unorganized squatting, and it allows for site planning that will ultimately facilitate the efficient extension of water and sanitary services.

Another way of thinking about serviced -- and surveyed -- sites is that they raise the quality of the construction being undertaken by the informal sector. In other words, by making

* While serviced sites provide an affordable option for serving very low-income households, larger sites with a somewhat higher level of amenities may also be attractive to middle-income Jamaicans, who can afford to erect a factory-built shell or even a complete unit rather than building an improvised shelter.

serviced sites available to low income households who would otherwise have squatted on unserviced land, the public sector is not displacing the informal private sector, but rather enhancing its capacity to produce minimally adequate housing. In pursuing solutions of this kind, however, it is essential to design the public intervention carefully to support and enhance informal sector activities. For example, sites and services projects need to be located in areas attractive to potential buyers, plot layouts should facilitate informal construction methods, and financing schemes must be affordable. If solutions of this kind are designed in ways that thwart informal sector activity, they will not be effective.

Proposals have been advanced to build high density housing on vacant sites in urban centers, particularly in central Kingston. The hope is that two- to three-story apartment buildings might yield significant economies of scale, that land costs per unit would be relatively low, and that development costs would be further reduced by the fact that water and sanitary services are already in place at these sites. This option needs to be pursued with great caution, however, because past experience appears to suggest that high density development in downtown areas can actually result in higher per unit costs, and that the market for rental projects may be extremely narrow. If projects of this description could be built at a per unit cost less expensive than single-family detached core units, they could be offered at low rents to households unable to afford homeownership. Consideration might also be given to the

possibility of subsidizing the rents paid by the poorest households for these multifamily units. This would enable very low income households to obtain adequate accommodations within the central city until they were in a position to become homeowners.

Even if the public sector focuses its schemes on the lowest cost solutions, the need for units far exceeds the current capacity of the Ministry of Construction (Housing). As discussed in Section 3, government housing schemes are developed by private and parastatal developers on contract to the Ministry. In recent years, construction delays and over-runs have substantially increased the cost of projects, making the completed units unaffordable for the intended buyers. Moreover, the Ministry simply does not employ enough staff to oversee numerous development projects. Efficient management of the construction process should be a priority for government financed schemes, and the capacity of various public and private developers -- including the Estate Development Corporation and Sugar Industry Housing -- to complete projects on time and within budget should be evaluated. One strategy for eliminating cost overruns and delays would be to shift some of the management responsibility and risk of development to the private and parastatal developers. In other words, the Ministry would contract with a developer to deliver a certain number of units at a specified cost and at a specified date. Bonuses could be offered for early delivery and for cost savings, but the risks of overruns and delays would be borne by the developer rather than

by the Ministry, and fewer Ministry staff would be needed to oversee the development process.

4.2.3 Constraints on the Informal Sector

Very little is currently known about how low income Jamaicans provide housing for themselves, using informal mechanisms for construction and finance. However, there is evidence of tremendous ingenuity and initiative in finding housing solutions. This initiative should be fostered to yield the best possible living conditions among those who rely on the informal sector. For example, low income households could benefit from information about how to build a sanitary pit latrine. Some could be trained in brick making or other construction related trades so that they could build their own houses and obtain ongoing employment as well. The loan of equipment might enable members of a squatter community to grade a foot path. Interventions of this kind would involve very small expenditures, but could substantially improve the quality of informal sector housing.

4.3: Summary of Issues

This final section summarizes the major issues raised in the body of this report. It is these issues that we would argue should be addressed in the second phase of Jamaica's National Shelter Sector Strategy. The issues fall into two classes -- information issues and policy issues -- each of which is discussed in turn.

4.3.1 Information Issues

Several serious gaps in the body of information available about housing conditions and household behavior have inhibited efforts to address Jamaica's housing needs. In some cases, lack of crucial information can lead to badly designed programs or unintended side effects. In others, information gaps simply immobilize the policy making process. We have identified four major areas in which data are desperately needed for the development of effective housing programs for Jamaica. Some of these can be addressed in Phase II of the Shelter Sector Strategy development process; others will require longer-term data collection and analysis:

1) Household composition and household formation.

As discussed in Section 2, households tend to be very large in Jamaica, especially among low income groups. These large household sizes may be a function of housing shortages and high construction costs. Alternatively, large household sizes may stem from other economic or social pressures. Expanding the availability and affordability of housing units may lead to smaller household sizes, increasing the total number of units required. Alternatively, household formation rates may prove to be insensitive to the availability and cost of housing units. If so, the design of alternative housing solutions and future programs to facilitate home improvements and additions should be sensitive to the composition of households at different income levels.

Household surveys conducted in Jamaica should be used to investigate the composition of households at different income levels, carefully documenting the family and financial relationships between members and how these relate to housing needs and housing strategies.

2) Share of income available for housing investment.

The available data on housing expenditures are inadequate for purposes of determining how much households at various income levels are able and willing to invest in housing. Without reliable information on this issues, it is dangerous to design housing solutions targetted to particular income groups, since the intended occupants may not be able or willing to spend enough to pay for their solution. The following specific questions need to be addressed:

At each income level, how much are households spending per month and how much are they willing to spend for 1) a serviced site, 2) a minimal core house, 3) a one-bedroom house or apartment, and 4) a two-bedroom house or apartment?

How much labor are households willing to contribute to the construction or expansion of their units?

To what degree are households willing to invest in modest units that could be expanded and improved over the long term?

To what degree do households already own or occupy land or informal structures that they would like to retain and upgrade?

3) Condition of the housing stock.

Very little is known about the roughly 550 thousand units of existing housing in Jamaica today. This stock of existing units represents a valuable capital resource, and, given the cost of new construction, it should not be allowed to deteriorate beyond repair. Ongoing data collection efforts should utilize explicit

definitions of housing and infrastructure adequacy, so that the problem of poor quality housing can be more effectively attacked. Specifically, data are need to determine:

Are inadequate units geographically dispersed or concentrated?

How poor are their occupants?

Are they owner-occupied, rented, or squatter units?

What types of improvements do they require and how much would these improvements cost?

What is preventing the occupants from making needed improvements?

4) Informal housing production and finance mechanisms.

A large share of Jamaica's annual housing production is attributable to the informal sector. But very little empirical evidence is available about informal housing production. A case study analysis of informally built houses is currently underway in Jamaica, and should begin to provide answers to some of these questions. Further data collection and analysis will be required to obtain a full understanding of the informal housing sector so that Jamaica's shelter strategy can take full advantage of the existing informal production capacity. Specifically:

What are the characteristics of households who rely on the informal sector for housing?

To what extent do they do the construction work themselves, and to what extent do they rely on contractors?

What are the characteristics and quality of informally produced units?

How long does it typically take to complete them?

How are they financed and how much do they ultimately cost?

What forms of public intervention would most effectively improve the quality of informally built housing and how can help be channelled to very low income households?

4.3.2 Policy Issues

The National Shelter Sector Strategy obviously cannot focus on data collection issues alone. It will have to identify specific mechanisms for removing the constraints that inhibit housing production in Jamaica, and establish priorities for implementation. On the basis of our analysis of Jamaica's housing needs and the recent performance of its formal housing sector, we have identified five key policy issues. In our view, these issues must be addressed and resolved if Jamaica's National Shelter Sector Strategy is to be effective.

1) The need for additions to the existing housing stock.

To meet the demands of newly forming households over the next two decades, the production of the formal housing sector -- both public and private -- needs to expand substantially, and the quality of housing provided by the informal sector needs to be improved.

2) Reduction of costs and risks inhibiting formal private sector production.

The major costs and risks of formal, private sector housing development need to be identified and reduced through government initiatives so that the formal private sector can serve a much large segment of the population. Specifically, the following conditions are required:

marketable design solutions;

fewer bureaucratic impediments to private construction;

reduced taxes on private construction for middle-income households;

interim financing from private institutions;

pool of long-term financing, providing guaranteed take-outs for large-scale developers.

The NHT mortgage certificate should be exploited as an opportunity to stimulate private sector experience with developing housing for the middle income market.

3) Reduced public sector housing solutions.

Production sponsored by the public sector should focus on solutions that provide the basic requirements for health and safety, leaving the construction of shelters up to the private sector -- formal and informal. These solutions should be as inexpensive as possible, so that direct subsidies are only required by the poorest households. Focusing public sector production on minimal solutions has three major advantages. First, it targets public assistance to the bottom of the income distribution. Second, it increases the volume of production that the public sector can achieve, and finally, it supplements rather than displacing informal sector housing production.

4) Expanded public sector production capacity.

The capacity of the public sector to produce (or sponsor) a significant volume of units annually needs to be enhanced. One strategy for accomplishing this objective is to transfer more of the responsibility and risk for Ministry schemes to private and parastatal developers in return for profit.

5) Enhanced informal sector housing production.

Public sector schemes should focus on minimal solutions that supplement informal sector efforts. In addition, residents of

Informal settlements should be systematically aided in improving the quality of their housing by channeling information, equipment, technical assistance through non-governmental organizations and social service agencies.

GLOSSARY OF ABBREVIATIONS

MOCH	-	Ministry of Construction (Housing)
NHP	-	National Housing Policy
The Trust	-	National Housing Trust
NHT	-	National Housing Trust
HG	-	Housing Guaranty Loan
NHC	-	National Housing Corporation
SIH	-	Sugar Industry Housing
UDC	-	Urban Development Corporation
CHFC	-	Caribbean Housing and Finance Corporation
JMB	-	Jamaica Mortgage Bank
JCCUL	-	Jamaica Cooperative Credit Union League

BIBLIOGRAPHY

- Robert M., June 1985, "Housing Finance Policy and Structural Adjustments in Jamaica," The Urban Institute.
- Societies Association of Jamaica, 1985, Fact Book - 1985, BSAJ.
- Societies Association of Jamaica, 1981, Housing and Finance - Jamaica, BSAJ.
- Government of Jamaica, 1976-1986, Estimates of Expenditure.
- Planning Agency, 1979, Five Year Development Plan 1978-1982, Ministry of Finance and Planning.
- Ben-Young and Associates, 1977, A Study of Housing In Jamaica, Ministry of Housing and Related Institutions, Vol. 1 and 2, Ministry of Housing.
- Ben-Young and Associates, 1977, A Study of Housing In Jamaica, Financial and Economic Aspects of Housing in Jamaica, Ministry of Housing.
- Planning Institute of Jamaica, Economic and Social Surveys of Jamaica, 1976 to 1985.
- Technical Department: Jamaica Cooperative Credit Unit League, August 30, 1985, Housing Needs of Credit Union Members, JCCUL.
- Task Force on Mortgage Finance, May 29, 1985, Report on Mortgage Finance.
- Agency for International Development, 1985, Jamaica Shelter Sector Support, USAID, Jamaica.
- Agency for International Development, 1985, Memorandum on Monetary and Financial Policies, Jamaica, USAID Regional Office.
- Agency for International Development, 1984, Jamaica - Urban and Rural Shelter Improvement.
- Urban Development Corporation, George and Stephanie Gordon, February 1985, Orange Bay Revisited: An Update of UDC's Sites and Services Project At Orange Bay, Negil, Urban Development Corporation.

**JAMAICA SHELTER SECTOR STRATEGY
PHASE I - FINAL REPORT**

February 1987

Annex Volume

U.I. Project 3666-02

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THE HOUSING NEEDS ASSESSMENT MODEL

This description of the Housing Needs Assessment Model was authored by Raymond J. Struyk of The Urban Institute. It will be published in the Journal of the American Planning Association, April 1987.

THE HOUSING NEEDS ASSESSMENT MODEL

There is wide agreement that the quality of housing available to most households in developing countries is a major problem that each of these nations is being forced to address. Nation after nation is trying to find approaches that will yield substantial gains within a few years. Often, however, these efforts are being expended without a complete and realistic definition of the task at hand. This can and does lead to putative solutions which are inappropriate, and extremely costly "false starts" are sometimes the consequence. The first step in a rational planning process is a thorough assessment of current housing needs as well as those likely to materialize over a reasonable planning horizon of ten to twenty years. Such an assessment provides an essential orientation; with needs clearly defined, a sound strategy to meet them can be formulated and implemented.

This paper describes a micro computer-assisted method for developing estimates of housing needs. The Housing Needs Assessment Methodology was developed in early 1984 under the sponsorship of USAID's Office of Housing and Urban Programs, as part of the U.S. contribution to the International Year of Shelter for the Homeless. By early 1986, the method had been applied to at least fifteen countries (see Table 1). Hence, it has attained substantial acceptance as a planning tool in its brief life.

The Methodology produces two types of results: (a) counts of the number of new and upgraded dwelling units of acceptable quality necessary to satisfy various sources of housing needs; and,

(b) estimates of the amount of investment necessary to produce this volume of units. The first type of result is produced in traditional housing needs assessments, and in this aspect the model is a direct descendent of the well-known U.N. Component Method. But the second type is more innovative and of great interest to policy makers. Since the methodology is programmed on a micro-computer, the vast number of calculations are routinized and performed quickly and accurately, so sensitivity analysis can easily be performed, either to explore the effects on output of different values of input data when there is uncertainty about their exact values or to do actual policy simulations.

Because of space limitations and the availability of substantial documentation about the method, we take a somewhat eclectic approach in this presentation. The first section presents an overview of the method. The second section gives special attention to the results produced. The third section discusses several key assumptions that are embodied in the calculations done by the computer model. The paper closes with a discussion of how the method has been used in the policy process. An annex provides notes on the types of computer on which the model operates and how to obtain more detailed documentation of the method.

Overview

We begin by enumerating several characteristics of the computer model and its data structures.

- o The computer model is essentially an accounting model as opposed to a structural equations or other econometric model. The model does, however, embody some behavioral assumptions that are highlighted in the third section.

- o The analyst defines a "plan" which governs the rate at which housing deficits present at the start of the period can be eliminated over the planning period. The deficits include units failing the minimum standards that must be replaced and those that can be economically upgraded; households living in overcrowded conditions are also in the deficit. Additional sources of housing needs to be met annually are newly forming households and replacements for units leaving the housing stock.
- o The model normally employs a 20 year planning period. Results are produced for each fifth year in the period. These results are only for that year (not cumulative five year totals); so one sees the requirements for the number of units needed that year and the related investment requirements. While the model has the 20 year time horizon, the analyst can choose to eliminate base year housing deficits over a shorter or longer period: the 20 years is simply the time dimension built into the model.
- o The model can also be run for a five-year planning period, with suitable adjustments to the data inputs. Analyzing this shorter period, within the 20-year context, has proven especially useful in preparing programmatic documents such as five-year plans.
- o There are several disaggregations of data in the model which are important to understanding its capabilities:
 - A nation can be divided into as many as three housing sectors. The typical application has used the breakdown of major metropolitan areas - other urban areas - rural areas. But in Sri Lanka it was urban - rural - estate sector; and in some countries (e.g., Barbados) only an urban-rural distinction was used.
 - As part of investment calculations, the model determines the value of housing that households can afford, i.e., effective demand, based on their incomes, the share of their incomes available for housing investment, and the terms used to capitalize their investment. These affordability calculations are carried out by income quintiles for each geographic sector.
 - The model uses input data on the income distribution and average income by housing sector along with anticipated real growth in GDP to determine average household incomes by income quintile and sector for each year.
 - In determining the quality of housing -- both the structure and the associated infrastructure -- that households can afford, the model includes three building standards for each geographic area: the

minimum quality upgraded unit; the minimum quality new unit; and the low cost market-produced full unit. Although each of these standards is based on a physical description of the unit, the input for the model is simply the cost of the solution.

- o The target group is defined as those households who cannot afford a lower cost market produced unit.
- o Based on effective demand (affordability) and the building standards, the model computes total housing investment necessary to meet the housing needs by sector and divides it between what households can afford by themselves and the subsidy needed to permit target group households to occupy minimum quality units.

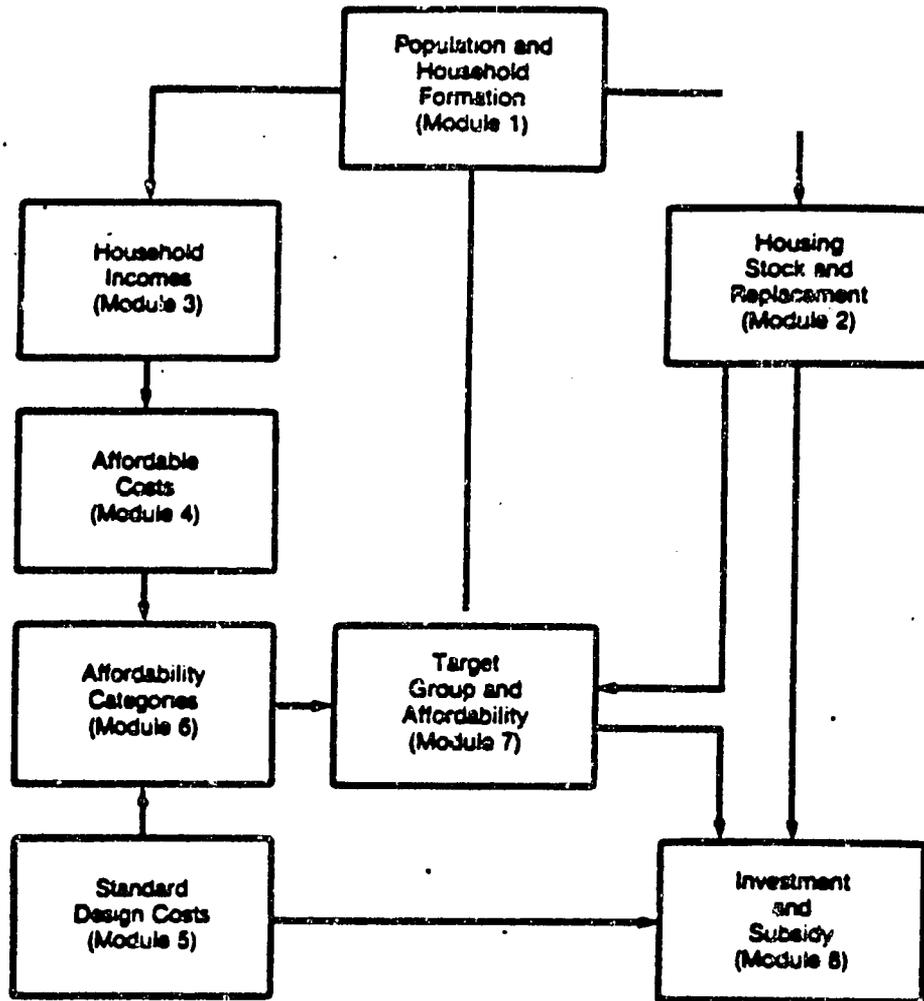
We can now give a rough outline of the model's calculations. The major determinants of projected physical needs for shelter are future population growth, household formation trends, and the adequacy of the existing housing stock to meet the needs of the current population. As shown in Figure 1, these 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 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.

FIGURE 1

MAIN COMPONENTS OF THE HOUSING
NEEDS ASSESSMENT MODEL



- 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 affordability by various segments of the population, modules 7 and 8 are then used to:

- o Determine national housing investment requirements;
- o 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
- o Estimate the level of direct subsidy, if any, that would be required to bring all housing to the chosen standard.

As detailed further below, 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.

Data Inputs

Space limitations do not allow any meaningful discussion of the data inputs. However, it may be worthwhile to note which inputs are especially critical to obtaining good quality projections. For variables effecting the number of units needed, population and household size projections and the quality distribution of the base year housing stock are key. For the affordability and investment analysis, inputs for base year household income distribution and average income, the "mortgage terms" faced by households in different income groups, and the current and future cost of various housing solutions are critical. A full listing of input data required and notes on how to assemble them

are in the documents described in the Annex. Obviously, maximum care must be taken in assembling the values of these inputs to obtain useful projections.

Results of the Computations

We focus here on the two primary outputs of the calculations: the number of newly constructed and upgraded units required over the plan period and the corresponding levels of investment. We use the results from the application to Sri Lanka (Manson and Struyk, 1984) for this illustration.

Units required. Table 2 displays an output table reporting physical housing needs for urban areas. The "bottom line" of these computations is contained in the last two rows of figures which show (in thousands) the number of new dwellings required at each fifth year in the plan period and the total number of acceptable units required (new plus upgraded units).

Some orientation for reading the rest of this table may be in order. For the base year of 1983 only data on the housing stock is presented. Except for the number of overcrowded units, which the model calculates internally, all of these stock figures are input data supplied by the analyst. The figures for 1988 through 2003 are outputs; each column presents data only for the year at the head of the column. The model deals with five different sources of housing needs to obtain the total figures. The most lucid way to explain these is to proceed down the list of entries in the left-hand stub.

- o Acceptable construction and replacements. These are losses from the stock of acceptable units due to depreciation and other causes, e.g., natural disasters. In this case it was estimated that such withdrawals were equivalent to about 2 percent of the stock. So in 1988, 4,690 new units ($213,000 * .022$) are needed for replacements.¹
- o Replacing non-upgradable units. Some of the base year housing stock is too deficient to warrant upgrading and must be replaced. The analyst determines, as part of the overall "plan," the rate at which these units will be replaced; in this case the assumption was that the annual rate would be 5 percent, or 2,400 replacement units each year ($48,000 * .05$).
- o Upgrading existing units. In Sri Lanka, like many countries, a large share of the stock that is unacceptable in the base year could be made acceptable through improving the unit and/or the infrastructure services provided to it. Again the analyst determines the rate at which the backlog is reduced; here it is 5 percent per year, and so in 1988 some 13,300 units are scheduled for upgrading ($267,000 * .05$).
- o Overcrowding. To relieve doubling up present in the base year, new units are scheduled for development. In the plan employed here the overcrowding in 1983 is eliminated at a rate of 5 percent per year which is equivalent to 3,800 units ($76,620 * .05$).
- o New households. The model assumes that an additional dwelling unit is needed for every new household. (The number of new households in each sector is computed earlier.)

In summary there are two key elements in determining the level of housing needs in each year: (a) the number of newly forming households, depreciation of acceptable units, and the extent of initial deficits, and, (b) the plan developed by the analyst for dealing with the deficits. It is important to note that the deficits can be scheduled to be eliminated in less than 20 years or not at all, depending on the circumstances in the country. In the case at hand, some 24,040 new units would be required in 1988 to meet the needs of new households, to relieve overcrowding, and to replace obsolete acceptable units and non-upgradable units. In addition, some 13,300 units would be upgraded.

Hence, a total of 37,340 units are "scheduled" for some sort of activity in 1988. A central assumption of all of the model's calculations is that the plan is accomplished each year.

Investment. Table 3 presents the output table reporting the investment required to carry out the program of housing construction developed above. The total housing investment figure at the bottom of the table is the total cost required to meet the housing needs as specified in the plan. It includes the investments made by the "scheduled" households in the target and the non-target groups. For the latter group, who cannot afford the minimum solutions currently being privately marketed, it also includes the subsidy that is required for them to obtain an acceptable unit. The total investment is sensitive to the building design assumptions and, therefore, the costs for the various alternatives.² The size of the target group is especially sensitive to the building standards employed.

Total housing needs -- that is, the sum of households or units scheduled for activity -- are divided between the target and non-target groups as follows: (a) newly forming households and withdrawal of units from the existing stock are assumed to be proportionately distributed between the two groups; and (b) the needs for upgrading of existing units, replacement of non-upgradable units, and the relief of overcrowding are assumed to be concentrated exclusively among the target population.

Investment by the non-target group is based strictly on the affordability calculations. Investment by the target group has two components. The first is their own affordability: the calculations

assume that these households invest the amount they can afford and therefore those households who can afford to do so do not stop investing at the point at which they obtain the minimum solution. Generally, some groups of households (defined by income quintile and sector) will not be able to afford the minimum solution assigned to them under the rules followed by the model in matching new and upgraded units to household groups.³ In this case the model computes the shortfall between what the households can afford with their own resources and the cost of the minimum solution to which they are assigned. The second investment component is the aggregation of these shortfalls, which is reported as "subsidy required" in the table. The subsidy is computed as a one-time grant required to make a unit affordable, although governments may well disburse subsidies in other forms. Moreover, it is essential to note that the shortfall need not be closed entirely with subsidies, if households could be induced to use more of their own resources.

Sensitivity Analysis. Even from this brief description it is evident that the investment levels will depend critically on several key factors: the rate of growth of households; the size of initial housing deficits; income levels, income growth, the share of income available for housing investment, and the capitalization terms; and, the building standards selected.

We can illustrate how the model can be used to analyze the impact of policy changes or a range of values for data inputs. Table 4 reproduces the result of a sensitivity analysis done for Sri Lanka, in which the applicable interest rate in the affordability calculations was increased from 8 to 12 percent. (Since only interest rates were

changed, the numbers of new and upgraded units required is unchanged.) In Table 4, the base case uses the 8 percent rate and "ALT 1" uses 12 percent. Since affordability declines with the increase in interest rates, total investment declines and the number of households needing subsidies and subsidy levels rise sharply. Similar analysis involving the factors listed above generally produce very informative results.

Key Assumptions

In the foregoing discussion we have glossed over some key assumptions underlying the calculations. We did this to simplify the initial presentation. However, fully understanding the assumptions is a precondition to properly interpreting the model's output and to assessing the utility of the overall method. This section highlights and expatiates four particularly important assumptions.

The first concerns the capitalization of monthly income available for housing investment. The ready analogy is to a household obtaining a mortgage loan, with the capitalization (the total investment figure shown on Table 2) representing the value of the housing purchased based on the mortgage payments. Unfortunately, the analogy has limited practical applicability in most developing countries where the availability of mortgage financing from formal institutions is restricted to perhaps 20 percent of units built annually.

However, there is an alternative interpretation which is consistent with incremental housing construction. Specifically, the capitalized value gives the value today of the result of a household undertaking an investment program in which on average it spends an amount each month equivalent to the mortgage payment.⁴

While it is useful to know that one can arrive at the same capitalized values from these two routes, the difference in policy implications of these interpretations is critical. Under the "mortgage" interpretation households obtain a unit of this value in the year in which they are scheduled under the plan to obtain it. By contrast, under the "incremental investment" interpretation the household will only obtain its assigned solution 15 or 20 years in the future.⁵ This distinction is obviously important in explaining the model's results to someone focusing on the short-term improvement of the housing stock.

A second assumption concerns the estimate of the aggregate amount of subsidy required. In brief, this estimate embodies assumptions of almost perfect targeting of subsidy expenditures. Specifically, only those households who are unable to afford a minimum unit receive a subsidy. In addition, the amount of the subsidy is limited to the difference between what a household can afford and the cost of the minimum unit. Finally, households are assumed to maintain their own housing investment at the levels they would have been in the absence of subsidies. While some of the rules allocating households "scheduled" for housing units to housing solutions offset the severity of these assumptions to some degree, considerable target efficiency is nevertheless implied.

Thus far we have been silent about housing supply. In fact, the model assumes that each year the necessary supply of new and upgraded units will be forthcoming at the prices in effect at the start of the year; i.e., an infinitely elastic supply curve. However, in the model the price of housing is permitted to rise more or less rapidly than the

overall price index. Thus, at the start of each simulation year, the cost of each housing standard is adjusted for relative inflation in the housing sector. All other computations are in constant, base year prices. So, from year to year the supply curve can shift up or down, although it is horizontal within each year. This means that it is possible in effect to have an upward sloping supply curve (over a several year period) in response to price increases expected as a result of sharp increases in the number of units produced annually. The analyst must specify such anticipated inflation patterns.

The final point to note is that the computations assume that the plan's specified goals are accomplished each year, and that over the plan period there are no additions to the deficits present at the beginning of the period. It is possible to avoid this assumption by running the model in five year segments, adding to the deficits in each period to approximate the shortfalls experienced. This is, however, an awkward and time consuming process. The model is really designed to focus attention on the types of policy changes needed to address fully a country's housing needs over an extended period. Other simulation models exist for shorter-term, more realistic policy analysis; but these are correspondingly more complex and data intensive (Turner & Struyk, 1985).

Using the Needs Assessment in a Policy Context

An appropriate conclusion of this description of the housing needs methodology may be to illustrate briefly the pay off from implementing the model by highlighting the experiences in some of the countries to which it has been applied. To be sure these are selective (and to a

certain degree the more impressive) examples, but they do give a flavor of what is possible.

Three different types of use of the results might be distinguished, i.e., their use in the formulation of a national housing strategy, in more selective policy discussions, and in exploring the implications for housing of different economic or demographic futures in a country. The results of the housing needs estimates for a 5-year time horizon were an integral part of the formulation of a national housing strategy in Barbados and are serving a similar role in on-going strategy developments in Jordan, Kenya, and Jamaica. In Barbados, the needs and corresponding investment estimates established the overall parameters within which more detailed programmatic planning took place. Of particular importance in Barbados was the role the estimates played in shifting the focus of housing policy from the production of new units to a larger program of upgrading existing, servicable units.

Results of the needs assessment have proven particularly useful in two types of more limited policy discussions. One area has been establishing the definition of the minimum quality unit to be made available to lower income households. In most countries where the model has been applied, the initial standards indicated by Government proved to be unrealistically expensive in terms of the implied subsidies and the total share of GNP required for the investment program. Repeated sensitivity analysis of alternative standards was typically undertaken, with a lower standard being put on the table for serious discussion if not adopted out right. The applications to Zimbabwe and Ecuador are good examples of this process. Analysis of ways to increase the

mobilization of finance for the housing sector is another area of policy analysis where the housing needs estimates have been employed. In Sri Lanka and Honduras the investment figures served to establish a broad target for the volume of funds required for the sector, after making adjustments for expected equity contributions by households.

Finally, sensitivity analysis has proven valuable for exploring the implications of a country's economic and demographic future. The best example here is from the work in Jordan where such analysis informed policy makers about the housing implications of a slow down in the Gulf economy which could cause a substantial number of Jordanians to return home from job sites elsewhere in the region.

As a closing remark, we should mention another use for the model and the more general methodology that may be equally valuable as policy analysis. The process of collecting the input data for the model, carefully analyzing the results of the "base case," and doing sensitivity analysis can serve as an extremely effective learning device. Simulations with the model allows the analyst to see unexpected impacts of changing various parameters; and the process of understanding the causal links among the changes is challenging and rewarding. Hence, it may be the method can serve as a teaching device as well as a tool in the policy development arena.

ANNEX
SPECIFICATIONS AND DOCUMENTATION

The computer program for this model is written in BASIC, and it operates in an MS.DOS environment on IBM, IBM-compatible, and Wang personal computers having at least a single disk drive and 128K of storage.⁶ The program is fully "menu driven," and very easy to use. Data are entered into predefined table shells, and multiple data files can be stored and retrieved. The model produces nine output tables (some of them occupying multiple pages) for each simulation, and the output menu allows the user to select only the tables he wishes to see. There is also a separate "sensitivity analysis" routine that compares the key outputs from two or three simulations on a single page of output, so that the user can quickly determine the extent of changes associated with input data changes. Versions of the computer program also exist in which Spanish or French is used on the monitor and in the output tables.

As suggested earlier, substantial documentation exists for the method and for the model proper. The available documents fall neatly into three groups. First is a general description of the overall method and the model entitled, Preparing a National Housing Assessment (USAID 1984). This basic document was prepared in English, Spanish, and French. Second is the Users Manual (USAID 1984a), available only in English, which explains how to use the computer model and provides some greater detail on the functions employed in the model's calculations. It also provides table shells identical to those in the computer program.

for preparing data for input. The third form of documentation is the set of papers reporting the results of applying the method. These give a new user useful guidance on how to present and interpret the results of the calculations. A half dozen of these are listed in the references.

Development of an enhanced version of the model has recently been completed. The principal improvements among the calculations concern the decay rates applied to permanent and upgradable units and the interest rates used in the affordability computations.⁷ More substantial improvements have been made in the interactions between the user and the model, especially for reviewing output. A new Users Manual (Manson with Struyk, 1986) will soon be available from USAID.

The various documents cited are available from AID Document and Information Handling Facility; PPC/CDIE; SA-18, Room 209; Washington, D.C. 20523.

Footnotes

1. In the "enhanced" version of the model whose development has just been completed, there are separate decay rates for permanent units and upgradable units. These rates can differ for urban and rural areas, which is also the case in the original model.

2. Note, however, that total investment does not include investment made by households not "scheduled" to have their needs met. So, for example, additional investment by higher income households who "trade-up" by building larger units is not included. For this reason the total investment figure, as well as the share of GDP that would go to housing, is understated by some amount compared to what would actually be experienced if the plan were actually implemented.

3. To explain the allocation process a bit further, we start with the point that the total number of new and upgraded units is provided by the calculations of traditional housing needs. For households in the target group in each sector, the number of units to be upgraded is first allocated evenly among the income quintiles making up the target group. All remaining target group households are allocated minimum new units.

4. In the enhanced version of the model referred to in note 1, mortgage terms are permitted to vary by income class as well as by sector. This in effect permits the analyst to differentiate between the cost of funds from formal and informal sources. Experience in applying the model indicated that such cost differences were important to take into account if the affordability calculations were to be accurate. The new version can also accommodate Graduated Payment Mortgages.

5. This capitalization procedure raises another issue having to do with the flow of investment indicated over time. That is, those households not obtaining financing will only make the investment indicated over an extended number of years. So the procedure seems to overstate the amount of investment actually occurring in a particular year. The assumption in the method is that in a steady-state environment, in which approximately the same number of households are beginning their investment program each year, that the aggregate investment across all annual "cohorts" of investors would approximate the annual amount being computed by the model. This assumption is less valid to the extent that large shifts in population or household incomes are anticipated to happen during the plan period.

6. More than one version of BASIC is supported by Wang PCs, and the model will only work with versions V1.03 and V1.04.

7. See notes 1 and 4.

REFERENCES

- Blankfeld, R. and S. Vergara (1984). An Assessment of National Housing Needs and Affordability in Ecuador: 1984-2004. Washington, D.C.: Robert R. Nathan Associates, Inc. report to USAID Office of Housing and Urban Programs.
- Clifton, C.S. and A.D. Roscoe (1984). Botswana: An Assessment of National Housing Needs, Affordability, and Potential Barriers to Successful Implementation. Washington, D.C.: Robert R. Nathan Associates, Inc., report to USAID Office of Housing and Urban Programs.
- Dubinsky, R. and R. Struyk (1985). Revised Estimates of Housing Needs and Investment in Barbados: 1980-2000. Washington, D.C.: Urban Institute report to USAID Office of Housing and Urban Programs.
- Manson, D. and R. Struyk (1984). Housing Needs and Probable Investment in Sri Lanka 1983-2003. Washington, D.C.: Urban Institute report to USAID Office of Housing and Urban Programs.
- Manson, D. and R. Struyk (1986). AID Housing Needs Assessment User's Manual. Washington, D.C.: Urban Institute Report to USAID Office of Housing and Urban Programs.
- PADCO (1984). Columbia: Shelter Sector Assessment. Washington, D.C.: author, report to USAID Office of Housing and Urban Programs.
- PADCO (1984). El Salvador: Shelter Sector Assessment. Washington, D.C.: author, report to USAID Office of Housing and Urban Programs.
- Turner, M. and R. Struyk (1985). The Housing Quality Simulation Model: Basic Description. Washington, D.C.: Urban Institute Report to USAID Office of Housing and Urban Programs.
- U.S. AID, Office of Housing and Urban Programs (1984). Preparing a National Housing Needs Assessment. Washington, D.C.: author, Occasional Paper.
- U.S. AID, Office of Housing and Urban Programs (1984). AID Housing Needs Assessment Model: User's Manual. Washington, D.C.: author.

TABLE 1

COUNTRIES TO WHICH THE HOUSING NEEDS
ASSESSMENT METHOD HAS BEEN APPLIED
(through Spring 1986)

Barbados	Jordan
Botswana	Kenya
Colombia	Panama
Costa Rica	Peru
El Salvador	Sri Lanka
Ecuador	Turkey
Honduras	Zimbabwe
Jamaica	

TABLE 2

**SRI LANKA BASE CASE: HOUSING STOCK AND HOUSING NEEDS,
URBAN AREAS
(in thousands)**

	<u>1983</u>	<u>1988</u>	<u>1993</u>	<u>1998</u>	<u>2003</u>
Metropolitan Area					
Dwelling Units by Construction Standard					
Acceptable Construction	213.00	376.26	541.22	704.38	864.06
(Annual Planned Repl.)	0.00	4.69	8.28	11.91	15.50
Non-Upgradable Construct.	48.00	36.00	24.00	12.00	0.00
(Annual Planned Repl.)	0.00	2.40	2.40	2.40	2.40
Upgradable Construction	267.00	200.50	134.00	67.50	1.00
(Planned Ann. Upgrading)	0.00	13.30	13.30	13.30	13.30
Total Dwelling Units	528.00	612.76	699.22	783.88	865.06
Total Overcrowded Units	76.62	57.62	38.62	19.62	0.62
Planned Annual Construction to Relieve Overcrowding	0.00	3.80	3.80	3.80	3.80
New Households/Year	0.00	13.15	13.49	13.13	12.43
Construction New Units/Yr.	0.00	24.04	27.97	31.24	34.13
Total Construction/Year	0.00	37.34	41.27	44.54	47.43

Notes:

1983 is the base year; other years are projections.

The values for 1988 and later are for that year. They are not cumulative five year totals.

TABLE 3

**SRI LANKA BASE CASE: HOUSING INVESTMENT
IN URBAN AREAS
(millions of rupees)**

	<u>1988</u>	<u>1993</u>	<u>1998</u>	<u>2003</u>
Metropolitan Area				
Non-target Group Invest.	596.82	844.64	1138.59	1910.17
Target Group Investment	783.50	1010.97	1285.76	1014.94
Subsidy Required	214.95	255.27	288.83	332.68
Total Housing Investment	1595.27	2110.88	2713.19	3257.79

Notes:

Target group is defined as those not able to afford a low cost until being sold in the market.

Target group investment is all the housing investment financed by the group's own resources. Total housing investment for the target group includes both their investment and the subsidies.

TABLE 4
SENSITIVITY ANALYSIS
EFFECT OF HIGHER INTEREST RATES

	1988			1993		
	<u>BASE</u>	<u>ALT 1</u>	<u>ALT 2</u>	<u>BASE</u>	<u>ALT 1</u>	<u>ALT 2</u>
<u>Households Needing Subsidy</u>						
Metropolitan Areas	18.7	22.0	0.0	21.0	21.0	0.0
Other Urban Areas	72.4	88.9	0.0	89.1	105.6	0.0
Rural Areas	7.5	9.0	0.0	8.4	9.9	0.0
Country	98.6	119.9	0.0	118.5	136.5	0.0
(%) Diff. from Base	0.0	21.6	0.0	0.0	15.2	0.0
<u>Total Housing Investment</u>						
Metropolitan Areas	1595.3	1329.2	0.0	2110.9	1753.0	0.0
Other Urban Areas	4355.2	3759.9	0.0	5630.8	4908.0	0.0
Rural Areas	85.3	84.5	0.0	127.3	123.5	0.0
Country	6035.8	5173.6	0.0	7869.0	6784.5	0.0
(%) Diff. from Base	0.0	-14.3	0.0	0.0	-13.8	0.0
<u>Subsidy Requirement</u>						
Metropolitan Areas	215.0	296.6	0.0	235.3	359.4	0.0
Other Urban Areas	792.4	1122.9	0.0	1062.5	1507.0	0.0
Rural Areas	68.2	77.8	0.0	92.6	103.4	0.0
Country	1075.6	1497.3	0.0	1410.4	1369.8	0.0
(%) Diff. from Base	0.0	39.2	0.0	0.0	39.7	0.0

Notes:

Base Case: Eight percent interest rate used in affordability calculations.

ALT 1: Twelve percent interest rate used in affordability calculations.

In the Sri Lanka application, somewhat unusual geographic definitions were used. So urban areas are labeled as "metropolitan" in the table, rural areas as "other urban," and the estate sector as "rural."

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ANNEX B

**JAMAICA HOUSING NEEDS ASSESSMENT
PRELIMINARY DATA INPUTS
SOURCES AND METHODOLOGY**

Prepared by
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February 17, 1987

PADCO

AN INTERNATIONAL COLLABORATIVE FORMED TO PROVIDE GOVERNMENTS AND PRIVATE CLIENTS IN AFRICA, ASIA, LATIN AMERICA AND THE NEAR EAST WITH INTEGRATED RESEARCH, PLANNING AND MANAGEMENT SERVICES FOR URBAN AND RURAL DEVELOPMENT.

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PREFACE

The author is grateful to many people in Jamaica who provided information and assistance. Special thanks are due to Mr. Harry Armstrong MOC(H) Convener, and all the members of the National IYSH Focus Committee; Ms. Eleanor Jones and Ms. Maureen Webber, Jamaican counterparts; and Margery Turner of Urban Institute.

This draft report was prepared by Carlos Linares (PADCO) in support of the Housing Needs Assessment Study to be conducted by the Urban Institute in Jamaica.

1. POPULATION

- METRO is defined as the Kingston Metropolitan Region, it includes:
 - Kingston and St. Andrew (urban)
 - Spanish Town and
 - Portmore

Analysis of the 1970 Census¹

• Kingston and Urban St. Andrew	473,697
• Spanish Town	39,204
• Portmore	<u>5,080</u>
KMR:	<u>517,981</u>

Percentage of total urban:	<u>.693</u>
Percentage of total national:	<u>.286</u>

Analysis of the 1982 Census

• Kingston and Urban St. Andrew	524,638
• Spanish Town	89,097
• Portmore	<u>73,426</u>
KMR:	<u>687,161</u>

Percentage of total urban	<u>.657</u>
Percentage of total national	<u>.314</u>

- Trend Analysis (KMR)
 - of total urban in 1970 = .693
 - of total urban in 1982 = .657
 - .036

Percentage points lost in 12 years or 0.003 percentage points lost per year.
(KMR loses its predominance over the total urban).

- Trend Analysis of all urban areas
 - of total national in 1970 = .412
 - of total national in 1982 = .478
 - .066

Percentage points gained in 12 years or 0.006 percentage points gained per year.
(all urban areas gain predominance over the total national).

¹ In 1982 Census, Population Census 1982, Volume I (Housing), Statistical Institute of Jamaica (STATIN), Analysis based on "total" population.

Population projections for housing needs estimates reflect population in private dwellings only.

Total population in 1970 =	1,813,594
non-private population =	21,574 ²
private population =	<u>1,792,020</u>

Total population in 1982 =	2,190,357
non-private population =	22,695 ³
private population =	<u>2,167,662</u>

It is assumed that the share non-private population will remain constant throughout the projection period.

Total population for 1985 was taken from STATIN⁴, this number was reduced by applying the resulting number of non-private populations, at the rate indicated above.

Table I shows the figures used to arrive at our Base Year 1986.

2 Rate 0.042 percent.

3 Ibid.

4 Population projections Jamaica 1980-2015, the Statistical Institute of Jamaica.

POPULATION TRENDS IN JAMAICA
(ADJUSTED FOR PRIVATE POPULATION)

TABLE I

YEAR	TOTAL	AAGR	ALL URBAN AREAS	AAGR	KMR	AAGR	OTHER URBAN	AAGR	RURAL	AAGR
1970	1,792,020		738,312 (.412)		511,650 TN(.286) TU(.693)		226,662 (.126) (.307)		1,053,708 (.588)	
1982	2,167,662	1.60	1,036,142 (.478)	2.86	680,745 TN(.314) TU(.657)	2.41	355,397 (.164) (.343)	3.82	1,131,520 (.522)	0.60
1985	2,280,318	1.70	1,131,038 (.496)	2.96	732,913 TU(.648)	2.49	398,125 (.352)	3.86	1,149,280 (.504)	0.52
1986 Base Year	2,314,523	1.50	1,161,890 (.502)	2.73	749,419 TU(.645)	2.25	412,471 (.355)	3.60	1,152,633 (.498)	0.29

AAGR=Average Annual Growth Rate
KMR =Includes Portmore and Spanish Town
TN =Percentage of total national
TU =Percentage of total urban

1986-2006 Projection Methodology:

- Total population growth rates were taken from STATIN's Medium Projection⁵ for 1985-90-95-2000-2005 and applied to our own-(1986-91-96-2001 and 2006)-years⁶.
- Regional population disaggregation was obtained from percentage shares of total national and urban as estimated by trend analysis.

The projections presented in Table II are based on the following assumptions:

- The growth rates of population decrease in all regions during the projection period.
- The national rate of growth decreases from 1.43 to 0.98 during the projection period, averaging 1.15 percent.
- Population in urban areas grow at a higher rate than the national total;
- Rural population grows at a slower rate than the national total;
- The KMR population grows at a slower rate than all the urban areas and loses predominance over the urban total;
- All other urban areas grow at a higher rate than all urban areas and increase their predominance over the urban total.

These assumptions are consistent with STATIN projections and past trends.

5 Ibid 4, Page 7.

6 Adjusted for private population.

**POPULATION PROJECTION
(ADJUSTED FOR PRIVATE POPULATION)**

TABLE II

YEAR	TOTAL	AAGR	ALL URBAN AREAS	AAGR	KMR	AAGR	OTHER URBAN	AAGR	RURAL	AAGR
1986	2,314,523		1,161,890 (.502)		749,419 TN(.324) TU(.645)		412,471 (.178) (.355)		1,152,633 (.498)	
1991	2,484,812	1.43	1,311,369 (.528)	2.45	832,719 (.335) (.635)	2.13	478,650 (.193) (.365)	3.02	1,173,443 (.472)	0.36
1996	2,642,739	1.24	1,449,277 (.548)	2.02	905,798 (.343) (.625)	1.70	543,479 (.205) (.375)	2.57	1,193,462 (.452)	0.34
2001	2,770,677	0.95	1,562,822 (.564)	1.52	961,136 (.347) (.615)	1.19	601,686 (.217) (.385)	2.05	1,207,855 (.436)	0.24
2006	2,909,127	0.98	1,689,417 (.581)	1.57	1,030,544 (.354) (.610)	1.40	658,873 (.226) (.390)	1.83	1,219,710 (.419)	0.19

AAGR=Average Annual Growth Rate
 KMR=Includes Portmore and Spanish Town
 TN=Percentage of total national
 TU=Percentage of total urban

12/8

2. HOUSEHOLD SIZE (of Private Households)

TABLE III

1982

	<u>Population in Private Dwellings</u>	<u>Private Households</u>	<u>Average Number Persons Per Household</u>
Jamaica	2,167,662	517,297	4.1904
KMR*	519,155	135,426	3.8335
Other U	510,701	122,060	4.1840
Rural	1,137,806	259,811	4.3794

Source: 1982 Census
Regional Disaggregation obtained from Mrs. Anderson (STATIN) (to Janet Kerley HNA of October 1985).

*KMR=KMA

(narrowly defined in the 1982 Census as Kingston and Urban St. Andrew only)

Household size adjusted for broad definition of KMR to include Spanish Town and Portmore. It is assumed that these cities' population contain the same HH size as KMA.

TABLE IV

1982

	<u>Population in Private Dwellings</u>	<u>Private Households</u>	<u>Average HH Size</u>
Jamaica	2,167,662	517,297	4.20
KMR	680,1667	177,465 ⁸	3.83
Other U	349,6909	80,021 ¹⁰	4.37 ¹¹
Rural	1,137,806	259,811	4.38

Methodology:

$$\frac{\text{KMR (1982) Private Population}}{\text{KMR (1982) Total Population}} = \frac{680,745}{687,161} = 0.9907 \text{ (ratio)}$$

$$\text{(S.T. and P. population) x (ratio)} = 162,523 \times 0.9907 = 161,011$$

$$\text{Spanish Town and Portmore's private population } \frac{161,011}{3.83} = 42,039$$

$$7 \quad 519,155 + 161,011 = 680,166$$

$$8 \quad 135,426 + 42,039 = 177,465$$

$$9 \quad 510,701 - 161,011 = 349,690$$

$$10 \quad 122,060 - 42,039 = 80,021$$

$$11 \quad \text{Adjusted Other Urban Household Size}$$

3. EXISTING STOCK

Estimate of existing stock and necessary dwellings in 1986.

TABLE V

	1986		(HH's)
	<u>Population</u>	<u>H.H. Size</u>	<u>Households</u>
KMR (Metro)	749,419	3.83	195,670
Urban	412,471	4.37	94,387
Rural	1,152,633	4.38	263,158

TABLE VI
OVERCROWDING INDEX

	1982		
	<u>Private HH's</u>	<u>Private Dwellings</u> ¹²	<u>Overcrowding Index</u> ¹³
KMA ¹⁴	135,426	131,773	1.0277
Urban	122,060	119,591	1.0206
Rural	259,811	257,346	1.0096

Methodology to revise overcrowding index adjusted for new (broader) definition of KMA=KMR, assumes the same average index for Spanish Town (S.T.) and Portmore (P).

- S.T. + P households (42,039) divided by 1.0277 = 40,905.9 dwellings in S.T. + P.
- Necessary dwellings to reduce/eliminate overcrowding in S.T. + P = 42,039-40,905.9 = 1,133.

1982

Revised Urban HH's (80,021)

Total Urban Dwellings (119,591)-S.T. and P. Dwelling (40,906)

$$= \frac{80,021}{78,685} = 1.0170 \quad \text{Revised overcrowded index for other urban areas.}$$

1982 necessary units to eliminate overcrowding in urban.

$$\begin{array}{r} 80,021 \\ - 78,685 \\ \hline 1,336 \end{array}$$

1982 necessary units to eliminate overcrowding in KMR.

$$\frac{177,465}{1.0277} = 172,681 \text{ (existing stock)}$$

$$177,465 - 172,681 = \underline{4,784}$$

12 Breakdown by Mrs. Anderson (STATIN) to Janeth Kerley, HNA, Oct. 1985..

13 Number of household per dwelling.

14 Narrow definition

TABLE VII

1986

	<u>HH's</u>	<u>Overcrowding Ratio/Index¹⁵</u>	<u>Stock</u>
Metro	195,670	% 1.0277 =	190,396
Urban	94,387	% 1.0170 =	92,809
Rural	263,158	% 1.0096 =	260,655

Necessary units to eliminate overcrowding.

Metro	195,670 - 190,396 = 5,274
Urban	94,387 - 92,809 = 1,578
Rural	263,158 - 260,655 = 2,503
National Total:	9,355

15 See Methodology on previous pages.

4. BREAKDOWN OF HOUSING STOCK QUALITY
(thousands)

TABLE VIII

	<u>METRO</u>	<u>PERCENT</u>	<u>URBAN</u>	<u>PERCENT</u>	<u>RURAL</u>	<u>PERCENT</u>	<u>TOTAL</u>
Non-UPG	15.2	TNU. (57) TM (8)	3.7	TNU (14) TU (4)	7.8	TNU (29) TR (3)	26.7 TN (5)
Upgradeab	9.5	TUP. (5) TM (5)	17.6	TUP (9) TU (19)	166.8	TUP (86) TR (64)	194.0 TN (36)
Acceptable	165.6	TA (51) TM (87)	71.5	TA. (22) TU (77)	86.0	TA (27) TR (33)	323.1 TN (59)
TOTAL	190.4	TN (35)	92.8	TN (17)	260.6	TN (48)	543.8

TNU - Percentage of total non-upgradeable.
 TM - Percentage of total metro.
 TU - Percentage of total urban.
 TR - Percentage of total rural.
 TUP - Percentage of total upgradeable.
 TA - Percentage of total acceptable.
 TN - Percentage of total national.

16 Assumptions for deriving these estimates are discussed in the body of the report.

TABLE IX
ESTIMATE OF THE NUMBER OF EXISTING, NECESSARY,
UPGRADEABLE AND NON-UPGRADEABLE PRIVATE DWELLINGS AND
HOUSING DEFICIT BY REGION IN 1986

<u>Region</u>	<u>Existing Stock</u> (1)=3+4+5	<u>Necessary Dwellings</u> (2)	<u>Adequate Stock</u> (3)	<u>Upgradeable</u> (4)	<u>Non- Upgradeable</u> (5)	<u>Overcrowded Needs</u> 2-1=(6)	<u>Deficit</u> 5+6=(7)
KMR	190,396	195,670	165,600	9,500	15,200	5,274	20,474
Other							
Urban	92,809	94,387	71,500	17,600	3,700	1,578	5,278
Rural	260,655	263,158	86,000	166,800	7,800	2,503	10,303
Country	543,860	553,215	323,100	194,000	26,700	9,355	36,055

5. ANNUAL CONSTRUCTION TO ELIMINATE OVERCROWDING (1986)**TABLE X**

- Assumes that necessary units to eliminate overcrowding are built at a rate of 5% (over a 20-year period).

KMR $5,274/20 = 263.70$ per year

URBAN $1,578/20 = 78.90$ per year

RURAL $2,503/20 = 125.15$ per year

6. UNITS TO BE UPGRADED ANNUALLY (1986)

TABLE XI

- Assumes that total upgradeable stock of 1986 is upgraded in 20 years (at a 5% rate)

KMR	$9,500/20 =$	475 per year
URBAN	$17,600/20 =$	880 per year
RURAL	$166,800/20 =$	8,340 per year

7. ANNUAL CONSTRUCTION TO REPLACE NON-UPGRADEABLE UNITS**TABLE XII**

- Assumes that total non-upgradeable stock of 1986 is replaced at a rate of 5% per year (in 20 years)

KMR	$15,200/20 = 760$ per year
URBAN	$3,700/20 = 185$ per year
RURAL	$7,800/20 = 390$ per year

8. AVERAGE ANNUAL HOUSEHOLD INCOME¹⁷

1984

KINGSTON METRO REGION:18	15,451.96
OTHER TOWNS	13,500.54
RURAL AREA	10,108.07

Methodology - Estimate of average annual household incomes of 1986.

KMR: 15.45	+ (- 3.7% GDP of 1985)	= 14.88
	+ (+25.7% INFLAT of 1985)	= 18.70
	+ (-4.0% GDP of 1986)	= 17.95
	+ (+15.0% INFLAT of 1986)	= 20.64
URBAN: 13.50	+ (-3.7)	=
	+ (+25.7)	=
	+ (-4)	=
	+ (+15)	= 18.04
RURAL: 10.10	+ (-3.7)	=
	+ (+25.7)	=
	+ (-4)	=
	+ (+15)	= 13.50

Accuracy Check:

KMA = 20,64 x number of HH's (177,465)	= 3,662.8 (millions)
URBAN = 18,04 x number of HH's (80,021)	= 1,443.6
RURAL = 13,50 x number of HH's (259,811)	= <u>3,507.4</u>
Total	= 8,613.8
Private Consumption ¹⁹	= 8,482.8

17 Source: 1984 Household Expenditure Survey, Unpublished Tables made available by Dr. Murthy and Dr. James, Statistical Institute of Jamaica (STATIN), November 1986.

18 KMR incomes include Spanish Town and Portmore.

19 From Quarterly Economic Report, Planning Institute of Jamaica (PIOJ), Volume 3, No.1, September 1986.

9. INCOME SHARES BY QUINTILE²⁰

TABLE XIII

<u>REGIONS</u>	<u>GINI COEFF. OF INCOME INEQUALITY</u>	<u>YEARS</u>	<u>PERCENTAGE SHARE OF INCOME ACCRUING TO GROUPS OF HOUSEHOLDS</u>				
			<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>Q5</u>
KMR	0.3944	1984	4.41	10.23	16.04	23.85	45.48
URBAN	0.3881	1984	4.92	10.24	15.48	24.21	45.15
RURAL	0.4142	1984	4.28	9.69	15.07	23.37	47.59

- Note: The GINI coefficient (Ratio) (GR) varies from 0 (perfect equality) to 1.0 (perfect inequality), and the smaller the GR, the nearer the income distribution to perfect equality.
- Historical trends:²¹ "The GINI coefficient estimated for Jamaica based on 1958 data, was 0.5766. This came down to 0.4452 in 1975 indicating that there was relatively greater equalitarian distribution of income by 1975. In other words, the economic development that had taken place after 1958 and up to 1975 and the state policies during this period, had the effect of reducing the overall income inequalities in the country."
- Statistical evidence suggests that incomes may have become even more equally distributed over the last 10 years, but it seems improbable that such a trend can persist in the future without substantial reductions in unemployment. Therefore, we assume that the income distribution remains essentially unchanged for the next two decades.

20 Household Expenditure Survey, Report on Household Expenditure Surveys 1975-1977; and Household Expenditure Survey of 1984-unpublished tables, the Statistical Institute of Jamaica.

21 Source: Household Expenditures Surveys 1975-1977 (STATIN) p.64.

10. SHARE OF INCOME DEVOTED TO HOUSING**TABLE XIV
(PERCENT)**

	METRO	URBAN	RURAL
Q1	30	30	25
Q2	30	30	25
Q3	28	28	22
Q4	25	25	20
Q5	25	25	20

The assumptions used to derive these estimates are discussed in the body of the report.

11. RECURRING EXPENDITURES

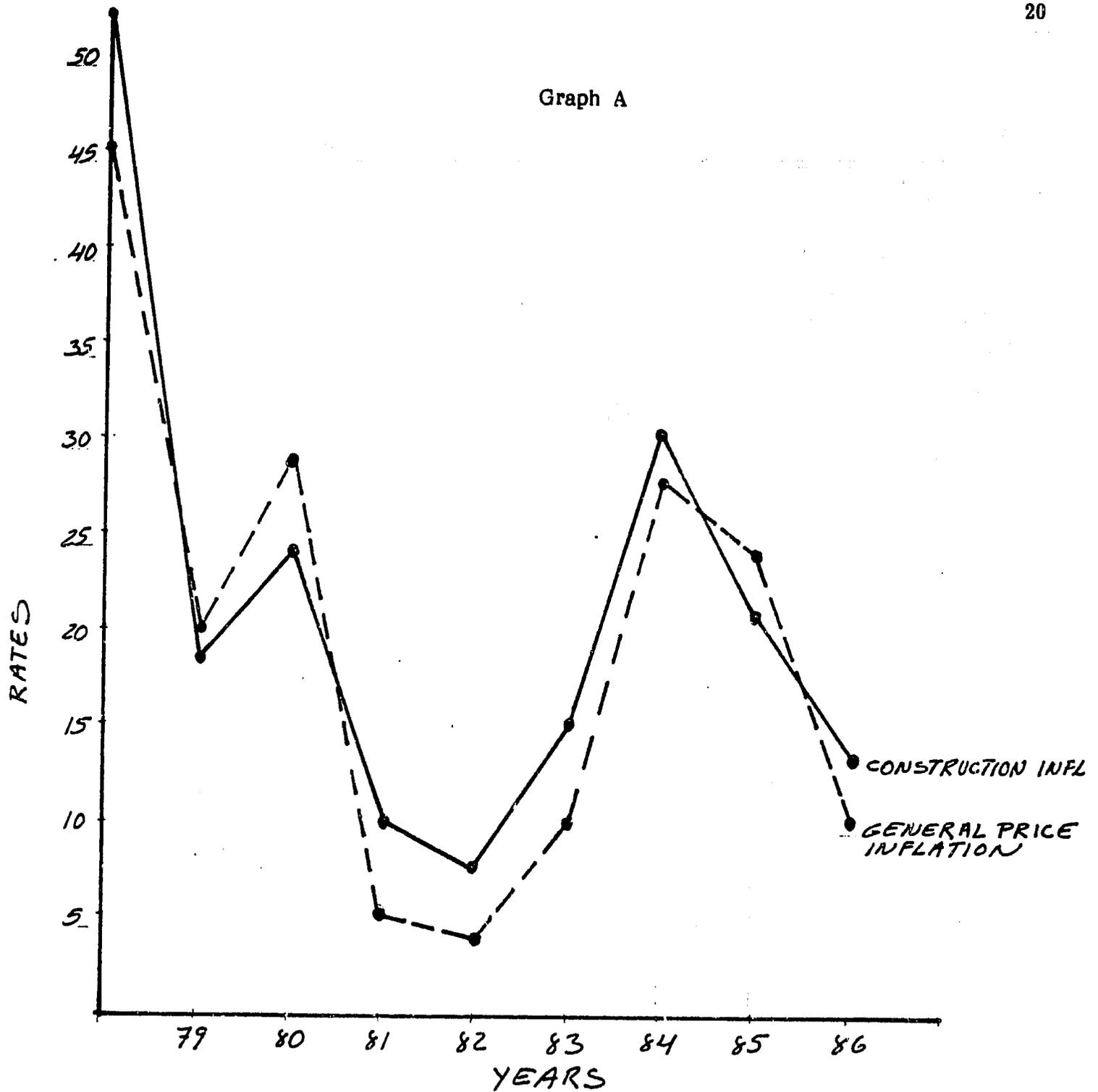
Because little reliable information is available on housing expense to income ratios, we set the share of housing expenditures that is devoted to recurring at zero.

12. GENERAL PRICE INFLATION AND CONSTRUCTION INFLATION

Trend Analysis in Graph A show that for the past eight years, General Price Inflation and Construction Inflation's rates of growth, have maintained an almost parallel behavior. Our analysis, assumes therefore, that over the next 20 years, real capacity to pay for housing will neither be eroded nor improved by differential inflation rates.

24 Dr. Murthy, STATIN.

25 Requested from Shirley Pryor, the Nutrition Economics Group, USDA, Washington DC



Source: From 1979 to 1981, from World Bank, Economic Prospects P.4-P.17; from 1981 to 1985, from Socio-Economic Surveys, PIOJ. Construction cost inflation according to Brian Goldson: "Trends in Housing Costs", Master-builder Magazine.

13. GROSS DOMESTIC PRODUCT (GDP)

The Planning Institute of Jamaica²⁶ (PIOJ) estimates (under a moderate growth scenario*) GDP in current values for 1986/1987 at J\$(million) 13,734.7.

Unpublished World Bank 5-year projections estimate a lower** GDP growth rate (under their moderate growth scenario)²⁷. We have taken the average figure under these two preliminary estimates and used J\$13,117.20 million for our Base Years' GDP in current values.

- GDP Growth Rates: Our long-term projection takes the average of World Bank's moderate scenario for the first five year period and then assumes an optimistic performance about future GDP growth rates. The growth rates presented in data input tables are consistent with Jamaica's pre-1974 economic performance.²⁸

14. RURAL SHARE OF TOTAL GDP

The Planning Institute of Jamaica²⁹ estimates Agriculture, Forestry and Fishing (for 1985) percentage contribution to Gross Domestic Product at 8.8 percent. Recent agriculture sector performance has increased (as measured by its percentage share of total output) from 7.6 percent in 1982 to 8.8 percent in 1985. This increase may reflect a drop in outputs of other sectors and not necessarily an increase in agricultural production.

However, the role of this variable in the simulations is to determine the share of total income going to rural households. Since the share of rural population is projected to decline, it seems unreasonable to expect the remaining rural households to drain an increasing share of total income. Therefore, we experimented with different trends in the rural share of GDP to arrive at values that kept income trends roughly comparable for households in all three sectors.

15. HOUSING TOTAL INVESTMENT, PUBLIC EXPENDITURES AND DECAY RATES

Preliminary research³⁰ shows that both private and public (formal) institutional investment in Housing for 1986 is estimated at \$130 million Jamaican dollars.

26 Quarterly Economic Report Published by the Planning Institute of Jamaica, Volume 3, No.1 September 1986, p.8, Table 1.1. (*Real GDP growth rate + 2.0).

27 World Bank projections unpublished tables; Source Michael McLindon USAID/Jamaica, (**Real GDP growth rate -4.0).

28 World Bank: Development Issues and Economic Prospects, January 29, 1982. p.172

29 Economic and Social Survey Jamaica 1984 (PIOJ) Table 1.9, p.1.9.

30 Maureen Webber-Robert Merrill preliminary figures.

This amount does not take into account informal sector investment. (There is no source for the determination of this amount in Jamaica.)

Public Sector Capital Expenditures (from the same sources) indicate an approximate J\$30.0 million. Available sources do not show the subsidy component of this figure.

- Decay Rates: The official figure, used by Jamaicans in previous analysis is 1.0 percent, which assumes a building's life span of 100 years. Anecdotal evidence and trained observers suggest that the rate of replacement in Jamaica is in fact, very low.

Recent deterioration of urban housing stock suggest a higher decay rate for Metro and Urban Areas of 1.5 percent.

Complete data input tables - Scenario 1: 1986-2006

POPULATION
(Thousands)

		1	2	3
		METRO	URBAN	RURAL
A	1986	749.4	412.5	1152.6
B	1991	832.7	478.7	1173.4
C	1996	905.8	543.5	1193.5
D	2001	961.1	601.7	1207.9
E	2006	1030.5	658.9	1219.7

ROW LETTER ->
(X EXIT)

HOUSEHOLD SIZE

		1	2	3
		METRO	URBAN	RURAL
A	1986	3.83	4.37	4.38
B	1991	3.83	4.37	4.38
C	1996	3.83	4.37	4.38
D	2001	3.83	4.37	4.38
E	2006	3.83	4.37	4.38

ROW LETTER ->
(X EXIT)

BASE YEAR GDP & AVERAGE ANNUAL HOUSEHOLD INCOME

1
1986

A	Gross Domestic Product(M)	13117.20
B	Avg. Metro HH Income(K)	20.64
C	Avg. Urban HH Income(K)	18.04
D	Avg. Rural HH Income(K)	13.50

ROW LETTER ->
(X EXIT)

GDP GROWTH AND INFLATION .
(Percent)

	1	2	3	4	
	86/91	91/96	96/01	01/06	
A	Country GDP Real Growth	1.4	2.0	3.0	3.0
B	General Price Inflation	10.0	8.0	8.0	8.0
C	Construction Inflation	10.0	8.0	8.0	8.0

ROW LETTER ->
(X EXIT)

INCOME SHARES BY QUINTILE, METRO
(Percent)

		1	2	3	4	5
		Q1	Q2	Q3	Q4	Q5
A	1986	4.4	10.2	16.0	23.9	45.5
B	1991	4.4	10.2	16.0	23.9	45.5
C	1996	4.4	10.2	16.0	23.9	45.5
D	2001	4.4	10.2	16.0	23.9	45.5
E	2006	4.4	10.2	16.0	23.9	45.5

ROW LETTER ->
(X EXIT)

INCOME SHARES BY QUINTILE, OTHER URBAN
(Percent)

		1	2	3	4	5
		Q1	Q2	Q3	Q4	Q5
A	1986	4.9	10.2	15.5	24.2	45.2
B	1991	4.9	10.2	15.5	24.2	45.2
C	1996	4.9	10.2	15.5	24.2	45.2
D	2001	4.9	10.2	15.5	24.2	45.2
E	2006	4.9	10.2	15.5	24.2	45.2

ROW LETTER ->
(X EXIT)

INCOME SHARES BY QUINTILE, RURAL
(Percent)

		1 Q1	2 Q2	3 Q3	4 Q4	5 Q5
A	1986	4.3	9.7	15.1	23.4	47.6
B	1991	4.3	9.7	15.1	23.4	47.6
C	1996	4.3	9.7	15.1	23.4	47.6
D	2001	4.3	9.7	15.1	23.4	47.6
E	2006	4.3	9.7	15.1	23.4	47.6

ROW LETTER ->
(X EXIT)

RURAL SHARE OF TOTAL GDP
(Percent)

		1 (%)
A	1986	9.0
B	1991	8.2
C	1996	7.6
D	2001	7.1
E	2006	6.6

ROW LETTER ->
(X EXIT)

SHARE OF HOUSEHOLD INCOME DEVOTED TO HOUSING
(Percent)

		1	2	3
		METRO	URBAN	RURAL
A	Q1	30.0	30.0	25.0
B	Q2	30.0	30.0	25.0
C	Q3	28.0	28.0	22.0
D	Q4	25.0	25.0	20.0
E	Q5	25.0	25.0	20.0

ROW LETTER ->
(X EXIT)

SHARE OF HOUSING EXPENDITURES DEVOTED TO RECURRING EXPENSES
(Percent)

		1	2	3
		METRO	URBAN	RURAL
A	Q1	0.0	0.0	0.0
B	Q2	0.0	0.0	0.0
C	Q3	0.0	0.0	0.0
D	Q4	0.0	0.0	0.0
E	Q5	0.0	0.0	0.0

ROW LETTER ->
(X EXIT)

HOUSING STOCK IN BASE YEAR
(Thousands)

		1	2	3
		METRO	URBAN	RURAL
A	Non-Upgradable	15.2	3.7	7.8
B	Upgradable	9.5	17.6	166.8
C	Acceptable	165.6	71.5	86.0

ROW LETTER ->
(X EXIT)

HOUSING TOTAL INVESTMENT, PUBLIC EXPENDITURES, AND DECAY RATE

	1
	1986
A Total Housing Invstmt (M)	130.00
B Public Capital Expend (M)	60.00
C Accpt Decay Rt, M / U (%)	1.50
D Upgrd Decay Rt, M / U (%)	0.00
E Accpt Decay Rt, Rural (%)	1.00
F Upgrd Decay Rt, Rural (%)	0.00

ROW LETTER ->
(X EXIT)

ANNUAL CONSTRUCTION TO REDUCE OVERCROWDING
(Thousands)

		1	2	3
		METRO	URBAN	RURAL
A	1986 / 1991	0.264	0.079	0.125
B	1991 / 1996	0.264	0.079	0.125
C	1996 / 2001	0.264	0.079	0.125
D	2001 / 2006	0.264	0.079	0.125

ROW LETTER ->
(X EXIT)

NUMBER TO BE UPGRADED ANNUALLY & UNIT VALUE BEFORE UPGRADING
(Thousands)

		1	2	3
		METRO	URBAN	RURAL
A	1986 / 1991	0.476	0.882	8.314
B	1991 / 1996	0.476	0.882	8.314
C	1996 / 2001	0.476	0.882	8.314
D	2001 / 2006	0.476	0.882	8.314
E	Value Before Upgrade (K)	15.000	15.000	7.000

ROW LETTER ->
(X EXIT)

ANNUAL CONSTRUCTION TO REPLACE NON-UPGRADABLE UNITS
(Thousands)

		1	2	3
		METRO	URBAN	RURAL
A	1986 / 1991	0.760	0.185	0.390
B	1991 / 1996	0.760	0.185	0.390
C	1996 / 2001	0.760	0.185	0.390
D	2001 / 2006	0.760	0.185	0.390

ROW LETTER ->
(X EXIT)

CONSTRUCTION COST IN BASE YEAR

		1	2	3
		METRO	URBAN	RURAL
A	Upgrade (K)	11.0	11.0	7.0
B	Core House (K)	56.0	56.0	56.0
C	Standard House (K)	85.7	85.7	85.7

ROW LETTER ->
(X EXIT)

TERMS OF HOUSING FINANCE, METRO

	1	2	3	4	5
	Q1	Q2	Q3	Q4	Q5
Interest Rate (%)	6.0	8.0	10.0	12.0	17.0
B Loan Term (years)	30.0	30.0	30.0	25.0	25.0
C Downpayment Share (%)	5.0	5.0	5.0	10.0	10.0
D Graduation Rate (%)	0.0	0.0	0.0	0.0	0.0
E Graduation Period (years)	0.0	0.0	0.0	0.0	0.0

ROW LETTER ->
(X EXIT)

TERMS OF HOUSING FINANCE, OTHER URBAN

	1	2	3	4	5
	Q1	Q2	Q3	Q4	Q5
A Interest Rate (%)	6.0	8.0	10.0	12.0	17.0
B Loan Term (years)	30.0	30.0	30.0	25.0	25.0
C Downpayment Share (%)	5.0	5.0	5.0	10.0	10.0
D Graduation Rate (%)	0.0	0.0	0.0	0.0	0.0
E Graduation Period (years)	0.0	0.0	0.0	0.0	0.0

ROW LETTER ->
(X EXIT)

TERMS OF HOUSING FINANCE, RURAL

	1	2	3	4	5
	Q1	Q2	Q3	Q4	Q5
A Interest Rate (%)	6.0	8.0	10.0	12.0	17.0
B Loan Term (years)	30.0	30.0	30.0	25.0	25.0
C Downpayment Share (%)	5.0	5.0	5.0	10.0	10.0
D Graduation Rate (%)	0.0	0.0	0.0	0.0	0.0
E Graduation Period (years)	0.0	0.0	0.0	0.0	0.0

ROW LETTER ->
(X EXIT)

Construction Cost Inputs for Scenarios Two and Three

Note: All other inputs are the same as for scenario one

CONSTRUCTION COST IN BASE YEAR

	1	2	3
	METRO	URBAN	RURAL
Upgrade (K)	9.0	9.0	7.0
Core House (K)	26.0	26.0	18.0
Standard House (K)	85.7	85.7	85.7

ROW LETTER ->
(X EXIT)

CONSTRUCTION COST IN BASE YEAR

	1	2	3
	METRO	URBAN	RURAL
A Upgrade (K)	7.0	7.0	5.0
B Core House (K)	16.0	16.0	8.0
C Standard House (K)	56.0	56.0	56.0

ROW LETTER ->
(X EXIT)

Model Input Tables for 1986-1990 Simulations

Note: Tables that are the same for the 1986-2006 simulations are not repeated here. These tables apply to all three scenarios.

POPULATION
(Thousands)

	1	2	3
	METRO	URBAN	RURAL
1986	749.4	412.5	1152.6
1987	765.7	425.2	1158.0
1988	782.2	438.1	1163.1
1989	798.9	451.3	1168.0
1990	815.7	464.8	1172.6

ROW LETTER ->
(X EXIT)

HOUSEHOLD SIZE

	1	2	3
	METRO	URBAN	RURAL
1986	3.83	4.37	4.38
1987	3.83	4.37	4.38
1988	3.83	4.37	4.38
1989	3.83	4.37	4.38
1990	3.83	4.37	4.38

A
B
C
D
E

ROW LETTER ->
(X EXIT)

GDP GROWTH AND INFLATION
(Percent)

	1	2	3	4
	86/87	87/88	88/89	89/90
A Country GDP Real Growth	0.0	1.0	2.0	2.5
B General Price Inflation	10.0	10.0	10.0	10.0
C Construction Inflation	10.0	10.0	10.0	10.0

ROW LETTER ->
(X EXIT)

INCOME SHARES BY QUINTILE, METRO
(Percent)

		1	2	3	4	5
		Q1	Q2	Q3	Q4	Q5
A	1986	4.4	10.2	16.0	23.9	45.5
B	1987	4.4	10.2	16.0	23.9	45.5
C	1988	4.4	10.2	16.0	23.9	45.5
D	1989	4.4	10.2	16.0	23.9	45.5
E	1990	4.4	10.2	16.0	23.9	45.5

ROW LETTER ->
(X EXIT)

INCOME SHARES BY QUINTILE, OTHER URBAN
(Percent)

		1	2	3	4	5
		Q1	Q2	Q3	Q4	Q5
A	1986	4.9	10.2	15.5	24.2	45.2
B	1987	4.9	10.2	15.5	24.2	45.2
C	1988	4.9	10.2	15.5	24.2	45.2
D	1989	4.9	10.2	15.5	24.2	45.2
E	1990	4.9	10.2	15.5	24.2	45.2

ROW LETTER ->
(X EXIT)

INCOME SHARES BY QUINTILE, RURAL
(Percent)

		1	2	3	4	5
		Q1	Q2	Q3	Q4	Q5
A	1986	4.3	9.7	15.1	23.4	47.6
B	1987	4.3	9.7	15.1	23.4	47.6
C	1988	4.3	9.7	15.1	23.4	47.6
D	1989	4.3	9.7	15.1	23.4	47.6
E	1990	4.3	9.7	15.1	23.4	47.6

ROW LETTER ->
(X EXIT)

ANNUAL CONSTRUCTION TO REDUCE OVERCROWDING
(Thousands)

		1	2	3
		METRO	URBAN	RURAL
A	1986 / 1987	0.264	0.079	0.125
B	1987 / 1988	0.264	0.079	0.125
C	1988 / 1989	0.264	0.079	0.125
D	1989 / 1990	0.264	0.079	0.125

ROW LETTER ->
(X EXIT)

NUMBER TO BE UPGRADED ANNUALLY & UNIT VALUE BEFORE UPGRADING
(Thousands)

		1	2	3
		METRO	URBAN	RURAL
A	1986 / 1987	0.476	0.882	8.314
B	1987 / 1988	0.476	0.882	8.314
C	1988 / 1989	0.476	0.882	8.314
D	1989 / 1990	0.476	0.882	8.314
E	Value Before Upgrade (K)	15.000	15.000	7.000

ROW LETTER ->
(X EXIT)

ANNUAL CONSTRUCTION TO REPLACE NON-UPGRADABLE UNITS
(Thousands)

	1	2	3
	METRO	URBAN	RURAL
1986 / 1987	0.760	0.185	0.390
1987 / 1988	0.760	0.185	0.390
1988 / 1989	0.760	0.185	0.390
1989 / 1990	0.760	0.185	0.390

ROW LETTER ->
(X EXIT)

ANNEX C

**HOUSING NEEDS ASSESSMENT
MODEL OUTPUTS**

Complete Model Output Tables for Scenario 1: 1986-2006

JAMAICA -- SCENARIO ONE
POPULATION AND HOUSEHOLD FORMATION

	1986 -----	1991 -----	1996 -----	2001 -----	2006 -----
Metropolitan Area					
Population	749.42	832.72	905.80	961.14	1030.54
Annual Growth Rate (%)	0.00	2.13	1.70	1.19	1.40
Average Household Size	3.83	3.83	3.83	3.83	3.83
Total Households	195.67	217.42	236.50	250.95	269.07
New Households per Year	0.00	4.35	3.82	2.89	3.62
Other Urban Areas					
Population	412.47	478.65	543.48	601.69	658.87
Annual Growth Rate (%)	0.00	3.02	2.57	2.06	1.83
Average Household Size	4.37	4.37	4.37	4.37	4.37
Total Households	94.39	109.53	124.37	137.69	150.77
New Households per Year	0.00	3.03	2.97	2.66	2.62
Rural Areas					
Population	1152.63	1173.44	1193.46	1207.86	1219.71
Annual Growth Rate (%)	0.00	0.36	0.34	0.24	0.20
Average Household Size	4.38	4.38	4.38	4.38	4.38
Total Households	263.16	267.91	272.48	275.77	278.47
New Households per Year	0.00	0.95	0.91	0.66	0.54
Country					
Population	2314.52	2484.81	2642.74	2770.68	2909.13
Annual Growth Rate (%)	0.00	1.43	1.24	0.95	0.98
Average Household Size	4.18	4.18	4.17	4.17	4.17
Total Households	553.22	594.86	633.35	664.40	698.32
New Households per Year	0.00	8.33	7.70	6.21	6.78

JAMAICA -- SCENARIO ONE
NATIONAL AND HOUSEHOLD INCOME

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
National Income (constant units)					
GDP (millions of units)	13117.20	14061.48	15525.01	17997.74	20864.31
GDP Ann. Growth Rate (%)	0.00	1.40	2.00	3.00	3.00
Rural GDP (millions)	1180.55	1153.04	1179.90	1277.84	1377.04
Metro & Urban GDP (mill)	11936.65	12908.44	14345.11	16719.90	19487.26
Metropolitan Area					
Mean Annual Income					
All Households (1,000s)	20.64	20.09	20.52	22.54	24.50
Annual Growth Rate of Mean Household Income (%)	0.00	-0.54	0.43	1.90	1.68
Quintile Mean Incomes (1,000s)					
1	4.55	4.42	4.51	4.96	5.39
2	10.56	10.24	10.47	11.50	12.50
3	16.55	16.07	16.42	18.03	19.60
4	24.61	24.00	24.52	26.94	29.28
5	46.94	45.70	46.69	51.28	55.75
Other Urban Areas					
Mean Annual Income					
All Households (1,000s)	18.04	16.81	16.45	17.32	18.44
Annual Growth Rate of Mean Household Income (%)	0.00	-1.40	-0.43	1.03	1.26
Quintile Mean Incomes (1,000s)					
1	4.44	4.12	4.03	4.24	4.52
2	9.24	8.57	8.39	8.83	9.40
3	13.96	13.03	12.75	13.42	14.29
4	21.84	20.34	19.91	20.96	22.31
5	40.73	37.99	37.19	39.15	41.67
Rural Areas					
Mean Annual Income					
All Households (1,000s)	13.50	12.95	13.03	13.94	14.88
Annual Growth Rate of Mean Household Income (%)	0.00	-0.83	0.12	1.36	1.31
Quintile Mean Incomes (1,000s)					
1	2.89	2.78	2.80	3.00	3.20
2	6.54	6.28	6.32	6.76	7.22
3	10.17	9.78	9.84	10.53	11.24
4	15.77	15.15	15.25	16.32	17.41
5	32.12	30.82	31.01	33.19	35.42

JAMAICA -- SCENARIO ONE
DESIGN STANDARDS AND COSTS

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Average Inflation Rate(%)	0.00	10.00	8.00	8.00	8.00
Construction Cost Inflatn	0.00	10.00	8.00	8.00	8.00
 Metropolitan Area					
Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	56.00	56.00	56.00	56.00	56.00
Design Cost Upgrade Existing Unit (Level 1)	11.00	11.00	11.00	11.00	11.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00
 Other Urban Areas					
Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	56.00	56.00	56.00	56.00	56.00
Design Cost Upgrade Existing Unit (Level 1)	11.00	11.00	11.00	11.00	11.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00
 Rural Areas					
Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	56.00	56.00	56.00	56.00	56.00
Design Cost Upgrade Existing Unit (Level 1)	7.00	7.00	7.00	7.00	7.00
Value of an Upgradable Unit (Add to cost of upgrade)	7.00	7.00	7.00	7.00	7.00

JAMAICA -- SCENARIO ONE
HOUSING STOCK AND REPLACEMENT

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Metropolitan Area					
Dwelling Units by Construction Standard					
Acceptable Construction	165.64	194.89	221.47	243.42	269.04
(Annual Repl. for Decay)	0.00	2.48	2.92	3.32	3.65
Non-Upgradable Construct.	15.20	11.40	7.60	3.80	-0.00
(Annual Replacement)	0.00	0.76	0.76	0.76	0.76
Upgradable Construction	9.52	7.14	4.76	2.38	0.00
(Annual Upgrading)	0.00	0.48	0.48	0.48	0.48
Total Dwelling Units	190.36	213.43	233.83	249.60	269.04
Total Overcrowded Units	5.31	3.99	2.67	1.35	0.03
Annual Construction to					
Relieve Overcrowding	0.00	0.26	0.26	0.26	0.26
New Households/Year	0.00	4.35	3.82	2.85	3.62
Construction New Units/Yr	0.00	7.86	7.76	7.24	8.30
Total Construction/Year	0.00	8.33	8.24	7.71	8.78

Other Urban Areas					
Dwelling Units by Construction Standard					
Acceptable Construction	71.46	92.33	112.90	131.94	150.75
(Annual Repl. for Decay)	0.00	1.07	1.38	1.69	1.98
Non-Upgradable Construct.	3.70	2.78	1.85	0.93	0.00
(Annual Replacement)	0.00	0.19	0.19	0.19	0.19
Upgradable Construction	17.63	13.22	8.81	4.40	0.00
(Annual Upgrading)	0.00	0.88	0.88	0.88	0.88
Total Dwelling Units	92.79	108.33	123.56	137.27	150.75
Total Overcrowded Units	1.60	1.20	0.81	0.41	0.02
Annual Construction to					
Relieve Overcrowding	0.00	0.08	0.08	0.08	0.08
New Households/Year	0.00	3.03	2.97	2.66	2.62
Construction New Units/Yr	0.00	4.36	4.62	4.62	4.86
Total Construction/Year	0.00	5.25	5.50	5.50	5.74

JAMAICA -- SCENARIO ONE
HOUSING STOCK AND REPLACEMENT (continued)

Rural Areas

Dwelling Units by Construction Standard

Acceptable Construction	86.02	134.91	183.63	231.06	277.91
(Annual Repl. for Decay)	0.00	0.86	1.35	1.84	2.31
Non-Upgradable Construct.	7.80	5.85	3.90	1.95	0.00
(Annual Replacement)	0.00	0.39	0.39	0.39	0.39
Upgradable Construction	166.82	125.25	83.68	42.11	0.54
(Annual Upgrading)	0.00	8.31	8.31	8.31	8.31
Total Dwelling Units	260.64	266.01	271.21	275.12	278.45
Total Overcrowded Units	2.52	1.90	1.27	0.65	0.02
Annual Construction to Relieve Overcrowding	0.00	0.13	0.13	0.13	0.13
New Households/Year	0.00	0.95	0.91	0.66	0.54
Construction New Units/Yr	0.00	2.33	2.78	3.01	3.37
Total Construction/Year	0.00	10.64	11.09	11.32	11.68

Country

New Construction/Year	0.00	14.55	15.16	14.87	16.53
Total Construction/Year	0.00	24.22	24.83	24.54	26.20

JAMAICA -- SCENARIO ONE
AFFORDABLE CAPITAL COSTS

Metropolitan Area

	--Q1--	--Q2--	--Q3--	--Q4--	--Q5--
Interest Rate (%)	6.00	8.00	10.00	12.00	17.00
Loan Term (years)	30	30	30	25	25
Downpayment Required (%)	5.00	5.00	5.00	10.00	10.00
Graduation Rate (%)	0.00	0.00	0.00	0.00	0.00
Graduation Period (years)	0	0	0	0	0
	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
(thousands of currency units)					
Quintile 1					
Mean Annual Income	4.55	4.42	4.51	4.96	5.39
% Available for Housing	30.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.11	0.11	0.11	0.12	0.13
Affordable Dwelling Cost	19.98	19.40	19.82	21.77	23.66
Quintile 2					
Mean Annual Income	10.56	10.24	10.47	11.50	12.50
% Available for Housing	30.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.26	0.26	0.26	0.29	0.31
Affordable Dwelling Cost	37.86	36.74	37.54	41.23	44.82
Quintile 3					
Mean Annual Income	16.55	16.07	16.42	18.03	19.60
% Available for Housing	28.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.39	0.37	0.38	0.42	0.46
Affordable Dwelling Cost	46.33	44.98	45.95	50.47	54.87
Quintile 4					
Mean Annual Income	24.61	24.00	24.52	26.94	29.28
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.51	0.50	0.51	0.56	0.61
Affordable Dwelling Cost	51.25	49.98	51.06	56.09	60.97
Quintile 5					
Mean Annual Income	46.94	45.70	46.69	51.28	55.75
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.98	0.95	0.97	1.07	1.16
Affordable Dwelling Cost	71.59	69.70	71.21	78.22	85.03

Other Urban Areas

	--Q1--	--Q2--	--Q3--	--Q4--	--Q5--
Interest Rate (%)	6.00	8.00	10.00	12.00	17.00
Loan Term (years)	30	30	30	25	25
Downpayment Required (%)	5.00	5.00	5.00	10.00	10.00
Graduation Rate (%)	0.00	0.00	0.00	0.00	0.00
Graduation Period (years)	0	0	0	0	0
	1986	1991	1996	2001	2006
	----	----	----	----	----
(thousands of currency units)					
Quintile 1					
Mean Annual Income	4.44	4.12	4.03	4.24	4.52
% Available for Housing	30.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.11	0.10	0.10	0.11	0.11
Affordable Dwelling Cost	19.48	18.08	17.69	18.63	19.83
Quintile 2					
Mean Annual Income	9.24	8.57	8.39	8.83	9.40
% Available for Housing	30.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.23	0.21	0.21	0.22	0.24
Affordable Dwelling Cost	33.13	30.75	30.10	31.68	33.72
Quintile 3					
Mean Annual Income	13.96	13.03	12.75	13.42	14.29
% Available for Housing	28.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.33	0.30	0.30	0.31	0.33
Affordable Dwelling Cost	39.08	36.46	35.69	37.57	39.99
Quintile 4					
Mean Annual Income	21.84	20.34	19.91	20.96	22.31
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.45	0.42	0.41	0.44	0.46
Affordable Dwelling Cost	45.47	42.35	41.45	43.64	46.45
Quintile 5					
Mean Annual Income	40.73	37.99	37.19	39.15	41.67
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.85	0.79	0.77	0.82	0.87
Affordable Dwelling Cost	62.12	57.95	56.72	59.71	63.55

Rural Areas

	--01-	--02-	--03-	--04-	--05-
Interest Rate (%)	6.00	8.00	10.00	12.00	17.00
Loan Term (years)	30	30	30	25	25
Downpayment Required (%)	5.00	5.00	5.00	10.00	10.00
Graduation Rate (%)	0.00	0.00	0.00	0.00	0.00
Graduation Period (years)	0	0	0	0	0

1986

1991

1996

2001

2006

(thousands of currency units)

Quintile 1

Mean Annual Income	2.89	2.78	2.80	3.00	3.20
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.06	0.06	0.06	0.06	0.07
	10.57	10.19	10.25	10.97	11.70

Quintile 2

Mean Annual Income	6.54	6.28	6.32	6.76	7.22
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.14	0.13	0.13	0.14	0.15
	19.55	18.77	18.89	20.21	21.57

Quintile 3

Mean Annual Income	10.17	9.78	9.84	10.53	11.24
% Available for Housing	22.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.19	0.18	0.18	0.19	0.21
	22.37	21.50	21.64	23.15	24.71

Quintile 4

Mean Annual Income	15.77	15.15	15.25	16.32	17.41
% Available for Housing	20.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.26	0.25	0.25	0.27	0.29
	26.28	25.24	25.40	27.18	29.00

Quintile 5

Mean Annual Income	32.12	30.82	31.01	33.19	35.42
% Available for Housing	20.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.54	0.51	0.52	0.55	0.59
	39.20	37.61	37.84	40.50	43.22

JAMAICA -- SCENARIO ONE
 AFFORDABLE COSTS BY INCOME CLASS AND REGION

	1986	1991	1996	2001	2006
	----	----	----	----	----
(thousands of currency units)					
Metropolitan Area					
Affordable Costs by Quintile					
1	19.98	19.40	19.82	21.77	23.66
2	37.86	36.74	37.54	41.23	44.82
3	46.33	44.98	45.95	50.47	54.87
4	51.25	49.98	51.06	56.09	60.97
5	71.59	69.70	71.21	78.22	85.03

Other Urban Areas

Affordable Costs by Quintile

1	19.48	18.08	17.69	18.63	19.83
2	33.13	30.75	30.10	31.68	33.72
3	39.08	36.46	35.69	37.57	39.99
4	45.47	42.35	41.45	43.64	46.45
5	62.12	57.95	56.72	59.71	63.55

Rural Areas

Affordable Costs by Quintile

1	10.57	10.19	10.25	10.97	11.70
2	19.55	18.77	18.89	20.21	21.57
3	22.37	21.50	21.64	23.15	24.71
4	26.28	25.24	25.40	27.18	29.00
5	39.20	37.61	37.84	40.50	43.22

JAMAICA -- SCENARIO ONE
 QUINTILE DESIGN COSTS CLASSIFICATION

	1986 -----	1991 -----	1996 -----	2001 -----	2006 -----
Metropolitan Area					
Quintile 1					
Affordable Costs	19.98	19.40	19.82	21.77	23.66
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	37.86	36.74	37.54	41.23	44.82
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 3					
Affordable Costs	46.33	44.98	45.95	50.47	54.87
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 4					
Affordable Costs	51.25	49.98	51.06	56.09	60.97
Affordable Level	1	1	1	2	2
Design Cost	11.00	11.00	11.00	56.00	56.00
Quintile 5					
Affordable Costs	71.59	69.70	71.21	78.22	85.03
Affordable Level	2	2	2	2	2
Design Cost	56.00	56.00	56.00	56.00	56.00

JAMAICA -- SCENARIO ONE
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	1986 -----	1991 -----	1996 -----	2001 -----	2006 -----
Other Urban Areas					
Quintile 1					
Affordable Costs	19.48	18.08	17.69	18.63	19.83
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	33.13	30.75	30.10	31.68	33.72
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 3					
Affordable Costs	39.08	36.46	35.69	37.57	39.99
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 4					
Affordable Costs	45.47	42.35	41.45	43.64	46.45
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 5					
Affordable Costs	62.12	57.95	56.72	59.71	63.55
Affordable Level	2	2	2	2	2
Design Cost	56.00	56.00	56.00	56.00	56.00

JAMAICA -- SCENARIO ONE
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	1986 -----	1991 -----	1996 -----	2001 -----	2006 -----
Rural Areas					
Quintile 1					
Affordable Costs	10.57	10.19	10.25	10.97	11.70
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	19.55	18.77	18.89	20.21	21.57
Affordable Level	1	1	1	1	1
Design Cost	7.00	7.00	7.00	7.00	7.00
Quintile 3					
Affordable Costs	22.37	21.50	21.64	23.15	24.71
Affordable Level	1	1	1	1	1
Design Cost	7.00	7.00	7.00	7.00	7.00
Quintile 4					
Affordable Costs	26.28	25.24	25.40	27.18	29.00
Affordable Level	1	1	1	1	1
Design Cost	7.00	7.00	7.00	7.00	7.00
Quintile 5					
Affordable Costs	39.20	37.61	37.84	40.50	43.22
Affordable Level	1	1	1	1	1
Design Cost	7.00	7.00	7.00	7.00	7.00

JAMAICA -- SCENARIO ONE
 TARGET GROUP IDENTIFICATION

	1986	1991	1996	2001	2006
	----	----	----	----	----
(thousands of households)					
Metropolitan Area					
Affordable Level 0	0.00	1.67	1.65	1.54	1.76
Affordable Level 1	0.00	5.00	4.94	3.08	3.51
Affordable Level 2	0.00	1.67	1.65	3.08	3.51
Subtotal, Target Group	0.00	8.33	8.24	7.71	8.78
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	8.33	8.24	7.71	8.78
Other Urban Areas					
Affordable Level 0	0.00	1.05	1.10	1.10	1.15
Affordable Level 1	0.00	3.15	3.30	3.30	3.44
Affordable Level 2	0.00	1.05	1.10	1.10	1.15
Subtotal, Target Group	0.00	5.25	5.50	5.50	5.74
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	5.25	5.50	5.50	5.74
Rural Areas					
Affordable Level 0	0.00	2.13	2.22	2.26	2.34
Affordable Level 1	0.00	8.51	8.87	9.06	9.34
Affordable Level 2	0.00	0.00	0.00	0.00	0.00
Subtotal, Target Group	0.00	10.64	11.09	11.32	11.68
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	10.64	11.09	11.32	11.68

JAMAICA -- SCENARIO ONE
NUMBER OF HOUSEHOLDS REQUIRING SUBSIDY BY INCOME CLASS AND REGION

		1986	1991	1996	2001	2006
		-----	-----	-----	-----	-----
(thousands of households)						
Metropolitan Area						
	1	0.00	1.67	1.65	1.54	1.76
	2	0.00	1.57	1.55	1.45	1.66
	3	0.00	1.57	1.55	1.45	1.66
	4	0.00	1.57	1.55	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00
Other Urban Areas						
	1	0.00	1.05	1.10	1.10	1.15
	2	0.00	0.87	0.92	0.92	0.97
	3	0.00	0.87	0.92	0.92	0.97
	4	0.00	0.87	0.92	0.92	0.97
	5	0.00	0.00	0.00	0.00	0.00
Rural Areas						
	1	0.00	2.13	2.22	2.26	2.34
	2	0.00	0.47	0.56	0.60	0.67
	3	0.00	0.47	0.56	0.60	0.67
	4	0.00	0.47	0.56	0.60	0.67
	5	0.00	0.47	0.56	0.60	0.67

JAMAICA -- SCENARIO ONE
ANNUAL INVESTMENT FOR UPGRADING AND NEW CONSTRUCTION

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
(millions of currency units)					
Country					
Upgrading	0.00	171.97	172.81	188.36	204.57
New Construction	0.00	837.97	873.12	868.20	989.29
Total	0.00	1009.94	1045.93	1056.56	1193.86
Metropolitan Area					
Upgrading	0.00	14.51	14.92	16.85	18.72
New Construction	0.00	461.61	458.37	437.49	521.22
Total	0.00	476.12	473.30	454.34	539.94
Other Urban Areas					
Upgrading	0.00	20.90	20.27	21.80	23.73
New Construction	0.00	246.13	259.16	262.23	279.53
Total	0.00	267.02	279.43	284.03	303.26
Rural Areas					
Upgrading	0.00	136.57	137.62	149.71	162.11
New Construction	0.00	130.23	155.59	168.48	188.55
Total	0.00	266.80	293.20	318.19	350.66

JAMAICA -- SCENARIO ONE
 TARGET GROUP INVESTMENT AND SUBSIDY REQUIREMENTS

	1986	1991	1996	2001	2006
	----	----	----	----	----
Country					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	10.18	10.21	11.56	12.03
Requiring Subsidy	0.00	14.04	14.62	12.98	14.17
Total	0.00	24.22	24.83	24.54	26.20
Target Group Cost (millions)					
Subsidy Portion	0.00	284.59	300.11	266.20	261.80
Supported by Target Group	0.00	603.27	621.86	639.41	736.84
Total	0.00	887.86	921.97	905.61	998.64
Metropolitan Area					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	1.95	1.93	3.28	3.70
Requiring Subsidy	0.00	6.38	6.31	4.44	5.07
Total	0.00	8.33	8.24	7.71	8.78
Target Group Cost (millions)					
Subsidy Portion	0.00	115.21	108.71	79.32	74.35
Supported by Target Group	0.00	330.10	331.28	331.12	395.67
Total	0.00	445.31	439.99	410.44	470.02
Other Urban Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	1.58	1.63	1.63	1.68
Requiring Subsidy	0.00	3.67	3.87	3.87	4.06
Total	0.00	5.25	5.50	5.50	5.74
Target Group Cost (millions)					
Subsidy Portion	0.00	85.51	92.93	86.77	82.75
Supported by Target Group	0.00	168.61	175.27	181.72	199.12
Total	0.00	254.12	268.19	268.50	281.87
Rural Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	6.65	6.65	6.65	6.65
Requiring Subsidy	0.00	3.99	4.44	4.67	5.03
Total	0.00	10.64	11.09	11.32	11.68
Target Group Cost (millions)					
Subsidy Portion	0.00	83.87	98.48	100.12	104.70
Supported by Target Group	0.00	104.56	115.31	126.56	142.05
Total	0.00	188.43	213.79	226.68	246.75

JAMAICA -- SCENARIO ONE
HOUSING INVESTMENT IN RELATION TO GDP

	1986	1991	1996	2001	2006
	----	----	----	----	----
(millions of currency units)					
Country					
Total Housing Expenditure	2251.31	2356.94	2555.07	2916.44	3328.11
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	725.35	745.81	790.35	932.06
Subsidy Required	0.00	284.59	300.11	266.20	261.80
Total Housing Investment	0.00	1009.94	1045.93	1056.56	1193.86
Metropolitan Area					
Total Housing Expenditure	1058.76	1144.70	1272.11	1482.70	1728.11
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	360.91	364.58	375.02	465.59
Subsidy Required	0.00	115.21	108.71	79.32	74.35
Total Housing Investment	0.00	476.12	473.30	454.34	539.94
Other Urban Areas					
Total Housing Expenditure	446.50	482.81	536.54	625.36	728.87
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	181.52	186.50	197.25	220.51
Subsidy Required	0.00	85.51	92.93	86.77	82.75
Total Housing Investment	0.00	267.02	279.43	284.03	303.26
Rural Areas					
Total Housing Expenditure	746.05	729.43	746.42	808.38	871.14
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	182.93	194.73	218.08	245.96
Subsidy Required	0.00	83.87	98.48	100.12	104.70
Total Housing Investment	0.00	266.80	293.20	318.19	350.66
Total Housing Investment in the Base Year	130.00				
Subsidy as a Percent of Public Capital Expend.	0.00	442.47	422.61	323.36	274.32
Total Housing Investment as a Percent of GDP	0.99	7.18	6.74	5.87	5.72

JAMAICA -- SCENARIO ONE
COMPONENTS OF TARGET GROUP INVESTMENT

	1986	1991	1996	2001	2006
	----	----	----	----	----
(millions of currency units)					
Country					
Cost of Upgrading Existing Units	0.00	73.13	73.13	73.13	73.12
of which:					
Infrastructure component	0.00	36.57	36.57	36.57	36.56
Superstructure component	0.00	36.57	36.57	36.57	36.56
Cost of New Housing Unit	0.00	814.73	848.84	872.48	925.52
of which:					
Land Component	0.00	31.29	32.40	31.61	35.14
Infrastructure component	0.00	278.64	289.31	282.94	314.50
Superstructure component	0.00	504.80	527.13	517.92	575.88
Target Group Housing Cost	0.00	887.86	921.97	905.61	998.64
Metropolitan Area					
Cost of Upgrading Existing Units	0.00	5.24	5.24	5.24	5.24
of which:					
Infrastructure component	0.00	2.62	2.62	2.62	2.62
Superstructure component	0.00	2.62	2.62	2.62	2.62
Cost of New Housing Unit	0.00	440.07	434.76	405.20	464.78
of which:					
Land Component	0.00	17.60	17.39	16.21	18.59
Infrastructure component	0.00	154.03	152.16	141.82	162.67
Superstructure component	0.00	268.45	265.20	247.17	283.52
Target Group Housing Cost	0.00	445.31	439.99	410.44	470.02

JAMAICA -- SCENARIO ONE
SUMMARY OF HOUSING NEEDS AND INVESTMENT

	1986 -----	1991 -----	1996 -----	2001 -----	2006 -----
Country					
Population	2314.52	2484.81	2642.74	2770.68	2909.13
Construction New Units/Yr	0.00	14.55	15.16	14.87	16.53
Upgrades per Year	0.00	9.67	9.67	9.67	9.67
Total Construction/Year	0.00	24.22	24.83	24.54	26.20
HHS needing subsidy	0.00	14.04	14.62	12.98	14.17
Subsidy/year	0.00	284.59	300.11	266.20	261.80
Housing investment	0.00	1009.94	1045.93	1056.56	1193.86
Investment as pct of GDP	0.00	7.18	6.74	5.87	5.72
Subsidy as percent of PCE	0.00	442.47	422.61	323.36	274.32
Metropolitan Area					
Population	749.42	832.72	905.80	961.14	1030.54
Construction New Units/Yr	0.00	7.86	7.76	7.24	8.30
Upgrades per Year	0.00	0.48	0.48	0.48	0.48
Total Construction/Year	0.00	8.33	8.24	7.71	8.78
HHS needing subsidy	0.00	6.38	6.31	4.44	5.08
Subsidy/year	0.00	115.21	108.71	79.32	74.35
Housing investment	0.00	476.12	473.30	454.34	539.94
Investment as pct of GDP	0.00	3.39	3.05	2.52	2.59
Subsidy as percent of PCE	0.00	179.13	153.09	96.35	77.90
Other Urban Areas					
Population	412.47	478.65	543.48	601.69	658.87
Construction New Units/Yr	0.00	4.36	4.62	4.62	4.86
Upgrades per Year	0.00	0.88	0.88	0.88	0.88
Total Construction/Year	0.00	5.25	5.50	5.50	5.74
HHS needing subsidy	0.00	3.67	3.87	3.87	4.06
Subsidy/year	0.00	85.51	92.93	86.77	82.75
Housing investment	0.00	267.02	279.43	284.03	303.26
Investment as pct of GDP	0.00	1.90	1.80	1.58	1.45
Subsidy as percent of PCE	0.00	132.94	130.86	105.40	86.71
Rural Areas					
Population	1152.63	1173.44	1193.46	1207.86	1219.71
Construction New Units/Yr	0.00	2.33	2.78	3.01	3.37
Upgrades per Year	0.00	8.31	8.31	8.31	8.31
Total Construction/Year	0.00	10.64	11.09	11.32	11.68
HHS needing subsidy	0.00	3.99	4.44	4.67	5.03
Subsidy/year	0.00	83.87	98.48	100.12	104.70
Housing investment	0.00	266.80	293.20	318.19	350.66
Investment as pct of GDP	0.00	1.90	1.89	1.77	1.68
Subsidy as percent of PCE	0.00	130.40	138.67	121.61	109.70

Model Output Tables for Scenario Two: 1986-2006

Note: Only those tables that differ from the results of Scenario One are presented here.

JAMAICA -- SCENARIO TWO
DESIGN STANDARDS AND COSTS

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Average Inflation Rate(%)	0.00	10.00	8.00	8.00	8.00
Construction Cost Inflatn	0.00	10.00	8.00	8.00	8.00

Metropolitan Area

Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	26.00	26.00	26.00	26.00	26.00
Design Cost Upgrade Existing Unit (Level 1)	9.00	9.00	9.00	9.00	9.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00

Other Urban Areas

Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	26.00	26.00	26.00	26.00	26.00
Design Cost Upgrade Existing Unit (Level 1)	9.00	9.00	9.00	9.00	9.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00

Rural Areas

Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	18.00	18.00	18.00	18.00	18.00
Design Cost Upgrade Existing Unit (Level 1)	7.00	7.00	7.00	7.00	7.00
Value of an Upgradable Unit (Add to cost of upgrade)	7.00	7.00	7.00	7.00	7.00

JAMAICA -- SCENARIO TWO
 QUINTILE DESIGN COSTS CLASSIFICATION

	1986 ----	1991 ----	1996 ----	2001 ----	2006 ----
Metropolitan Area					
Quintile 1					
Affordable Costs	19.98	19.40	19.82	21.77	23.66
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	37.86	36.74	37.54	41.23	44.82
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 3					
Affordable Costs	46.33	44.98	45.95	50.47	54.87
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 4					
Affordable Costs	51.25	49.98	51.06	56.09	60.97
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 5					
Affordable Costs	71.59	69.70	71.21	78.22	85.03
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00

JAMAICA -- SCENARIO TWO
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Other Urban Areas					
Quintile 1					
Affordable Costs	19.48	18.08	17.69	18.63	19.83
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	33.13	30.75	30.10	31.68	33.72
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 3					
Affordable Costs	39.08	36.46	35.69	37.57	39.99
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 4					
Affordable Costs	45.47	42.35	41.45	43.64	46.45
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 5					
Affordable Costs	62.12	57.95	56.72	59.71	63.55
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00

JAMAICA -- SCENARIO TWO
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Rural Areas					
Quintile 1					
Affordable Costs	10.57	10.19	10.25	10.97	11.70
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	19.55	18.77	18.89	20.21	21.57
Affordable Level	2	2	2	2	2
Design Cost	18.00	18.00	18.00	18.00	18.00
Quintile 3					
Affordable Costs	22.37	21.50	21.64	23.15	24.71
Affordable Level	2	2	2	2	2
Design Cost	18.00	18.00	18.00	18.00	18.00
Quintile 4					
Affordable Costs	26.28	25.24	25.40	27.18	29.00
Affordable Level	2	2	2	2	2
Design Cost	18.00	18.00	18.00	18.00	18.00
Quintile 5					
Affordable Costs	39.20	37.61	37.84	40.50	43.22
Affordable Level	2	2	2	2	2
Design Cost	18.00	18.00	18.00	18.00	18.00

JAMAICA -- SCENARIO TWO
 TARGET GROUP IDENTIFICATION

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
(thousands of households)					
Metropolitan Area					
Affordable Level 0	0.00	1.67	1.65	1.54	1.76
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	6.67	6.59	6.17	7.02
Subtotal, Target Group	0.00	8.33	8.24	7.71	8.78
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	8.33	8.24	7.71	8.78
Other Urban Areas					
Affordable Level 0	0.00	1.05	1.10	1.10	1.15
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	4.20	4.40	4.40	4.59
Subtotal, Target Group	0.00	5.25	5.50	5.50	5.74
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	5.25	5.50	5.50	5.74
Rural Areas					
Affordable Level 0	0.00	2.13	2.22	2.26	2.34
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	8.51	8.87	9.06	9.34
Subtotal, Target Group	0.00	10.64	11.09	11.32	11.68
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	10.64	11.09	11.32	11.68

JAMAICA --- SCENARIO TWO
 NUMBER OF HOUSEHOLDS REQUIRING SUBSIDY BY INCOME CLASS AND REGION

		<u>1986</u>	<u>1991</u>	<u>1996</u>	<u>2001</u>	<u>2006</u>
(thousands of households)						
Metropolitan Area						
	1	0.00	1.67	1.55	1.54	1.76
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00
Other Urban Areas						
	1	0.00	1.05	1.10	1.10	1.15
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00
Rural Areas						
	1	0.00	2.13	2.22	2.26	2.34
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00

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JAMAICA -- SCENARIO TWO
 ANNUAL INVESTMENT FOR UPGRADING AND NEW CONSTRUCTION

	<u>1986</u>	<u>1991</u>	<u>1996</u>	<u>2001</u>	<u>2006</u>
(millions of currency units)					
Country					
Upgrading	0.00	171.43	172.27	187.82	204.05
New Construction	0.00	582.67	602.88	625.92	746.75
Total	0.00	754.11	775.15	813.74	950.80
Metropolitan Area					
Upgrading	0.00	14.32	14.73	16.66	18.53
New Construction	0.00	357.41	359.85	364.70	450.98
Total	0.00	371.72	374.59	381.37	469.51
Other Urban Areas					
Upgrading	0.00	20.55	19.92	21.44	23.40
New Construction	0.00	168.93	175.37	183.57	203.86
Total	0.00	189.48	195.29	205.02	227.27
Rural Areas					
Upgrading	0.00	136.57	137.62	149.71	162.11
New Construction	0.00	56.34	67.66	77.64	91.91
Total	0.00	192.91	205.28	227.36	254.03

JAMAICA -- SCENARIO TWO
 TARGET GROUP INVESTMENT AND SUBSIDY REQUIREMENTS

	1986 ----	1991 ----	1996 ----	2001 ----	2006 ----
Country					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	19.38	19.86	19.63	20.96
Requiring Subsidy	0.00	4.84	4.97	4.91	5.24
Total	0.00	24.22	24.83	24.54	26.20
Target Group Cost (millions)					
Subsidy Portion	0.00	28.76	29.33	23.38	18.72
Supported by Target Group	0.00	401.32	412.96	409.48	454.47
Total	0.00	430.08	442.29	432.86	473.19
Metropolitan Area					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	6.67	6.59	6.17	7.02
Requiring Subsidy	0.00	1.67	1.65	1.54	1.76
Total	0.00	8.33	8.24	7.71	8.78
Target Group Cost (millions)					
Subsidy Portion	0.00	10.82	10.00	6.34	3.92
Supported by Target Group	0.00	197.79	196.13	186.07	216.16
Total	0.00	208.60	206.13	192.41	220.08
Other Urban Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	4.20	4.40	4.40	4.59
Requiring Subsidy	0.00	1.05	1.10	1.10	1.15
Total	0.00	5.25	5.50	5.50	5.74
Target Group Cost (millions)					
Subsidy Portion	0.00	7.96	8.78	7.76	6.74
Supported by Target Group	0.00	113.46	119.17	120.33	127.57
Total	0.00	121.42	127.95	128.09	134.31
Rural Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	8.51	8.87	9.06	9.34
Requiring Subsidy	0.00	2.13	2.22	2.26	2.34
Total	0.00	10.64	11.09	11.32	11.68
Target Group Cost (millions)					
Subsidy Portion	0.00	9.98	10.55	9.28	8.06
Supported by Target Group	0.00	90.08	97.66	103.07	110.74
Total	0.00	100.06	108.21	112.35	118.80

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JAMAICA -- SCENARIO TWO
HOUSING INVESTMENT IN RELATION TO GDP

	1986	1991	1996	2001	2006
	----	----	----	----	----
(millions of currency units)					
Country					
Total Housing Expenditure	2251.31	2356.94	2555.07	2916.44	3328.12
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	725.35	745.82	790.35	932.08
Subsidy Required	0.00	28.76	29.33	23.38	18.72
Total Housing Investment	0.00	754.10	775.15	813.73	950.80
Metropolitan Area					
Total Housing Expenditure	1058.76	1144.70	1272.11	1482.70	1728.11
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	360.91	364.58	375.02	465.59
Subsidy Required	0.00	10.82	10.00	6.34	3.92
Total Housing Investment	0.00	371.72	374.58	381.36	469.51
Other Urban Areas					
Total Housing Expenditure	446.50	482.81	536.54	625.36	728.87
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	181.52	186.50	197.25	220.53
Subsidy Required	0.00	7.96	8.78	7.76	6.74
Total Housing Investment	0.00	189.48	195.29	205.02	227.27
Rural Areas					
Total Housing Expenditure	746.05	729.43	746.42	808.38	871.14
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	182.93	194.73	218.08	245.96
Subsidy Required	0.00	9.98	10.55	9.28	8.06
Total Housing Investment	0.00	192.90	205.28	227.35	254.02
Total Housing Investment in the Base Year	130.00				
Subsidy as a Percent of Public Capital Expend.	0.00	44.71	41.30	28.40	19.61
Total Housing Investment as a Percent of GDP	0.99	5.36	4.99	4.52	4.56

JAMAICA -- SCENARIO TWO
SUMMARY OF HOUSING NEEDS AND INVESTMENT

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Country					
Population	2314.52	2484.81	2642.74	2770.68	2909.13
Construction New Units/Yr	0.00	14.55	15.16	14.87	16.53
Upgrades per Year	0.00	9.67	9.67	9.67	9.67
Total Construction/Year	0.00	24.22	24.83	24.54	26.20
HHs needing subsidy	0.00	4.84	4.97	4.91	5.24
Subsidy/year	0.00	28.76	29.33	23.38	18.72
Housing investment	0.00	754.10	775.15	813.73	950.80
Investment as pct of GDP	0.00	5.36	4.99	4.52	4.56
Subsidy as percent of PCE	0.00	44.71	41.30	28.40	19.61
Metropolitan Area					
Population	749.42	832.72	905.80	961.14	1030.54
Construction New Units/Yr	0.00	7.86	7.76	7.24	8.30
Upgrades per Year	0.00	0.48	0.48	0.48	0.48
Total Construction/Year	0.00	8.33	8.24	7.71	8.78
HHs needing subsidy	0.00	1.67	1.65	1.54	1.76
Subsidy/year	0.00	10.82	10.00	6.34	3.92
Housing investment	0.00	371.72	374.58	381.36	469.51
Investment as pct of GDP	0.00	2.64	2.41	2.12	2.25
Subsidy as percent of PCE	0.00	16.82	14.08	7.70	4.10
Other Urban Areas					
Population	412.47	478.65	543.48	601.69	658.87
Construction New Units/Yr	0.00	4.36	4.62	4.62	4.86
Upgrades per Year	0.00	0.88	0.88	0.88	0.88
Total Construction/Year	0.00	5.25	5.50	5.50	5.74
HHs needing subsidy	0.00	1.05	1.10	1.10	1.15
Subsidy/year	0.00	7.96	8.78	7.76	6.74
Housing investment	0.00	189.48	195.29	205.02	227.27
Investment as pct of GDP	0.00	1.35	1.26	1.14	1.09
Subsidy as percent of PCE	0.00	12.38	12.37	9.43	7.06
Rural Areas					
Population	1152.63	1173.44	1193.46	1207.86	1219.71
Construction New Units/Yr	0.00	2.33	2.78	3.01	3.37
Upgrades per Year	0.00	8.31	8.31	8.31	8.31
Total Construction/Year	0.00	10.64	11.09	11.32	11.68
HHs needing subsidy	0.00	2.13	2.22	2.26	2.34
Subsidy/year	0.00	9.98	10.55	9.28	8.06
Housing investment	0.00	192.90	205.28	227.35	254.02
Investment as pct of GDP	0.00	1.37	1.32	1.26	1.22
Subsidy as percent of PCE	0.00	15.51	14.85	11.27	8.45

Model Output Tables for Scenario Three: 1986-2006

Note: Only those tables that differ from the results of Scenario One are presented here.

JAMAICA -- SCENARIO THREE
 DESIGN STANDARDS AND COSTS

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Average Inflation Rate(%)	0.00	10.00	8.00	8.00	8.00
Construction Cost Inflatn	0.00	10.00	8.00	8.00	8.00
 Metropolitan Area					
Price Minimum Standard Formal					
Sector Housing (Level 3)	56.00	56.00	56.00	56.00	56.00
Design Cost New Housing Unit					
(Level 2)	16.00	16.00	16.00	16.00	16.00
Design Cost Upgrade Existing Unit					
(Level 1)	7.00	7.00	7.00	7.00	7.00
Value of an Upgradable Unit					
(Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00
 Other Urban Areas					
Price Minimum Standard Formal					
Sector Housing (Level 3)	56.00	56.00	56.00	56.00	56.00
Design Cost New Housing Unit					
(Level 2)	16.00	16.00	16.00	16.00	16.00
Design Cost Upgrade Existing Unit					
(Level 1)	7.00	7.00	7.00	7.00	7.00
Value of an Upgradable Unit					
(Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00
 Rural Areas					
Price Minimum Standard Formal					
Sector Housing (Level 3)	56.00	56.00	56.00	56.00	56.00
Design Cost New Housing Unit					
(Level 2)	8.00	8.00	8.00	8.00	8.00
Design Cost Upgrade Existing Unit					
(Level 1)	5.00	5.00	5.00	5.00	5.00
Value of an Upgradable Unit					
(Add to cost of upgrade)	7.00	7.00	7.00	7.00	7.00

JAMAICA -- SCENARIO THREE
 QUINTILE DESIGN COSTS CLASSIFICATION

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Metropolitan Area					
Quintile 1					
Affordable Costs	19.98	19.33	19.69	21.58	23.41
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 2					
Affordable Costs	37.86	36.62	37.29	40.88	44.34
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 3					
Affordable Costs	46.33	44.83	45.65	50.04	54.28
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 4					
Affordable Costs	51.25	49.82	50.73	55.61	60.32
Affordable Level	2	2	2	2	3
Design Cost	16.00	16.00	16.00	16.00	56.00
Quintile 5					
Affordable Costs	71.59	69.47	70.75	77.55	84.12
Affordable Level	3	3	3	3	3
Design Cost	56.00	56.00	56.00	56.00	56.00

JAMAICA -- SCENARIO THREE
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	1986 ----	1991 ----	1996 ----	2001 ----	2006 ----
Other Urban Areas					
Quintile 1					
Affordable Costs	19.48	18.02	17.58	18.47	19.61
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 2					
Affordable Costs	33.13	30.65	29.90	31.41	33.36
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 3					
Affordable Costs	39.08	36.35	35.46	37.25	39.56
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 4					
Affordable Costs	45.47	42.22	41.18	43.27	45.95
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 5					
Affordable Costs	62.12	57.76	56.35	59.20	62.87
Affordable Level	3	3	3	3	3
Design Cost	56.00	56.00	56.00	56.00	56.00

JAMAICA -- SCENARIO THREE
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Rural Areas					
Quintile 1					
Affordable Costs	10.57	10.56	11.06	12.20	13.48
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00
Quintile 2					
Affordable Costs	19.55	19.46	20.38	22.49	24.84
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00
Quintile 3					
Affordable Costs	22.37	22.29	23.34	25.76	28.45
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00
Quintile 4					
Affordable Costs	26.28	26.16	27.40	30.24	33.40
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00
Quintile 5					
Affordable Costs	39.20	38.99	40.83	45.06	49.76
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00

JAMAICA -- SCENARIO THREE
 TARGET GROUP IDENTIFICATION

	1986	1991	1996	2001	2006
	----	----	----	----	----
(thousands of households)					
Metropolitan Area					
Affordable Level 0	0.00	0.00	0.00	0.00	0.00
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	6.97	6.89	6.47	5.87
Subtotal, Target Group	0.00	6.97	6.89	6.47	5.87
Affordable Level 3	0.00	1.37	1.35	1.24	2.91
Total	0.00	8.33	8.24	7.71	8.78
Other Urban Areas					
Affordable Level 0	0.00	0.00	0.00	0.00	0.00
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	4.43	4.63	4.63	4.82
Subtotal, Target Group	0.00	4.43	4.63	4.63	4.82
Affordable Level 3	0.00	0.82	0.87	0.87	0.92
Total	0.00	5.25	5.50	5.50	5.74
Rural Areas					
Affordable Level 0	0.00	0.00	0.00	0.00	0.00
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	10.64	11.09	11.32	11.68
Subtotal, Target Group	0.00	10.64	11.09	11.32	11.68
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	10.64	11.09	11.32	11.68

JAMAICA -- SCENARIO THREE
NUMBER OF HOUSEHOLDS REQUIRING SUBSIDY BY INCOME CLASS AND REGION

		1986	1991	1996	2001	2006
		----	----	----	----	----
(thousands of households)						
Metropolitan Area						
	1	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00
Other Urban Areas						
	1	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00
Rural Areas						
	1	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00

JAMAICA -- SCENARIO THREE
 ANNUAL INVESTMENT FOR UPGRADING AND NEW CONSTRUCTION

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
(millions of currency units)					
Country					
Upgrading	0.00	162.72	171.59	195.91	220.60
New Construction	0.00	554.12	574.97	603.73	724.60
Total	0.00	716.84	746.56	799.64	945.20
Metropolitan Area					
Upgrading	0.00	10.78	11.11	12.86	12.22
New Construction	0.00	339.38	341.34	348.22	429.39
Total	0.00	350.16	352.45	361.08	441.61
Other Urban Areas					
Upgrading	0.00	14.82	14.13	15.52	17.29
New Construction	0.00	160.11	165.27	173.83	194.25
Total	0.00	174.93	179.41	189.35	211.54
Rural Areas					
Upgrading	0.00	137.12	146.34	167.53	191.09
New Construction	0.00	54.63	68.35	81.68	100.96
Total	0.00	191.75	214.70	249.21	292.05

JAMAICA -- SCENARIO THREE
 TARGET GROUP INVESTMENT AND SUBSIDY REQUIREMENTS

	1986 -----	1991 -----	1996 -----	2001 -----	2006 -----
Country					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	22.03	22.61	22.42	22.37
Requiring Subsidy	0.00	0.00	0.00	0.00	0.00
Total	0.00	22.03	22.61	22.42	22.37
Target Group Cost (millions)					
Subsidy Portion	0.00	0.00	0.00	0.00	0.00
Supported by Target Group	0.00	230.25	235.88	231.03	227.29
Total	0.00	230.26	235.88	231.04	227.29
Metropolitan Area					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	6.97	6.89	6.47	5.87
Requiring Subsidy	0.00	0.00	0.00	0.00	0.00
Total	0.00	6.97	6.89	6.47	5.87
Target Group Cost (millions)					
Subsidy Portion	0.00	0.00	0.00	0.00	0.00
Supported by Target Group	0.00	107.20	105.98	99.23	89.56
Total	0.00	107.20	105.98	99.23	89.56
Other Urban Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	4.43	4.63	4.63	4.82
Requiring Subsidy	0.00	0.00	0.00	0.00	0.00
Total	0.00	4.43	4.63	4.63	4.82
Target Group Cost (millions)					
Subsidy Portion	0.00	0.00	0.00	0.00	0.00
Supported by Target Group	0.00	62.88	66.10	66.17	69.22
Total	0.00	62.88	66.10	66.17	69.22
Rural Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	10.64	11.09	11.32	11.68
Requiring Subsidy	0.00	0.00	0.00	0.00	0.00
Total	0.00	10.64	11.09	11.32	11.68
Target Group Cost (millions)					
Subsidy Portion	0.00	0.00	0.00	0.00	0.00
Supported by Target Group	0.00	60.17	63.80	65.64	68.50
Total	0.00	60.17	63.80	65.64	68.51

JAMAICA -- SCENARIO THREE
HOUSING INVESTMENT IN RELATION TO GDP

	1986	1991	1996	2001	2006
	----	----	----	----	----
(millions of currency units)					
Country					
Total Housing Expenditure	2251.31	2378.31	2602.25	2989.38	3433.80
Non-Target Group Invest.	0.00	142.34	144.41	147.93	267.97
Target Group Investment	0.00	574.50	602.14	651.70	677.22
Subsidy Required	0.00	0.00	0.00	0.00	0.00
Total Housing Investment	0.00	716.84	746.55	799.63	945.19
Metropolitan Area					
Total Housing Expenditure	1058.76	1140.96	1263.85	1469.93	1709.60
Non-Target Group Invest.	0.00	94.96	95.36	96.34	210.17
Target Group Investment	0.00	255.19	257.09	264.74	231.43
Subsidy Required	0.00	0.00	0.00	0.00	0.00
Total Housing Investment	0.00	350.16	352.45	361.08	441.61
Other Urban Areas					
Total Housing Expenditure	446.50	481.23	533.06	619.98	721.06
Non-Target Group Invest.	0.00	47.37	49.05	51.59	57.80
Target Group Investment	0.00	127.56	130.36	137.76	153.74
Subsidy Required	0.00	0.00	0.00	0.00	0.00
Total Housing Investment	0.00	174.93	179.41	189.35	211.54
Rural Areas					
Total Housing Expenditure	746.05	756.12	805.35	899.47	1003.13
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	191.75	214.70	249.20	292.05
Subsidy Required	0.00	0.00	0.00	0.00	0.00
Total Housing Investment	0.00	191.75	214.70	249.21	292.05
Total Housing Investment in the Base Year	130.00				
Subsidy as a Percent of Public Capital Expend.	0.00	0.00	0.00	0.00	0.00
Total Housing Investment as a Percent of GDP	0.99	5.10	4.81	4.44	4.53

JAMAICA -- SCENARIO THREE
SUMMARY OF HOUSING NEEDS AND INVESTMENT

	1986	1991	1996	2001	2006
	-----	-----	-----	-----	-----
Country					
Population	2314.52	2484.81	2642.74	2770.68	2909.13
Construction New Units/Yr	0.00	14.55	15.16	14.87	16.53
Upgrades per Year	0.00	9.67	9.67	9.67	9.67
Total Construction/Year	0.00	24.22	24.83	24.54	26.20
HHS needing subsidy	0.00	0.00	0.00	0.00	0.00
Subsidy/year	0.00	0.00	0.00	0.00	0.00
Housing investment	0.00	716.84	746.55	799.63	945.19
Investment as pct of GDP	0.00	5.10	4.81	4.44	4.53
Subsidy as percent of PCE	0.00	0.00	0.00	0.00	0.00
Metropolitan Area					
Population	749.42	832.72	905.80	961.14	1030.54
Construction New Units/Yr	0.00	7.86	7.76	7.24	8.30
Upgrades per Year	0.00	0.48	0.48	0.48	0.48
Total Construction/Year	0.00	8.33	8.24	7.71	8.78
HHS needing subsidy	0.00	0.00	0.00	0.00	0.00
Subsidy/year	0.00	0.00	0.00	0.00	0.00
Housing investment	0.00	350.16	352.45	361.08	441.61
Investment as pct of GDP	0.00	2.49	2.27	2.01	2.12
Subsidy as percent of PCE	0.00	0.00	0.00	0.00	0.00
Other Urban Areas					
Population	412.47	478.65	543.48	601.69	658.87
Construction New Units/Yr	0.00	4.36	4.62	4.62	4.86
Upgrades per Year	0.00	0.88	0.88	0.88	0.88
Total Construction/Year	0.00	5.25	5.50	5.50	5.74
HHS needing subsidy	0.00	0.00	0.00	0.00	0.00
Subsidy/year	0.00	0.00	0.00	0.00	0.00
Housing investment	0.00	174.93	179.41	189.35	211.54
Investment as pct of GDP	0.00	1.24	1.16	1.05	1.01
Subsidy as percent of PCE	0.00	0.00	0.00	0.00	0.00
Rural Areas					
Population	1152.63	1173.44	1193.46	1207.86	1219.71
Construction New Units/Yr	0.00	2.33	2.78	3.01	3.37
Upgrades per Year	0.00	8.31	8.31	8.31	8.31
Total Construction/Year	0.00	10.64	11.09	11.32	11.68
HHS needing subsidy	0.00	0.00	0.00	0.00	0.00
Subsidy/year	0.00	0.00	0.00	0.00	0.00
Housing investment	0.00	191.75	214.70	249.21	292.05
Investment as pct of GDP	0.00	1.36	1.38	1.38	1.40
Subsidy as percent of PCE	0.00	0.00	0.00	0.00	0.00

Complete Model Output Tables for Scenario One: 1986-1990

JAMAICA -- 5 YR SCENARIO ONE
 POPULATION AND HOUSEHOLD FORMATION

	1986	1987	1988	1989	1990
	-----	-----	-----	-----	-----
Metropolitan Area					
Population	749.42	765.70	782.20	798.90	815.70
Annual Growth Rate (%)	0.00	2.17	2.15	2.14	2.10
Average Household Size	3.83	3.83	3.83	3.83	3.83
Total Households	195.67	199.92	204.23	208.59	212.98
New Households per Year	0.00	4.25	4.31	4.36	4.39
Other Urban Areas					
Population	412.47	425.20	438.10	451.30	464.80
Annual Growth Rate (%)	0.00	3.09	3.03	3.01	2.99
Average Household Size	4.37	4.37	4.37	4.37	4.37
Total Households	94.39	97.30	100.25	103.27	106.36
New Households per Year	0.00	2.91	2.95	3.02	3.09
Rural Areas					
Population	1152.63	1158.00	1163.10	1168.00	1172.60
Annual Growth Rate (%)	0.00	0.47	0.44	0.42	0.39
Average Household Size	4.38	4.38	4.38	4.38	4.38
Total Households	263.16	264.38	265.55	266.67	267.72
New Households per Year	0.00	1.23	1.16	1.12	1.05
Country					
Population	2314.52	2348.90	2383.40	2418.20	2453.10
Annual Growth Rate (%)	0.00	1.49	1.47	1.46	1.44
Average Household Size	4.18	4.18	4.18	4.18	4.18
Total Households	553.22	561.61	570.03	578.53	587.05
New Households per Year	0.00	8.39	8.42	8.50	8.53

JAMAICA -- 5 YR SCENARIO ONE
NATIONAL AND HOUSEHOLD INCOME

	1986	1987	1988	1989	1990
	----	----	----	----	----
National Income (constant units)					
GDP (millions of units)	13117.20	13117.20	13248.37	13513.34	13851.17
GDP Ann. Growth Rate (%)	0.00	0.00	1.00	2.00	2.50
Rural GDP (millions)	1180.55	1159.56	1149.96	1151.34	1157.96
Metro & Urban GDP (mill)	11936.65	11957.64	12098.41	12362.00	12693.21
Metropolitan Area					
Mean Annual Income					
All Households (1,000s)	20.64	20.24	20.04	20.05	20.16
Annual Growth Rate of					
Mean Household Income (%)	0.00	-1.95	-0.96	0.04	0.56
Quintile Mean Incomes (1,000s)					
1	4.55	4.45	4.41	4.41	4.44
2	10.56	10.32	10.22	10.23	10.28
3	16.55	16.19	16.03	16.04	16.13
4	24.61	24.18	23.95	23.96	24.10
5	46.94	46.04	45.60	45.62	45.87
Other Urban Areas					
Mean Annual Income					
All Households (1,000s)	18.04	17.53	17.21	17.08	17.02
Annual Growth Rate of					
Mean Household Income (%)	0.00	-2.82	-1.80	-0.81	-0.30
Quintile Mean Incomes (1,000s)					
1	4.44	4.30	4.22	4.18	4.17
2	9.24	8.94	8.78	8.71	8.68
3	13.96	13.59	13.34	13.23	13.19
4	21.84	21.21	20.83	20.66	20.60
5	40.73	39.62	38.91	38.59	38.47
Rural Areas					
Mean Annual Income					
All Households (1,000s)	13.50	13.20	13.03	12.99	13.02
Annual Growth Rate of					
Mean Household Income (%)	0.00	-2.23	-1.26	-0.30	0.18
Quintile Mean Incomes (1,000s)					
1	2.89	2.84	2.80	2.79	2.80
2	6.54	6.40	6.32	6.30	6.31
3	10.17	9.96	9.84	9.81	9.83
4	15.77	15.44	15.25	15.20	15.23
5	32.12	31.41	31.02	30.92	30.98

JAMAICA -- 5 YR SCENARIO ONE
 DESIGN STANDARDS AND COSTS

	1986	1987	1988	1989	1990
	-----	-----	-----	-----	-----
Average Inflation Rate(%)	0.00	10.00	10.00	10.00	10.00
Construction Cost Inflatn	0.00	10.00	10.00	10.00	10.00

Metropolitan Area

Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	56.00	56.00	56.00	56.00	56.00
Design Cost Upgrade Existing Unit (Level 1)	11.00	11.00	11.00	11.00	11.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00

Other Urban Areas

Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	56.00	56.00	56.00	56.00	56.00
Design Cost Upgrade Existing Unit (Level 1)	11.00	11.00	11.00	11.00	11.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00

Rural Areas

Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	56.00	56.00	56.00	56.00	56.00
Design Cost Upgrade Existing Unit (Level 1)	7.00	7.00	7.00	7.00	7.00
Value of an Upgradable Unit (Add to cost of upgrade)	7.00	7.00	7.00	7.00	7.00

JAMAICA -- 5 YR SCENARIO ONE
HOUSING STOCK AND REPLACEMENT

	1986	1987	1988	1989	1990
	----	----	----	----	----
Metropolitan Area					
Dwelling Units by Construction Standard					
Acceptable Construction	165.64	171.39	177.20	183.06	188.95
(Annual Repl. for Decay)	0.00	2.83	2.83	2.83	2.83
Non-Upgradable Construct.	15.20	14.44	13.68	12.92	12.16
(Annual Replacement)	0.00	0.76	0.76	0.76	0.76
Upgradable Construction	9.52	9.04	8.57	8.09	7.62
(Annual Upgrading)	0.00	0.48	0.48	0.48	0.48
Total Dwelling Units	190.36	194.87	199.45	204.07	208.72
Total Overcrowded Units	5.31	5.05	4.78	4.52	4.25
Annual Construction to					
Relieve Overcrowding	0.00	0.26	0.26	0.26	0.26
New Households/Year	0.00	4.25	4.31	4.36	4.39
Construction New Units/Yr	0.00	8.11	8.17	8.22	8.24
Total Construction/Year	0.00	8.59	8.64	8.69	8.72

Other Urban Areas					
Dwelling Units by Construction Standard					
Acceptable Construction	61.46	65.52	69.62	73.78	78.02
(Annual Repl. for Decay)	0.00	1.17	1.17	1.17	1.17
Non-Upgradable Construct.	3.70	3.52	3.33	3.15	2.96
(Annual Replacement)	0.00	0.19	0.19	0.19	0.19
Upgradable Construction	17.63	16.75	15.87	14.98	14.10
(Annual Upgrading)	0.00	0.88	0.88	0.88	0.88
Total Dwelling Units	82.79	85.78	88.81	91.91	95.08
Total Overcrowded Units	11.60	11.52	11.44	11.36	11.28
Annual Construction to					
Relieve Overcrowding	0.00	0.08	0.08	0.08	0.08
New Households/Year	0.00	2.91	2.95	3.02	3.09
Construction New Units/Yr	0.00	4.35	4.39	4.45	4.52
Total Construction/Year	0.00	5.23	5.27	5.34	5.41

JAMAICA -- 5 YR SCENARIO ONE
 HOUSING STOCK AND REPLACEMENT (continued)

Rural Areas

Dwelling Units by Construction Standard

Acceptable Construction	86.02	96.07	106.06	116.01	125.89
(Annual Repl. for Decay)	0.00	1.26	1.26	1.26	1.26
Non-Upgradable Construct.	7.80	7.41	7.02	6.63	6.24
(Annual Replacement)	0.00	0.39	0.39	0.39	0.39
Upgradable Construction	166.82	158.51	150.19	141.88	133.56
(Annual Upgrading)	0.00	8.31	8.31	8.31	8.31
Total Dwelling Units	260.64	261.99	263.27	264.52	265.69
Total Overcrowded Units	2.52	2.40	2.27	2.15	2.02
Annual Construction to Relieve Overcrowding	0.00	0.13	0.13	0.13	0.13
New Households/Year	0.00	1.23	1.16	1.12	1.05
Construction New Units/Yr	0.00	3.00	2.94	2.89	2.82
Total Construction/Year	0.00	11.31	11.25	11.21	11.14

Country

New Construction/Year	0.00	15.46	15.49	15.57	15.59
Total Construction/Year	0.00	25.13	25.16	25.24	25.26

JAMAICA -- 5 YR SCENARIO ONE
AFFORDABLE CAPITAL COSTS

Metropolitan Area

	--Q1--	--Q2--	--Q3--	--Q4--	--Q5--
Interest Rate (%)	6.00	8.00	10.00	12.00	17.00
Loan Term (years)	30	30	30	25	25
Downpayment Required (%)	5.00	5.00	5.00	10.00	10.00
Graduation Rate (%)	0.00	0.00	0.00	0.00	0.00
Graduation Period (years)	0	0	0	0	0

	1986	1987	1988	1989	1990
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(thousands of currency units)

Quintile 1

Mean Annual Income	4.55	4.45	4.41	4.41	4.44
% Available for Housing	30.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.11	0.11	0.11	0.11	0.11
Affordable Dwelling Cost	19.98	19.54	19.35	19.36	19.47

Quintile 2

Mean Annual Income	10.56	10.32	10.22	10.23	10.28
% Available for Housing	30.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.26	0.26	0.26	0.26	0.26
Affordable Dwelling Cost	37.86	37.01	36.66	36.68	36.88

Quintile 3

Mean Annual Income	16.55	16.19	16.03	16.04	16.13
% Available for Housing	28.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.39	0.38	0.37	0.37	0.38
Affordable Dwelling Cost	46.33	45.31	44.88	44.90	45.15

Quintile 4

Mean Annual Income	24.61	24.18	23.95	23.96	24.10
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.51	0.50	0.50	0.50	0.50
Affordable Dwelling Cost	51.25	50.35	49.87	49.89	50.17

Quintile 5

Mean Annual Income	46.94	46.04	45.60	45.62	45.87
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.98	0.96	0.95	0.95	0.96
Affordable Dwelling Cost	71.59	70.22	69.55	69.58	69.97

Other Urban Areas

	--Q1--	--Q2--	--Q3--	--Q4--	--Q5--
Interest Rate (%)	6.00	8.00	10.00	12.00	17.00
Loan Term (years)	30	30	30	25	25
Downpayment Required (%)	5.00	5.00	5.00	10.00	10.00
Graduation Rate (%)	0.00	0.00	0.00	0.00	0.00
Graduation Period (years)	0	0	0	0	0

	1986	1987	1988	1989	1990
	----	----	----	----	----

(thousands of currency units)

Quintile 1

Mean Annual Income	4.44	4.30	4.22	4.18	4.17
% Available for Housing	30.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.11	0.11	0.11	0.10	0.10
	19.48	18.85	18.51	18.35	18.31

Quintile 2

Mean Annual Income	9.24	8.94	8.78	8.71	8.68
% Available for Housing	30.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.23	0.22	0.22	0.22	0.22
	33.13	32.06	31.49	31.23	31.14

Quintile 3

Mean Annual Income	13.96	13.59	13.34	13.23	13.19
% Available for Housing	28.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.33	0.32	0.31	0.31	0.31
	39.08	38.03	37.34	37.04	36.93

Quintile 4

Mean Annual Income	21.84	21.21	20.83	20.66	20.60
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.45	0.44	0.43	0.43	0.43
	45.47	44.17	43.37	43.02	42.89

Quintile 5

Mean Annual Income	40.73	39.62	38.91	38.59	38.47
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg. Affordable Dwelling Cost	0.85	0.83	0.81	0.80	0.80
	62.12	60.43	59.34	58.86	58.68

Rural Areas

	--Q1--	--Q2--	--Q3--	--Q4--	--Q5--
Interest Rate (%)	6.00	8.00	10.00	12.00	17.00
Loan Term (years)	30	30	30	25	25
Downpayment Required (%)	5.00	5.00	5.00	10.00	10.00
Graduation Rate (%)	0.00	0.00	0.00	0.00	0.00
Graduation Period (years)	0	0	0	0	0
	1986	1987	1988	1989	1990
	----	----	----	----	----
(thousands of currency units)					
Quintile 1					
Mean Annual Income	2.89	2.84	2.80	2.79	2.80
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.06	0.06	0.06	0.06	0.06
Affordable Dwelling Cost	10.57	10.38	10.25	10.22	10.24
Quintile 2					
Mean Annual Income	6.54	6.40	6.32	6.30	6.31
% Available for Housing	25.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.14	0.13	0.13	0.13	0.13
Affordable Dwelling Cost	19.55	19.13	18.89	18.83	18.87
Quintile 3					
Mean Annual Income	10.17	9.96	9.84	9.81	9.83
% Available for Housing	22.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.19	0.18	0.18	0.18	0.18
Affordable Dwelling Cost	22.37	21.91	21.64	21.57	21.61
Quintile 4					
Mean Annual Income	15.77	15.44	15.25	15.20	15.23
% Available for Housing	20.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.26	0.26	0.25	0.25	0.25
Affordable Dwelling Cost	26.28	25.72	25.40	25.32	25.37
Quintile 5					
Mean Annual Income	32.12	31.41	31.02	30.92	30.98
% Available for Housing	20.00				
% Needed for Recurr. Exp.	0.00				
Monthly Income for Mortg.	0.54	0.52	0.52	0.52	0.52
Affordable Dwelling Cost	39.20	38.33	37.85	37.73	37.80

JAMAICA -- 5 YR SCENARIO ONE
 AFFORDABLE COSTS BY INCOME CLASS AND REGION

(thousands of currency units)

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
--	-------------	-------------	-------------	-------------	-------------

Metropolitan Area

Affordable Costs by Quintile

1	19.98	19.54	19.35	19.36	19.47
2	37.86	37.01	36.66	36.68	36.88
3	46.33	45.31	44.88	44.90	45.15
4	51.25	50.35	49.87	49.89	50.17
5	71.59	70.22	69.55	69.58	69.97

Other Urban Areas

Affordable Costs by Quintile

1	19.48	18.85	18.51	18.36	18.31
2	33.13	32.06	31.49	31.23	31.14
3	39.08	38.03	37.34	37.04	36.93
4	45.47	44.17	43.37	43.02	42.89
5	62.12	60.43	59.34	58.86	58.68

Rural Areas

Affordable Costs by Quintile

1	10.57	10.38	10.25	10.22	10.24
2	19.55	19.13	18.89	18.83	18.87
3	22.37	21.91	21.64	21.57	21.61
4	26.28	25.72	25.40	25.32	25.37
5	39.20	38.33	37.85	37.73	37.80

JAMAICA -- 5 YR SCENARIO ONE
 QUINTILE DESIGN COSTS CLASSIFICATION

	1986 -----	1987 -----	1988 -----	1989 -----	1990 -----
Metropolitan Area					
Quintile 1					
Affordable Costs	19.98	19.54	19.35	19.36	19.47
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	37.86	37.01	36.66	36.68	36.88
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 3					
Affordable Costs	46.33	45.31	44.88	44.90	45.15
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 4					
Affordable Costs	51.25	50.35	49.87	49.89	50.17
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 5					
Affordable Costs	71.59	70.22	69.55	69.58	69.97
Affordable Level	2	2	2	2	2
Design Cost	56.00	56.00	56.00	56.00	56.00

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JAMAICA -- 5 YR SCENARIO ONE
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Other Urban Areas					
Quintile 1					
Affordable Costs	19.48	18.85	18.51	18.36	18.31
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	33.13	32.06	31.49	31.23	31.14
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 3					
Affordable Costs	39.08	38.03	37.34	37.04	36.93
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 4					
Affordable Costs	45.47	44.17	43.37	43.02	42.89
Affordable Level	1	1	1	1	1
Design Cost	11.00	11.00	11.00	11.00	11.00
Quintile 5					
Affordable Costs	62.12	60.43	59.34	58.86	58.68
Affordable Level	2	2	2	2	2
Design Cost	56.00	56.00	56.00	56.00	56.00

JAMAICA -- 5 YR SCENARIO ONE
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Rural Areas					
Quintile 1					
Affordable Costs	10.57	10.38	10.25	10.22	10.24
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	19.55	19.13	18.89	18.83	18.87
Affordable Level	1	1	1	1	1
Design Cost	7.00	7.00	7.00	7.00	7.00
Quintile 3					
Affordable Costs	22.37	21.91	21.64	21.57	21.61
Affordable Level	1	1	1	1	1
Design Cost	7.00	7.00	7.00	7.00	7.00
Quintile 4					
Affordable Costs	26.28	25.72	25.40	25.32	25.37
Affordable Level	1	1	1	1	1
Design Cost	7.00	7.00	7.00	7.00	7.00
Quintile 5					
Affordable Costs	39.20	38.33	37.85	37.73	37.80
Affordable Level	1	1	1	1	1
Design Cost	7.00	7.00	7.00	7.00	7.00

JAMAICA -- 5 YR SCENARIO ONE
 TARGET GROUP IDENTIFICATION

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
(thousands of households)					
Metropolitan Area					
Affordable Level 0	0.00	1.65	1.66	1.67	1.67
Affordable Level 1	0.00	4.94	4.98	5.01	5.02
Affordable Level 2	0.00	1.65	1.66	1.67	1.67
Subtotal, Target Group	0.00	8.24	8.29	8.34	8.37
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	8.24	8.29	8.34	8.37
Other Urban Areas					
Affordable Level 0	0.00	1.00	1.00	1.02	1.03
Affordable Level 1	0.00	2.99	3.01	3.05	3.09
Affordable Level 2	0.00	1.00	1.00	1.02	1.03
Subtotal, Target Group	0.00	4.98	5.02	5.09	5.16
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	4.98	5.02	5.09	5.16
Rural Areas					
Affordable Level 0	0.00	2.18	2.17	2.16	2.15
Affordable Level 1	0.00	8.73	8.68	8.65	8.59
Affordable Level 2	0.00	0.00	0.00	0.00	0.00
Subtotal, Target Group	0.00	10.91	10.85	10.81	10.74
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	10.91	10.85	10.81	10.74

JAMAICA -- 5 YR SCENARIO ONE
NUMBER OF HOUSEHOLDS REQUIRING SUBSIDY BY INCOME CLASS AND REGION

		1986	1987	1988	1989	1990
		-----	-----	-----	-----	-----
(thousands of households)						
Metropolitan Area						
	1	0.00	1.65	1.66	1.67	1.67
	2	0.00	1.55	1.56	1.57	1.58
	3	0.00	1.55	1.56	1.57	1.58
	4	0.00	1.55	1.56	1.57	1.58
	5	0.00	0.00	0.00	0.00	0.00
Other Urban Areas						
	1	0.00	1.00	1.00	1.02	1.03
	2	0.00	0.82	0.83	0.84	0.86
	3	0.00	0.82	0.83	0.84	0.86
	4	0.00	0.82	0.83	0.84	0.86
	5	0.00	0.00	0.00	0.00	0.00
Rural Areas						
	1	0.00	2.18	2.17	2.16	2.15
	2	0.00	0.52	0.51	0.50	0.49
	3	0.00	0.52	0.51	0.50	0.49
	4	0.00	0.52	0.51	0.50	0.49
	5	0.00	0.52	0.51	0.50	0.49

JAMAICA -- 5 YR SCENARIO ONE
 ANNUAL INVESTMENT FOR UPGRADING AND NEW CONSTRUCTION

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
(millions of currency units)					
Country					
Upgrading	0.00	176.65	173.70	172.95	173.28
New Construction	0.00	835.39	835.62	839.66	841.71
Total	0.00	1012.04	1009.32	1012.61	1014.99
Metropolitan Area					
Upgrading	0.00	14.65	14.47	14.47	14.58
New Construction	0.00	456.60	458.91	462.03	464.18
Total	0.00	471.25	473.38	476.50	478.76
Other Urban Areas					
Upgrading	0.00	22.16	21.61	21.36	21.27
New Construction	0.00	233.16	234.48	237.97	241.70
Total	0.00	255.32	256.09	259.33	262.97
Rural Areas					
Upgrading	0.00	139.84	137.63	137.11	137.42
New Construction	0.00	145.63	142.22	139.66	135.83
Total	0.00	285.47	279.85	276.77	273.25

JAMAICA -- 5 YR SCENARIO ONE
 TARGET GROUP INVESTMENT AND SUBSIDY REQUIREMENTS

	1986	1987	1988	1989	1990
	----	----	----	----	----
Country					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	10.11	10.13	10.15	10.17
Requiring Subsidy	0.00	14.02	14.04	14.09	14.10
Total	0.00	24.13	24.17	24.24	24.27
Target Group Cost (millions)					
Subsidy Portion	0.00	279.38	284.21	285.77	284.03
Supported by Target Group	0.00	603.45	600.60	603.25	606.46
Total	0.00	882.83	884.81	889.02	890.49
Metropolitan Area					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	1.93	1.94	1.95	1.96
Requiring Subsidy	0.00	6.30	6.35	6.39	6.41
Total	0.00	8.24	8.29	8.34	8.37
Target Group Cost (millions)					
Subsidy Portion	0.00	112.02	115.13	115.80	114.82
Supported by Target Group	0.00	327.75	327.84	330.10	332.53
Total	0.00	439.77	442.97	445.90	447.36
Other Urban Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	1.53	1.53	1.55	1.56
Requiring Subsidy	0.00	3.46	3.49	3.54	3.60
Total	0.00	4.98	5.02	5.09	5.16
Target Group Cost (millions)					
Subsidy Portion	0.00	75.77	78.53	80.72	82.36
Supported by Target Group	0.00	163.46	162.89	164.54	166.74
Total	0.00	239.23	241.42	245.26	249.11
Rural Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	6.65	6.65	6.65	6.65
Requiring Subsidy	0.00	4.26	4.20	4.16	4.09
Total	0.00	10.91	10.85	10.81	10.74
Target Group Cost (millions)					
Subsidy Portion	0.00	91.59	90.55	89.25	86.85
Supported by Target Group	0.00	112.24	109.87	108.61	107.18
Total	0.00	203.83	200.42	197.86	194.03

JAMAICA -- 5 YR SCENARIO ONE
HOUSING INVESTMENT IN RELATION TO GDP

	1986	1987	1988	1989	1990
	-----	-----	-----	-----	-----
(millions of currency units)					
Country					
Total Housing Expenditure	2251.31	2241.19	2252.86	2286.97	2332.92
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	732.66	725.12	726.84	730.95
Subsidy Required	0.00	279.38	284.21	285.77	284.03
Total Housing Investment	0.00	1012.04	1009.32	1012.61	1014.99
Metropolitan Area					
Total Housing Expenditure	1058.76	1060.39	1072.87	1096.25	1125.62
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	359.23	358.25	360.71	363.94
Subsidy Required	0.00	112.02	115.13	115.80	114.82
Total Housing Investment	0.00	471.25	473.38	476.50	478.76
Other Urban Areas					
Total Housing Expenditure	446.50	447.24	452.51	462.37	474.76
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	179.55	177.57	178.61	180.61
Subsidy Required	0.00	75.77	78.53	80.72	82.36
Total Housing Investment	0.00	255.32	256.09	259.33	262.97
Rural Areas					
Total Housing Expenditure	746.05	733.56	727.48	728.35	732.54
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	193.87	189.30	187.52	186.40
Subsidy Required	0.00	91.59	90.55	89.25	86.85
Total Housing Investment	0.00	285.47	279.85	276.77	273.25
Total Housing Investment in the Base Year	130.00				
Subsidy as a Percent of Public Capital Expend.	0.00	465.63	468.99	462.33	448.30
Total Housing Investment as a Percent of GDP	0.99	7.72	7.62	7.49	7.33

JAMAICA -- 5 YR SCENARIO ONE
 COMPONENTS OF TARGET GROUP INVESTMENT

	1986	1987	1988	1989	1990
	----	----	----	----	----
(millions of currency units)					
Country					
Cost of Upgrading Existing Units of which:					
Infrastructure component	0.00	73.13	73.13	73.13	73.13
Superstructure component	0.00	36.57	36.57	36.57	36.57
Cost of New Housing Unit of which:					
Land Component	0.00	809.70	811.68	815.89	817.36
Infrastructure component	0.00	30.93	31.04	31.24	31.34
Superstructure component	0.00	275.11	276.98	278.58	279.28
Target Group Housing Cost	0.00	502.65	503.66	506.07	506.74
Metropolitan Area					
Cost of Upgrading Existing Units of which:					
Infrastructure component	0.00	5.24	5.24	5.24	5.24
Superstructure component	0.00	2.62	2.62	2.62	2.62
Cost of New Housing Unit of which:					
Land Component	0.00	434.53	437.74	440.66	442.12
Infrastructure component	0.00	17.38	17.51	17.63	17.68
Superstructure component	0.00	152.09	153.21	154.23	154.74
Target Group Housing Cost	0.00	265.07	267.02	268.80	269.69
		439.77	442.97	445.90	447.36

JAMAICA -- 5 YR SCENARIO ONE
SUMMARY OF HOUSING NEEDS AND INVESTMENT

	1986 -----	1987 -----	1988 -----	1989 -----	1990 -----
Country					
Population	2314.52	2348.90	2383.40	2418.20	2453.10
Construction New Units/Yr	0.00	15.46	15.49	15.57	15.59
Upgrades per Year	0.00	9.67	9.67	9.67	9.67
Total Construction/Year	0.00	25.13	25.16	25.24	25.26
HHS needing subsidy	0.00	14.02	14.04	14.09	14.10
Subsidy/year	0.00	279.38	284.21	285.77	284.03
Housing investment	0.00	1012.04	1009.32	1012.61	1014.99
Investment as pct of GDP	0.00	7.72	7.62	7.49	7.33
Subsidy as percent of PCE	0.00	465.63	468.99	462.33	448.30
Metropolitan Area					
Population	749.42	765.70	782.20	798.90	815.70
Construction New Units/Yr	0.00	8.11	8.17	8.22	8.24
Upgrades per Year	0.00	0.48	0.48	0.48	0.48
Total Construction/Year	0.00	8.59	8.64	8.69	8.72
HHS needing subsidy	0.00	6.30	6.35	6.39	6.41
Subsidy/year	0.00	112.02	115.13	115.80	114.82
Housing investment	0.00	471.25	473.38	476.50	478.76
Investment as pct of GDP	0.00	3.59	3.57	3.53	3.46
Subsidy as percent of PCE	0.00	186.69	189.99	187.33	181.23
Other Urban Areas					
Population	412.47	425.20	438.10	451.30	464.80
Construction New Units/Yr	0.00	4.35	4.39	4.45	4.52
Upgrades per Year	0.00	0.88	0.88	0.88	0.88
Total Construction/Year	0.00	5.23	5.27	5.34	5.41
HHS needing subsidy	0.00	3.46	3.49	3.54	3.60
Subsidy/year	0.00	75.77	78.53	80.72	82.36
Housing investment	0.00	255.32	256.09	259.33	262.97
Investment as pct of GDP	0.00	1.95	1.93	1.92	1.90
Subsidy as percent of PCE	0.00	126.28	129.58	130.60	130.00
Rural Areas					
Population	1152.63	1158.00	1163.10	1168.00	1172.60
Construction New Units/Yr	0.00	3.00	2.94	2.89	2.82
Upgrades per Year	0.00	8.31	8.31	8.31	8.31
Total Construction/Year	0.00	11.31	11.25	11.21	11.14
HHS needing subsidy	0.00	4.26	4.20	4.16	4.09
Subsidy/year	0.00	91.59	90.55	89.25	86.85
Housing investment	0.00	285.47	279.85	276.77	273.25
Investment as pct of GDP	0.00	2.18	2.11	2.05	1.97
Subsidy as percent of PCE	0.00	152.66	149.42	144.39	137.07

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Model Output Tables for Scenario Two: 1986-1990

Note: Only those tables that differ from the results of Scenario One are presented here.

JAMAICA -- 5 YR SCENARIO TWO
 DESIGN STANDARDS AND COSTS

	1986	1987	1988	1989	1990
	-----	-----	-----	-----	-----
Average Inflation Rate(%)	0.00	10.00	10.00	10.00	10.00
Construction Cost Inflatn	0.00	10.00	10.00	10.00	10.00
Metropolitan Area					
Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	26.00	26.00	26.00	26.00	26.00
Design Cost Upgrade Existing Unit (Level 1)	8.00	8.00	8.00	8.00	8.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00
Other Urban Areas					
Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	26.00	26.00	26.00	26.00	26.00
Design Cost Upgrade Existing Unit (Level 1)	9.00	9.00	9.00	9.00	9.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00
Rural Areas					
Price Minimum Standard Formal Sector Housing (Level 3)	85.70	85.70	85.70	85.70	85.70
Design Cost New Housing Unit (Level 2)	18.00	18.00	18.00	18.00	18.00
Design Cost Upgrade Existing Unit (Level 1)	7.00	7.00	7.00	7.00	7.00
Value of an Upgradable Unit (Add to cost of upgrade)	7.00	7.00	7.00	7.00	7.00

JAMAICA -- 5 YR SCENARIO TWO
 QUINTILE DESIGN COSTS CLASSIFICATION

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Metropolitan Area					
Quintile 1					
Affordable Costs	19.98	19.54	19.35	19.36	19.47
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	37.86	37.01	36.66	36.68	36.88
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 3					
Affordable Costs	46.33	45.31	44.88	44.90	45.15
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 4					
Affordable Costs	51.25	50.35	49.87	49.89	50.17
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 5					
Affordable Costs	71.59	70.22	69.55	69.58	69.97
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00

JAMAICA -- 5 YR SCENARIO TWO
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Other Urban Areas					
Quintile 1					
Affordable Costs	19.48	18.85	18.51	18.36	18.31
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	33.13	32.06	31.49	31.23	31.14
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 3					
Affordable Costs	39.08	38.03	37.34	37.04	36.93
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 4					
Affordable Costs	45.47	44.17	43.37	43.02	42.89
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00
Quintile 5					
Affordable Costs	62.12	60.43	59.34	58.86	58.68
Affordable Level	2	2	2	2	2
Design Cost	26.00	26.00	26.00	26.00	26.00

JAMAICA -- 5 YR SCENARIO TWO
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Rural Areas					
Quintile 1					
Affordable Costs	10.57	10.38	10.25	10.22	10.24
Affordable Level	0	0	0	0	0
Design Cost	0.00	0.00	0.00	0.00	0.00
Quintile 2					
Affordable Costs	19.55	19.13	18.89	18.83	18.87
Affordable Level	2	2	2	2	2
Design Cost	18.00	18.00	18.00	18.00	18.00
Quintile 3					
Affordable Costs	22.37	21.91	21.64	21.57	21.61
Affordable Level	2	2	2	2	2
Design Cost	18.00	18.00	18.00	18.00	18.00
Quintile 4					
Affordable Costs	26.28	25.72	25.40	25.32	25.37
Affordable Level	2	2	2	2	2
Design Cost	18.00	18.00	18.00	18.00	18.00
Quintile 5					
Affordable Costs	39.20	38.33	37.85	37.73	37.80
Affordable Level	2	2	2	2	2
Design Cost	18.00	18.00	18.00	18.00	18.00

JAMAICA -- 5 YR SCENARIO TWO
 TARGET GROUP IDENTIFICATION

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
(thousands of households)					
Metropolitan Area					
Affordable Level 0	0.00	1.65	1.66	1.67	1.67
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	6.59	6.63	6.68	6.70
Subtotal, Target Group	0.00	8.24	8.29	8.34	8.37
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	8.24	8.29	8.34	8.37
Other Urban Areas					
Affordable Level 0	0.00	1.03	1.03	1.05	1.06
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	4.10	4.14	4.19	4.25
Subtotal, Target Group	0.00	5.13	5.17	5.24	5.31
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	5.13	5.17	5.24	5.31
Rural Areas					
Affordable Level 0	0.00	2.18	2.17	2.16	2.15
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	8.73	8.68	8.65	8.59
Subtotal, Target Group	0.00	10.91	10.85	10.81	10.74
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	10.91	10.85	10.81	10.74

JAMAICA -- 5 YR SCENARIO TWO
NUMBER OF HOUSEHOLDS REQUIRING SUBSIDY BY INCOME CLASS AND REGION

		1986	1987	1988	1989	1990
		----	----	----	----	----
(thousands of households)						
Metropolitan Area						
	1	0.00	1.65	1.66	1.67	1.67
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00
Other Urban Areas						
	1	0.00	1.03	1.03	1.05	1.06
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00
Rural Areas						
	1	0.00	2.18	2.17	2.16	2.15
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00

JAMAICA -- 5 YR SCENARIO TWO
 ANNUAL INVESTMENT FOR UPGRADING AND NEW CONSTRUCTION

	1986	1987	1988	1989	1990
(millions of currency units)	----	----	----	----	----
Country					
Upgrading	0.00	176.01	173.06	172.31	172.64
New Construction	0.00	529.78	586.06	588.80	592.44
Total	0.00	765.80	759.13	761.11	765.08
Metropolitan Area					
Upgrading	0.00	14.37	14.18	14.19	14.30
New Construction	0.00	355.23	354.81	357.31	360.29
Total	0.00	369.59	368.99	371.50	374.59
Other Urban Areas					
Upgrading	0.00	21.81	21.26	21.01	20.92
New Construction	0.00	170.53	169.41	170.91	173.14
Total	0.00	192.34	190.66	191.92	194.06
Rural Areas					
Upgrading	0.00	139.84	137.63	137.11	137.42
New Construction	0.00	64.02	61.85	60.58	59.01
Total	0.00	203.86	199.48	197.69	196.43

JAMAICA -- 5 YR SCENARIO TWO
 TARGET GROUP INVESTMENT AND SUBSIDY REQUIREMENTS

	1986 ----	1987 ----	1988 ----	1989 ----	1990 ----
Country					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	19.42	19.45	19.51	19.53
Requiring Subsidy	0.00	4.86	4.86	4.88	4.88
Total	0.00	24.28	24.32	24.39	24.42
Target Group Cost (millions)					
Subsidy Portion	0.00	27.32	28.31	28.62	28.49
Supported by Target Group	0.00	401.65	402.07	404.08	405.44
Total	0.00	428.97	430.38	432.70	433.93
Metropolitan Area					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	6.59	6.63	6.68	6.70
Requiring Subsidy	0.00	1.65	1.66	1.67	1.67
Total	0.00	8.24	8.29	8.34	8.37
Target Group Cost (millions)					
Subsidy Portion	0.00	10.35	10.74	10.79	10.65
Supported by Target Group	0.00	195.20	196.30	197.61	198.43
Total	0.00	205.56	207.04	208.40	209.08
Other Urban Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	4.10	4.14	4.19	4.25
Requiring Subsidy	0.00	1.03	1.03	1.05	1.06
Total	0.00	5.13	5.17	5.24	5.31
Target Group Cost (millions)					
Subsidy Portion	0.00	6.98	7.39	7.65	7.81
Supported by Target Group	0.00	111.42	112.03	113.56	115.18
Total	0.00	118.40	119.42	121.21	122.99
Rural Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	8.73	8.68	8.65	8.59
Requiring Subsidy	0.00	2.18	2.17	2.16	2.15
Total	0.00	10.91	10.85	10.81	10.74
Target Group Cost (millions)					
Subsidy Portion	0.00	9.98	10.18	10.17	10.03
Supported by Target Group	0.00	95.02	93.74	92.92	91.83
Total	0.00	105.01	103.91	103.09	101.86

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JAMAICA -- 5 YR SCENARIO TWO
HOUSING INVESTMENT IN RELATION TO GDP

	1986	1987	1988	1989	1990
	-----	-----	-----	-----	-----
(millions of currency units)					
Country					
Total Housing Expenditure	2251.31	2241.19	2252.86	2286.97	2332.92
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	738.47	730.82	732.49	736.59
Subsidy Required	0.00	27.32	28.31	28.62	28.49
Total Housing Investment	0.00	765.79	759.13	761.11	765.08
Metropolitan Area					
Total Housing Expenditure	1058.76	1060.39	1072.87	1096.25	1125.62
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	359.23	358.25	360.71	363.94
Subsidy Required	0.00	10.35	10.74	10.79	10.65
Total Housing Investment	0.00	369.59	368.99	371.50	374.59
Other Urban Areas					
Total Housing Expenditure	446.50	447.24	452.51	462.37	474.76
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	185.36	183.27	184.27	186.25
Subsidy Required	0.00	6.98	7.39	7.65	7.81
Total Housing Investment	0.00	192.34	190.66	191.92	194.06
Rural Areas					
Total Housing Expenditure	746.05	733.56	727.48	728.35	732.54
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	193.87	189.30	187.52	186.40
Subsidy Required	0.00	9.98	10.18	10.17	10.03
Total Housing Investment	0.00	203.86	199.48	197.69	196.43
Total Housing Investment in the Base Year	130.00				
Subsidy as a Percent of Public Capital Expend.	0.00	45.54	46.71	46.30	44.96
Total Housing Investment as a Percent of GDP	0.99	5.84	5.73	5.63	5.52

JAMAICA -- 5 YR SCENARIO TWO
SUMMARY OF HOUSING NEEDS AND INVESTMENT

	1986	1987	1988	1989	1990
	-----	-----	-----	-----	-----
Country					
Population	2314.52	2348.90	2383.40	2418.20	2453.10
Construction New Units/Yr	0.00	15.61	15.64	15.72	15.74
Upgrades per Year	0.00	9.67	9.67	9.67	9.67
Total Construction/Year	0.00	25.28	25.31	25.39	25.41
HHs needing subsidy	0.00	4.86	4.86	4.88	4.88
Subsidy/year	0.00	27.32	28.31	28.62	28.49
Housing investment	0.00	765.79	759.13	761.11	765.08
Investment as pct of GDP	0.00	5.84	5.73	5.63	5.52
Subsidy as percent of PCE	0.00	45.54	46.71	46.30	44.96
Metropolitan Area					
Population	749.42	765.70	782.20	798.90	815.70
Construction New Units/Yr	0.00	8.11	8.17	8.22	8.24
Upgrades per Year	0.00	0.48	0.48	0.48	0.48
Total Construction/Year	0.00	8.59	8.64	8.69	8.72
HHs needing subsidy	0.00	1.65	1.66	1.67	1.67
Subsidy/year	0.00	10.35	10.74	10.79	10.65
Housing investment	0.00	369.59	368.99	371.50	374.59
Investment as pct of GDP	0.00	2.82	2.79	2.75	2.70
Subsidy as percent of PCE	0.00	17.26	17.72	17.46	16.80
Other Urban Areas					
Population	412.47	425.20	438.10	451.30	464.80
Construction New Units/Yr	0.00	4.50	4.54	4.60	4.67
Upgrades per Year	0.00	0.88	0.88	0.88	0.88
Total Construction/Year	0.00	5.38	5.42	5.49	5.56
HHs needing subsidy	0.00	1.03	1.03	1.05	1.06
Subsidy/year	0.00	6.98	7.39	7.65	7.81
Housing investment	0.00	192.34	190.66	191.92	194.06
Investment as pct of GDP	0.00	1.47	1.44	1.42	1.40
Subsidy as percent of PCE	0.00	11.64	12.20	12.38	12.33
Rural Areas					
Population	1152.63	1158.00	1163.10	1168.00	1172.60
Construction New Units/Yr	0.00	3.00	2.94	2.89	2.82
Upgrades per Year	0.00	8.31	8.31	8.31	8.31
Total Construction/Year	0.00	11.31	11.25	11.21	11.14
HHs needing subsidy	0.00	2.18	2.17	2.16	2.15
Subsidy/year	0.00	9.98	10.18	10.17	10.03
Housing investment	0.00	203.86	199.48	197.69	196.43
Investment as pct of GDP	0.00	1.55	1.51	1.46	1.42
Subsidy as percent of PCE	0.00	16.64	16.79	16.46	15.82

Model Output Tables for Scenario Three: 1986-1990

Note: Only those tables that differ from the results
of Scenario One are presented here.

JAMAICA -- 5 YR SCENARIO THREE
 DESIGN STANDARDS AND COSTS

	1986	1987	1988	1989	1990
	-----	-----	-----	-----	-----
Average Inflation Rate(%)	0.00	10.00	10.00	10.00	10.00
Construction Cost Inflatn	0.00	10.00	10.00	10.00	10.00

Metropolitan Area

Price Minimum Standard Formal Sector Housing (Level 3)	56.00	56.00	56.00	56.00	56.00
Design Cost New Housing Unit (Level 2)	16.00	16.00	16.00	16.00	16.00
Design Cost Upgrade Existing Unit (Level 1)	7.00	7.00	7.00	7.00	7.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00

Other Urban Areas

Price Minimum Standard Formal Sector Housing (Level 3)	56.00	56.00	56.00	56.00	56.00
Design Cost New Housing Unit (Level 2)	16.00	16.00	16.00	16.00	16.00
Design Cost Upgrade Existing Unit (Level 1)	7.00	7.00	7.00	7.00	7.00
Value of an Upgradable Unit (Add to cost of upgrade)	15.00	15.00	15.00	15.00	15.00

Rural Areas

Price Minimum Standard Formal Sector Housing (Level 3)	56.00	56.00	56.00	56.00	56.00
Design Cost New Housing Unit (Level 2)	8.00	8.00	8.00	8.00	8.00
Design Cost Upgrade Existing Unit (Level 1)	5.00	5.00	5.00	5.00	5.00
Value of an Upgradable Unit (Add to cost of upgrade)	7.00	7.00	7.00	7.00	7.00

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JAMAICA -- 5 YR SCENARIO THREE
 QUINTILE DESIGN COSTS CLASSIFICATION

	1986 -----	1987 -----	1988 -----	1989 -----	1990 -----
Metropolitan Area					
Quintile 1					
Affordable Costs	19.98	19.54	19.35	19.36	19.47
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 2					
Affordable Costs	37.86	37.01	36.66	36.68	36.88
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 3					
Affordable Costs	46.33	45.31	44.88	44.90	45.15
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 4					
Affordable Costs	51.25	50.35	49.87	49.89	50.17
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 5					
Affordable Costs	71.59	70.22	69.55	69.58	69.97
Affordable Level	3	3	3	3	3
Design Cost	56.00	56.00	56.00	56.00	56.00

JAMAICA -- 5 YR SCENARIO THREE
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Other Urban Areas					
Quintile 1					
Affordable Costs	19.48	18.35	18.51	18.36	18.31
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 2					
Affordable Costs	33.13	32.06	31.49	31.23	31.14
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 3					
Affordable Costs	39.08	38.03	37.34	37.04	36.93
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 4					
Affordable Costs	45.47	44.17	43.37	43.02	42.89
Affordable Level	2	2	2	2	2
Design Cost	16.00	16.00	16.00	16.00	16.00
Quintile 5					
Affordable Costs	62.12	60.43	59.34	58.86	58.68
Affordable Level	3	3	3	3	3
Design Cost	56.00	56.00	56.00	56.00	56.00

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JAMAICA -- 5 YR SCENARIO THREE
 QUINTILE DESIGN COSTS CLASSIFICATION (continued)

	1986	1987	1988	1989	1990
	-----	-----	-----	-----	-----
Rural Areas					
Quintile 1					
Affordable Costs	10.57	10.38	10.25	10.22	10.24
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00
Quintile 2					
Affordable Costs	19.55	19.13	18.89	18.83	18.87
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00
Quintile 3					
Affordable Costs	22.37	21.91	21.64	21.57	21.61
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00
Quintile 4					
Affordable Costs	26.28	25.72	25.40	25.32	25.37
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00
Quintile 5					
Affordable Costs	39.20	38.33	37.85	37.73	37.80
Affordable Level	2	2	2	2	2
Design Cost	8.00	8.00	8.00	8.00	8.00

JAMAICA -- 5 YR SCENARIO THREE
 TARGET GROUP IDENTIFICATION

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
(thousands of households)					
Metropolitan Area					
Affordable Level 0	0.00	0.00	0.00	0.00	0.00
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	6.89	6.93	6.98	7.00
Subtotal, Target Group	0.00	6.89	6.93	6.98	7.00
Affordable Level 3	0.00	1.35	1.36	1.37	1.37
Total	0.00	8.24	8.29	8.34	8.37
Other Urban Areas					
Affordable Level 0	0.00	0.00	0.00	0.00	0.00
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	4.33	4.36	4.42	4.47
Subtotal, Target Group	0.00	4.33	4.36	4.42	4.47
Affordable Level 3	0.00	0.80	0.80	0.82	0.83
Total	0.00	5.13	5.17	5.24	5.31
Rural Areas					
Affordable Level 0	0.00	0.00	0.00	0.00	0.00
Affordable Level 1	0.00	0.00	0.00	0.00	0.00
Affordable Level 2	0.00	10.91	10.85	10.81	10.74
Subtotal, Target Group	0.00	10.91	10.85	10.81	10.74
Affordable Level 3	0.00	0.00	0.00	0.00	0.00
Total	0.00	10.91	10.85	10.81	10.74

JAMAICA -- 3 YR SCENARIO THREE
 NUMBER OF HOUSEHOLDS REQUIRING SUBSIDY BY INCOME CLASS AND REGION

		<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
(thousands of households)						
Metropolitan Area						
	1	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00
Other Urban Areas						
	1	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00
Rural Areas						
	1	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00

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JAMAICA -- 5 YR SCENARIO THREE
 ANNUAL INVESTMENT FOR UPGRADING AND NEW CONSTRUCTION

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
(millions of currency units)					
Country					
Upgrading	0.00	160.90	157.78	156.98	157.34
New Construction	0.00	561.70	557.39	559.90	563.61
Total	0.00	722.61	715.16	716.88	720.95
Metropolitan Area					
Upgrading	0.00	10.97	10.80	10.81	10.91
New Construction	0.00	338.62	337.90	340.34	343.42
Total	0.00	349.59	348.70	351.15	354.33
Other Urban Areas					
Upgrading	0.00	16.12	15.59	15.35	15.27
New Construction	0.00	163.03	161.58	162.86	164.94
Total	0.00	179.14	177.16	178.21	180.21
Rural Areas					
Upgrading	0.00	133.82	131.39	130.82	131.16
New Construction	0.00	60.06	57.91	56.70	55.24
Total	0.00	193.88	189.30	187.52	186.41

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JAMAICA -- 5 YR SCENARIO THREE
 TARGET GROUP INVESTMENT AND SUBSIDY REQUIREMENTS

	1986	1987	1988	1989	1990
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Country					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	22.14	22.15	22.20	22.21
Requiring Subsidy	0.00	0.00	0.00	0.00	0.00
Total	0.00	22.14	22.15	22.20	22.21
Target Group Cost (millions)					
Subsidy Portion	0.00	0.00	0.00	0.00	0.00
Supported by Target Group	0.00	229.70	230.45	231.63	232.30
Total	0.00	229.71	230.45	231.63	232.30
Metropolitan Area					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	6.89	6.93	6.98	7.00
Requiring Subsidy	0.00	0.00	0.00	0.00	0.00
Total	0.00	6.89	6.93	6.98	7.00
Target Group Cost (millions)					
Subsidy Portion	0.00	0.00	0.00	0.00	0.00
Supported by Target Group	0.00	105.93	106.66	107.33	107.66
Total	0.00	105.93	106.66	107.33	107.67
Other Urban Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	4.33	4.36	4.42	4.47
Requiring Subsidy	0.00	0.00	0.00	0.00	0.00
Total	0.00	4.33	4.36	4.42	4.47
Target Group Cost (millions)					
Subsidy Portion	0.00	0.00	0.00	0.00	0.00
Supported by Target Group	0.00	61.40	61.90	62.78	63.66
Total	0.00	61.40	61.90	62.78	63.66
Rural Areas					
Target Households (1,000s)					
Not Requiring Subsidy	0.00	10.91	10.85	10.81	10.74
Requiring Subsidy	0.00	0.00	0.00	0.00	0.00
Total	0.00	10.91	10.85	10.81	10.74
Target Group Cost (millions)					
Subsidy Portion	0.00	0.00	0.00	0.00	0.00
Supported by Target Group	0.00	62.37	61.89	61.52	60.97
Total	0.00	62.37	61.89	61.52	60.97

JAMAICA. -- 5 YR SCENARIO THREE
HOUSING INVESTMENT IN RELATION TO GDP

	1986	1987	1988	1989	1990
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(millions of currency units)					
Country					
Total Housing Expenditure	2251.31	2241.19	2252.86	2286.97	2332.92
Non-Target Group Invest.	0.00	142.75	142.24	143.43	144.99
Target Group Investment	0.00	579.85	572.92	573.45	575.95
Subsidy Required	0.00	0.00	0.00	0.00	0.00
Total Housing Investment	0.00	722.61	715.16	716.88	720.94
Metropolitan Area					
Total Housing Expenditure	1058.76	1060.39	1072.87	1096.25	1125.62
Non-Target Group Invest.	0.00	94.59	94.48	95.25	96.15
Target Group Investment	0.00	254.99	254.21	255.90	258.17
Subsidy Required	0.00	0.00	0.00	0.00	0.00
Total Housing Investment	0.00	349.59	348.69	351.15	354.33
Other Urban Areas					
Total Housing Expenditure	446.50	447.24	452.51	462.37	474.76
Non-Target Group Invest.	0.00	48.16	47.76	48.16	48.84
Target Group Investment	0.00	130.98	129.40	130.03	131.37
Subsidy Required	0.00	0.00	0.00	0.00	0.00
Total Housing Investment	0.00	179.14	177.16	178.21	180.21
Rural Areas					
Total Housing Expenditure	746.05	733.56	727.48	728.35	732.54
Non-Target Group Invest.	0.00	0.00	0.00	0.00	0.00
Target Group Investment	0.00	193.87	189.30	187.52	186.40
Subsidy Required	0.00	0.00	0.00	0.00	0.00
Total Housing Investment	0.00	193.88	189.30	187.52	186.41
Total Housing Investment in the Base Year	130.00				
Subsidy as a Percent of Public Capital Expend.	0.00	0.00	0.00	0.00	0.00
Total Housing Investment as a Percent of GDP	0.99	5.51	5.40	5.30	5.20

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JAMAICA -- 5 YR SCENARIO THREE
SUMMARY OF HOUSING NEEDS AND INVESTMENT

	1986 ----	1987 ----	1988 ----	1989 ----	1990 ----
Country					
Population	2314.52	2348.90	2383.40	2418.20	2453.10
Construction New Units/Yr	0.00	15.61	15.64	15.72	15.74
Upgrades per Year	0.00	9.67	9.67	9.67	9.67
Total Construction/Year	0.00	25.28	25.31	25.39	25.41
HHs needing subsidy	0.00	0.00	0.00	0.00	0.00
Subsidy/year	0.00	0.00	0.00	0.00	0.00
Housing investment	0.00	722.61	715.16	716.88	720.94
Investment as pct of GDP	0.00	5.51	5.40	5.30	5.20
Subsidy as percent of PCE	0.00	0.00	0.00	0.00	0.00
Metropolitan Area					
Population	749.42	765.70	782.20	798.90	815.70
Construction New Units/Yr	0.00	8.11	8.17	8.22	8.24
Upgrades per Year	0.00	0.48	0.48	0.48	0.48
Total Construction/Year	0.00	8.59	8.64	8.69	8.72
HHs needing subsidy	0.00	0.00	0.00	0.00	0.00
Subsidy/year	0.00	0.00	0.00	0.00	0.00
Housing investment	0.00	349.59	348.69	351.15	354.33
Investment as pct of GDP	0.00	2.67	2.63	2.60	2.56
Subsidy as percent of PCE	0.00	0.00	0.00	0.00	0.00
Other Urban Areas					
Population	412.47	425.20	438.10	451.30	464.80
Construction New Units/Yr	0.00	4.50	4.54	4.60	4.67
Upgrades per Year	0.00	0.88	0.88	0.88	0.88
Total Construction/Year	0.00	5.38	5.42	5.49	5.56
HHs needing subsidy	0.00	0.00	0.00	0.00	0.00
Subsidy/year	0.00	0.00	0.00	0.00	0.00
Housing investment	0.00	179.14	177.16	178.21	180.21
Investment as pct of GDP	0.00	1.37	1.34	1.32	1.30
Subsidy as percent of PCE	0.00	0.00	0.00	0.00	0.00
Rural Areas					
Population	1152.63	1158.00	1163.10	1168.00	1172.60
Construction New Units/Yr	0.00	3.00	2.94	2.89	2.82
Upgrades per Year	0.00	8.31	8.31	8.31	8.31
Total Construction/Year	0.00	11.31	11.25	11.21	11.14
HHs needing subsidy	0.00	0.00	0.00	0.00	0.00
Subsidy/year	0.00	0.00	0.00	0.00	0.00
Housing investment	0.00	193.88	189.30	187.52	186.41
Investment as pct of GDP	0.00	1.48	1.43	1.39	1.35
Subsidy as percent of PCE	0.00	0.00	0.00	0.00	0.00