# DEVELOPING A HOUSING FINANCE STRATEGY FOR HONDURAS

by

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## EXECUTIVE SUMMARY

Honduran housing and urban infrastructure needs are acute. Production of shelter meeting minimum standards has fallen sharply in recent years, in large measure due to the reduced availability of financing, particularly of financing on terms that are accessible to lower-income households.

USAID and the Government of Honduras (GOH) are preparing to implement a series of new programs that will help to restore liquidity to the housing finance system and support a substantial increase in the production of shelter and on-site infrastructure during the 1987 to 1989 period. Official AID and government resources will not be sufficient, however, to completely satisfy projected requirements during this period, and Honduras faces the prospect of a sharp curtailment in housing sector activity after these resources have been expended.

The primary purpose of this study, therefore, has been the identification of a strategy that can lead to the creation of a permanent base of domestic financial resources to support the country's efforts to achieve a minimum standard of shelter adequacy for its burgeoning population. Adequacy is defined in terms of availability, affordability, quality of materials, water and sanitation services as discussed in the text.

The strategy that we propose rests on three major initiatives. These are designed to:

- Sharply increase to volume of savings mobilized by formal, private sector financial institutions

- o Increase the security and liquidity of investments in the housing sector, especially of mortgages on low and middle-income housing units, and

- o Broaden the participation of formal, private sector financial institutions in lending for the housing sector while increasing the competitiveness of the sector vis a vis other users of credit.

These initiatives are interrelated and mutually-reinforcing components of a single strategy which should be implemented as an integrated package. The overall success of the strategy rests, however, on the degree of success achieved in mobilizing additional savings domestically. The maintenance of economic and financial stability in Honduras over the next few years depends crucially on restraining the growth in domestic credit to levels that can be supported by the resources mobilized by the financial system. Exceeding such levels would lead, inexorably, to a resurgence of domestic inflation and disastrous consequences for the inflation- and interest-rate sensitive housing sector. Under conditions of overall credit restraint and continuing competition for available funds by the government and other sectors of the domestic economy, housing credit can only expand to the degree that total resource availability is expanded and to the degree that investments in the housing sector are able to compete effectively with lending opportunities in other sectors.

Our recommendations for a program to develop a domestic resource base for housing finance in Honduras are given in detail in Chapter 4. Key elements of the program are summarized below, grouped by each of the three major strategy initiatives that we propose.

**Savings Mobilization**

Three programs are suggested to increase the volume of savings collected from different classes of depositors in Honduras, reduce the costs of serving such depositors and create a relationship with them that will facilitate the evaluation of credit risk and help to qualify participants for housing-related credits, irrespective of their tenure status or access to collateral.

The first would involve the establishment of contractual savings plans for organized groups, such as the employees of large firms, union members and the members of producer cooperatives in urban and rural areas alike. Under such plans, payroll and/or dues collection mechanisms would be used to collect a regular savings deposit from participants. These deposits would be held at a savings and loan or commercial bank, subject only to an interest-rate penalty for early withdrawal, until such time as a pre-established minimum balance qualifying the depositor for a lot purchase, construction or home-improvement loan is reached. The contractual savings mechanism, which has been implemented successfully in other countries and exists on a limited scale in Honduras, has the advantages of motivating savers towards a specific goal and reducing both the administrative costs and risks of qualifying and lending to small-scale borrowers. The more stable deposit base generated for financial institutions through this mechanism also helps to reduce their exposure to the risks of term-intermediation.

For low-income urban households that are not regularly employed or otherwise organized, and for dispersed households in rural areas, other

mechanisms must be devised to facilitate participation in savings plans and eventual qualification for housing credits. In urban areas, community groups or "patronatos" can serve as deposit-collection agents, and, by pledging the collective savings deposits of the group, can provide collateral against individual credits extended, with group approval, to members of the community for home-improvement and similar purposes. Patronatos have legal standing under Honduran law, and, with assistance from savings and loans or commercial banks, could serve as the necessary vehicle for reaching and serving small-scale savers/borrowers cost-effectively and at acceptable risk.

In rural areas, collection agents working on a commission basis may be the most cost-effective manner of reaching small-savers to make possible their participation in contractual or group savings plans such as are envisioned for other groups within the country. Some of the commercial banks in Honduras already use crop-credit supervisors and extension personnel for deposit collection purposes; and, particularly if a bonding system and deposit insurance mechanism are put into place, there should not be major difficulties in extending this concept further. AID may wish to support the development of specialized savings arrangements by helping to organize and initially coinsuring small depositors and bonded collection agents.

**Increasing the Security and Liquidity of Home Mortgages**

To achieve the fundamental purposes above, we propose:

a) AID assistance in the organization and initial capitalization of a privately-managed mortgage default co-insurance program, and

b) Encouragement of the Fondo de la Vivienda and private issuers in placing housing bonds domestically.

Details of the proposed mortgage default coinsurance program are given in Chapter 4. The key is the coinsurance concept, ensuring that lending institutions share in the risks and costs of mortgage default. Such insurance, privately managed and available to all mortgage lenders who wish to insure the whole of their portfolios, can be made to be fully self-financing. By adding to the security and marketability of mortgage-backed housing bonds, such insurance would help to make possible the development of a private market in such securities, generating additional liquidity for the housing sector.

Placement of housing bonds would be concentrated with the social security institute (IHSS), pension funds and insurance companies. These institutional savers are required to maintain large capital reserves, and could be expected to include housing bonds in their portfolios if these are of sufficient quality and competitively priced in relation to other available investment alternatives.

It is suggested also that access to mortgage rediscounting through FOVI be made partly conditional on the financial institution's participation in one or more of the specialized savings mobilization plans outlined above. In this way, enhanced liquidity is tied to resource mobilization, ensuring that these two program components are mutually reinforcing.

**Equalizing Competition and Enhancing Competitiveness**

The Honduran housing finance system, patterned after the U.S. system, is composed of six private and one parastatal savings and loan

companies, and the housing cooperative federation, FEHCOVIL. The role of commercial banks, insurance companies and pension funds, particularly in low-income housing, has been relatively limited. Like the U.S. savings and loans prior to deregulation, Honduran S&L's are restricted from offering checking services to the public, and are obliged to concentrate their portfolios in term mortgage loans. As was the case in the U.S., these restrictions have put the S&L system in Honduras at a competitive disadvantage and under considerable stress during a period of unstable prices and interest rates. As specialized institutions they lack access to opportunities for diversification and the operating flexibility necessary to adapt to changing market conditions and weather adverse periods successfully.

To increase their competitiveness and enhance their chances of survival, it is recommended that S&L's be provided with expanded asset powers allowing portfolio diversification towards a mix that includes more short-term loans (e.g., lot purchase, construction, home-improvement and certain categories of personal loans), and that they also be authorized to provide checking and other services that reduce their cost of funds and help to attract a larger clientele. Greater flexibility in the composition of both assets and liabilities should allow the S&Ls to avoid, with prudent management, crisis situations such as have prevailed in the last couple of years.

At the same time, to mitigate the negative impact of our proposals on the volume of mortgage lending by the S&Ls, and to provide a more level playing field for any financial institution that wishes to engage in mortgage lending, we would encourage regulatory reforms aimed at

providing commercial banks equal access to mortgage coinsurance and refinancing, and also recommend that reserve requirements on bank deposits financing housing loans be made the same as reserve requirements for the S&Ls. Under these conditions, banks would be encouraged to expand mortgage and other housing-loan activities. Their financial strength and extended branch office network should contribute to a more rapid expansion of the savings and lending programs we envision, and provide for a more competitive, and ultimately healthier and more durable housing finance system for the country as a whole.

In summary, the above are the key elements for implementing a viable housing finance strategy in the near and medium term. What can be accomplished if this strategy is carried out?

Our estimates, based on conservative assumptions, indicate the following. With full implementation of the strategy, Honduras will have, by 1990:

- Generated over Lps. 190 million in additional domestic savings (1987-1990), of which more than Lps. 160 million is expected to be allocated towards credits for the housing sector
- Achieved an annual increment of Lps. 56 million in new lending for the housing sector, more than replacing external resources provided in the interim through the AID HG and ESF programs
- Increased by over 47 percent the number of households achieving acceptable dwelling quality during the 1986-1990 period
- Brought total housing investment in Honduras to about 87 percent of investment required to meet projected housing needs for the whole population, versus a current investment level that is estimated at only 77 percent of full requirements.

Most importantly, Honduras will have developed a self-sufficient and viable housing finance system that will continue to evolve and grow in response to changing requirements of the market independently of the

fluctuating availability of external resources. In coping with the requirements of housing finance, the financial system will also have tried and perfected mechanisms for efficiently mobilizing domestic resources, better assessing and managing risk, preserving the value of capital while channeling it to its best uses in the economy. By contributing to the growth and evolution of a more sophisticated and secure financial system, better attuned to the needs and characteristics of the Honduran population, implementation of the housing finance strategy will help to meet the primary purpose for which it was designed, but will also generate a lasting and far broader impact by helping to bring about the institutional foundations for a viable, private-sector development-finance system.

# CHAPTER 1

# INTRODUCTION

This report discusses strategies for addressing Honduras' housing requirements over the next five years. Its primary aim is to help mobilize domestic financial resources for the housing sector, paying special attention to the needs of households with low and moderate incomes. The analysis is based, in part, on the difference between estimates of current investment in the sector and levels of investment required to meet future housing needs.

While Honduras' housing needs are substantial, the new government has expressed interest in making housing a priority in its overall economic and social policy and in developing a framework for increased activity to alleviate housing deficits. This chapter introduces the reader to current economic and housing circumstances in Honduras, recent developments in housing policy, and the specific tasks of the study.

## Economic Situation

Political turmoil in the region, unfavorable terms of trade, world recession and financial instability resulted in a significant deterioration of the Honduran economy in the early 1980s. Real GDP growth dropped steadily between 1981 and 1983 from an average of about 5 percent during the 1970s to contractions of -1.8 and -0.5 percent in 1982 and 1983. Difficulties with continuing deficits on current account led to reliance on import restrictions which exacerbated the domestic recession and unemployment, while growing public sector deficits fueled inflation.

**TABLE 1.1**

**HONDURAS: BASIC INDICATORS**
(in percent)

| Annual Changes in | 1981 | 1982 | 1983 | 1984 | Est. 1985 |
|---|---|---|---|---|---|
| Real GDP at market prices (in percent) | 1.2 | -1.8 | -0.5 | 2.8 | 2.5 |
| Per capita real national income | -2.1 | -3.5 | -1.9 | -1.2 | -1.1 |
| Consumer Prices End of Year | 9.2 | 8.9 | 7.8 | 3.7 | 4.0 |

Source: Central Bank of Honduras.

In the past two years, the economy has slowly begun to recover. Real GDP grew by 2.8 percent in 1984 and by an estimated 2.5 percent in 1985. This turnaround is attributed to a sharp increase in private investment related to the completion of a large hydroelectric project (El Cajon) that has freed credit for use elsewhere, strong growth in exports, and an increase in private sector confidence. Domestic inflation has been low due to a decline in external prices and tight monetary management. Annual inflation dropped from about 8 percent in 1983 to 3.7 percent in 1984 (Table 1.1). The overall public sector deficit is estimated to have declined from 12 percent of GDP in 1984 to 8.5 percent of GDP in 1985. Current payments deficits have remained constant at around 11 percent of GDP, since exports and imports have grown at comparable rates, resulting in no net change.

Nevertheless, real per capita income has continued to decline (albeit, at a slower rate) and unemployment remains high. Per capita income growth changed from -1.2 percent in 1984 to an estimated -1.1 percent in 1985 (Table 1.1). A 1985 survey conducted in Tegucigalpa and San Pedro Sula estimates unemployment to be about 14 percent, while Central Bank studies indicate a nationwide rate of about 12 percent.

Two key determinants of the current economic conditions are government's continuing demands for credit with which to finance its deficit and the very high real interest rates in effect (which are essentially administratively set to clear the market for loanable funds). Both of these facts make mobilization of funds for long term loans, such as residential mortgages, very difficult.

**Housing Circumstances**

The 1985 population of Honduras was estimated to be 4.2 million — about 0.7 million households. The number of housing units in 1985 was approximately 707,580 with 21 percent found in the metropolitan areas (Tegucigalpa and San Pedro Sula), 9 percent in other urban areas and 70 percent in rural areas. Honduras will continue to be predominantly rural in the next decade if present population growth patterns remain unchanged.

Table 1.2 presents some descriptive indicators of housing stock quality in Honduras. The second panel of the table shows the distribution of units classified by the strength of the materials used for roofs, floors, and walls. Urban-rural contrasts are dramatic; only 23 percent of the units in rural areas are rated as "permanent" compared to 45 percent and 78 percent in urban and metropolitan areas, respectively. Only 6 percent of the dwellings in metro areas, on the other hand, are classified as "improvised" compared to 61 percent in rural areas. This pattern — of higher quality housing stock in urban areas — is common throughout the world.

The third panel in Table 1.2 presents the distribution of housing by infrastructure adequacy. A unit is considered to have adequate infrastructure if it has both water and sewer facilities in metro and urban sectors, with piped water (on or off the premises) and flush or water-sealed toilets being designated as minimally adequate. In rural areas, wells and latrines are regarded as adequate. In the metro sector, 57 percent of all permanent units enjoy water and sewer services whereas only 16 percent of the improvised dwellings do so.

TABLE 1.2

HOUSING CHARACTERISTICS IN HONDURAS
1986
(percentages)

| | Metro[a] | Urban | Rural |
|---|---|---|---|
| Distribution of units by location | 21 | 9 | 70 |
| Distribution of units by building materials | | | |
| permanent | 78 | 46 | 12 |
| semi-permanent | 16 | 29 | 16 |
| improvised | 6 | 25 | 61 |
| Total | 100 | 100 | 100 |
| Percentage of units with adequate infrastructure | | | |
| permanent | 57 | 54 | 83 |
| semi-permanent | 71 | 51 | 34 |
| improvised | 16 | 16 | 39 |
| Distribution of units by tenure | | | |
| owned | 38 | 53 | 86 |
| rented or leased | 35 | 33 | 14 |
| squatters | 27 | 14 | - |
| Total | 100 | 100 | 100 |

Source: Honduras Household Classification Matrix. See Annex A for discussion on how these estimates were generated.

a. "Metro" includes Teguicigalpa and San Pedro Sula. "Other urban" includes all other places of over 2000 population.

The high share (83 percent) of permanent dwellings with both water and sanitation in rural areas results both from the fact that there are relatively few permanent units (23 percent), and from the low standard (well and latrine) used to define "adequate" service. Given that 61 percent of the dwellings in the rural sector are rated as improvised, and that only 39 percent of these dwellings have well water or latrines, there remains a large need for continued rural water and sanitation programs. Likewise, only about half of the permanent dwellings in metro and urban areas have piped water and flush toilets, showing a similar lack of coverage.

Below, units have been classified into "acceptable," "upgradable," and "non-upgradable" categories, based on whether or not they pass minimum standards for the structure adequacy as well as water and sanitation services. So, an acceptable unit is one made of permanent materials and having adequate infrastructure services; A non-upgradable unit is made of improvised materials and may or may not have adequate infrastructure; all other units are upgradable. Based on calculations done for this study (detailed in Annex B), the percentage of dwellings in various categories in 1986 are:

| | Metro | Urban | Rural |
|---|---|---|---|
| acceptable | 46 | 28 | 19 |
| upgradable | 48 | 47 | 20 |
| non-upgradable | 6 | 25 | 61 |

These figures along with those discussed in the next chapter reveal the challenging task Honduras faces in providing minimally adequate housing for all in the years to come.

The final panel in Table 1.2 shows the tenure distribution for households in Honduras. Tenure status is an important factor because it influences the rate at which a household will invest in its dwelling. Moreover, ownership plays a decisive role in allowing or blocking access to formal sector finance; a household can rarely obtain a formal sector loan without having clear title to its land. Therefore, we attempted to estimate the proportion of owners who did not have clear title to the land and to designate them as squatters. Our tenure estimates are based on the 1978 Household Income and Expenditure Survey, adjusted for more recent surveys conducted within squatter settlements in Tegucigalpa and San Pedro Sula, where the largest concentration of squatter households are found.[1] About 35 percent of households in the metropolitan area are estimated to be squatters in contrast to only 15 percent in the urban sector. No households in rural areas are classified as squatters.

There are more renters than squatters in both the metro and urban sectors. While there exists a rent control law in Honduras, it is difficult to discern its overall influence upon the rental market. Both by law as in practice, renters are protected from eviction, late payments, and breaking rental agreements. Landlord-tenant disputes can take two years to get to court and another three to five years more to be decided, usually in favor of the renter. On the other hand, while the law states a maximum rent to be charged, the maximum is not enforced. Neither are sanitary and safety violations monitored closely;

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1. To the extent that squatters are quite certain of their rights to remain on their properties, it is possible to consider them as secure owners. In fact in Honduras, removing squatter settlements is not considered politically feasible.

reports of negligent slum lords abound. Most renters are found in the lower income deciles. Little additional rental construction appears to be occurring.

**Current Government Policies**

Throughout the 1960s and into the mid-seventies, Honduran housing policies were geared toward government-built and subsidized units benefiting middle-income households. Direct construction programs produced units at prices that virtually excluded families of low incomes and the general shortage of housing finance meant that the few who could afford to borrow soaked up the little that was available.

After the mid-seventies the emphasis began to change toward housing for low-income families, lower construction standards, progressive housing and neighborhood upgrading, and developing financial mechanisms to mobilize resources toward the housing sector. Much of this change can be attributed to AID's Housing Guaranty (HG) programs, which emphasize that such targeting is crucial if the country is to begin to make a dent in its housing problem.

Over the past several years there has been no clear housing policy in Honduras. Prior to the Azcona government, most of the formal sector construction was for middle-or upper-income families. CONSUPLANE estimates that 7,000 units a year are built by the informal sector in contrast to 3,500 units a year built by the formal sector. Over the years a specialized group of savings and loan associations has developed, and these along with commercial banks and several pension funds are providing a significant volume of formal housing finance. These institutions are described further in Chapter 3.

The lack of a clear policy coupled with low priority for the housing sector has resulted in delayed implementation and completion of several major AID programs. Since the election of the new government, AID has been negotiating the status of these programs. There are four AID-assisted projects active in Honduras today or being planned:

(1) Shelter for the Urban Poor ($10,500,000) intended to develop the National Housing Institute's (INVA) capability to produce and deliver about 2,000 minimum cost shelter units and 1,000 home improvement loans per year targeted to poor families in the metropolitan and secondary cities;

(2) Private Sector Shelter ($25,000,000) created to encourage private sector involvement in providing shelter affordable to the poor;

(3) Urban Upgrading ($10,000,000), to improve the capacity of municipal governments in the metro sector for upgrading marginal neighborhoods; and,

(4) Shelter for the Urban Poor II ($25,000,000) for employment generation and to provide access to housing to low-income families.

All but the last project are currently being implemented.

A recent evaluation of the three programs shows that the number of units financed, home improvement loans made, and beneficiaries will be fewer than anticipated. Inadequate infrastructure, errors made in site selections, and lack of institutional capacity have been cited as contributing factors.

The Private Sector Shelter Program has been burdened by the poor performance and recent closure of the National Housing Finance Institute (FINAVI), which was to have played a key role in the project and which was the regulatory agency and refinancing facility for the savings and loan associations. FINAVI was dismantled because of financial problems caused primarily by its involvement in the government's poorly structured emergency shelter program which was launched in 1980. The

project left FINAVI with a large inventory of houses it was unable to sell due to poor location, lack of marketing studies, an ineffective sales program, and incomplete infrastructure. The financial cost decapitalized the institution, and the GOH decided to transfer its assets and liabilities to the Central Bank. Some of FINAVI's functions have been taken over by a successor institution, FOVI, which is discussed in greater detail in Chapter 3.

At the time of the field work for this project discussions about government housing policy focused on how best to distribute the available AID resources of Lps.85 million plus Lps.10 million raised by FOVI. The so-called Administration proposal divides a total Lps.95 million into two programs. Forty million lempiras would be reserved for infrastructure upgrading through municipalities. The remaining Lps.55 million would be for direct construction and home improvement loans, channeled through public sector institutions such as INVA and private sector entities such as savings and loan associations, banks, cooperatives, and private voluntary organizations. The AID resources, Lps.85 million of the total, would provide infrastructure or loans to families with incomes below the median. The private savings and loan associations are expected to provide one-bedroom and core units in the metro sector, whereas the other private sector entities (cooperatives and PVOs) would provide lower cost solutions such as wet cores, sites and services, and home improvement loans in secondary cities and smaller towns. Under this plan, no resources are scheduled for the rural areas.

A group of savings and loan association representatives (SNAP) and the National Planning Agency (CONSUPLANE) have also proposed strategies

for allocating these resources. As with the Administration plan, SNAP allocates the resources between the metro and urban sectors; their plan is to build one-bedroom and wet core units for moderate and low-income families, primarily the former. CONSUPLANE allocates some resources to poor families in rural areas and distributes the remainder across households in the lower-income deciles in urban and metro areas.[1]

In addition to the Housing Guaranty programs and ESF monies, AID's Rural Housing Improvement project channels resources through the National Housing Institute (INVA). INVA then provides financing to various government institutions, private voluntary organizations, and cooperatives for the provision of short-term credit—in the form of building materials—to rural homeowners improving their existing dwellings. This program has assisted about 12,000 households but is to be discontinued this year when its funds are exhausted.

Once the decision about how to allocate external financing available to the housing sector has been made, Government must address a much more difficult question: how to mobilize domestic finance in the future to replace these external funds. Since the AID funds are to be spent by the end of 1989, Honduras has several years to design and implement policies that will yield the necessary financing. This paper presents an approach that is feasible in the near term, and that significantly increases domestic funding for the housing sector.

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1. For a more detailed discussion of the differences between the three proposals, and their projected differential impact on the housing stock, refer to Annex D.

**Purposes of the Study**

This study represents the logical next step to the Housing Needs Assessment done for Honduras by PADCO in February of 1986.[1] As discussed in Chapter 2, The Housing Needs Assessment estimated the investment required annually to house Hondurans in a minimally adequate manner. The next task is to define a strategy for generating these resources. A primary objective is to develop a stable domestic source of financing for low cost shelter by the time the presently available external resources are exhausted.

The balance of this report is divided into four parts. First, we define the size of the resource gap by reviewing the country's housing needs and contrasting them with current allocation of resources going into the sector. Second, we discuss alternatives for mobilizing additional funds for shelter. Third, a specific package of initiatives for mobilizing and allocating additional funds is defined. Finally, the impact of pursuing this approach is evaluated in terms of its overall efficiency and its impact upon the national housing stock.

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1. Linares, Carlos. "Diagnostico y Pronostico de Necesidades de Vivienda en Honduras 1985-2005," Informe Final (PADCO, 1986).

## CHAPTER 2

## HOUSING NEEDS AND INVESTMENT ESTIMATES

Before formulating appropriate mechanisms for mobilizing additional resources into the housing sector, it is essential to estimate the volume of resources required to house Hondurans in a minimally adequate way. This section begins by outlining the housing needs and investment requirements of Honduras over the 1985-1990 period. We base these estimates on the Housing Needs Assessment methodology, which in turn depends on certain assumptions about economic and demographic trends and on the specification of a realistic minimum standard of housing quality. We then present estimates of the current level of investment. The gap between actual investment levels and resource requirements serves as a target for designing policies to mobilize additional resources into the housing sector.

### Housing Needs and Related Investment

The Housing Needs Assessment Methodology estimates aggregate needs levels in two steps. First, the number of dwelling units needed each fifth year over a 10- to 20-year planning period is computed. The computations are based on a plan that calls for all households to be living in adequate units by the end of the planning period. Specifically, the plan calls for (a) new units for newly formed households, to relieve overcrowding, and to replace obsolete and deteriorated units, and (b) the upgrading of existing units that fail a minimum quality standard. To estimate these needs, the analyst

specifies the rate at which housing deficits existing in the base year are to be corrected. In this case, deficits are assumed to be eliminated at the rate of ten percent per year over 10 years.

The second step in the Needs Assessment Methodology is to estimate the level of housing investment required every year to achieve planned production of new units and upgrades of existing units. The amount of private investment anticipated is computed, so that the gap between the required level of investment to fulfill the plan and the investment coming from private sources can then be estimated. This gap essentially represents total subsidy requirements. The Needs Assessment model computes these resource estimates for households in each income quintile in three sectors — metropolitan, urban, and rural areas.

The results of the Needs Assessment Methodology for Honduras are presented in Tables 2.1 and 2.2. Table 2.1 presents housing needs and related investment requirements for the year 1990 estimated using more detailed information than was used in the original PADCO study.[1] In this case, non-upgradable units and improved upgradable units are replaced at a rate of a ten percent per year, which is consistent with the rate of progress resulting from USAID assistance to the sector. In the country as a whole, 85,700 units would be required to meet production levels called for in a plan that provides all new households with minimally adequate units, and deals with deficits present in

1. For a detailed description of the differences between our revised estimates and those of the original needs assessment, refer to Annex A.

TABLE 2.1

SUMMARY OF HOUSING NEEDS AND INVESTMENT REQUIREMENTS IN 1990 BY SECTOR

| | Metro | Urban | Rural | Total |
|---|---|---|---|---|
| Units needed (000s) | | | | |
| Upgrading existing units | 7.1 | 2.9 | 10.3 | 20.3 |
| New construction | 11.5 | 5.1 | 48.9 | 65.4 |
| Total | 19.6 | 8.0 | 59.2 | 85.7 |
| Investment needed (millions of lempires) | 329.7 | 83.0 | 257.3 | 670.0 |
| Government subsidies necessary for "starter" solution | - | 5.2 | - | 5.2 |

Source: Annex A, Table A.6 and A.9.

TABLE 2.2

TYPE OF "INITIAL" HOUSING SOLUTION AFFORDABLE
(percentages)

| | Metro | Urban | Rural | Total |
|---|---|---|---|---|
| No solution affordable | - | 34 | - | 3 |
| Upgraded unit | - | - | - | - |
| Urbanized lot | 49 | 34 | 74 | 64 |
| Basic unit | 51 | 32 | 26 | 33 |
| TOTAL | 100 | 100 | 100 | 100 |

Source: Tabulations of output from the Housing Needs Assessment model.

1985 at the rates indicated. The corresponding investment level is projected at about Lps.670 million for 1990 (in 1985 prices). This investment is sufficient for all households scheduled under the plan to obtain fully adequate housing or to improve their units up to the minimum standard (defined below). An equivalent investment figure for 1986 is about Lps.575 million; i.e., this is the investment necessary to carry out the same program in 1986.[1]

The capacity of households to afford units meeting minimum standards determines the ability to reach the goal of adequate housing for all. The Needs Assessment methodology focuses on those households unable to afford housing supplied by the formal private sector but are able to afford only the minimum units or less. These so-called "target households" can be assigned to one of two categories of housing solutions: an upgrade of the household's existing unit or a newly constructed "urbanized lot." The amount a household can afford to pay for shelter is determined by the capitalized value of its current housing expenditures. The model computes the difference between the design cost of the housing solution and the capital value affordable to households who are unable to afford the unit assigned to them. The minimum standard is a unit built of permanent materials and having adequate infrastructural services. For upgrades, it is assumed that improved infrastructure services are needed; for new units the standard is an urbanized lot with a wet core and an additional room.

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1. The cost is lower in 1986 because there are fewer new households for whom to provide housing and a smaller housing stock that is depreciating.

Table 2.2 shows the distribution of households by the type of unit they can initially afford. It is important to stress that the urbanized lot is only that; no unit is provided. This is the "starter" solution, which households are expected to improve upon to the minimum level. The subsidy figures in the last row of Table 2.1 are the subsidies necessary for all households to afford a unit upgrade or this starter solution. The overall investment figures, in contrast, include the cost of dwellings meeting the minimum standards as well. We present the subsidy figures for the urbanized lot rather than the full minimum standard because the starter solution appears to be the appropriate standard for government assistance.

Returning to the affordability calculations, one sees that in Honduras as a whole all but 3 percent of households can afford at least an upgraded unit. Moreover, fully 64 percent and 33 percent, respectively, can afford an urbanized lot and a basic unit. These encouraging estimates result from Honduran households' purchasing power and from the realistic standards used to define the housing solutions. Higher cost solutions would have produced a much larger estimate of the share of households unable to afford even an upgraded unit.

**Current Housing Investment**

We have developed our own estimate of current investment in the shelter sector using the Housing Quality Simulation Model. This model, which is described more fully in Annex E, arrives at investment estimates by simulating housing market activities such as increases in the population of households, dwelling unit upgrades, and replacement of depreciating units. The total investment level produced by the model

includes funds from all sources—formal finance, government subsidies, savings, and informal finance. Thus, it is more comprehensive than standard published measures of housing investment.

Using the HQM, we estimate total actual housing investment in 1990 to be Lps.491 million (in 1985 prices) versus the Lps.670 million necessary to meet the country's housing needs. This leaves a gap of Lps.179 million. The corresponding gap for 1986 is estimated to be Lps.129. This gap need not be filled entirely by government; given additional opportunities, households can be induced to dedicate increased proportions of their income to housing investment. Still, the role of formal finance and government are critical, since active steps must be taken to increase the flow of domestic resources to the housing sector.

During the 1987-1989 period, a large infusion of AID-loan and grant funds into the housing sector would substantially reduce the resource gap. Under the Administration/AID proposal, use of the funds is concentrated in 1989 (the last year of planned spending), when half of the resources are expended. Table 2.3 shows the scale of the proposed program in 1989; almost 40,000 households will receive infrastructure services or loans for upgrading or building their homes. Total investment reaches Lps.550 million in 1989, thereby cutting the gap to about Lps.100 million. The challenge to the country is to design a system that not only replaces these funds with domestic resources but supplements them substantially for the future.

The results of the Housing Quality Simulations also provide us with some guidance on the impact on housing quality of deploying the

TABLE 2.3

PLANNED GOVERNMENT ASSISTANCE IN 1989[a]
(households participating)

| Program or Financing Source | Metro | Urban | Rural | Total |
|---|---|---|---|---|
| FOVI | 139 | 23 | - | 162 |
| Home Improvement Loans | 3,226 | 386 | 1443 | 5,055 |
| Infrastructure Upgrading | 10,944[b] | 10,944[b] | 10,628 | 32,516 |
| Construction of Basic Units | 1,680 | 261 | 285 | 2,225 |
| TOTAL | 15,989 | 11,614 | 12,356 | 39,959 |

a. Under the Administration plan. For details, see Annex C.

b. Of which 3,547 metro and the same number of other urban households will obtain complete water and sanitation services.

currently available resources over the 1986-1990 period. Table 2.4 shows the percentage of households in the metro, urban, and rural sectors living in structures built of permanent materials and passing the minimum infrastructure standards as of 1986; these are termed "fully acceptable" units and generally correspond to the minimum standards used in the housing needs assessment. The table also reports the shift in these distributions between 1986 and the end of 1990, assuming that the Administration program is fully implemented on schedule.

The results of implementing these programs are quite impressive. Looking at the bottom two rows of figures in the table, one sees that in metro and rural areas, there is an overall increase of about 13 percentage points in the share of households living in fully acceptable units over the period; in urban areas, this gain is equivalent to almost 50 percent (13.6/28.0). In rural areas, some 36,500 households shift into fully acceptable housing — versus about 50,500 in the metro and urban sectors combined.

Examining changes in housing adequacy by income decile for the three sectors yields further insights on the impacts of the Administration proposal. Predicted gains in housing quality (measured as change in the percent of households in each income decile who occupy adequate units) are greatest in the metro sector and smallest in the rural sector. This is explained by the fact that water and sanitation programs constitute a much larger share of the total policy package for rural areas than for metro and urban areas. Provision of improved infrastructure services addresses a critical need of rural households,

TABLE 2.4

PERCENT OF HOUSEHOLDS OCCUPYING FULLY ACCEPTABLE DWELLINGS IN 1986 AND 1990: METRO, URBAN, AND RURAL AREAS
(percentages)

| Percentage of Households in Income Decile (%) | 1986 | | | 1990 | | | Net Change 1986-90 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Metro | Urban | Rural | Metro | Urban | Rural | Metro | Urban | Rural |
| 1. (lowest) | 19.5 | 7.9 | 12.9 | 35.3 | 17.4 | 16.8 | 15.9 | 9.6 | 3.9 |
| 2. | 28.9 | 9.3 | 13.3 | 45.5 | 22.1 | 18.3 | 16.6 | 12.7 | 5.0 |
| 3. | 31.2 | 10.6 | 12.0 | 48.4 | 26.3 | 16.7 | 17.2 | 15.7 | 4.6 |
| 4. | 34.1 | 16.9 | 12.8 | 53.0 | 35.5 | 18.1 | 18.9 | 18.5 | 5.3 |
| 5. | 45.0 | 19.6 | 13.4 | 63.0 | 38.9 | 18.0 | 18.0 | 19.3 | 4.6 |
| 6. | 44.7 | 21.4 | 19.6 | 58.3 | 38.6 | 25.1 | 13.6 | 17.2 | 5.5 |
| 7. | 47.7 | 27.9 | 19.1 | 55.1 | 42.3 | 22.0 | 7.4 | 14.4 | 3.0 |
| 8. | 56.2 | 36.4 | 15.4 | 62.6 | 50.1 | 22.5 | 6.4 | 13.7 | 3.1 |
| 9. | 63.1 | 46.3 | 29.3 | 68.4 | 58.1 | 33.6 | 5.3 | 11.9 | 4.4 |
| 10. (highest) | 93.8 | 83.4 | 35.7 | 94.7 | 86.9 | 39.9 | 0.9 | 3.5 | 4.2 |
| Average % in class | 46.4 | 28.0 | 18.8 | 58.4 | 41.6 | 23.1 | 12.0 | 13.6 | 4.4 |
| Total units in class (000) | 68.6 | 17.1 | 93.5 | 106.0 | 30.2 | 130.0 | 37.4 | 13.1 | 36.5 |

but does not bring semi-permanent or improvised dwellings up to the minimum standard of adequacy. In metro and urban areas, infrastructure upgrading is combined with home improvement loans for lower income households, and this combination yields a potent mechanism for creating fully acceptable units.

The rural program's concentration on infrastructure upgrading also explains why housing quality gains are evenly distributed among income groups in the rural sector. Typically, water and sanitation services are extended to new areas on the basis of need, not on the basis of income. In metro and urban areas, where flexible home improvement and mortgage loans play a greater role, the Administration proposal succeeds quite well in targeting the biggest quality gains to households with incomes below the median.

It is important to emphasize that mere participation in a program does not guarantee that a household will occupy an acceptable unit. If a household living in a deficient dwelling receives improved infrastructure services, it must still bring its unit up to the minimum standard for the household to be "recorded" as occupying a fully satisfactory unit. Similarly, obtaining a loan for making improvements in the structure will shift a dwelling into the fully acceptable category only if the value of the improvements is great enough. Thus, gains achieved under the Administration plan are doubly impressive.

Nevertheless, serious housing deficits persist, despite the improvements predicted from 1986 to 1990. As the final entries in Table 2.4 illustrate, a substantial share of households are still expected to occupy unacceptable dwellings in 1990 -- about 40 percent in the metro

sector, almost 60 percent in the urban sector, and over 75 percent in the rural sector. Thus, the gains expected for the remainder of the 1980s must be supplemented and sustained, using domestic resources. This is the challenge to which we now turn.

# CHAPTER 3

# HOUSING FINANCE IN THE HONDURAN FINANCIAL SYSTEM

## Overview

The formal financial system of Honduras is composed of the Central Bank, 15 commercial banks, three development banks, six private and one public savings and loan institution, several foreign and domestic insurance companies and the credit union and housing cooperative federations, FACACH and FEHCOVIL.[1] The total domestic assets of these institutions are shown in Table 3.1, by category and consolidated for the financial system as a whole.

As shown, total domestic assets of the Honduran financial system were equivalent to about $1.9 billion at the end of 1984, up from about $1.2 billion at the end of 1981.[2] Outstanding mortgage and construction loan balances of the commercial banks, S&Ls, and insurance companies stood at 421 million lempiras ($210 million) at the end of 1984, vs. Lps. 348 million in 1981. Mortgage and construction loans fell, therefore, as a proportion of the domestic assets of the financial system, from about 14 percent in 1981 to only 11 percent by December 31, 1984. As outstanding mortgage and construction loan balances were

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1. Central Bank statistics do not include the social security institute (IHSS) or the pension funds (INJUPEMP, INPREMA and IPM) in their definition of the financial system, though such institutions are often included in the statistics of other countries. The four groups named above play a secondary but growing role in housing finance in Honduras -- both as originators of mortgage and construction loans, and as major institutional savers and bond purchasers. Their potential future role is discussed in Chapter 4.

2. Unless otherwise noted, statistics cited in this chapter are from the Central Bank of Honduras.

TABLE 3.1

DOMESTIC ASSETS OF THE HONDURAN FINANCIAL SYSTEM
(millions of Lempiras)

| | 12/31/81 | 12/31/84 | 9/30/85 |
|---|---|---|---|
| Central Bank of Honduras | 739 | 1,340 | 1,396 |
| Commercial banks | 1,291 | 2,041 | 2,190 |
| Development banks | 403 | 571 | 629 |
| Savings and loan associations | 166 | 231 | 246 |
| Insurance companies, credit unions and cooperatives | 182 | 205 | n/a |
| Consolidated financial system | 2,465 | 3,758 | n/a |

Source: Central Bank of Honduras.

virtually unchanged at the end of 1985 (Lps. 429 million), this proportion can be inferred, on the basis of the growth in domestic assets shown in Table 3.1, to have fallen somewhat further in 1985 and early 1986.

This declining trend in the availability in mortgage and construction finance in Honduras is corroborated by Central Bank figures on new lending of the commercial banks and the savings and loan associations, which show that such credits fell from 10.6 to 6.4 percent of the total volume of new credits extended by these institutions between 1981 and 1985. The trend is only slightly offset by modest increases in mortgage and construction lending by INJUPEMP and INPREMA, the public sector employee and teacher pension funds, respectively. These institutions extended loans to their membership amounting to about

Lps. 35 million in 1984 vs. Lps. 151 million by the commercial banks and savings and loans institutions.

There has, therefore, been a substantial decline in the relative participation of the construction and housing sectors in formal sector finance over the last few years. This decline is due to a variety of factors, among which the most important include the following:

- o A sharp increase in the borrowing requirements of the public sector, with public sector debt up from 20.6 to 28.3 percent of the domestic assets of the financial system between 1981 and 1984
- o The maintenance of unusually high real rates of interest on loans, enforced in an effort to contain the demand for credit, thus restraining pressures on the inflation and exchange rates
- o uncertainty regarding the government's ability to contain inflationary pressures, leading to a growing reluctance among lending institutions to extend medium and long-term credits
- o The foundering and eventual collapse of FINAVI, a parastatal mortgage discount facility, the only institution of its kind in Honduras, which was finally dissolved in 1985
- o A reduction in the availability of external resources for housing finance, due in part to the government's reluctance to incur additional foreign indebtedness at the high rates of interest prevailing internationally between 1980 and 1985.

Gross domestic savings have fallen sharply as a percentage of GDP in Honduras — from 20.1 percent in 1979 to 12.5 percent in 1985 — reflecting the slowdown in growth that has been experienced, as well as insecurity with respect to financial and political stability within the economy and the region. These factors have led to a fall in private savings and investment that has been even more dramatic, going from 10.5 to 5.5 percent of GDP (1979-1985) in the case of savings, and from 14.5 to 7.4 percent of GDP in the case of private fixed capital formation. Only large inflows of external capital and a massive draw-down in

international reserves have prevented much tighter credit conditions or a more severe inflationary episode from taking place. Either situation would have resulted in an even more pronounced negative impact on housing finance than that which was experienced.

**Recent Developments and Current Outlook**

Important recent developments that can be expected to have an impact on the housing sector and housing finance in Honduras include the following:

- o A general improvement in the economy, due in large measure to external conditions (better export prices, lower petroleum prices and international interest rates), and prospects for the resumption of more normal GDP growth rates in the range of 4-6 percent per year. Renewed growth and stronger prospects should help to restore domestic savings rates to more normal historical levels, especially as regards the private sector.

- o Good prospects for early negotiation of about $44.5 million in external resources for housing finance and infrastructure upgrading through the AID Housing Guaranty program and AID Mission funding.[1]

- o Assumption of the assets and liabilities of FINAVI by the Fondo de la Vivienda (FOVI), a trust fund to be managed by the Central Bank of Honduras to discount mortgages originated by the savings and loans, the national housing institute (INVA -- Instituto de la Vivienda) and other qualified financial institutions. The government has authorized a Lps. 10 million initial bond issue, and, in conjunction with the AID funds to be channeled through FOVI, appears disposed to take other measures to restore liquidity to the housing finance system.

- o Policy-level support for housing. As evidenced by a recent housing strategy statement issued by the national planning council (CONSUPLANE), the current government assigns considerable importance to revitalizing the housing sector, both as a means of addressing an increasingly severe unemployment problem and out of longer-run social considerations.

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1. The $44.5 million includes $2 million of funding through the Cooperative Housing Foundation.

Lower international interest rates and improved balance-of-payments performance over the next few years should also make possible a gradual lowering in both deposit and lending rates of interest in Honduras. These have been unusually high in real terms over the last several years. Their reduction can only come about gradually, however, and strictly on the condition that the government substantially reduces the public sector fiscal deficit and domestic borrowing requirements.

**Financial Policies and Their Impacts on Housing**

Financial policies in Honduras, as everywhere, are guided by a complex set of objectives: the restoration of real growth in the economy on a sustainable basis; achievement of an adequate level of international reserves; maintenance of price stability; and, maintenance of exchange rate stability at the current official rate.

Opposition to an official currency devaluation is strong in Honduras. Protecting the exchange rate has required containment of the growth in imports, which, along with anti-inflationary objectives, has required strict control over the growth in domestic credit. Despite large inflows of external resources to support public sector expenditures, growing deficits have forced increasing reliance on domestic financing. Between 1981 and 1984, for example, outstanding financial system credits to the public sector expanded by 109 percent while those extended to the private sector grew by only 36 percent. Within the context of overall credit restraint, crowding out of the private sector has unquestionably been a consequence of government fiscal management. This will be a continuing problem into the future if public sector deficits are not sharply reduced.

The Honduran government has implemented its recent policy of domestic credit restraint through a mix of instruments. Long-term credits to the private sector, which have traditionally been financed by external or governmental resources channeled through the Central Bank or one of the development banks, continue to be managed in this way, with control exerted through direct quantity rationing. Pricing of such credits has been and continues to be accomplished through a fixed markup over the cost of external or official resources, presumably to cover administrative costs of the disbursing agency.

In the case of short-term credits financed from domestic resources, however, credit rationing has in recent years been accomplished indirectly, through the maintenance of high real rates of interest (to clear the market with a restricted supply), and through manipulation of the reserve requirement imposed on the commercial banking system. The current reserve requirement for local currency deposits at Honduran commercial banks stands at 32 percent. By making banking system holdings of government bonds eligible under the reserve requirement — and paying only 4 percent interest on bonds serving this purpose — the government has been able to utilize this mechanism not only to restrain the growth in credit to the private sector, but also as a low-cost means of deficit financing.

Table 3.2 presents maximum interest rates charged and paid by financial institutions in Honduras since 1980, along with corresponding estimates of the annual rate of inflation between 1980 and 1981. A floor on deposit rates has been effectively set, except for small

TABLE 3-2

FINANCIAL SYSTEM INTEREST RATES
AND INFLATION RATES IN HONDURAS

| | Maximum Interest Rates | | | |
|---|---|---|---|---|
| | Sep 1979-Mar 1980 | Mar 1982-May 1982 | May 1982-Sep 1982 | Sep 1982-to date |
| Lending Rates | | | | |
| Loans with domestic financing | 16.0 | 19.0 | 19.0 | 19.0 |
| Special Loans | | | | |
| Industrial sector | n.a. | 16.0-17.0 | 16.0-17.0 | 14.5-15.5 |
| Primary sector | n.a. | 16.0 | 16.0 | 14.5 |
| Housing | 12.0 | 14.0 | 15.0 | 15.0 |
| Deposit Rates | | | | |
| Savings deposits | 7.0 | 8.0 | 8.0-10.0 | 8.0-10.0 |
| Time deposits | 8.0-11.0 | 8.0-14.0 | 8.0-14.0 | 8.0-14.0 |
| Certificates of deposit | 8.0-11.0 | 8.0-14.0 | 8.0-14.0 | 8.0-16.0 |
| Central government bonds[a] | 4.0 | 7.0 | 10.0 | 10.0-13.0[b] |

Annual Changes in the Consumer Price Index
(Year-end)

| | 1979-80 | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 |
|---|---|---|---|---|---|---|
| Inflation rate | 18.1 | 12.7 | 8.8 | 7.8 | 3.7 | 3.6 |

a. Government bonds held by the banking system, up to the amount of reserve requirements, earn 4.0 percent.

b. Since late 1985, the government has been issuing 2-year sight bonds paying 7.0 percent the first semester, 9.0 percent the second semester, 11.0 percent the third semester, and 13.0 percent the fourth semester.

savings depositors, by the rates of interest paid on government bonds which, being tax-free and redeemable on sight as well as relatively secure, have been quite attractive to investors since inflation levels began to fall in 1983-84. High deposit rates have, in turn, kept lending rates at or near maximum levels set by the Central Bank. As shown in Table 3.2 real rates of interest on short-term commercial loans have averaged about 15 percent since 1984, with longer-term loans, including housing mortgage loans (assuming long-term inflation in the neighborhood of 4-5 percent), also at unusually high levels by international standards.

Note the seeming anomaly in the relationship between interest rates and loan periods, i.e., yield curve, reflected in Table 3.2. Typically, longer maturities carry higher rates but the table shows that interest rates on short-term commercial loans have been kept consistently higher than those charged for medium- and long-term loans charged to the industrial, primary and housing sectors. This, of course, in part reflects an aspect of development policy that still embraces the concept of incentive rates to encourage "productive" or socially desirable investment. Also, it reflects the fact that the financing of so-called special (medium- and long-term) loans remains largely dependent on external or government resources which continue to be priced independently of domestic financial market conditions.

In the case of mortgage loans for housing, the interest rate differential relative to short-term commercial loans is alleged to also reflect a lower reserve requirement for savings and loan associations than that which is set for commercial banks. Currently, S&Ls are

required to maintain reserves equal to 15 percent of deposits, while commercial banks have a 32 percent reserve requirement. In fact, however, the differential reserve requirement between S&Ls and commercial banks only partially compensates for the S&Ls' inability to provide non interest-bearing checking accounts, which currently make up about 26 percent of the commercial banks' deposit base. The cost of money for S&Ls is roughly comparable to, or even slightly higher than, that of the commercial banks. Given lower lending margins allowed them, this puts them at a significant competitive disadvantage relative to the commercial banks, in part explaining their recent performance.

Savings and loans have been particularly hard hit since the demise of FINAVI. Without access to a rediscount facility they face an enormous liquidity and term-intermediation problem, compounded by the need to pay higher deposit rates than the commercial banks, who are able to attract clientele through checking accounts, foreign exchange loans and other services not available to the S&Ls. Mortgage and construction lending by the S&Ls has, as a consequence, fallen sharply, from a recent high of about Lps. 90 million in 1981 to only Lps. 48 million in 1985. Commercial banks have, by contrast, increased lending for these purposes from Lps. 53 million to Lps. 102 million over this same period, with a heavy (75 percent) concentration, however, on medium-term construction loans primarily for commercial projects.[1]

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1. Mortgage-secured lending in 1985 consisted of the following amounts: commercial banks, Lps. 24 million; savings and loan associations, Lps. 34 million; insurance companies, Lps. 3 million; pension funds, Lps. 23 million, for a total of approximately Lps. 84 million. This is equivalent to about 55 percent of formal housing investment and only 20 percent of total estimated investment in the housing sector.

**Housing Finance Development Strategy**

Increased mortgage lending by the S&Ls (including INVA), commercial banks, and other qualified financial institutions will be made possible over the next three years through the availability of AID Housing Guaranty (HG) and economic support funds (ESF) that will be channeled into the sector through FOVI. Bond-financed government resources will also be available to FOVI on a limited scale. Other pressing resource needs of the government will, however, keep government-backed financing for the housing sector to modest levels, and AID resources can only partially fill the projected financing gap, and only for a limited period of time. Present programming of government and external resources will only partially alleviate what has been a rapidly accumulating problem and still leaves open the fundamental question of how to structure a stable and self-sustaining mechanism for financing the needs of the Honduran housing sector over the longer term.

Only a partial answer to that question can be given now because a complete solution will involve an evolutionary process for the financial system of Honduras as a whole, and a variety of regulatory and institutional changes within the housing finance system specifically. The specific course of such a transformation can not be accurately predicted. Therefore, we can only define objectives and provide suggestions on how to begin the process. These are given in detail in Chapter 4. The objectives that need to be established are fundamentally two:

1. To substantially increase the volume of domestic resources (savings) mobilized by the Honduran financial system, and

2. To make it possible for the housing sector, particularly the low-income housing sector, to compete more effectively for available resources, gradually leading to the achievement of a market share more closely commensurate with housing needs as reflected by effective demand.

The emphasis on savings-mobilization is all-important, for various reasons.

First, although projections indicate that appropriate policy measures can bring about a substantial reduction in the public sector deficit over the next few years — from an estimated 9 percent of GDP in 1985 to about 5 percent by 1990 -- external debt management will require that a growing proportion of the deficit be financed internally. Thus, public sector borrowing requirements will continue to exert considerable pressure on domestic credit markets for the foreseeable future.

Secondly, other private sector credit demands — particularly those related to financing investment and working capital needs of Honduran export sectors — must receive priority attention if Honduran structural adjustment policies are to succeed.

Third, prudent monetary management requires restraint in the growth of total domestic credit to both the public and private sectors if a resurgence of high levels of inflation and additional pressures on the exchange rate are to be avoided. With the growth in medium and long-term foreign liabilities constrained by debt-management considerations, and the growth in international reserves determined in relation to Honduran import needs, the only non-inflationary means to finance an increase in domestic credit for the housing sector is through an increase in the deposits held by the financial system or through an increase in medium and long-term domestic liabilities (e.g., bonds

placed with the public) of the financial system. Either option requires that the financial system mobilize additional savings, and, for the purpose of meeting housing sector objectives, that the financial system be able to channel such savings into housing credits profitably and efficiently.

The need to emphasize savings mobilization to sustain the further development of the financial system in Honduras is not peculiar to Honduras or uniquely-derived from the needs of its housing sector. It is an increasingly common observation that developing-country financial institutions have relied too heavily on public or external resources and on providing services to borrowers, to the detriment of the development of efficient mechanisms for serving depositors and other forms of domestic savers. Research in many countries has revealed significant and largely untapped savings-mobilization potential that can be realized through the combination of prudent financial policies ("good" monetary management and positive real deposit rates), measures to foster competition in the financial sector, and the development of mechanisms that can more efficiently serve small urban and rural savers.[1] These groups are, after all, the overwhelming majority of the population of developing countries, and must be increasingly recognized by developing-country financial institutions as the major source of future market-growth.

Our recommendations on measures for accelerating the development of the housing finance system in Honduras are entirely consistent with a

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1. See, for example, Gonzalez-Vega, Claudio, "Strengthening Agricultural Banking and Credit Systems in Latin America and the Caribbean," Ohio State University, Revised April 1986.

broad emerging concensus on financial market development strategy for developing countries, and draw on the lessons of successful experiences that have been recorded in a growing number of developing countries. These recommendations, which should be viewed as mutually-reinforcing elements of a single strategy, emphasize, as will be discussed in the following chapter, the following key elements:

- Developing cost-effective mechanisms for reaching small savers
- Increasing competition among financial institutions serving the housing sector
- Introducing policy and regulatory changes that will permit financial institutions to serve the low-income housing sector efficiently and profitably, thereby attracting a larger volume of resources to this market segment.

# CHAPTER 4

## A PROGRAM FOR DEVELOPING A DOMESTIC RESOURCE BASE FOR HOUSING FINANCE IN HONDURAS

Table 4.1 summarizes the major elements of the program we propose. For each group of initiatives, we have identified supporting actions that would be required of the Government of Honduras (GOH) and of AID to help ensure success. Each initiative, along with recommended GOH and AID actions, is described in the first section that follows below.

We have also prepared estimates of the impact of undertaking the recommended initiatives, both in terms of projected growth in financial savings mobilized and projected increments in housing credit generated as a consequence. These estimates are presented in the final section of this chapter. Chapter 5 will then present estimates developed through simulations of the HQM model that express the impact of increased savings and formal housing credit availability on the adequacy of shelter projected for low-income segments of the Honduran population.

### Key Elements of the Program

As shown in Table 4.1, we have grouped recommended initiatives under three major headings:

- Increased Savings
- Sales of Housing Bonds on Market Terms
- Equalizing Competition and Channeling Available Credit to Housing

TABLE 4-1

STEPS TO MOBILIZE ADDITIONAL FUNDS FOR THE HOUSING SECTOR
OVER THE MEDIUM TERM

| TYPE OF INITIATIVE | GOH ACTION | AID ACTION |
|---|---|---|
| A. Increased Savings | | |
| 1. Expand contract savings arrangements with present individual depositors, employees or large companies, union and cooperative members. | 1,2,3. Give priority access to mortgage refinancing to institutions expanding savings of these types. | |
| 2. In low income urban areas, use community groups to administer hoem improvement loan-linked deposit plans. | 2,3. May require provisions for deposit insurance.<br>4. Secure executive order. | 2,3. Coinsure pilot projects of this type. |
| 3. Increase rural household savings using collection agents. | | |
| 4. Raise ceiling on per participant contribution to social security (IHSS). | | |
| B. Sale of Housing Bonds on Market Terms | | |
| 1. Continue FOVI access to market for L20 million/year for at least 2-3 years. | 1. Possibly tie access to FOVI funds to savings scheme participation and mortgage lending outside of metro areas. Review property/infrastructure standards. | 1,2. Provide loan for initial reserves of a private mortgage default coinsurance program, available in principle to all lenders. Action prepares way for larger bond offerings. |
| 2. Encourage private bond offerings in limited volume; set stage of expansion when credit conditions slacken. | | |
| C. Equalizing Completion and Channeling Available Credit to Housing | | |
| 1. Expand asset powers of S&Ls to make more short-term loans and allow them to offer some services now only at commercial banks, e.g., checking accounts. | 1,2. Regulatory changes by the Central Bank. | |
| 2. Commercial banks should have the same reserve requirements on deposits financing housing loans as S&Ls; allow them to use mortgage refinancing facility. | | |

The various initiatives discussed below under each of these headings will require varying degrees of time to become effective. All elements of the package can be expected to be working effectively by 1990., however. By this time we anticipate that they will together result in almost Lps.60 million per year in additional housing sector finance generated entirely from domestic resources, a base that should continue increasing thereafter.

Increasing Savings

Small depositors in Honduras (savings deposits less than Lps.1,000, or $500) make up 86 percent of total banking system depositors, but only about 13 percent of total deposit volume. The average deposit for this class of saver is only Lps.110, or about $55. Total deposits held by this group were slightly over Lps.60 million.[1] Seventy percent of the deposit accounts and about 66 percent of deposit value for this size group were held in the metropolitan provinces of Francisco Morazan and Cortes. Annual incomes for the poorest 40 percent of families in the metropolitan regions of Honduras averaged about Lps.4,800 in 1985.

From the above, it is clear that:

- Average savings deposit size for low-income families in Honduras is small, even in relation to their income, and
- Population participation in banking system savings deposits is low, especially outside of the metropolitan areas of Tegucigalpa and San Pedro Sula, and among low income families generally.

1. Superintendencia de Bancos, Banco Central de Honduras. Data are for June 30, 1985.

This, despite survey evidence indicating average savings rates among families with incomes below Lps.500/month ranging from 9-15 percent in metro areas, from 10-16 percent in other urban areas and from 7-12 percent in rural areas.[1] Low participation rates in formal sector financial savings among low-income strata can be explained by:

- o Inadequate incentives to motivate savers,
- o Inadequate access to formal sector financial institutions,
- o Inadequate information among low-income families on services available through financial institutions.

Poor access to and information about financial institutions may in turn be explained by the high costs of serving small savers through traditional means, and by the high-cost and risks that have been involved in serving these groups as borrowers. Suggestions presented in Table 4.1 for increasing savings are oriented towards overcoming these constraints.

First of all, we propose the expansion of contractual savings arrangements for current depositors, employees of large companies, union and cooperative members. The benefits of contractual savings arrangements arise from the incentive they provide to savers to participate systematically and regularly so as to qualify eventually for a variety of credits facilitating the achievement of strong family goals. Voluntary compliance with a contractual savings schedule over a period of time could qualify savers, for example, for lot-purchase, construction, home-improvement or mortgage loans, or, as another example, for equity-based educational or other types of personal

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1. CONSUPLANE, Eucuesta de Ingresos y Gastos 1978-79.

loans. From the financial institutions' point of view, such arrangements, reinforced by interest-penalty clauses, help ensure a stable and growing deposit base that reduces the risks of term-intermediation and provides a solid basis for evaluating credit risks. Implementation of such savings and credit plans through established organizations such as large companies, unions and cooperatives can — through regular payroll deductions or dues collection procedures — greatly reduce the administrative costs of serving small savers and borrowers, making such service additionally attractive to the financial institution.

Contractual savings plans do presently exist among a few of the larger companies in Honduras, and are viewed by management as good for employee relations. Given such receptivity and the success experienced with such plans in other countries, we believe that there is substantial potential for expanding such systems in Honduras exists and that such mechanisms can contribute both to increasing the average size of deposits among small savers, and to encouraging the participation of a larger number of savers.

In low-income urban areas, variously termed "informal" or "marginal" settlements, many people are self-employed or lack access to regular employment with a large company or linkages to labor or cooperative organizations. Such families, as demonstrated by survey evidence as well as personal inspection, do save, however, and regularly invest in home improvements even when they lack clear title to the land and dwellings that they occupy. Specifically for such communities, we propose a second mechanism based on deposit collection through a

community organization and group-collateralization of individual home-improvement loans.

Most so-called marginal neighborhoods in urban areas of Honduras are already organized into legally recognized community groups known as "patronatos," formed, often with municipal support, in the context of arranging for land payments from, and the eventual transfer of title to, the individual squatter families that make up the community. Indeed, the patronatos often predate the settlement, as these organizations have often served in the past as the vehicles for launching an "invasion."

By working through such groups — either as presently constituted[1] or reorganized into cooperatives — savings and repayment collection costs can be greatly reduced for formal sector financial institutions. One model which was discussed by the study team with patronato leaders and savings and loans representatives in Tegucigalpa would involve, for example, the following:

- Regular collection of, say, Lps.20/month from participating families through the patronato organization. I the community visited, this would generate total savings of Lps.3,000/month if all families participated,
- Deposit of such funds in individual family accounts, grouped together, however, under the terms of the community savings arrangement,
- Use of the blocked community savings pool to collateralize individual loans made, with community approval, to members of the community for home-improvement or emergency personal expenditures.

The above mechanism provides for a low-cost means for collecting savings deposits, and for originating and servicing small-scale loans to families with a demonstrated ability to save but who lack tenure or

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1. Patronatos enjoy full legal status under Honduran law.

other forms of collateral. In the process of introducing such mechanisms, a large number of small savers will establish relations with formal sector financial institutions for the first time, and these should develop into other savings and credit arrangements over time.

Our third major savings mobilization proposal involves the use of bonded agents by savings and loans and banks to facilitate (and reduce the costs of) deposit collection in rural areas. This system has been used successfully in a number of countries, including by the Agricultural Bank (Caja Agraria) in Colombia. Usually, agents will be well-established members of a local community or area who work as deposit-takers on a commission basis. In Honduras, a precedent exists among certain commercial banks who use crop credit supervisors to collect savings deposits from rural clients. As in the first two savings proposals, deposits collected in rural areas through a network of bonded agents can be linked to contractual savings plans providing eventual eligibility for construction and home improvement loans, or to group saving/lending mechanisms such as proposed for low-income urban areas.

Item 4 among our savings mobilization proposals is something of a special case. For a variety of reasons including the facts that the Honduran Social Security system (IHSS) has not been allowed to raise its taxable income ceiling from the Lps.600/month ($300) established when the system was created in 1962, that collections of government contributions to social security are badly in arrears, and that medical services provided by the system are completely free, the social security system is currently generating large operating deficits that are being

covered out of capital reserves and earnings. Within a very few years of continued operation under current conditions, the system is projected to enter into serious financial difficulties requiring sizable current transfers from government to avoid collapse.

The management of the social security system has submitted a proposal to government that would raise the ceiling on taxable income from Lps.600 to Lps.2,000 per month. This measure, if adopted, is expected to yield Lps.12-15 million in annual net contributions to capital reserves.

Rather than creating a new earmarked payroll tax to support a Social Housing Fund, as some have suggested, supporting the social security system proposal would appear to be a more viable alternative. Additional payroll taxes beyond the IHSS proposal would, we believe, have an unfavorable impact on labor costs — hence on employment and the competitiveness of Honduran export industries. In addition, an earmarked tax channeled exclusively into housing could be expected to generate administrative difficulties and inflationary pressures on land values and construction costs.

Since the social security system invests capital reserves in public and private securities, as well as in time deposits held with the commercial banks, it is reasonable to suppose that at least a portion of additional net cash flow will be invested in such a manner as to support an expansion in housing credit, whether through bonds or time deposits. Over the longer-run, a market mechanism such as described above will provide a sounder basis for accessing social security, pension fund and other institutional savers' resources to provide

liquidity for housing finance than the institution of new earmarked payroll taxes.[1]

Implementing the social security wage ceiling revision proposed above would not require legislation, but only executive action by the government as indicated in Table 4.1.

Additional GOH actions to support efforts to expand financial savings could include preferential access to mortgage refinancing for institutions establishing new savings mechanisms, and instituting deposit insurance to encourage and protect small-savers participating in decentralized, semi-formal savings collection systems such as proposed for low-income urban communities and rural areas. Mortgage refinancing options will be discussed more fully in connection with proposals to facilitate mortgage-backed bond placements, below.

Formal deposit insurance does not currently exist in Honduras. In the only recent case of bank failure, the Central Bank assumed all liabilities of the institution and there exists an implicit commitment by the Central Bank to guarantee deposits of any of the institutions it regulates (commercial banks, savings and loans) in the event of future bankruptcies.

We are not prepared to evaluate the general soundness of this policy, only noting that it appears to be satisfactory to Honduran depositors, financial institutions and government authorities. Banks generally appear to be reluctant to assume the costs of funding a

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1. Net investable cash flow for the IHSS, and the three pension funds — INJUPEMP, INPREMA and the military fund, IPM — are projected at between Lps. 120-160 million per year over the next five years. These funds constitute an attractive market for the placement of housing bonds, as is discussed further below.

deposit insurance system at this time. However, in the special case of savings arrangements implemented — in an effort to reduce administrative costs — through decentralized mechanisms such as community groups or rural collection agents, it would be prudent to implement limited coverage to protect the depositor and encourage his/her participation, protect the financial institution, and to provide for a mechanism to screen, "license" and, to a moderate extent, supervise the activities of community groups and rural agents. Special insurance for these types of deposits can provide security to small-savers and an "official stamp-of-approval" that can be important to the successful expansion of this type of service. AID could facilitate the development of decentralized savings mobilization systems by coinsuring pilot projects of this type.

The remainder of our proposals are complementary to the savings mobilization initiatives discussed above. They are designed to provide liquidity for the housing finance system and otherwise make the housing sector more competitive with other sectors in attracting available resources.

Sale of Housing Bonds on Market Terms

Over recent years, a substantial primary market for the placement of government bonds with the commercial banks, social security system and pension funds and, to a limited extent, the general public has developed in Honduras. Table 4.2 provides some summary information on the distribution of the public sector bonded debt. In large part, growth in government bond placements with the commercial banks and the

TABLE 4.2

DISTRIBUTION OF PUBLIC SECTOR
DOMESTIC BONDED DEBT
(million lempiras)

| | 12/21/81 | Percent | 9/30/85 | Percent |
|---|---|---|---|---|
| Total | 773.8 | 100.0 | 1,542.1 | 100.0 |
| Central government | 741.8 | 95.9 | 1,511.4 | 98.0 |
| Central bank | 412.4 | 53.3 | 616.2 | 40.0 |
| Commercial banks | 181.2 | 23.4 | 467.8 | 30.3 |
| ISSS, pension funds | 93.1 | 12.0 | 216.4 | 14.0 |
| Private sector | 28.2 | 3.6 | 93.7 | 6.1 |
| Other[a] | 26.9 | 3.5 | 117.3 | 7.6 |
| Local government | 17.4 | 2.2 | 28.6 | 1.9 |
| Other public sector | 14.5 | 1.9 | 2.1 | 0.1 |

a. Includes other credit institutions, insurance companies, syndications and international organizations.

Source: Central Bank of Honduras.

public is attributable to the complete liquidity and high yields of the bonos financieros issued by the government in recent years to finance the deficit. However, there have also been successful placements of term instruments to finance specific development activities.

There is some secondary trading of government securities, principally managed by and among the commercial banks, and there have also been successful private bond placements. Other than to say that it exists, there is no readily available information on the magnitude of

such activity, however. At the moment, private placements with the pension funds for example, compete directly with government issues and are not being actively encouraged.

The government has, however, approved an initial Lps.10 million bond issue earmarked for the national housing fund (Fondo de la Vivienda — FOVI), and is considering a FOVI request for government guarantee of an additional Lps.20 million issue. These funds will enable FOVI to rediscount mortgages from savings and loans and other qualified institutions, with the objective of restoring some liquidity to the housing finance system. Government funds will be used to rediscount up to 80 percent of the value of mortgages for dwellings costing up to Lps.50,000[1] at a discount rate of 10 percent. Eligible mortgages will bear a maximum interest rate to the borrower of 14 percent per year.

AID funds programmed for FY 1987-89 will add another Lps.15-20 million per year for the refinancing of mortgages extended to families below the median income level. Programmed AID resources will only partially make up projected mortgage financing requirements, and it is recommended that FOVI be provided continued access to the bond market, with government guarantee, in the amount of at least Lps.20 million per year over the next 2-3 years.

In addition, it will be important to encourage private commercial banks and savings and loan associations to begin issuing mortgage-backed securities on a limited scale. One of the primary markets for such placements would be the Honduran Social Security Institute and the public sector pension funds which, not being subject to income taxes,

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1. Excluding the value of the lot.

would find private bond offerings as attractive as public sector tax-exempts so long as they were adequately secured and competitively priced. Other private investors could be attracted to such securities once credit conditions slacken and the government is no longer obliged to market its own securities as aggressively as at present.

In order to provide a sound long-term basis for the expansion of housing finance, government action should not only facilitate private bond offerings, but provide specific incentives tied to institutional performance in directly mobilizing savings. One means of providing such an incentive would be by making access to mortgage refinancing partly conditional on the implementation of contractual and decentralized savings arrangements by participating financial institutions. This might be accomplished in several ways including, for example, the two mechanisms described below.

First, FOVI might set a lower basic limit on the percentage of mortgage value eligible for refinancing (say 70 percent, rather than 80 percent), and limit access to the higher percentage only to those institutions having implemented savings schemes such as proposed in this report. Or, the percentage eligible for refinancing could be made directly proportional to institutional performance in expanding their deposit base without reference to the specific mechanisms employed.

Alternatively, FOVI could set up a separate refinancing "window," with access to the special window limited to only those institutions satisfying a predetermined savings mobilization performance standard.

The specific mechanisms selected should be worked out on the basis of a more detailed evaluation performed by FOVI and the participating

institutions. Whatever its ultimate structure, the government, FOVI and AID should give serious considerations to building savings mobilization incentives into the mortgage refinancing mechanism.

A second area for government attention regards the water supply problem in Tegucigalpa and its potential impact on low-income housing programs. Current underwriting standards require connection to municipal water supplies as a condition for mortgage refinancing. In light of near term constraints on the rate of development of municipal water supplies, consideration should be given to relaxing this standard, allowing mortgages to be written and refinanced for dwellings served by interim water supply systems.

AID is in a position to be highly instrumental to the development of a market in private mortgage-backed bond issues by supporting the initial capitalization of a mortgage coinsurance reserve fund. Such insurance would clearly enhance the quality and marketability of housing bonds, facilitating their development into a permanent financing mechanism for the housing sector in Honduras.

A model of the proposed mortgage coinsurance mechanism is provided in outline form below.

1. Eligibility. Coverage would be available to all institutions, provided:

    a. they follow the required underwriting standards, perhaps modeled on those of FOVI

    b. they insure all of the mortgages they originate (i.e., institutions would not be allowed to only insure high risk loans)

2. Ownership and Operation. Insurance should be provided by a private firm, legally insulated from political pressures.

3. Insurance Principle. Co-insurance covers 80 percent of net losses.

4. Net loss is the loss to the originating institution after it has disposed (resold) the foreclosed property. Allowable costs (losses) would include foregone payments income to the point of foreclosure, a fixed cost for foreclosing and reselling, payment for foregone interest income for a specified number of months during foreclosure and resale proceedings. Setting maximums and fixed fees for some items would strengthen incentives for rapid foreclosure and disposal.

5. Responsibilities of the Originating Institution. Include collection of mortgage repayments, initiation and conclusion of foreclosure procedures, resale of property, presentation to the insurance agency of a full accounting of costs incurred in making a foreclosure, and timely payments of all insurance premiums to the agency.

6. Responsibilities of the Insurance Agency. Include collection and proper crediting of premium income; maintenance of adequate reserves (probably in the range of 8-12 percent of liabilities); raising additional capital as necessary; prompt review of applications for insurance coverage; prompt payment of claims to institutions that are up-to-date in the payment of premiums.

7. Costs. The primary determinant of costs and the required premium will be expected claims. A careful examination of past experience would be required to establish this figure. Net interest costs on the seed capital loan and provision for replenishing capital reserves would also need to be built into the premium. Administrative costs should be quite low, given the modest responsibilities of the insuring agency.

The coinsurance mechanism described above preserves strong incentives for mortgage originating institutions to minimize losses. Its availability, supplanting the current system of unfunded "self-insurance" by mortgage originators (so-far accepted by FOVI), would, we believe, substantially enhance the quality of private mortgage-backed securities, contributing to the development of a market in such instruments and, thereby, to the creation of a permanent component of the housing finance system in Honduras. Pending the outcome of a full feasibility analysis, including the necessary actuarial studies, we

suggest AID consider providing a local currency loan of up to Lps.20 million to help capitalize the initial reserve fund.

Equalizing Competition and Channeling Available Credit to Housing

Chapter 3 touched briefly on the competitive disadvantages faced by the savings and loan system of Honduras in attracting depositors and maintaining profitability comparable to that of the commercial banks. S&Ls also face a more serious term-intermediation problem than the commercial banks, one that has been particularly acute since the dissolution of FINAVI in 1985. Relieving that problem, and providing liquidity to the S&Ls, is the object of the bond-issue and refinancing proposals presented above.

In addition, we believe that greater operational flexibility needs to be provided for the S&Ls, on both the assets and liabilities sides, to allow them to adjust to changing market conditions more readily, maintain a strong competitive position in the marketplace and thereby continue to attract the investor resources required for their future expansion. On the assets side, we recommend greater liberality in allowing them to diversify their loan portfolios more heavily in the direction of short and medium-term loans extended at commercial rates of interest. Industry representatives indicated to us that almost 90 percent of S&L loan portfolios is currently made up of home mortgages. As specialized institutions, they should continue to engage heavily in mortgage finance, subject to access to refinancing, but need to be allowed greater flexibility to adjust loan portfolios in accordance with changing conditions of liquidity.

On the liabilities side, we recommend that S&Ls be permitted to offer regular checking and NOW[1] accounts, both as a means of reducing their cost of money and, perhaps more importantly, as a means of attracting and retaining clientele that will also be a source of longer-term deposits through contractual and other savings plans offered. These measures should contribute to asset-growth among the S&Ls, compensating in part for a possible reduction in mortgage loans as a share of their loan portfolios.

To ensure that total mortgage lending increases in Honduras, and also to foster a higher degree of competition in the mortgage-lending market, we also propose that commercial banks be encouraged to participate in housing finance to a greater extent than at present. They should, we believe, have equal access to mortgage coinsurance and to mortgage refinancing as the S&Ls and other qualified institutions such as the housing cooperatives that will be served by FOVI. We also recommend that, for that portion of commercial bank deposits corresponding to their outstanding mortgage loan portfolio, commercial banks be authorized a reserve requirement equivalent to that of the savings and loans. These measures, which can be implemented simply through regulatory changes by the Central Bank, could have a most significant impact on the availability of mortgage finance in Honduras, both due to the additional resources available through the commercial banks and because of the extensive branch office and agency network of these banks in secondary cities and rural areas.

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1. Negotiable order of withdrawal.

**Projected Impacts on Savings Mobilization and Credit for the Housing Sector**

Table 4.3 presents our estimates of the impact of implementing the package of proposals we have outlined above. Section I of the table presents estimates of savings mobilization through each of the suggested mechanisms. Estimates of the impact of savings plans are based on information collected on the number of employees at firms with ten or more employees; membership of production cooperatives; average wage and income levels for these groups as well as for low-income urban and rural residents; projected savings plan participation rates; and, savings propensity estimates. As shown, savings plans are expected to generate at least Lps.54 million per year in incremental savings by 1990. In addition we have estimates from the social security institute of the revenue impact of implementing their proposals, giving a total estimate of incremental savings of Lps.69 million per year by 1990.

Section II of the table presents a projected allocation of incremental savings to the housing sector. Since savings plans will be largely tied to housing, we expect a large proportion of the resources generated to be reinvested in that sector. Assuming adequate security and competitive pricing of housing bonds, these should also be able to capture about 40 percent of incremental social security funds.

Section III presents estimates of the impact of the risk-reducing and profitability-enhancing measures we have proposed (mortgage refinancing, coinsurance, greater flexibility for S&Ls and banks) on the share of domestic credit (not counting incremental savings) allocated to the housing sector. As shown, we have conservatively estimated that this share will increase only from 16 to 18 percent, yielding an

TABLE 4.3

PROJECTED IMPACTS OF IMPLEMENTING THE HONDURAS HOUSING FINANCE STRATEGY PROPOSALS

| | Millions 1985 Lempiras | |
|---|---|---|
| | 1987 | 1990 |
| **I. Estimates of Savings Mobilization** | | |
| 1. Contractual savings for employees, union and cooperative members | | |
| a. employees/unions | 3 | 12 |
| b. production cooperatives | 3 | 8 |
| 2. Savings plans for low-income urban families | | |
| a. metropolitan areas | 5 | 13 |
| b. other urban areas | 2 | 6 |
| 3. Rural savings facility | 5 | 15 |
| 4. Subtotal, savings plans | 18 | 54 |
| 5. Increased social security tax revenues | 10 | 15 |
| 6. Total, savings mobilization | 28 | 69 |
| **II. Allocation to Housing Sector Credits** | | |
| 1. From savings plans, 80% | 14 | 43 |
| 2. Social security system bond purchases, 40% | 4 | 6 |
| 3. Total, housing credit generated from incremental savings | 18 | 49 |

TABLE 4.3

PROJECTED IMPACTS OF IMPLEMENTING THE HONDURAS HOUSING FINANCE STRATEGY PROPOSALS
(continued)

| | 1985 | 1987 | 1990 |
|---|---|---|---|
| **III. Increased Housing Credit Allocations in Response to Banking System Incentives** | | | |
| 1. Programmed increase in total domestic credit | 280 | 290 | 360 |
| 2.. Current allocation of residential mortgage finance | .16 | — | — |
| 3. Mortgage lending projections under current allocations | 45 | 46 | 58 |
| 4. Projected allocation in response to incentives | — | .18 | .18 |
| 5. Mortgage lending projections under projected allocations | — | 52 | 65 |
| 6. Increment in mortgage lending in response to incentives | — | 6 | 7 |
| **IV. Consolidated Projections of Domestic Credit, Total and Incremental Credit for the Housing Sector** | | | |
| 1. Projected increase in domestic credit with savings mobilization (I.6 + III.1) | 280 | 318 | 429 |
| 2. Projected mortgage and home improvement lending (II.3 + III.3 + III.6) | 45 | 70 | 114 |
| 3. Increase over base case projections (IV.2 - III.3) | — | 24 | 56 |

additional Lps.7 million by 1990. This sum could easily be twice as large as we have projected, but, given difficulties in forecasting behavioral response and future credit conditions, we have preferred to be conservative.

Thus, total incremental credit to the housing sector, shown in Section IV of Table 4.3, is estimated at about Lps.56 million/year by 1990. Over the 1986-1990 period, gradual growth in savings mobilization and housing credit is estimated to result in a cumulative increment of Lps.163 million over what is expected to be available during this period if the recommended programs and policy actions are not implemented. This is a substantial addition to the flow of resources into the sector and will form a base for continued future expansion. The impact of this projected increment in the availability of financing for the housing sector is discussed in Chapter 5, below.

# CHAPTER 5

## RESULTS

The expanded finance policy outlined in the previous chapter mobilizes an additional Lps.163 million in formal finance for the housing sector over the 1986 to 1990 period. These funds are deployed in the form of home improvement loans and mortgage loans available to the households who participate in the contract savings plans as well as to other borrowers.[1] How will this mobilization and deployment plan affect housing conditions in Honduras? What groups of households are most likely to benefit? What is the cost per beneficiary in terms of total resources and in terms of public subsidies?

This chapter compares the projected impacts of the expanded finance policy to the impacts of the Administration plan over the 1986 to 1990 period. We begin by examining differences in levels of housing investment and program participation. Next we compare the income levels of households achieving acceptable housing under the two policy

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1. These funds are allocated as follows: 98 million is dedicated to the metro sector, 41 million is dedicated to the urban sector, and 24 million to the rural sector. The funds to each sector are evenly divided between home improvement financing and mortgage loans. The mortgage loan program is assumed to issue loans of Lps. 20,000-35,000 to metro and urban households, and of Lps. 10,000-25,000 for rural households, each with 20 year terms at 14 percent interest. The loans are issued to households of all income deciles, tenures and present dwelling types, subject only to the households' ability to afford the loans.

The home improvement loans are issued to owner and squatter households in permanent or semi-permanent dwellings. As with mortgages, households of all income deciles are eligible, subject only to their ability to repay the loans. For metro and urban areas, we assume an average loan of Lps. 3,000, with a 20 year term and 14 percent interest; for rural areas we assume an average loan of Lps. 1,500.

scenarios. Third, we assess the relative efficiency of the two scenarios, by comparing costs per participant and per household achieving acceptable housing. The chapter concludes with a brief summary of results and their implications.

**Housing Investment and Program Participation**

Table 5.1 illustrates that, over the 1986 to 1990 period, the expanded finance policy generates a substantial increase in housing investment, program participation, and housing improvement over the Administration plan. Total housing investment increases by over Lps.270 million (or about 11 percent). Sixty percent of this increase (Lps.163 million) is mobilized from the formal financial sector, as described in the previous chapter. The remainder is generated from savings and informal financing sources, in response to the opportunities provided by the availability of home improvement and mortgage loans.

In response to a 96 percent increase in program expenditures (defined as formal finance plus government subsidies), program participation increases by 52 percent under the expanded finance policy. The increase in program participation is lower than the increase in program expenditures because the expanded finance policy does not supplement the very low cost programs included in the Administration program, such as the basic units or water and sanitation programs. Of the approximately 42,500 new program participants under the expanded finance policy, about 17,000 (40 percent) shift from unacceptable to fully acceptable dwelling units. The rest either occupied acceptable dwellings to begin with, or were not able to achieve fully acceptable housing despite program participation. The

TABLE 5.1

INVESTMENT LEVELS AND PROGRAM PARTICIPATION
1986-1990 TOTALS

| | Administration | Expanded Finance | Percentage Difference |
|---|---|---|---|
| Total Investment (millions) | 2,500.5 | 2,771.4 | +10.8 |
| Metro[a] | 59.4% | 59.9% | |
| Urban | 16.9 | 17.6 | |
| Rural | 23.7 | 22.6 | |
| Total Program Expenditures (millions) | 170.6 | 333.6 | +95.5 |
| Metro[a] | 41.5% | 50.6% | |
| Urban | 15.8 | 20.4 | |
| Rural | 42.6 | 29.0 | |
| Total Policy Participants | 82,036 | 124,476 | +51.7 |
| Metro[a] | 22.3% | 31.2% | |
| Urban | 12.7 | 15.9 | |
| Rural | 64.9 | 52.9 | |
| Participants Achieving Acceptable Units | 35,446 | 52,278 | +47.5 |
| Metro[a] | 42.5% | 45.8% | |
| Urban | 18.9 | 22.7 | |
| Rural | 38.6 | 31.5 | |

a. These figures give the percentage distribution of the total among metro, other urban, and rural areas.

characteristics of participants and their rates of housing improvement are discussed further in the next section.

How does the expanded finance policy compare to the Administration plan in terms of sectoral allocation? As Table 5.1 illustrates, the distribution of both funding and program participation are very similar under the two policies. The expanded finance policy shifts the allocation of total program expenditures slightly away from rural areas to urban and metro areas. Correspondingly, a higher share of program beneficiaries are located in urban and metro areas under the expanded finance policy.

How effectively does the expanded finance policy meet the housing resource requirements of Honduras over the 1986-1990 period? Table 5.2 presents estimates of needs along with our projections of annual investment levels under both the Administration and expanded finance policies. When the Administration plan peaks in 1989, it generates Lps.550 million in housing investment. Thus, the expanded finance policy, which supplements the Administration plan, comes close to meeting the nation's housing resource needs in 1989, with total investment of Lps.629 million. By 1990, the external funds allocated by the Administration plan are used up, so that even the expanded finance policy falls short of total resource requirements by about Lps.86 million. However, in 1990 the expanded finance policy does succeed in replacing the Administration plan's external funds with money mobilized domestically, a significant accomplishment.

TABLE 5.2

ANNUAL HOUSING NEEDS AND INVESTMENT LEVELS
1986-1990
(millions of lempiras)

| Year | Needs | Administration | Expanded Finance | Increment |
|---|---|---|---|---|
| 1986 | 575.0 | 444.7 | 444.7 | 0 |
| 1987 | a | 499.3 | 539.2 | 39.9 |
| 1988 | a | 515.5 | 573.8 | 58.3 |
| 1989 | a | 550.1 | 629.4 | 79.3 |
| 1990 | 670.0 | 490.8 | 584.4 | 93.6 |
| Total | | 2500.5 | 2,771.4 | 270.9 |

a. The Housing Needs Assessment model, which is the source of these figures, produces estimates only for every fifth year. The 1986 figure is a hand-computed estimate.

**Program Participants and Beneficiaries**

As discussed in Chapter 2, the Administration plan yields substantial improvements in housing conditions over the 1986 to 1990 period, targeted to households with incomes below the median for their sector. Table 5.3 presents the total number of households achieving acceptable housing under the Administration plan, for the metro, urban, and rural sectors. Table 5.3 also reports the number of additional households achieving acceptable dwellings under the expanded finance policy, and presents the share of these new program beneficiaries in each income decile by sector.

The expanded finance policy makes loans available to households of all income levels, and, as a result, yields improvements in housing quality for all income deciles. As a rule, the highest rates of improvement occur at middle income levels, since the lowest income households either cannot afford to participate, or cannot afford sufficient improvements to achieve fully acceptable housing, while the highest income households tend to occupy acceptable units already, and use program loans to finance incremental improvements. In metro areas, about 30 percent of the households achieving acceptable dwelling units through participation in the expanded finance policy are in the lowest three deciles, and less than 20 percent are in the highest three deciles. In urban areas, where incomes are somewhat lower, less than 15 percent of households achieving acceptable housing are in the lowest three income deciles, and about 25 percent are in the highest three deciles. Finally, among rural households, which have very low incomes,

## TABLE 5.3

### HOUSEHOLDS ACHIEVING ACCEPTABLE HOUSING 1986-1990

| | Metro | Urban | Rural | Total |
|---|---|---|---|---|
| Administration | 36,360 | 13,065 | 36,471 | 86,896 |
| Expanded Finance | 8,894 (52.8%) | 5,159 (30.7%) | 2,780 (16.5%) | 16,833 (100.0%) |
| 1 (low) | 6.73% | 0.00% | 0.00% | |
| 2 | 8.21 | 4.90 | 3.46 | |
| 3 | 13.64 | 9.12 | 3.58 | |
| 4 | 15.25 | 15.71 | 2.39 | |
| 5 | 12.63 | 15.09 | 7.12 | |
| 6 | 12.63 | 15.29 | 11.17 | |
| 7 | 11.93 | 14.13 | 10.84 | |
| 8 | 9.80 | 12.30 | 18.29 | |
| 9 | 3.22 | 10.45 | 16.91 | |
| 10 (high) | 0.86 | 2.93 | 26.28 | |
| | 100.00 | 100.00 | 100.00 | |

only seven percent of the households achieving acceptable housing are in the lowest three deciles, and over 60 percent are in the highest three. Comparing these distributions with those presented in Chapter 2 for the Administration program (Table 2.4), we can see that the expanded formal finance policy is somewhat less targeted in its impacts than the Administration plan, which restricted eligibility for several programs to the neediest households.

As indicated above, the distribution of households achieving acceptable housing under the new loan programs of the expanded finance policies is the outcome of both the initial allocation of loans and the rate of housing improvements among loan recipients. Middle income loan recipients are the most likely to achieve housing improvements, since lower income households often cannot afford the full cost of an acceptable dwelling and higher income households are likely to occupy adequate units already. The overall rate of improvements among program participants is highest in urban areas (55 percent) and lowest in rural areas (22 percent).

**Program Efficiency**

Table 5.4 presents three measures for comparing the efficiency of the Administration policy and the expanded finance policy over the 1986 to 1990 period. All of these measures focus on the cost per household of achieving improved housing.

The first two measures report total program expenditures per participant and per participant who achieves a fully acceptable dwelling unit. Program expenditures are defined as the total amount contributed by formal financial institutions and by government to fund specified

housing and infrastructure programs. For example, in a water and sanitation program serving 100 households in which the government pays Lps.350 per participant, total program expenditures are Lps.3,500. Correspondingly, in an unsubsidized loan program like those considered here, total program expenditures correspond to the total volume of loan funds. Household contributions from savings and informal finance are not included in total program expenditures. We are more interested in the cost per participant achieving fully acceptable housing; producing housing of this quality is often the principal objective of these programs. Serving some participants does not result in additional acceptable units because (a) some of them already live in acceptable units and participation allows them further improved housing and (b) some improvements are not sufficient to produce a fully acceptable unit.

Countrywide (last panel of table), the expanded finance policy increases program expenditures per participant by about 30 percent, while program expenditures per participant achieving acceptable housing are about 33 percent higher than under the Administration policy. These increases are explained by the fact that the Administration policy includes some very low cost housing solutions targeted to the neediest households, while the expanded finance policy introduces more generally available home improvement and mortgage loan programs. Among areas of the country, the increases in rural areas are much lower than elsewhere because of their lower incomes. Rural households take out comparatively smaller loans; but often these small loans are sufficient to move the borrowers to fully acceptable units.

TABLE 5.4
MEASURES OF PROGRAM EFFICIENCY
1986-1990

| Metro | Administration | Expanded Finance | Percentage Difference |
|---|---|---|---|
| Total Program Expenditures per Participant | Lps.3,868 | Lps.4,342 | +12.3% |
| Total Program Expenditures per Participant Achieving Acceptable Dwelling | 4,711 | 7,054 | +49.7 |
| Total Investment per New Acceptable Unit | 39,753 | 35,850 | -9.8 |
| **Urban** | | | |
| Total Program Expenditures per Participant | 2,574 | 3,435 | +33.4 |
| Total Program Expenditures per Participant Achieving Acceptable Dwelling | 4,015 | 5,726 | +42.6 |
| Total Investment per New Acceptable Unit | 32,291 | 26,686 | -17.4 |
| **Rural** | | | |
| Total Program Expenditures per Participant | 1,366 | 1,470 | +7.61 |
| Total Program Expenditures per Participant Achieving Acceptable Dwelling | 5,313 | 5,873 | +10.54 |
| Total Investment per New Acceptable Unit | 16,273 | 15,970 | -1.86 |
| **Total** | | | |
| Total Program Expenditures per Participant | 2,079 | 2,680 | +28.9 |
| Total Program Expenditures per Participant Achieving Acceptable Dwelling | 4,812 | 6,380 | +32.6 |
| Total Investment per New Acceptable Unit | 28,776 | 26,718 | -7.2 |

Finally, we compare the two policy scenarios in terms of the total investment levels per new acceptable unit. This measure reflects the total cost to the economy per household achieving acceptable housing. Investment by all households, not just those participating in the various programs, is included. The results demonstrate the strength of the unsubsidized loan programs introduced under the expanded finance policy. Over the 1986 to 1990 period, the expanded finance policy reduces the economy-wide cost per new acceptable dwelling unit by about seven percent. In urban areas (both metro and other) where higher income households make bigger housing investments, the reductions are greater. This means that by following this kind of approach substantial progress can be made toward meeting the housing needs of Honduras without requiring an unreasonable share of the nation's total investment resources.

**Summary**

Housing needs in Honduras are severe; a large share of households in all three sectors live in dwellings that are either structurally inadequate or lack basic infrastructure services. Eliminating these deficits and meeting the demands generated by population growth will require substantial increases in the levels of investment flowing to the housing sector. A sizeable pool of AID funds is currently available, and, as shown in Chapter 2, the Administration's plan for deploying the AID resources can be expected to yield significant gains in housing quality between 1986 and 1990. However, these gains must be supplemented and sustained into the future, using domestic resources.

Chapter 4 outlined a set of actions that the Government of Honduras and AID can take to substantially increase domestic savings and to enhance the ability of the housing sector to compete for available investment resources. In this chapter, we have demonstrated that, if these newly mobilized funds are deployed in the form of market rate home improvement and mortgage loans, the gains achieved under the Administration/AID scenario can be supplemented substantially. Moreover, by 1990 domestic resources can replace the AID funding, so that gains can be sustained.

If general economic conditions in Honduras continue to improve, the financial reforms proposed in Chapter 4 should yield a gradually increasing volume of domestic savings, some of which will continue to flow to the housing sector. These formal sector resources, deployed in the form of home improvement loans and mortgage loans can be expected to bring forth further household investment from savings and informal sources, and to promote steady gains in housing quality. This plan involves no government subsidy expenditures, and yields a fairly high rate of housing improvement for total resources invested. Nevertheless, government involvement will still be needed to continue extending adequate sewer and water services to metro and urban, as well as rural households, since large numbers of households will still lack adequate services, even after the ambitious 1986-1990 program proposed here.

# DEVELOPING A HOUSING FINANCE STRATEGY FOR HONDURAS

— Annexes —

by

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## Annex A
## Revisions to the Housing Needs Assessment

In the course of implementing the Housing Finance Strategy Methodology, several alternatives to the base case housing needs estimates prepared by PADCO were found to be desirable.[1]

Of the changes made, one substituted values for a data input that we thought were more accurate than the original and the other two reflected changes thought desirable to more accurately match government policies. More specificially, the three changes were as follows.

1. We changed the quality distribution of the 1985 housing stock. We were able to generate more detailed estimates of the stock using micro-level data from the 1978 income and expenditure survey data tape which we used in preparing the data for the Housing Quality Simulation Model, which were then updated through simulation with the model. We also altered the definitions of the quality classifications from those used in the base case by incorporating both dwelling and infrastructure quality dimensions in the definitions of acceptable and upgradable units. The original and revised distributions are given in Table A.1.

2. It was decided that the definition of the standard for the minimum new dwelling unit (Design Cost Level 2) used in the base case overstated the quality level necessary for a "starter" unit. Lower cost solutions -- involving only a serviced site -- were defined for both urban and rural areas. Estimates made using this standard provide a better estimate of the required subsidy necessary to get all households into such a "starter" unit. They do not, however, reflect very well the ultimate investment that a household will make in the unit. For this second purpose, estimates prepared using the standard used in the original base case (but with the revised housing stock) are more appropriate.

3. The original base case replaced non upgradable units and improved upgradable units at the rate of five percent per year over the 20 year planning period. In fact, under the assistance provided by USAID, the rate at which improvement should occur appears to be much greater for the next few years at least. For this reason, a 10 percent per year improvement rate was simulated to provide an estimate of the investment requirements

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1."Diagnostico Y Pronostico de Necesidades de Vivienda en Honduras: 1985-2005." Washington, D.C.: PADCO Report Prepared for the Office of Housing and Urban Programs, 1986.

program. Note that in doing this run we used the original base case cost level data in order to show the full long-term investment requirements.

We employed these changes in three different simulations. Highlights from these computer runs are presented in the tables contained in the balance of this Annex. These runs are:

1. The base case with only the base year housing stock altered. Results are reported in Tables A.2-A.4.

2. The base case with the revised housing stock and the lower standard for the minimum new unit. Tables A.5-A.6.

3. The base case with the revised housing stock and an accelerated upgrading program (but with the original cost levels for minimum new units). Tables A.7-A.9.

Table A.1
Original and Revised 1985 Housing Quality Distribution
(thousands of units)

| Quality Classification | original | revised |
|---|---|---|
| Metro areas | | |
| acceptable | 82.75 | 68.6 |
| non-upgradable | 20.69 | 8.3 |
| upgradable | 44.33 | 70.8 |
| Other urban areas | | |
| acceptable | 26.28 | 17.1 |
| non-upgradable | 11.00 | 15.3 |
| upgradable | 23.84 | 28.7 |
| Rural areas | | |
| acceptable | 159.57 | 94.8 |
| non-upgradable | 99.73 | 300.8 |
| upgradable | 239.37 | 103.1 |

HONDURAS: BASE CASE WITH REVISED HOUSING STOCK
DESIGN STANDARDS AND COSTS

**TABLE A.2**

| | 1985 | 1990 | 1995 | 2000 | 2005 |
|---|---|---|---|---|---|
| Average Inflation Rate % | 0.00 | 4.50 | 4.50 | 4.50 | 4.50 |
| Construction Cost Esc. % | 0.00 | 4.50 | 4.50 | 4.50 | 4.50 |
| Metropolitan Area | | | | | |
| Price Minimum Standard Formal Sector Housing (Level 3) | 10.80 | 10.80 | 10.80 | 10.80 | 10.80 |
| Design Cost New Housing Unit (Level 2) | 8.30 | 8.30 | 8.30 | 8.30 | 8.30 |
| Design Cost Upgrade Existing Unit (Level 1) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Value of an Upgradable Unit (Add. t upgrade cost) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Other Urban Areas | | | | | |
| Price Minimum Standard Formal Sector Housing (Level 3) | 10.80 | 10.80 | 10.80 | 10.80 | 10.80 |
| Design Cost New Housing Unit (Level 2) | 8.30 | 8.30 | 8.30 | 8.30 | 8.30 |
| Design Cost Upgrade Existing Unit (Level 1) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Value of an Upgradable Unit (Add. to upgrade cost) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Rural Areas | | | | | |
| Price Minimum Standard Formal Sector Housing (Level 3) | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| Design Cost New Housing Unit (Level 2) | 3.60 | 3.60 | 3.60 | 3.60 | 3.60 |
| Design Cost Upgrade Existing Unit (Level 1) | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Value of an Upgradable Unit (Add. to upgrade cost) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

HONDURAS: BASE CASE WITH REVISED HOUSING STOCK
HOUSING STOCK AND REPLACEMENT

**TABLE A.3**

| | 1985 | 1990 | 1995 | 2000 | 2005 |
|---|---|---|---|---|---|
| Metropolitan Area | | | | | |
| Dwelling Units by Construction Standard | | | | | |
| Acceptable Construction | 58.60 | 134.65 | 211.12 | 294.56 | 387.58 |
| (Annual Planned Repl.) | 0.00 | 1.37 | 2.69 | 4.22 | 5.89 |
| Non-Upgradable Construct. | 8.30 | 6.23 | 4.15 | 2.08 | 0.00 |
| (Annual Planned Repl.) | 0.00 | 0.42 | 0.42 | 0.42 | 0.42 |
| Upgradable Construction | 70.80 | 53.10 | 35.40 | 17.70 | 0.00 |
| (Planned Ann. Upgrading) | 0.00 | 3.54 | 3.54 | 3.54 | 3.54 |
| Total Dwelling Units | 147.70 | 193.98 | 250.67 | 314.33 | 387.58 |
| Total Overcrowded Units | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 |
| Planned Annual Construction to Relieve Overcrowding | 0.00 | 1.36 | 1.36 | 1.36 | 1.36 |
| New Households/Year | 0.00 | 7.90 | 9.98 | 11.37 | 13.29 |
| Construction New Units/Yr | 0.00 | 11.04 | 14.45 | 17.37 | 20.96 |
| Total Construction/Year | 0.00 | 14.58 | 17.99 | 20.91 | 24.50 |
| Other Urban Areas | | | | | |
| Dwelling Units by Construction Standard | | | | | |
| Acceptable Construction | 17.10 | 44.30 | 72.65 | 105.03 | 139.50 |
| (Annual Planned Repl.) | 0.00 | 0.34 | 0.89 | 1.45 | 2.10 |
| Non-Upgradable Construct. | 15.30 | 11.48 | 7.65 | 3.83 | 0.00 |
| (Annual Planned Repl.) | 0.00 | 0.77 | 0.77 | 0.77 | 0.77 |
| Upgradable Construction | 28.70 | 21.50 | 14.30 | 7.10 | -0.10 |
| (Planned Ann. Upgrading) | 0.00 | 1.44 | 1.44 | 1.44 | 1.44 |
| Total Dwelling Units | 61.10 | 77.27 | 94.60 | 115.95 | 139.40 |
| Total Overcrowded Units | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| Planned Annual Construction to Relieve Overcrowding | 0.00 | 0.56 | 0.56 | 0.56 | 0.56 |
| New Households/Year | 0.00 | 2.67 | 2.90 | 3.71 | 4.13 |
| Construction New Units/Yr | 0.00 | 4.34 | 5.12 | 6.49 | 7.55 |
| Total Construction/Year | 0.00 | 5.78 | 6.56 | 7.93 | 8.99 |

HONDURAS: BASE CASE WITH REVISED HOUSING STOCK
HOUSING STOCK AND REPLACEMENT (CONTINUED)

Rural Areas

Dwelling Units by Construction Standard

| | | | | | |
|---|---|---|---|---|---|
| Acceptable Construction | 94.80 | 280.25 | 475.16 | 630.17 | 895.74 |
| (Annual Planned Repl.) | 0.00 | 1.90 | 5.60 | 9.50 | 13.60 |
| Non-Upgradable Construct. | 300.80 | 225.60 | 150.40 | 75.20 | 0.00 |
| (Annual Planned Repl.) | 0.00 | 15.04 | 15.04 | 15.04 | 15.04 |
| Upgradable Construction | 103.10 | 77.33 | 51.55 | 25.77 | -0.00 |
| (Planned Ann. Upgrading) | 0.00 | 5.16 | 5.16 | 5.16 | 5.16 |
| Total Dwelling Units | 498.70 | 583.17 | 677.11 | 781.14 | 895.74 |
| Total Overcrowded Units | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Planned Annual Construction to Relieve Overcrowding | 0.00 | 1.87 | 1.87 | 1.87 | 1.87 |
| New Households/Year | 0.00 | 15.02 | 16.92 | 18.9 | |
| 0.00 15.02 16.92 18.94 21.05 | | | | | |
| Construction New Units/Yr | 0.00 | 33.83 | 39.43 | 45.35 | 51.56 |
| Total Construction/Year | 0.00 | 38.99 | 44.59 | 50.50 | 56.72 |

TOTAL COUNTRY

| | | | | | |
|---|---|---|---|---|---|
| New Construction/Year | 0.00 | 49.21 | 58.99 | 69.21 | 80.07 |
| Total Construction/Year | 0.00 | 59.35 | 69.13 | 79.34 | 90.21 |

HONDURAS: BASE CASE WITH REVISED HOUSING STOCK
HOUSING INVESTMENT IN RELATION TO GDP

TABLE A.4

| | 1985 | 1990 | 1995 | 2000 | 2005 |
|---|---|---|---|---|---|
| (Millions of Currency Units) | | | | | |
| Country | | | | | |
| Total Housing Expend. | 1266.69 | 1487.35 | 1746.21 | 2150.80 | 2648.77 |
| Non-target Group Invest. | 0.00 | 436.55 | 548.43 | 705.26 | 893.76 |
| Target Group Investment | 0.00 | 66.12 | 111.70 | 125.46 | 140.27 |
| Subsidy Required | 0.00 | 86.89 | 84.15 | 93.76 | 102.92 |
| Total Housing Investment | 0.00 | 589.56 | 744.28 | 924.49 | 1136.95 |
| Metropolitan Area | | | | | |
| Total Housing Expend. | 640.58 | 781.66 | 953.12 | 1218.81 | 1557.06 |
| Non-target Group Invest. | 0.00 | 280.14 | 368.79 | 468.08 | 600.00 |
| Target Group Investment | 0.00 | 23.49 | 25.15 | 29.64 | 33.31 |
| Subsidy Required | 0.00 | 14.64 | 18.07 | 19.80 | 21.81 |
| Total Housing Investment | 0.00 | 318.27 | 412.02 | 518.52 | 655.12 |
| Other Urban Areas | | | | | |
| Total Housing Expend. | 142.32 | 173.66 | 211.76 | 270.74 | 345.94 |
| Non-target Group Invest. | 0.00 | 48.53 | 62.22 | 89.70 | 115.99 |
| Target Group Investment | 0.00 | 9.71 | 10.97 | 13.66 | 16.41 |
| Subsidy Required | 0.00 | 14.86 | 16.24 | 18.33 | 19.39 |
| Total Housing Investment | 0.00 | 73.11 | 89.44 | 121.69 | 151.79 |
| Rural Areas | | | | | |
| Total Housing Expend. | 483.79 | 532.02 | 581.33 | 661.45 | 745.78 |
| Non-target Group Invest. | 0.00 | 107.88 | 117.41 | 147.48 | 177.77 |
| Target Group Investment | 0.00 | 32.91 | 75.58 | 83.17 | 90.55 |
| Subsidy Required | 0.00 | 57.38 | 49.83 | 55.53 | 61.72 |
| Total Housing Investment | 0.00 | 198.18 | 242.82 | 286.19 | 330.04 |
| Total Housing Investment as a Percent of GDP | 0.42 | 7.31 | 7.77 | 7.75 | 7.65 |

HONDURAS: REVISED HOUSING STOCK & LOWER NEW UNITS STANDARDS **TABLE A.5**
DESIGN STANDARDS AND COSTS

| | 1985 | 1990 | 1995 | 2000 | 2005 |
|---|---|---|---|---|---|
| Average Inflation Rate % | 0.00 | 4.50 | 4.50 | 4.50 | 4.50 |
| Construction Cost Esc. % | 0.00 | 4.50 | 4.50 | 4.50 | 4.50 |
| Metropolitan Area | | | | | |
| Price Minimum Standard Formal Sector Housing (Level 3) | 10.80 | 10.80 | 10.80 | 10.80 | 10.80 |
| Design Cost New Housing Unit (Level 2) | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| Design Cost Upgrade Existing Unit (Level 1) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Value of an Upgradable Unit (Add. to upgrade cost) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Other Urban Areas | | | | | |
| Price Minimum Standard Formal Sector Housing (Level 3) | 10.80 | 10.80 | 10.80 | 10.80 | 10.80 |
| Design Cost New Housing Unit (Level 2) | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| Design Cost Upgrade Existing Unit (Level 1) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Value of an Upgradable Unit (Add. to upgrade cost) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Rural Areas | | | | | |
| Price Minimum Standard Formal Sector Housing (Level 3) | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| Design Cost New Housing Unit (Level 2) | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Design Cost Upgrade Existing Unit (Level 1) | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Value of an Upgradable Unit (Add. to upgrade cost) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

HONDURAS: REVISED HOUSING STOCK & LOWER NEW UNITS STANDARDS **TABLE A.6**
HOUSING INVESTMENT IN RELATION TO GDP

| | 1985 | 1990 | 1995 | 2000 | 2005 |
|---|---|---|---|---|---|
| (Millions of Currency Units) | | | | | |
| Country | | | | | |
| Total Housing Expend. | 1266.69 | 1487.35 | 1746.21 | 2150.80 | 2648.77 |
| Non-target Group Invest. | 0.00 | 436.55 | 549.43 | 705.26 | 893.76 |
| Target Group Investment. | 0.00 | 66.12 | 111.70 | 125.46 | 140.27 |
| Subsidy Required | 0.00 | 5.18 | 5.52 | 6.03 | 6.28 |
| Total Housing Investment | 0.00 | 507.85 | 665.65 | 836.76 | 1040.31 |
| Metropolitan Area | | | | | |
| Total Housing Expend. | 640.58 | 781.66 | 953.12 | 1218.61 | 1557.06 |
| Non-target Group Invest. | 0.00 | 280.14 | 368.79 | 468.08 | 600.00 |
| Target Group Investment | 0.00 | 23.49 | 25.15 | 29.64 | 33.31 |
| Subsidy Required | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total Housing Investment | 0.00 | 303.63 | 393.94 | 496.72 | 633.31 |
| Other Urban Areas | | | | | |
| Total Housing Expend. | 142.32 | 173.66 | 211.76 | 270.74 | 345.94 |
| Non-target Group Invest. | 0.00 | 48.53 | 62.22 | 89.70 | 115.99 |
| Target Group Investment | 0.00 | 9.71 | 10.97 | 13.66 | 16.41 |
| Subsidy Required | 0.00 | 5.18 | 5.52 | 6.03 | 6.28 |
| Total Housing Investment | 0.00 | 67.43 | 78.72 | 109.39 | 138.68 |
| Rural Areas | | | | | |
| Total Housing Expend. | 483.79 | 532.02 | 581.33 | 661.45 | 745.78 |
| Non-target Group Invest. | 0.00 | 107.88 | 117.41 | 147.48 | 177.77 |
| Target Group Investment | 0.00 | 32.91 | 75.58 | 83.17 | 90.55 |
| Subsidy Required | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total Housing Investment | 0.00 | 140.80 | 192.99 | 230.65 | 268.32 |
| Total Housing Investment as a Percent of GDP | 0.42 | 6.30 | 6.95 | 7.01 | 7.00 |

HONDURAS: REVISED HOUSING STOCK & ACCELERATED UPGRADING DESIGN STANDARDS AND COSTS

**TABLE A.7**

| | 1985 | 1990 | 1995 | 2000 | 2005 |
|---|---|---|---|---|---|
| Average Inflation Rate % | 0.00 | 4.50 | 4.50 | 4.50 | 4.50 |
| Construction Cost Esc. % | 0.00 | 4.50 | 4.50 | 4.50 | 4.50 |
| Metropolitan Area | | | | | |
| Price Minimum Standard Formal Sector Housing (Level 3) | 10.80 | 10.80 | 10.80 | 10.80 | 10.80 |
| Design Cost New Housing Unit (Level 2) | 8.30 | 8.30 | 8.30 | 8.30 | 8.30 |
| Design Cost Upgrade Existing Unit (Level 1) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Value of an Upgradable Unit (Add. to upgrade cost) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Other Urban Areas | | | | | |
| Price Minimum Standard Formal Sector Housing (Level 3) | 10.80 | 10.80 | 10.80 | 10.80 | 10.80 |
| Design Cost New Housing Unit (Level 2) | 8.30 | 8.30 | 8.30 | 8.30 | 8.30 |
| Design Cost Upgrade Existing Unit (Level 1) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Value of an Upgradable Unit (Add. to upgrade cost) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Rural Areas | | | | | |
| Price Minimum Standard Formal Sector Housing (Level 3) | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| Design Cost New Housing Unit (Level 2) | 3.60 | 3.60 | 3.60 | 3.60 | 3.60 |
| Design Cost Upgrade Existing Unit (Level 1) | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Value of an Upgradable Unit (Add. to upgrade cost) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

HONDURAS: REVISED HOUSING STOCK & ACCELERATED UPGRADING
HOUSING STOCK AND REPLACEMENT

TABLE A.8

| | 1985 | 1990 | 1995 | 2000 | 2005 |
|---|---|---|---|---|---|
| **Metropolitan Area** | | | | | |
| Dwelling Units by Construction Standard | | | | | |
| Acceptable Construction | 68.60 | 154.43 | 250.67 | 314.33 | 387.58 |
| (Annual Planned Repl.) | 0.00 | 1.37 | 3.09 | 5.01 | 6.29 |
| Non-Upgradable Construct. | 8.30 | 4.15 | 0.00 | 0.00 | 0.00 |
| (Annual Planned Repl.) | 0.00 | 0.83 | 0.83 | 0.00 | 0.00 |
| Upgradable Construction | 70.80 | 35.40 | 0.00 | 0.00 | 0.00 |
| (Planned Ann. Upgrading) | 0.00 | 7.08 | 7.08 | 0.00 | 0.00 |
| Total Dwelling Units | 147.70 | 193.98 | 250.67 | 314.33 | 387.58 |
| Total Overcrowded Units | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 |
| Planned Annual Construction to Relieve Overcrowding | 0.00 | 1.36 | 1.36 | 1.36 | 1.36 |
| New Households/Year | 0.00 | 7.90 | 9.98 | 11.37 | 13.29 |
| Construction New Units/Yr | 0.00 | 11.46 | 15.26 | 17.75 | 20.94 |
| Total Construction/Year | 0.00 | 18.54 | 22.34 | 17.75 | 20.94 |
| **Other Urban Areas** | | | | | |
| Dwelling Units by Construction Standard | | | | | |
| Acceptable Construction | 17.10 | 55.32 | 94.70 | 116.05 | 139.50 |
| (Annual Planned Repl.) | 0.00 | 0.34 | 1.11 | 1.39 | 2.32 |
| Non-Upgradable Construct. | 15.30 | 7.65 | 0.00 | 0.00 | 0.00 |
| (Annual Planned Repl.) | 0.00 | 1.53 | 1.53 | 0.00 | 0.00 |
| Upgradable Construction | 28.70 | 14.30 | -0.10 | -0.10 | -0.10 |
| (Planned Ann. Upgrading) | 0.00 | 2.88 | 2.88 | 0.00 | 0.00 |
| Total Dwelling Units | 61.10 | 77.27 | 94.60 | 115.95 | 139.40 |
| Total Overcrowded Units | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| Planned Annual Construction to Relieve Overcrowding | 0.00 | 0.56 | 0.56 | 0.56 | 0.56 |
| New Households/Year | 0.00 | 2.67 | 2.90 | 3.71 | 4.13 |
| Construction New Units/Yr | 0.00 | 5.11 | 6.10 | 6.17 | 7.01 |
| Total Construction/Year | 0.00 | 7.99 | 8.99 | 6.17 | 7.01 |

HONDURAS: REVISED HOUSING STOCK & ACCELERATED UPGRADING
HOUSIN8 STOCK AND REPLACEMENT (CONTINUED)

Rural Areas

Dwelling Units by Construction Standard

| | | | | | |
|---|---|---|---|---|---|
| Acceptable Construction | 94.80 | 381.22 | 677.11 | 781.14 | 895.74 |
| (Annual Planned Repl.) | 0.00 | 1.90 | 7.62 | 13.54 | 15.62 |
| Non-Upgradable Construct. | 300.80 | 150.40 | 0.00 | 0.00 | 0.00 |
| (Annual Planned Repl.) | 0.00 | 30.08 | 30.08 | 0.00 | 0.00 |
| Upgrauable Construction | 103.10 | 51.55 | -0.00 | -0.00 | -0.00 |
| (Planned Ann. Upgrading) | 0.00 | 10.31 | 10.31 | 0.00 | 0.00 |
| Total Dwelling Units | 498.70 | 583.17 | 677.11 | 781.14 | 895.74 |
| Total Overcrowded Units | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Planned Annual Construction to Relieve Overcrowding | 0.00 | 1.87 | 1.87 | 1.87 | 1.87 |
| New Households/Year | 0.00 | 15.02 | 16.92 | 18.94 | 21.05 |
| Construction New Units/Yr | 0.00 | 48.87 | 56.49 | 34.35 | 38.54 |
| Total Construction/Year | 0.00 | 59.18 | 66.80 | 34.35 | 38.54 |

TOTAL COUNTRY

| | | | | | |
|---|---|---|---|---|---|
| New Construction/Year | 0.00 | 65.43 | 77.85 | 58.26 | 66.49 |
| Total Construction/Year | 0.00 | 85.70 | 98.12 | 58.26 | 66.49 |

HONDURAS: REVISED HOUSING STOCK & ACCELERATED UPGRADING HOUSING INVESTMENT IN RELATION TO GDP

TABLE A.9

| | 1985 | 1990 | 1995 | 2000 | 2005 |
|---|---|---|---|---|---|
| (Millions of Currency Units) | | | | | |
| Country | | | | | |
| Total Housing Expend. | 1266.69 | 1487.35 | 1746.21 | 2150.80 | 2648.77 |
| Non-target Group Invest. | 0.00 | 436.55 | 574.08 | 757.61 | 920.60 |
| Target Group Investment | 0.00 | 101.52 | 169.15 | 77.44 | 88.12 |
| Subsidy Required | 0.00 | 132.06 | 120.10 | 65.97 | 72.65 |
| Total Housing Investment | 0.00 | 670.13 | 863.33 | 901.02 | 1081.36 |
| Metropolitan Area | | | | | |
| Total Housing Expend. | 840.58 | 781.66 | 953.12 | 1218.61 | 1557.06 |
| Non-target Group Invest. | 0.00 | 280.14 | 380.30 | 491.83 | 612.37 |
| Target Group Investment | 0.00 | 33.28 | 34.64 | 19.64 | 23.29 |
| Subsidy Required | 0.00 | 16.32 | 20.15 | 16.35 | 20.60 |
| Total Housing Investment | 0.00 | 329.73 | 435.08 | 530.32 | 656.16 |
| Other Urban Areas | | | | | |
| Total Housing Expend. | 142.32 | 173.66 | 211.76 | 270.74 | 345.94 |
| Non-target Group Invest. | 0.00 | 48.53 | 65.84 | 87.36 | 120.10 |
| Target Group Investment | 0.00 | 13.83 | 15.51 | 8.59 | 11.52 |
| Subsidy Required | 0.00 | 20.66 | 22.42 | 13.66 | 14.54 |
| Total Housing Investment | 0.00 | 83.02 | 103.78 | 120.62 | 146.16 |
| Rural Areas | | | | | |
| Total Housing Expend. | 483.79 | 532.02 | 581.33 | 661.45 | 745.78 |
| Non-target Group Invest. | 0.00 | 107.88 | 127.94 | 168.43 | 188.13 |
| Target Group Investment | 0.00 | 54.42 | 118.00 | 48.21 | 53.31 |
| Subsidy Required | 0.00 | 35.07 | 77.53 | 33.45 | 37.81 |
| Total Housing Investment | 0.00 | 257.38 | 324.47 | 250.09 | 279.05 |
| Total Housing Investment as a Percent of GDP | 0.42 | 8.31 | 9.02 | 7.55 | 7.27 |

## ANNEX B

## ESTIMATING 1986 HOUSEHOLD CLASSIFICATION MATRICES

To further our analysis of housing finance strategies, we have used the Housing Quality Simulation Model to analyze housing sector response to a variety of policy scenarios. As explained in Annex E, the Model begins with an initial classification of households by income, tenure and dwelling quality, and then simulates year-to-year shifts over a test period. This Annex outlines the procedures and assumptions underlying our estimates of such classifications for 1986; in Annex C we list the assumptions used to project changes over the 1986 to 1990 study period.

In preparing our initial household classifications, we were fortunate to obtain access to a national survey of households that includes information on income, tenure, dwelling type, dwelling value, and source of drinking water. However, this survey was conducted in 1978, and information on subsequent changes in income and housing conditions is limited. We therefore use the Model itself to simulate the 1978-1985 period, calibrating it to match as closely as possible evidence presented in the 1985 Needs Assessment and in other published sources. The resulting household distribution by income, tenure, and dwelling quality then serves as the basis for our 1986-1990 simulations.

Our first step was to classify survey households by income decile. Table B.1 presents mean annual incomes at the beginning of 1978 by decile for each of the three housing sectors.[1] Within each income decile, households can be assigned to one of four possible tenure categories:

TABLE B-1

HOUSEHOLD INCOMES AND OWNERSHIP RATES — 1978

| Decile | Metro | | Urban | | Rural | |
|---|---|---|---|---|---|---|
| | Avg Inc. | % Owners | Avg Inc. | % Owners | Avg Inc. | % Owners |
| 1 (low) | L4,845 | 34.8% | L2,561 | 52.4% | L12,40 | 85.2% |
| 2 | 7,689 | 38.3 | 4,668 | 51.6 | 1,923 | 86.1 |
| 3 | 9,696 | 46.6 | 5,983 | 46.9 | 2,382 | 84.3 |
| 4 | 11,715 | 50.1 | 7,316 | 58.8 | 2,711 | 89.9 |
| 5 | 14,013 | 53.1 | 8,841 | 57.6 | 3,089 | 88.0 |
| 6 | 16,574 | 53.1 | 10.804 | 57.2 | 3,560 | 88.0 |
| 7 | 19,986 | 59.6 | 13,021 | 59.2 | 4,295 | 85.2 |
| 8 | 25,222 | 64.3 | 15,899 | 69.1 | 5,395 | 90.8 |
| 9 | 35,016 | 65.4 | 20,789 | 68.7 | 6,940 | 83.3 |
| 10 (high) | 72,798 | 83.7 | 40,489 | 80.3 | 12,006 | 76.8 |

- Secure owners -- possessing clear title to their properties;
- Squatters -- owners lacking title or secure tenure;
- Unit renters;
- Room renters.

The inclusion of room renters in the Model permits explicit consideration of over-crowding in the housing sector. Specifically, when more that one family occupies a dwelling unit, the second family can be classified as a room renter household -- lacking a dwelling unit of its own. Unfortunately, there is little concrete data on this kind of crowding in Honduras, and the 1985 Needs Assessment assumed that the problem was negligible.[2] Since our household survey does not indicate whether multiple families share a dwelling unit, we have adopted the Needs Assessment's assumption that doubling-up is not a serious problem in Honduras. Similarly, although our 1985 classification includes a percentage of squatter households, these are omitted

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1. All currency values are presented in 1985 lempiras; the official exchange rate of lempiras to dollars is two to one. Income figures are as reported by households; they include non-money income in the form of goods and services, but they have not been adjusted for systematic under reporting.

2. However, anecdotal data suggest that, in some metro and urban neighborhoods, doubling-up is common. One study reports an average of 1.06 families per household in "marginal" neighborhoods of Tegucigalpa. This would imply that about six percent of all families in such neighborhoods should be designated as room renters.

from the 1978 estimates; all households are classified as either secure owners or unit renters. Table B.1 presents the 1978 owner-occupancy rate by income decile for each of the three housing sectors in Honduras.

Within each tenure category, households are classified by dwelling status, defined on the basis of structural adequacy and infrastructure acceptability. In Honduras, structures are defined as (1) permanent -- constructed with permanent materials and therefore presumably adequate; (2) semi-permanent -- not fully adequate but structurally upgradable; or (3) improvised -- inadequate and not upgradable. Infrastructure is simply defined as either acceptable or unacceptable, on the basis of access to drinking water and sanitation facilities. Allowing independence between structural quality and infrastructure acceptability, we have six dwelling categories:

1) permanent structure with passing water and sanitation,
2) permanent structure with failing water or sanitation,
3) semi-permanent structure with passing water and sanitation,
4) semi-permanent structure with failing water or sanitation,
5) improvised (non-upgradable) structure with passing water and sanitation, and
6) improvised (non-upgradable) structure with failing

water or sanitation.

Throughout this report, only the first category is considered "acceptable" or "adequate". The second through fourth categories are considered potentially upgradable to adequacy, since transition to the first category can be accomplished with appropriate materials and expense. Dwellings of the fifth and sixth categories, by definition, cannot be upgraded to acceptability.

Detailed classification of dwellings by structural materials was not available in the income and expenditure survey, so we inferred each dwelling unit's structural quality on the basis of the type of unit, its imputed value, and its size. More specifically, we assumed that all apartment buildings and rooming houses were permanent structures, while units designated as rancho, improvisado, or "intended for other than residential use" were improvised and not upgradable. The remaining independent houses were classified as permanent if their imputed value was greater than L6,000 (L3,000 in rural areas), and as semi-permanent if their imputed value was between L2,500 and L6,000 (L1,250 to L3,000 rural). For rural areas, houses valued at less than L1,250 were classified as semi-permanent rather than improvised if they consisted of more than two rooms. These value cutoffs are based on reported costs of public direct construction projects in Honduras, and on anecdotal evidence obtained in our

first field visit. Table B.2 presents the resulting shares of permanent, semi-permanent and improvised units for each sector in 1978. These are consistent with 1974 census data on building materials.

The next step in constructing the 1978 household classification matrix for each sector was to determine which households had adequate water services. For the metro and urban sectors, only households with access to piped water (either on or off their properties) and flush or water sealed toilets were designated as having adequate infrastructure. For the rural sector, wells and latrines were also designated as adequate. Our survey data includes information on source of drinking water, and Table B.3 reports the share of households in each structure category with adequate water service. Census figures for 1974 indicate that a much smaller share of households had adequate sewer service -- about 40 percent in metro and urban areas and about 10 percent in rural areas. Therefore, the share of households with adequate water service was deflated to yield estimates of the share of households with both adequate water service and adequate sewage disposal facilities. Occupants of expensive, high quality dwellings who had adequate water service were assumed to be more likely to have adequate sewage disposal service as well, while occupants of lower value dwellings were assumed to be less likely to receive adequate sewage services, even if they received adequate water service. Table B.3 presents

**TABLE B-2**

**STRUCTURE QUALITY - 1978**
(percentages)

| Decile | — METRO — | | | — URBAN — | | | — RURAL — | | |
|---|---|---|---|---|---|---|---|---|---|
| | Perm | Semi | Impr | Perm | Semi | Impr | Perm | Semi | Impr |
| 1 (low) | 28.14 | 50.30 | 21.56 | 5.95 | 35.32 | 58.73 | 6.54 | 18.69 | 74.77 |
| 2 | 47.65 | 40.00 | 12.35 | 9.56 | 40.64 | 49.80 | 7.48 | 21.50 | 71.03 |
| 3 | 53.25 | 37.87 | 8.88 | 9.16 | 47.81 | 43.03 | 5.61 | 21.50 | 72.90 |
| 4 | 61.54 | 33.14 | 5.33 | 16.67 | 53.97 | 29.37 | 4.67 | 26.17 | 69.16 |
| 5 | 74.71 | 24.12 | 1.18 | 22.71 | 52.99 | 24.30 | 11.21 | 14.95 | 73.83 |
| 6 | 78.11 | 17.75 | 4.14 | 26.98 | 53.97 | 19.05 | 13.21 | 25.47 | 61.32 |
| 7 | 88.24 | 10.00 | 1.76 | 36.90 | 49.60 | 13.49 | 10.28 | 31.78 | 57.94 |
| 8 | 94.15 | 5.26 | 0.58 | 48.21 | 45.42 | 6.37 | 10.38 | 33.02 | 56.60 |
| 9 | 93.53 | 5.88 | 0.59 | 58.73 | 36.11 | 5.16 | 14.95 | 48.60 | 36.45 |
| 10 (High) | 97.08 | 2.92 | 0.00 | 85.77 | 12.25 | 1.98 | 30.84 | 37.38 | 31.78 |
| TOTAL: | 71.64 | 22.72 | 5.64 | 32.07 | 42.81 | 25.13 | 11.52 | 27.91 | 60.58 |
| No. of Units | 76,010 | 24,105 | 5,984 | 14,848 | 19,821 | 11,635 | 47,186 | 114,319 | 248,135 |

| | Dwelling Units | Units per Decile |
|---|---|---|
| Metro | 106,100 | 10,610 |
| Urban | 46,300 | 4,630 |
| Rural | 409,600 | 40,960 |

## TABLE B-3

## ADEQUACY OF INFRASTRUCTURE SERVICES — 1978

Percent of Households with Acceptable Water Service:

| | Metro | Urban | Rural |
|---|---|---|---|
| Permanent Structures | 98.9% | 91.3% | 74.8% |
| Semi-Perm. Structures | 91.2 | 83.3 | 72.5 |
| Improvised Structures | 85.2 | 71.3 | 59.7 |
| Total | 96.4 | 82.8 | 65.0 |
| Units with Acceptable Water | 102,280 | 38,105 | 266,240 |
| Total Units | 106,100 | 46,300 | 409,60[illegible] |

Percent of Households with Acceptable Water and Sewer Service:

| | Metro | Urban | Rural |
|---|---|---|---|
| Permanent Structures | 43.4% | 64.0% | 23.9% |
| Semi-Perm. Structures | 41.9 | 42.7 | 17.2 |
| Improvised Structures | 18.9 | 15.3 | 3.8 |
| Total | 41.7 | 42.8 | 9.9 |
| Units with Acceptable Water and Sanitation | 44,244 | 19,816 | 40,550 |
| Total Units | 106,100 | 46,300 | 409,600 |

the final estimates of infrastructure adequacy rates by structure type for 1978.

## Updating the 1978 Household Classification Matrix

Between 1978 and 1985, we simulate two sources of change to the classification of households by income, tenure and dwelling quality. First, we assume "natural" transitions -- even in the absence of public assistance, a small share of semi-permanent dwellings are presumably upgraded to fully acceptable quality each year. We were unable to obtain data on such improvements to the existing stock, although evidence of upgrading does exist. Therefore, we assume that in all the sectors, about five percent of all semi-permanent units are upgraded to permanent materials each year, and that about 1 percent of semi-permanent and permanent units with unacceptable infrastructure are upgraded to acceptable infrastructure without public involvement. In addition, we simulate the effects for HG-005, HG-006, and HG-007 programs in the metro and urban sectors, and of the Rural Housing Improvement Program and the Rural Water and Sanitation program. These programs, in combination with the natural dwelling transitions and the influx of new households (distributed according to the existing dwelling distribution) produced the estimated dwelling and infrastructure distributions presented in Table B.4.

Although we assumed that the ratio of owners to renters

TABLE B.4

ESTIMATED STRUCTURE AND INFRASTRUCTURE QUALITY: METRO - 1986

| MEAN INC. | DECILE | -- STRUCTURE QUALITY -- PERM | SEMI | IMPR | DECILE | - PERCENT ADEQUATE INFRASTRUCTURE - PERM | SEMI | IMPR | ALL |
|---|---|---|---|---|---|---|---|---|---|
| 1958 | 1 (Low) | 43.91 | 34.53 | 21.56 | 1 (Low) | 0.44 | 0.63 | 0.17 | 0.45 |
| 3637 | 2 | 59.99 | 27.65 | 12.36 | 2 | 0.48 | 0.68 | 0.20 | 0.50 |
| 5770 | 3 | 64.92 | 26.20 | 8.88 | 3 | 0.48 | 0.69 | 0.21 | 0.51 |
| 7513 | 4 | 71.75 | 22.92 | 5.33 | 4 | 0.48 | 0.69 | 0.24 | 0.51 |
| 8987 | 5 | 82.09 | 16.73 | 1.18 | 5 | 0.55 | 0.71 | 0.21 | 0.57 |
| 11447 | 6 | 83.45 | 12.40 | 4.15 | 6 | 0.54 | 0.76 | 0.15 | 0.55 |
| 13803 | 7 | 91.28 | 6.95 | 1.77 | 7 | 0.52 | 0.71 | 0.22 | 0.53 |
| 17420 | 8 | 95.76 | 3.65 | 0.59 | 8 | 0.59 | 0.71 | 0.15 | 0.59 |
| 26023 | 9 | 95.32 | 4.09 | 0.59 | 9 | 0.56 | 0.72 | 0.30 | 0.56 |
| 54102 | 10 (High) | 97.94 | 2.06 | 0.00 | 10 (High) | 0.96 | 0.80 | 0.00 | 0.95 |
| | Total: | 78.64 | 15.72 | 5.64 | Total: | 0.57 | 0.71 | 0.16 | 0.58 |

TOTAL HOUSEHOLDS: 147,780
TOTAL PER DECILE: 14,778

TABLE B.4 (continued)

ESTIMATED STRUCTURE AND INFRASTRUCTURE QUALITY: URBAN - 1986

| MEAN INC. | DECILE | — STRUCTURE QUALITY — PERM | SEMI | IMPR | DECILE | - PERCENT ADEQUATE INFRASTRUCTURE - PERM | SEMI | IMPR | ALL |
|---|---|---|---|---|---|---|---|---|---|
| 1035 | 1 (Low) | 17.74 | 23.53 | 58.74 | 1 (Low) | 0.44 | 0.39 | 0.12 | 0.24 |
| 2208 | 2 | 23.03 | 27.16 | 49.81 | 2 | 0.41 | 0.42 | 0.15 | 0.28 |
| 3560 | 3 | 25.02 | 31.95 | 43.03 | 3 | 0.42 | 0.42 | 0.16 | 0.31 |
| 4721 | 4 | 34.47 | 36.16 | 29.37 | 4 | 0.49 | 0.45 | 0.16 | 0.38 |
| 5870 | 5 | 40.02 | 35.68 | 24.30 | 5 | 0.49 | 0.50 | 0.16 | 0.41 |
| 7462 | 6 | 44.54 | 36.41 | 19.05 | 6 | 0.48 | 0.52 | 0.22 | 0.45 |
| 8993 | 7 | 53.08 | 33.43 | 13.49 | 7 | 0.53 | 0.51 | 0.20 | 0.48 |
| 10981 | 8 | 62.74 | 30.88 | 6.38 | 8 | 0.58 | 0.60 | 0.22 | 0.56 |
| 15450 | 9 | 70.22 | 24.63 | 5.15 | 9 | 0.66 | 0.63 | 0.24 | 0.63 |
| 30091 | 10 (High) | 89.66 | 8.37 | 1.97 | 10 (High) | 0.93 | 0.65 | 0.00 | 0.89 |
| | Total: | 46.05 | 28.82 | 25.13 | Total: | 0.54 | 0.51 | 0.16 | 0.46 |

TOTAL HOUSEHOLDS: 61,130
TOTAL PER DECILE: 6,113

TABLE 8.4 (continued)

ESTIMATED STRUCTURE AND INFRASTRUCTURE QUALITY: RURAL - 1986

| DECILE | -- STRUCTURE QUALITY -- PERM | SEMI | IMPR | DECILE | - PERCENT ADEQUATE INFRASTRUCTURE - PERM | SEMI | IMPR | ALL |
|---|---|---|---|---|---|---|---|---|
| 1 (Low) | 14.07 | 11.17 | 74.76 | 1 (Low) | 0.92 | 0.34 | 0.43 | 0.49 |
| 2 | 15.87 | 13.09 | 71.04 | 2 | 0.84 | 0.37 | 0.43 | 0.49 |
| 3 | 14.36 | 12.74 | 72.90 | 3 | 0.84 | 0.38 | 0.43 | 0.49 |
| 4 | 14.65 | 16.16 | 69.19 | 4 | 0.87 | 0.31 | 0.42 | 0.47 |
| 5 | 17.04 | 9.14 | 73.83 | 5 | 0.79 | 0.32 | 0.42 | 0.47 |
| 6 | 23.78 | 14.90 | 61.32 | 6 | 0.83 | 0.32 | 0.44 | 0.51 |
| 7 | 23.43 | 18.63 | 57.94 | 7 | 0.81 | 0.33 | 0.45 | 0.51 |
| 8 | 23.91 | 19.48 | 56.61 | 8 | 0.81 | 0.34 | 0.44 | 0.51 |
| 9 | 35.57 | 27.98 | 36.45 | 9 | 0.82 | 0.32 | 0.48 | 0.56 |
| 10 (High) | 46.73 | 21.50 | 31.77 | 10 (High) | 0.76 | 0.41 | 0.00 | 0.60 |
| Total: | 22.94 | 16.48 | 60.58 | Total: | 0.83 | 0.34 | 0.39 | 0.51 |

TOTAL HOUSEHOLDS: 498,670
TOTAL PER DECILE: 49,867

remained constant in each sector over the 1978 to 1985 study period, we were given estimates, based on surveys of marginal neighborhoods in Tegucigalpa and San Pedro Sula, that approximately 35 percent of households in the metro sector, and 15 percent in the urban sector lacked secure title to their homes, and that the majority of those households fall between the second and fourth income deciles. We therefore adjusted our estimated tenure distribution to include those squatter households, constructing a simple distribution roughly consistent with those criteria. Our final estimated household classification matrices are presented in Table B.5. The table shows, for example, that an estimated seven percent of all households in the first income decile of the metro sector are owners living in semi-permanent dwellings with passing infrastructure.

In addition to adjusting our classification matrix for estimated changes between 1978 and 1985, we also adjusted counts of total households per sector, and estimated mean incomes per decile. Using real primary GDP per capita to represent rural incomes, and "all other" GDP per capita to represent metro and urban incomes, we estimate that real household incomes actually declined from 1978 to 1985 by about five percent per year on average in metro and urban areas, and by about four percent per year on average in rural areas. We assume that:

- in rural areas, the income distribution remained stable between 1978 and 1984, with all deciles experiencing a 4 percent real annual decline in income.

TABLE B.5

HOUSEHOLD CLASSIFICATION MATRIX FOR METRO HONDURAS 1986

| DECILE | TENURE | PERM-PASS | PERM-FAIL | SEMI-PASS | SEMI-FAIL | IMP-PASS | IMP-FAIL | ALL |
|---|---|---|---|---|---|---|---|---|
| 1 (Low) | Owner | 6.31 | 7.75 | 6.30 | 4.03 | 0.46 | 2.90 | 28.26 |
| | Squatter | 3.90 | 4.89 | 4.38 | 2.52 | 0.73 | 3.58 | 20.00 |
| | Renter | 9.27 | 11.79 | 10.74 | 6.05 | 2.47 | 11.42 | 51.74 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | Owner | 7.19 | 7.43 | 3.94 | 1.91 | 0.62 | 1.85 | 22.94 |
| | Squatter | 11.56 | 12.43 | 7.57 | 3.49 | 1.00 | 3.94 | 40.00 |
| | Renter | 10.15 | 11.22 | 7.42 | 3.32 | 0.88 | 4.07 | 37.07 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | Owner | 2.96 | 3.46 | 1.58 | 0.63 | 0.16 | 0.55 | 9.35 |
| | Squatter | 24.96 | 26.97 | 14.53 | 6.43 | 1.48 | 5.62 | 80.00 |
| | Renter | 3.28 | 3.29 | 2.05 | 0.97 | 0.21 | 0.86 | 10.65 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | Owner | 3.66 | 3.95 | 1.53 | 0.69 | 0.04 | 0.20 | 10.06 |
| | Squatter | 27.28 | 30.13 | 12.61 | 5.73 | 1.02 | 3.24 | 80.00 |
| | Renter | 3.16 | 3.38 | 1.33 | 0.75 | 0.22 | 0.31 | 9.21 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | Owner | 10.32 | 8.06 | 1.77 | 0.85 | 0.07 | 0.16 | 21.23 |
| | Squatter | 27.00 | 22.25 | 7.10 | 2.94 | 0.15 | 0.56 | 60.00 |
| | Renter | 7.68 | 6.78 | 2.97 | 1.11 | 0.03 | 0.21 | 18.77 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | Owner | 14.24 | 12.81 | 2.66 | 0.82 | 0.13 | 1.29 | 31.95 |
| | Squatter | 17.87 | 15.51 | 3.75 | 1.21 | 0.25 | 1.41 | 40.00 |
| | Renter | 12.56 | 10.46 | 2.96 | 1.00 | 0.25 | 0.82 | 28.05 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | Owner | 23.50 | 20.98 | 1.12 | 0.51 | 0.31 | 1.10 | 47.53 |
| | Squatter | 9.54 | 8.72 | 0.99 | 0.40 | 0.08 | 0.28 | 20.00 |
| | Renter | 14.66 | 13.88 | 2.82 | 1.10 | 0.00 | 0.00 | 32.47 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | Owner | 33.34 | 22.19 | 1.22 | 0.59 | 0.00 | 0.00 | 57.35 |
| | Squatter | 5.63 | 3.95 | 0.26 | 0.11 | 0.01 | 0.05 | 10.00 |
| | Renter | 17.29 | 13.36 | 1.10 | 0.37 | 0.08 | 0.45 | 32.65 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | Owner | 42.34 | 20.11 | 1.94 | 0.91 | 0.00 | 0.00 | 65.30 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 20.76 | 12.11 | 0.99 | 0.25 | 0.00 | 0.59 | 34.70 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 (High) | Owner | 32.30 | 1.48 | 1.31 | 0.34 | 0.00 | 0.00 | 83.33 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 13.90 | 2.65 | 0.35 | 0.07 | 0.00 | 0.00 | 16.97 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Totals: | | 46.42 | 32.22 | 10.31 | 4.71 | 1.36 | 4.58 | 100.00 |

Each income decile contains 14,773 households. Table entries give percent of decile's households in each category.

TABLE B.5 (continued)

HOUSEHOLD CLASSIFICATION MATRIX FOR URBAN HONDURAS 1986

| DECILE | TENURE | PERM-PASS | PERM-FAIL | SEMI-PASS | SEMI-FAIL | IMP-PASS | IMP-FAIL | ALL |
|---|---|---|---|---|---|---|---|---|
| 1 (Low) | Owner | 3.80 | 4.28 | 4.54 | 6.66 | 3.52 | 24.34 | 47.14 |
| | Squatter | 0.79 | 0.99 | 0.91 | 1.44 | 0.72 | 5.15 | 10.00 |
| | Renter | 3.30 | 4.59 | 3.64 | 6.33 | 3.00 | 22.00 | 42.86 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | Owner | 4.30 | 6.12 | 5.52 | 6.04 | 3.03 | 16.42 | 41.43 |
| | Squatter | 1.87 | 2.74 | 2.29 | 3.14 | 1.45 | 8.51 | 20.00 |
| | Renter | 3.18 | 4.83 | 3.65 | 6.51 | 2.78 | 17.62 | 38.57 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | Owner | 3.13 | 4.19 | 4.01 | 5.88 | 1.60 | 9.39 | 28.21 |
| | Squatter | 4.24 | 5.77 | 5.37 | 7.41 | 2.78 | 14.43 | 40.00 |
| | Renter | 3.22 | 4.47 | 4.05 | 5.23 | 2.57 | 12.25 | 31.79 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | Owner | 5.09 | 7.32 | 5.46 | 7.12 | 1.53 | 8.71 | 35.23 |
| | Squatter | 6.78 | 7.01 | 6.46 | 8.00 | 1.86 | 9.89 | 40.00 |
| | Renter | 5.08 | 3.20 | 4.23 | 4.88 | 1.25 | 6.13 | 24.77 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | Owner | 9.74 | 11.19 | 7.48 | 8.57 | 1.32 | 7.92 | 46.22 |
| | Squatter | 3.93 | 4.08 | 3.57 | 3.57 | 0.75 | 4.11 | 20.00 |
| | Renter | 5.98 | 5.11 | 6.80 | 5.70 | 1.70 | 8.50 | 33.78 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | Owner | 10.51 | 10.93 | 10.48 | 10.21 | 2.03 | 7.25 | 51.42 |
| | Squatter | 2.14 | 2.32 | 1.90 | 1.74 | 0.42 | 1.49 | 10.00 |
| | Renter | 8.72 | 9.92 | 6.62 | 5.46 | 1.71 | 6.15 | 38.58 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | Owner | 16.29 | 15.07 | 10.77 | 9.85 | 1.57 | 5.57 | 59.12 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 11.61 | 10.10 | 6.30 | 6.52 | 1.09 | 5.26 | 40.88 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | Owner | 26.65 | 18.86 | 12.78 | 7.84 | 0.57 | 2.62 | 69.31 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 9.77 | 7.47 | 5.79 | 4.47 | 0.85 | 2.34 | 30.69 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | Owner | 31.89 | 18.16 | 10.12 | 6.10 | 0.57 | 1.81 | 68.66 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 14.37 | 5.80 | 5.40 | 3.00 | 0.68 | 2.09 | 31.34 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 (High) | Owner | 67.69 | 3.69 | 4.32 | 2.17 | 0.37 | 1.60 | 79.84 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 15.76 | 2.53 | 1.13 | 0.75 | 0.00 | 0.00 | 20.16 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Totals: | | 27.98 | 18.07 | 14.36 | 14.46 | 3.97 | 21.15 | 100.00 |

Each income decile contains 6,113 households. Table entries give percent of decile's households in each category.

TABLE B.5 (continued)

HOUSEHOLD CLASSIFICATION MATRIX FOR RURAL HONDURAS 1986

| DECILE | TENURE | PERM-PASS | PERM-FAIL | SEMI-PASS | SEMI-FAIL | IMP-PASS | IMP-FAIL | ALL |
|---|---|---|---|---|---|---|---|---|
| 1 (Low) | Owner | 9.76 | 0.40 | 2.87 | 5.46 | 29.67 | 37.68 | 85.03 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 2.93 | 0.78 | 0.92 | 1.93 | 3.59 | 4.82 | 14.97 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | Owner | 10.32 | 1.83 | 3.88 | 8.40 | 27.50 | 36.06 | 85.98 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 3.02 | 0.70 | 0.95 | 1.87 | 3.36 | 4.11 | 14.02 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | Owner | 10.02 | 1.62 | 4.59 | 7.12 | 26.24 | 34.51 | 84.11 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 2.01 | 0.70 | 0.28 | 0.75 | 5.37 | 6.78 | 15.89 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | Owner | 10.74 | 0.60 | 4.52 | 10.30 | 26.24 | 36.51 | 88.91 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 2.37 | 1.24 | 0.46 | 0.38 | 2.83 | 3.81 | 11.09 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | Owner | 8.15 | 2.77 | 2.25 | 4.51 | 23.76 | 40.19 | 87.34 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 4.23 | 0.89 | 0.70 | 1.67 | 2.11 | 2.57 | 12.16 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | Owner | 17.95 | 3.53 | 4.68 | 9.69 | 23.13 | 29.70 | 88.68 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 1.69 | 0.61 | 0.11 | 0.43 | 3.90 | 4.58 | 11.32 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | Owner | 14.32 | 1.76 | 5.38 | 11.69 | 22.73 | 29.46 | 85.04 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 4.75 | 2.59 | 0.21 | 0.86 | 2.96 | 3.59 | 14.96 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | Owner | 16.95 | 3.27 | 6.37 | 12.09 | 23.25 | 29.59 | 91.52 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 2.42 | 1.27 | 0.31 | 0.71 | 1.66 | 2.11 | 8.48 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | Owner | 25.07 | 5.17 | 7.31 | 16.66 | 13.79 | 15.19 | 83.19 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 4.20 | 1.13 | 1.63 | 2.38 | 3.58 | 3.88 | 16.81 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 (High) | Owner | 27.34 | 8.32 | 7.22 | 8.43 | 12.13 | 12.17 | 75.62 |
| | Squatter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Renter | 8.38 | 2.69 | 1.60 | 3.22 | 3.68 | 3.79 | 23.37 |
| | Room Renter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Totals: | | 13.75 | 4.19 | 3.38 | 10.31 | 26.60 | 33.78 | 100.00 |

Each income decile contains 49,867 households. Table entries give percent of decile's households in each category.

- in metro and urban areas, the income distribution shifted down over the 1978-1980 period, presumably due to an influx of lower income households and/or differential rates of real income decline.

- the changing income distribution in metro and urban areas from 1978 to 1984 was reflected by more substantial declines in the mean incomes of lower deciles than in the mean incomes of higher deciles, with an average annual decline of 5 percent.

Our rates of growth in the number of households were matched to estimates used in the Housing Needs Assessment. Table B.6 shows our final estimates of the number of households and their distribution by income in 1978, at the end of 1985, and at the end of 1990. Derivation of the 1990 estimates is explained in Annex C.

TABLE B-6

NUMBER OF HOUSEHOLDS BY SECTOR:
1978, 1985 and 1990

| | Metro | Urban | Rural | Total |
|---|---|---|---|---|
| Households, 1978 | 106,100 | 46,300 | 409,600 | 562,000 |
| Households, 1985 | 147,780 | 61,130 | 498,670 | 707,580 |
| Annual Increase, 1986-90 | 6,713 | 2,268 | 12,763 | 21,744 |
| Households, end 1990 | 181,343 | 72,470 | 562,486 | 816,299 |

Mean Real Incomes by Decile (in 1985 lempiras)

| | Metro | | | Urban | | | Rural | | |
|---|---|---|---|---|---|---|---|---|---|
| | 78 | 86 | 90 | 78 | 86 | 90 | 78 | 86 | 90 |
| 1 (low) | L4,845 | L1,980 | L2,013 | L2,561 | L1,047 | L1,108 | L1,054 | L770 | L825 |
| 2 | 7,689 | 3,678 | 3,740 | 4,668 | 2,233 | 2,362 | 1,634 | 1,194 | 1,280 |
| 3 | 9,696 | 5,834 | 5,932 | 5,983 | 3,600 | 3,809 | 2,024 | 1,479 | 1,585 |
| 4 | 11,715 | 7,597 | 7,725 | 7,316 | 4,773 | 5,050 | 2,303 | 1,683 | 1,804 |
| 5 | 14,013 | 9,087 | 9,240 | 8,841 | 5,733 | 6,065 | 2,624 | 1,917 | 2,055 |
| 6 | 16,574 | 11,574 | 11,768 | 10,804 | 7,545 | 7,983 | 3,025 | 2,210 | 2,369 |
| 7 | 19,986 | 13,957 | 14,191 | 13,021 | 9,093 | 9,620 | 3,645 | 2,665 | 2,857 |
| 8 | 25,222 | 17,613 | 17,909 | 15,899 | 11,103 | 11,747 | 4,582 | 3,348 | 3,589 |
| 9 | 35,016 | 26,313 | 26,755 | 20,789 | 15,622 | 16,529 | 5,896 | 4,308 | 4,618 |
| 10 (high) | 72,798 | 54,704 | 26,755 | 40,489 | 30,422 | 32,189 | 10,200 | 7,452 | 7,988 |

## ANNEX C

## INPUTS AND ASSUMPTIONS FOR 1986-1990 POLICY SIMULATIONS

As the second task in our application of the Housing Quality Simulation Model to housing finance strategy in Honduras, we prepared four "baseline" policy scenarios to represent a range of likely background environments for our proposed housing finance strategies. For comparison, we prepared a fifth scenario incorporating estimated results from the mobilization of additional funds for housing finance (discussed in Chapter 4 of the main report). In this Annex are outlined the assumptions involved in preparing those scenarios. Simulation results for the four baseline scenarios are summarized in Annex D; results for the fifth scenario are discussed in Chapter 5.

The first of our four baseline scenarios assumes that HG-008 and ESF funds are not used; the remaining three represent stylized versions, respectively, of an allocation suggested by CONSUPLANE, one described in a letter from the President to AID, and one outlined by the Sistema Nacional de Ahorro Y Prestamo (SNAP). For purposes of comparison, we have applied consistent schedules and assumptions to each of the alternatives we consider. In each case, for example, we assume that 20% of funds are allocated in 1987, 30% in 1988, and 50% in 1989. We also set total funding to Lps. 89.0 million for each of the three alternative scenarios.

The expanded formal finanance scenario builds on the Administration proposal. In addition to planned program activities, it includes an additional Lps. 163 million mobilized through implementation of the recommendations in our report.

In the notes that follow, we first outline some calculations and assumptions common to all of our inputs, we next

describe those policies assumed common to each of our five scenarios, and finally we describe those policies that vary according to the scenario chosen. In most cases, data inputs are listed in the actual format of the corresponding input files, with brief notes of explanation.

## SUMMARY OF POLICIES SIMULATED

POLICY ALTERNATIVES

| | METRO | URBAN | RURAL |
|---|---|---|---|
| POLICY 1: No use of L. 70 million HG-008, of L. 15 million ESF, nor of L. 4 million rural CHF. | | | |
| POLICY 2: (Derived from CONSUPLANE proposal)[1] | | | |
| | Infra 10.6 | Infra 0.0 | Infra 4.3 |
| | Constr 10.6 | Constr 42.5 | Constr 17.0 |
| | 21.3 | 42.5 | CHF 4.0 |
| | | | 25.3 |
| POLICY 3: (Derived from the President's letter)[1] | | | |
| | Loans 12.2 | Loans 1.3 | |
| | Infra 20.0 | Infra 20.0 | |
| | Constr 28.3 | Constr 3.2 | CHF 4.0 |
| | 60.5 | 24.5 | |
| POLICY 4: (Derived from Savings and Loan proposal)[1] | | | |
| | Loans 76.5 | Loans 8.5 | CHF 4.0 |
| POLICY 5: (Mobilization of additional formal finance beyond expenditures planned for POLICY 3) | | | |
| | Azcona: 60.5 | 24.5 | 4.0 |
| | Add'l : 98.0 | 41.0 | 23.9 |
| | 158.5 | 65.5 | 27.9 |

POLICIES COMMON TO ALL SCENARIOS

| | | | | | |
|---|---|---|---|---|---|
| FOVI | 9.0 | FOVI | 1.0 | IDB & SP | 57.4 |
| CHF | 1.4 | CHF | 1.4 | Other Rural | 11.5[2] |
| | 10.4 | | 2.4 | | 68.9 |

TOTAL EXPENDITURE

| | | | |
|---|---|---|---|
| POLICY 1: | 10.4 | 2.4 | 68.9 |
| POLICY 2: | 31.7 | 44.9 | 94.2 |
| POLICY 3: | 70.9 | 26.9 | 72.9 |
| POLICY 4: | 86.9 | 10.9 | 72.9 |
| POLICY 5: | 168.9 | 67.9 | 96.8 |

1. Includes Lps. 70 million HG-008 and Lps. 15 million ESF
2. Includes .6 million Lps. remaining from Water and Sanitation.

## GENERAL CALCULATIONS AND ASSUMPTIONS

### PROJECTED INCOME GROWTH RATES BY SECTOR

We use projected real GDP growth rates in combination with our projected population growth rates to estimate the growth of real incomes over the study period. We have:

| | 1986 | 1987 | 1988 | 1989 | 1990 |
|---|---|---|---|---|---|
| Primary: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| All other: | 4.0 | 4.0 | 4.0 | 5.4 | 6.8 |

from conversations with the Honduras AID. Using primary GDP as a measure of incomes in rural areas and "all other" GDP as a measure of metro and urban incomes, and subtracting the corresponding population growth rates, we have:

| | 1986 | 1987 | 1988 | 1989 | 1990 |
|---|---|---|---|---|---|
| Metro: | -0.5 | -0.5 | -0.5 | 0.9 | 2.3 |
| Urban: | 0.3 | 0.3 | 0.3 | 1.7 | 3.1 |
| Rural: | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |

We assume this growth to be distributed evenly across all deciles.

## PROJECTED POPULATION GROWTH RATES BY SECTOR

Population projections were not available by geographic sector; we found data for projected fertility rates for urban and rural areas, but could not find a similar categorization for projected mortality. We have therefore relied on projected overall population growth rates from the Honduras US AID office, and have used those estimates to adjust those supplied as part of the Housing Needs Assessment. We begin with national population growth rates:

1987 : 3.0
1988 : 2.9
1989 : 2.8
1990 : 2.7

For simplicity, we use a 2.9% rate for the entire simulation period, which yields a cumulative population increase of 15.37% over 5 years. If we assume constant household sizes over that period, we have 707,580 (total households at end of 1985) * 1.1537 = 816,305 households expected at end of 1990, or a gain of 108,725 households from 1985. We divide this increase into the same proportions used in the Housing Needs Assessment (30.9%, 10.4%, 58.7%) to obtain total increases of 33,563, 11,340, and 63,816 or average growth of 6,713 (4.5%), 2,268 (3.7%), and 12,763 (2.6%) households per year for metro, urban, and rural respectively.

Addition of new households occurs yearly in model simulations, and the user must specify their distribution by income, tenure, and dwelling type. We assume that new households have the same characteristics as existing households. For example, if 1.2 percent of all 1988 metro households are squatters of the second income decile living in permanent dwellings with failing infrastructure, we assume that 1.2% of new households formed that year will be of that type.

## NATURAL DWELLING TRANSITIONS

We assume that 5 percent of all semi-permanent dwellings are upgraded to permanency each year without any involvement of government or formal finance. We also assume that 1 percent of permanent and semi-permanent dwellings with failing infrastructure are upgraded to passing infrastructure each year.

| Beginning of Year Status | --- End of Year Status --- | | | | | |
|---|---|---|---|---|---|---|
| | Perm/P | Perm/F | Semi/P | Semi/F | Imp./P | Imp./F |
| Perm/Pass | 0 | 0 | 0 | 0 | 0 | 0 |
| Perm/Fail | 1% | 0 | 0 | 0 | 0 | 0 |
| Semi/Pass | 5% | 0 | 0 | 0 | 0 | 0 |
| Semi/Fail | 1% | 5% | 1% | 0 | 0 | 0 |
| Imp./Pass | 0 | 0 | 0 | 0 | 0 | 0 |
| Imp./Fail | 0 | 0 | 0 | 0 | 0 | 0 |

Consistent with the Housing Needs Assessment, we assume that 2 percent of all dwellings must be replaced annually.

## DWELLING ENTRY COSTS

Affordability and resource requirement calculations both rely on estimated "entry costs" for each dwelling type. We assume the following costs:

| | Metro | Urban | Rural |
|---|---|---|---|
| Permanent Structure | | | |
| Services Pass | 7,000 | 7,000 | 4,500 |
| Services Fail | 6,000 | 6,000 | 3,500 |
| Semi-Permanent Structure | | | |
| Services Pass | 3,500 | 3,500 | 2,250 |
| Services Fail | 2,500 | 2,500 | 1,750 |
| Improvised Structure | | | |
| Services Pass | 1,150 | 1,150 | 575 |
| Services Fail | 150 | 150 | 75 |

Since dwelling costs and general inflation seem to be rising at about the same rates, we assume that real entry costs are constant over the study period.

## SHARE OF HOUSEHOLD INCOME AVAILABLE FOR HOUSING

Affordability calculations involve both household income and the share of that income available for housing costs. In financing natural transitions to better quality dwellings, replacement of dwellings removed from the housing stock, and provision of dwellings for newly formed households, we use the following estimates for the maximum fraction of income available for housing.

| Income Decile: | Metro | Urban | Rural |
|---|---|---|---|
| 1 (low) | 0.15 | 0.15 | 0.20 |
| 2 | 0.15 | 0.15 | 0.20 |
| 3 | 0.20 | 0.20 | 0.25 |
| 4 | 0.20 | 0.20 | 0.25 |
| 5 | 0.25 | 0.25 | 0.30 |
| 6 | 0.25 | 0.25 | 0.30 |
| 7 | 0.25 | 0.30 | 0.30 |
| 8 | 0.25 | 0.30 | 0.30 |
| 9 | 0.30 | 0.30 | 0.30 |
| 10 (high) | 0.30 | 0.30 | 0.30 |

# CALCULATING INFRASTRUCTURE COSTS

## METRO AND URBAN

From distribution of infrastructure programs in AID letter:

| | | | | |
|---|---|---|---|---|
| Potable Water | : 7,180 | x 620 | = | 4,451,600 |
| Waste Disposal | : 8,560 | x 1740 | = | 14,894,400 |
| Water and Sewer | : 5,627 | x 3400 | = | 19,131,800 |
| Other Upgrade | : 520 | x 2920 | = | 1,518,400 |
| | 21,887 | | | 39,996,200 |

Assume that there is no overlap between houses served by the "Potable Water" and "Waste Disposal" categories of the table, that installation of potable water always precedes or accompanies installation of waste disposal services, and that the "other upgrade" category is not relevant to infrastructure as defined in the model. Then the number of households that have complete water and sanitation services as a result of program participation is equal to the total number of households given waste disposal service, or 8,560 + 5,627 = 14,187. These households are given complete infrastructure at a total cost of Lps. 39,996,200, for an average of Lps. 2,819 per newly serviced unit.

## ALLOCATING INFRASTRUCTURE PROGRAMS

We assume that infrastructure program activity is allocated to low income neighborhoods according to need, and that households with above-median incomes can benefit to the extent that they reside in target neighborhoods. As a rough approximation of the resulting distribution of benefits, we assume that the proportion of a given income decile's households lacking infrastructure reflects the proportion living in neighborhoods without infrastructure services[1], and allocate infrastructure program funds accordingly. From our 1986 estimated household classification matrices, we have:

Infrastructure Failure Rates

| Decile | -- Metro -- | | -- Urban -- | | -- Rural -- | |
|---|---|---|---|---|---|---|
| | Fail | Alloc | Fail | Alloc | Fail | Alloc |
| 1 (Low) | .55 | .13 | .76 | .14 | .51 | .10 |
| 2 | .50 | .12 | .72 | .13 | .51 | .10 |
| 3 | .49 | .12 | .69 | .13 | .51 | .10 |
| 4 | .49 | .12 | .62 | .12 | .53 | .11 |
| 5 | .43 | .10 | .59 | .11 | .53 | .11 |
| 6 | .45 | .11 | .55 | .10 | .49 | .10 |
| 7 | .47 | .11 | .52 | .10 | .49 | .10 |
| 8 | .42 | .10 | .44 | .08 | .49 | .10 |
| 9 | .34 | .08 | .37 | .07 | .44 | .09 |
| 10 (High) | .05 | .01 | .11 | .02 | .40 | .08 |
| | | 1.00 | | 1.00 | | 1.00 |

We allocate, for example, 12 percent of urban infrastructure upgrading funds to households in the fourth urban income decile. We assume that both renters and owners are covered by the programs in proportion to their relative counts in each decile, and that coverage is likewise divided among permanent fail, semi-permanent fail, and improvised-fail dwellings. We assume that no funds are allocated to households already living in structures with adequate water and sanitation services.

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1. Experience in other developing countries has shown that urban slum areas -- especially the more mature ones -- are surprisingly heterogeneous by income. (See, for example, "The Tondo Project: Whom Have We Served?", D. L. Lindauer, the World Bank, Urban Regional Economics Division, 1981, Table 1, for an example from the Phillipines).

## ESTIMATING COSTS FOR CONSTRUCTED UNITS

### BASIC UNIT

Assume the "Basic Unit" to be composed of a mix of 1 bedroom units and basic core units. Using the prices and mix described on page 22 of the HG-008 program paper, we have:

| | | |
|---|---|---|
| 1 Bedroom: | 15,000 * (39/57) | = 10,263 |
| Basic Core: | 9,600 * (18/57) | = 3,032 |
| | | 13,295 = average sales price of mix |
| | 13,295 * .9 = 11,966[1] | = average loan |

### WET CORE/SERVICED LOT

Assume wet cores and serviced sites are offered in the proportions described on p. 22. then we have:

| | | |
|---|---|---|
| Wet Core: | 5,900 * (.19/.31) | = 3,616 |
| Serviced Lot | 4,100 * (.12/.31) | = 1,587 |
| | | 5,203 = average sales price of mix |
| | 5,203 * .9 = 4,683 | = average loan |

Assume further that wet core / serviced lot units are offered with an accompanying option of additional loan funds for building materials for those who qualify (as described in HG-008). Assume that 90% of participants qualify. The amount of additional funds necessary to create the equivalent of a basic core unit is 9,600 -5,203 = 4,397 (or 3,957 loan). If we assume 10% of loans are for the lower amount only, and 90% for the combined, we have an average price of 9,160 for each unit sold, or an average loan of 8,244. A mix of 70% of these wet core/serviced lot + opportunity packages and 30% basic units yields an average of 12,000 cost per unit constructed, or an average loan of 10,800. For rural areas, we take an estimate (2445 Lps.) inferred from the AID Engineering office[1] for cost of wet core in combined CHF and INVA programs. No additional loan opportunity is assumed for participants in rural areas.

## -------- POLICY 1: NO USE OF HG-008 or ESF FUNDS ---------- (BASE CASE)

**General Description**

For our Base Case policy scenario, we assume that no use is made of additional HG or ESF funds, and that no CHF funds are authorized beyond 1987. In metro and urban areas, the only programs assumed active are from the Lps. 10 million Housing Fund (FOVI) and the remaining Lps. 2.8 million of previously committed CHF funds. The rural component contains a more complex mix of programs, including a Lps. 1.5 million home improvement loan program through INVA, Lps. 57.4 million IDB and Special Projects water and sanitation programs, another Lps. 6.4 million of water and sanitation programs through INVA, SANAA-PRASAR and the Employment Generation Program, and a Lps. 3 million wet core / serviced sites program through INVA.

In addition, the Base Case contains all expected "natural" housing activity -- construction for newly formed households, replacement for unit depreciation, and unit upgrading without government involvment -- that we assume as common background for all five of our policy scenarios.

Ninety percent of the FOVI loans and fifty percent of the CHF expenditures are dedicated to the metro sector; the remainder of each is allocated to other urban areas. The CHF infrastructure upgrading program is assumed allocated to the households in the lower half of the metro and urban income scales (from private conversation with CHF officials) but other infrastructure programs are allocated according to need in all income deciles. FOVI loans are allocated to the upper six income deciles, but rural home improvement loans and all construction programs are targetted to the bottom five income deciles (with 10 percent leakage to the sixth).

---

1. Prices in the HG-008 program paper and other documents are often expressed in US dollars. We assume an exchange rate of US $1.00 = Lps. 2.00, and quote all prices in Lempiras throughout these notes.
2. Source: Proposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

FOVI MORTGAGE LOANS (METRO)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 3,000,000 |
| | 88 | : 3,000,000 |
| | 89 | : 3,000,000 |
| | 90 | : |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment Period | | : 20 |
| Expected Average Loan: | | : 22500 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 1 |
| Minimum Cost of Target Dwelling | | : 7000 |
| Maximum Loan | | : 22500 |
| Maximum Loan/Value | | : .9 |
| Allocation: | | |
| Decile | | : 5,6,7,8,9 |
| Tenure | | : 1,2,3 |
| Dwellings | | : 1,2,3,4,5,6 |

10,000,000 * .9=9,000,000 METRO /3 = 3,000,000/yr
Exp average loan =25,000 value * .9=22,500
22,500 loan at .14 requires income of 12,000+
 -> deciles 5,6,7,8,9,10.
10th decile is excluded from program in the metro area.

FOVI MORTGAGE LOANS (URBAN)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 333,333 |
| | 88 | : 333,333 |
| | 89 | : 333,333 |
| | 90 | : |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment.Period | | : 20 |
| Expected Average Loan: | | : 16,200 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 1 |
| Minimum Cost of Target Dwelling | | : 7000 |
| Maximum Loan | | : 22500 |
| Maximum Loan/Value | | : .9 |
| Allocation: | | |
| Decile | | : 5,6,7,8,9.10 |
| Tenure | | : 1,2,3 |
| Dwellings | | : 1,2,3,4,5,6 |

10,000,000 * .1=1,000,000 urban /3 = 333,333/yr
In urban areas, we assume a lower average loan of 18,000 * .9= 16,200. A 16,200 loan at .14 requires income of 12,000+ -> 5-10th deciles.

CHF HOME IMPROVEMENT LOANS (METRO)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | 466,667 |
| | 87 | 466,667 |
| Interest rate | | .14 |
| Market interest rate | | .14 |
| Repayment Period | | 4 |
| Expected Average Loan: | | 1300 |
| Savings/Informal Mobilization | | .25 |
| Target Dwelling Status | | 3 |
| Minimum Cost of Target Dwelling | | 3500 |
| Maximum Loan | | 1300 |
| Maximum Loan/Value | | .9 |
| Allocation: | | |
| Decile | | 1,2,3,4,5 6:10% |
| Tenure | | 1 |
| Dwellings | | 1,2,3,6 |

Assume 2.8 million L funds available in 1985 are disbursed in 1986 and 1987. Assume home improvement program gets 2/3 of total funding, and new construction gets 1/3. 50% of funds are devoted to metro region, 50% to urban.

1986: 1,400,000 * .5 = 700,000 metro * 2/3 = 466,667
1987: 1,400,000 * .5 = 700,000 metro * 2/3 = 466,667

Source: CHF interview

CHF HOME IMPROVEMENT LOANS (URBAN)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | 466,667 |
| | 87 | 466,667 |
| Interest rate | | .14 |
| Market interest rate | | .14 |
| Repayment Period | | 4 |
| Expected Average Loan: | | 1300 |
| Savings/Informal Mobilization | | .25 |
| Target Dwelling Status | | 3 |
| Minimum Cost of Target Dwelling | | 3500 |
| Maximum Loan | | 1300 |
| Maximum Loan/Value | | .9 |
| Allocation: | | |
| Decile | | 1,2,3,4,5 6:10% |
| Tenure | | 1 |
| Dwellings | | 4,5,6 |

Assume 2.8 million L funds available in 1985 are disbursed in 1986 and 1987. Assume home improvement program gets 2/3 of total funding, and new construction gets 1/3. 50% of funds are devoted to metro region, 50% to urban.

1986: 1,400,000 * .5 = 700,000 urban * 2/3 = 466,667
1987: 1,400,000 * .5 = 700,000 urban * 2/3 = 466,667

Source: CHF interview.

CHF NEW CONSTRUCTION (METRO)

| | | | |
|---|---|---|---|
| Number of households | | 86 | : 27 |
| | | 87 | : 27 |
| Household contribution | | | : 0 |
| Grant | | | : 0 |
| Target Dwelling Status | | | : 1 |
| Target Tenure Status | | | : 1 |
| Cost of Structural Upgrade | | | : 0 |
| Subsequent year upgrade rates | 1 | | : 0 |
| | 2 | | : 0 |
| | 3 | | : 0 |
| | 4 | | : 0 |
| | 5 | | : 0 |
| Savings/Informal Mobilization | | | : .25 |
| Earmarked loan: Aggregate amount | | 86 | : 233,333 |
| | | 87 | : 233,333 |
| Interest rate | | | : .15 |
| Market Interest rate | | | : .15 |
| Loan term (years) | | | : 15 |
| Estimated avg. loan amt. | | | : 8640 |
| Maximum loan amt. | | | : 8640 |
| Maximum loan/value | | | : .9 |
| Allocation : | | | |
| Deciles | | | : 1,2,3,4,5 6:10% |
| Tenure | | | : 1 |
| Dwellings | | | : 2,3,4,5,6 |

Assume 2.8 million L funds available in 1985 is disbursed in 1986 and 1987. Assume home improvement program gets 2/3 of total funding, and new construction gets 1/3. 50% of funds are devoted to metro region, 50% to urban. Assume basic core unit for average price of 9,600 (explained elsewhere) or average loan of 9,600 * .9 = 8,640.

1986: 1,400,000 * .5 = 700,000 * 1/3= 233,333 / 8640 = 27
1987: 1,400,000 * .5 = 700,000 * 1/3= 233,333 / 8640 = 27

Source: CHF interview.

CHF NEW CONSTRUCTION (URBAN)

| | | | |
|---|---|---|---|
| Number of households | | 86 | : 27 |
| | | 87 | : 27 |
| Household contribution | | | : 0 |
| Grant | | | : 0 |
| Target Dwelling Status | | | : 1 |
| Target Tenure Status | | | : 1 |
| Cost of Structural Upgrade | | | : 0 |
| Subsequent year upgrade rates | 1 | | : 0 |
| | 2 | | : 0 |
| | 3 | | : 0 |
| | 4 | | : 0 |
| | 5 | | : 0 |
| Savings/Informal Mobilization | | | : .25 |
| Earmarked loan: Aggregate amount | | 86 | : 233,333 |
| | | 87 | : 233,333 |
| Interest rate | | | : .15 |
| Market Interest rate | | | : .15 |
| Loan term (years) | | | : 15 |
| Estimated avg. loan amt. | | | : 8640 |
| Maximum loan amt. | | | : 8640 |
| Maximum loan/value | | | : .9 |
| Allocation : | | | |
| Deciles | | | : 1,2,3,4,5 6:10% |
| Tenure | | | : 1 |
| Dwellings | | | : 2,3,4,5,6 |

Assume 2.8 million L funds available in 1985 are disbursed in 1986 and 1987. Assume home improvement program gets 2/3 of total funding, and new construction gets 1/3. 50% of funds are devoted to metro region, 50% to urban. Assume basic core unit for average price of 9,600 (explained elsewhere) or average loan of 9,600 * .9 = 8,640.

1986: 1,400,000 * .5 = 700,000 * 1/3= 233,333 / 8640 = 27
1987: 1,400,000 * .5 = 700,000 * 1/3= 233,333

Source: CHF interview.

INVA HOME IMPROVEMENT LOANS (RURAL)

| | | |
|---|---|---|
| Aggregate amount of loans: | 87 : | 246,171 |
| | 88 : | 367,615 |
| | 89 : | 426,696 |
| | 90 : | 459,519 |
| Interest rate | : | .14 |
| Market interest rate | : | .14 |
| Repayment. Period | : | 3 |
| Expected Average Loan: | : | 656 |
| Savings/Informal Mobilization | : | .25 |
| Target Dwelling Status | : | 3 |
| Minimum Cost of Target Dwelling | : | 2250 |
| Maximum Loan | : | 656 |
| Maximum Loan/Value | : | .9 |
| Allocation: | | |
| Decile | : | 1,2,3,4,5 6:10% |
| Tenure | : | 1 |
| Dwellings | : | 2,3,4 |

Calculations and Assumptions:
Program as in "Benchmarks" letter less CHF component.
Total INVA 1,500,000 / 2285 households = 656 L /hh
3 year repayment period was maximum allowed in RHIP program for 1981-1986. Assume same limit for proposed program.

1987: 375 * 656 = 246,171
1988: 560 * 656 = 367,615
1989: 650 * 656 = 426,696
1990: 700 * 656 = 459,519

| | |
|---|---|
| 2,285 | 1,500,001 |

Source: Proposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

IDB AND SPECIAL PROJECTS WATER AND SANITATION (RURAL)

| | | |
|---|---|---|
| Number of Households | 86 | : |
| | 87 | : 6,788 |
| | 88 | : 6,788 |
| | 89 | : 6,788 |
| | 90 | : 6,788 |
| Household Contribution | | : 0 |
| Grant | | : 2113 |
| Cost of Structural Upgrade | | : 0 |
| Subsequent yr upgrade rates year1 | | : 0 |
| year2 | | : 0 |
| year3 | | : 0 |
| year4 | | : 0 |
| year5 | | : 0 |
| Savings/Informal Mobilization | | : .25 |
| Earmarked loan: Aggregate amount | | : 0 |
| Interest rate | | : 0 |
| Market Interest rate | | : 0 |
| Loan term (years) | | : 0 |
| Estimated avg. loan amt. | | : 0 |
| Maximum loan amt. | | : 0 |
| Maximum loan/value | | : 0 |

Allocation :
Deciles 1,2,3,4,5,6
Tenure: Owners and Renters (1 and 3)
Dwellings: Perm Fail, Semi Fail, and Impr Fail (2,4,and 6)

180 aquaducts each serving 600 people or 100 households = 18,000 households with water.
Assume some overlap between households provided water and those provided sanitation, and that some households receiving water do not yet have sanitation. We multiply the water service total by 1/2 to account for these effects. 150 septic tanks assumed to service 150 households, and 18,000 latrines assumed to service 18,000 households. We then have:

18,000 * 1/2 = 9,000
150 = 150
18,000 18,000
---
27,150 households provided complete water and sanitation

27,150 / 4 = 6,788 households per year.
Assume total project cost of 54,000,000 (IDB) + 3,375,000 (SP) =L 57,375,000 over 4 years (1987 to 1990) = 14,343,750 /yr.

57,375,000 / 27,150 = average cost of 2113 per unit.

Source: National Water Authority (SANAA), Personal Communication.

SANAA-PRASAR, EGP, INVA INFRASTRUCTURE UPGRADING (RURAL)

| | | |
|---|---|---|
| Number of Households | 86 | 1,531* |
| | 87 | 4,686 |
| | 88 | 3,755 |
| | 89 | 3,886 |
| | 90 | 4,000 |
| Household Contribution | | 0 |
| Grant | | 392 |
| Cost of Structural Upgrade | | 0 |
| Subsequent yr upgrade rates year1 | | 0 |
| year2 | | 0 |
| year3 | | 0 |
| year4 | | 0 |
| year5 | | 0 |
| Savings/Informal Mobilization | | .25 |
| Earmarked loan: Aggregate amount | | 0 |
| Interest rate | | 0 |
| Market Interest rate | | 0 |
| Loan term (years) | | 0 |
| Estimated avg. loan amt. | | 0 |
| Maximum loan amt. | | 0 |
| Maximum loan/value | | 0 |

Allocation :
  Deciles 1-10
  Tenure: Owners and Renters (1 and 3)
  Dwellings: Perm Fail, Semi Fail, and Impr Fail (2,4,and 6)

Cost per water service= 4,100,000 / 17,675 hhs=232
Cost per sanitation=2,300,000 / 14,380 hhs=160.
Assume services overlap, and total cost per hh is 232+160=
Then 6,400,000 / 392=16,327.
Keep same schedule as printed for combined programs.
Assume household's payment for water service is not significant for purposes of model. (Estimated at 30 L/yr in of Water and Sanitation program paper, 1980).
Assume infrastructure program proceeds by location, and covers all deciles.

1987: 16,327 * .287 = 4,686
1988: 16,327 * .230 = 3,755
1989: 16,327 * .238 = 3,886
1990: 16,327 * .245 = 4,000
---
16,327

* 600,000 Lps. left in Water and Sanitation fund for 1986 (from

private conversation with AID Engineering office). 600,000 / 392 = 153 infrastructure upgrades in 1986.

Source: Proposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

INVA WET CORE / SERVICED SITE (RURAL)

| | | | |
|---|---|---|---|
| Number of households | | 87: | 150 |
| | | 88: | 225 |
| | | 89: | 263 |
| | | 90: | 282 |
| Household contribution | | : | 0 |
| Grant | | : | 0 |
| Target Dwelling Status | | : | 3 |
| Target Tenure Status | | : | 1 |
| Cost of Structural Upgrade | | : | 0 |
| Subsequent year upgrade rates | 1 | : | 0 |
| | 2 | : | 0 |
| | 3 | : | 0 |
| | 4 | : | 0 |
| | 5 | : | 0 |
| Savings/Informal Mobilization | | : | .25 |
| Earmarked loan: Aggregate amount | 87 | : | 489,130 |
| | 88 | : | 733,696 |
| | 89 | : | 857,609 |
| | 90 | : | 919,565 |
| Interest rate | | : | .14 |
| Market Interest rate | | : | .14 |
| Loan term (years) | | : | 20 |
| Estimated avg. loan amt. | | : | 3,261 |
| Maximum loan amt. | | : | 3,261 |
| Maximum loan/value | | : | .9 |

Allocation:

| | | |
|---|---|---|
| Deciles | : | 1,2,3,4,5 6:10% |
| Tenure | : | 1,3 |
| Dwellings | : | 4,5,6 |

Calculations:

Program as in "Benchmarks" letter less CHF component.
INVA cost 3,000,000 /920 hhs = 3,261 /unit.

| | | |
|---|---|---|
| 1987: | 150 hhs * 3,261/unit = | 489,130 |
| 1988: | 225 hhs * 3,261/unit = | 733,696 |
| 1989: | 263 hhs * 3,261/unit = | 857,609 |
| 1990: | 282 hhs * 3,261/unit = | 919,565 |
| | 920 | 3,000,000 |

Source: Proposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

## ---------- POLICY 2: CONSUPLANE ----------

General Description

Our stylized version of the CONSUPLANE proposal consists of three types of programs. The first, infrastructure upgrading, directs Lps. 10,625 million to the metro sector, and another 4.250 million to rural areas. We assume a distribution of program benefits according to need in all of the ten income deciles in both sectors, regardless of tenure. In the metro sector, we assume an average cost per upgrade of 2,819, and in rural areas, an average cost of 392 (both are explained above).

The second program, wet core construction, is confined to the metro sector. Its total budget is Lps. 10.625 million, and its beneficiaries obtain semi-permanent (upgradable) dwellings with adequate water and sanitation services. We assume an average unit cost of 5,203, financed by a 20 year loan at 14 percent for 4,683 (requiring a 10 percent down payment).

For the urban and rural sectors, the scenario includes a basic unit construction program. Although the original proposal calls for a mix of 1-2 bedroom and 3 bedroom units, our stylized version contains a mix of basic core and 1 bedroom units, for comparability. Based on costs estimated in the HG-008 project paper, we estimate an average cost per unit of 13,295, financed by a 20 year loan at 14 percent interest for 11,966 (with a 10 percent downpayment).

The combined budget of these three programs is Lps. 85 million, representing the sum of 70 million HG and 15 million ESF. With the exception of infrastructure upgrading, all program funds are allocated to households with incomes below their sector's median with an assumed program leakage of 10 percent to the sixth income decile. They are scheduled to use 20 percent of their funds in 1987, 30 percent in 1988, and 50 percent in 1989, and to supplement existing programs simulated in the Base Case scenario.

An additional Lps. 4 million in rural CHF funds is assumed released in this scenario, and is divided equally between home improvement loans (average 5 year loan of 708 at market interest) and a wet core construction project financed by loans averaging 1,778 per household with a 20 year term at market interest rates. CHF funds are distributed over the 1988-1990 period according to a schedule described in the "Benchmarks" letter.

CHF HOME IMPROVEMENT LOANS (RURAL)

(RURAL CHF FUNDS ARE ASSUMED LINKED TO HG-008 FOR PURPOSES OF THIS ANALYSIS. CHF POLICY IS THEREFORE INCLUDED IN THOSE THREE OF OUR POLICY SCENARIOS WHICH USE THE HG-008 AND ESF FUNDS)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 884,956 |
| | 88 | : 442,478 |
| | 89 | : 672,566 |
| | 90 | : |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment Period | | : 5 |
| Expected Average Loan: | | : 708 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 3 |
| Minimum Cost of Target Dwelling | | : 3,500 |
| Maximum Loan | | : 708 |
| Maximum Loan/Value | | : .9 |
| Allocation: | | |
| Decile | | : 1,2,3,4,5 6:10% |
| Tenure | | : 1 |
| Dwellings | | : 2,3,4 |

Calculations:
Average loan = 2,000,000 / 2,825 hhs = 708

| | | |
|---|---|---|
| 1988: | 1,250 * 708 = | 884,956 |
| 1989: | 625 * 708 = | 442,478 |
| 1990: | 950 * 708 = | 672,566 |
| | 2,825 | 2,000,000 |

Source: Proposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

CONSUPLANE INFRASTRUCTURE UPGRADING (METRO )

| | | | |
|---|---|---|---|
| Number of Households | | 86 : | |
| | | 87 : | 754 |
| | | 88 : | 1,131 |
| | | 89 : | 1,184 |
| | | 90 : | |
| Household Contribution | | : | 0 |
| Grant | | : | 0 |
| Cost of Structural Upgrade | | : | 0 |
| Subsequent yr upgrade rates | year1 | : | 0 |
| | year2 | : | 0 |
| | year3 | : | 0 |
| | year4 | : | 0 |
| | year5 | : | 0 |
| Savings/Informal Mobilization | | : | .25 |
| Earmarked loan: Aggregate amount | | 86 : | |
| | | 87 : | 2,125,000 |
| | | 88 : | 3,187,000 |
| | | 89 : | 5,312,000 |
| | | 90 : | |
| Interest rate | | : | .14 |
| Market Interest rate | | : | .14 |
| Loan term (years) | | : | 12 |
| Estimated avg. loan amt. | | : | 2,819 |
| Maximum loan amt. | | : | 2,819 |
| Maximum loan/value | | : | 1.0 |

Allocation:
- Deciles : All (according to need per income decile)
- Tenure : 1,3
- Dwellings : 2,4,6

Calculations:

Proposed 8.75 million increased 21% for ESF = 10.625 Million Lps.
Average cost of upgrade is 2,250 (explained elsewhere).
Assume same .2, .3, .5 schedule used in deploying other policy alternatives, and that ESF funds are distributed in the same manner as CONSUPLANE's proposal for HG-008 (i.e. some goes to rural areas).

| | | | |
|---|---|---|---|
| 10.625 million * .2 = | 2,125,000 / 2,819 = | 754 | (1987) |
| 10.625 million * .3 = | 3,187,500 / 2,819 = | 1,131 | (1988) |
| 10.625 million * .5 = | 5,312,500 / 2,819 = | 1,884 | (1989) |
| | 10,625,000 | 3,769 | |

CONSUPLANE INFRASTRUCTURE UPGRADING (RURAL)

| | | | |
|---|---|---|---|
| Number of Households | | 86 | : |
| | | 87 | : 2,168 |
| | | 88 | : 3,253 |
| | | 89 | : 5,421 |
| | | 90 | : 0 |
| Household Contribution | | | : 0 |
| Grant | | | : 392 |
| Cost of Structural Upgrade | | | : 0 |
| Subsequent yr upgrade rates | year1 | | : 0 |
| | year2 | | : 0 |
| | year3 | | : 0 |
| | year4 | | : 0 |
| | year5 | | : 0 |
| Savings/Informal Mobilization | | | : .25 |
| Earmarked loan: | Aggregate amount | | : 0 |
| | Interest rate | | : 0 |
| | Market Interest rate | | : 0 |
| | Loan term (years) | | : 0 |
| | Estimated avg. loan amt. | | : 0 |
| | Maximum loan amt. | | : 0 |
| | Maximum loan/value | | : 0 |

Average cost of upgrade is 392 (from "Benchmarks" letter). Proposed 3.5 million Lps. increased 21% for ESF = 4.25 million Lps.

| | | | |
|---|---|---|---|
| 4,250,000 * .2 = | 850,000 | / 392 = | 2,168 (1987) |
| 4,250,000 * .3 = | 1,275,000 | / 392 = | 3,253 (1988) |
| 4,250,000 * .5 = | 2,125,000 | / 392 = | 5,421 (1989) |
| | 4,250,000 | | 10,842 |

Allocation:

| | |
|---|---|
| Deciles | : All (according to need per income decile) |
| Tenure | : 1,3 |
| Dwellings | : 2,4,6 |

CHF WET CORE / SERVICED SITES (RURAL)

(RURAL CHF FUNDS ARE ASSUMED LINKED TO HG-008 FOR PURPOSES OF THIS ANALYSIS. CHF POLICY IS THEREFORE INCLUDED IN THOSE THREE OF OUR POLICY SCENARIOS WHICH USE THE HG-008 FUNDS)

| | | | |
|---|---|---|---|
| Number of households | | 86 : | |
| | | 87 : | 500 |
| | | 88 : | 250 |
| | | 89 : | 375 |
| | | 90 : | |
| Household contribution | | | : 0 |
| Grant | | | : 0 |
| Target Dwelling Status | | | : 3 |
| Target Tenure Status | | | : 1 |
| Cost of Structural Upgrade | | | : 0 |
| Subsequent year upgrade rates | 1 | | : 0 |
| | 2 | | : 0 |
| | 3 | | : 0 |
| | 4 | | : 0 |
| | 5 | | : 0 |
| Savings/Informal mobilization | | | : .25 |
| Earmarked loan: Aggregate amount | | 86 : | |
| | | 87 : | 888,889 |
| | | 88 : | 444,444 |
| | | 89 : | 666,667 |
| | | 90 : | |
| | Interest rate | | : .14 |
| | Market Interest rate | | : .14 |
| | Loan term (years) | | : 20 |
| | Estimated avg. loan amt. | | : 1,778 |
| | Maximum loan amt. | | : 1,778 |
| | Maximum loan/value | | : .9 |

Allocation:

| | |
|---|---|
| Deciles | : 1,2,3,4,5 6:10% |
| Tenure | : 1,2,3 |
| Dwellings | : 4,5,6 |

Calculations:

Average loan = 2,000,000 / 1,125 hhs = 1,778 per household

| | | |
|---|---|---|
| 1988: | 500 * 1,778 = | 888,889 |
| 1989: | 250 * 1,778 = | 444,444 |
| 1990: | 375 * 1,778 = | 666,667 |
| | 1,125 | 2,000,000 |

Source: Proposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

CONSUPLANE WET CORE / SERVICED SITES (METRO)

| | | | |
|---|---|---|---|
| Number of households | | 86 : | |
| | | 87 : | 454 |
| | | 88 : | 681 |
| | | 89 : | 1,134 |
| | | 90 : | |
| Household contribution | | : | 0 |
| Grant | | : | 0 |
| Target Dwelling Status | | : | 3 |
| Target Tenure Status | | : | 1 |
| Cost of Structural Upgrade | | : | 0 |
| Subsequent year upgrade rates | 1 | : | 0 |
| | 2 | : | 0 |
| | 3 | : | 0 |
| | 4 | : | 0 |
| | 5 | : | 0 |
| Savings/Informal mobilization | | : | .25 |
| Earmarked loan: Aggregate amount | | 87 : | 2,125,000 |
| | | 88 : | 3,187,000 |
| | | 89 : | 5,312,000 |
| Interest rate | | : | .14 |
| Market Interest rate | | : | .14 |
| Loan term (years) | | : | 20 |
| Estimated avg. loan amt. | | : | 4,683 |
| Maximum loan amt. | | : | 4,683 |
| Maximum loan/value | | : | .9 |

Allocation:

| | |
|---|---|
| Deciles | : 1,2,3,4,5 6:10% |
| Tenure | : 1,2,3 |
| Dwellings | : 4,5,6 |

Calculations:
Proposed 8.75 million Lps. funding increased 21% for ESF = 10.625 million Lps.
Assume average loan for this package is 4,683 (explained elsewhere).

| | | |
|---|---|---|
| 10,625,000 * .2 = 2,125,000 / 4,683 = | 454 hhs | (1987) |
| 10,625,000 * .3 = 3,187,500 / 4,683 = | 681 hhs | (1988) |
| 10,625,000 * .5 = 5,312,500 / 4,683 = | 1,134 hhs | (1989) |
| 10,625,000 | 2,269 | |

Source: Table #4/6 of Consuplane proposal.

CONSUPLANE BASIC UNITS (URBAN)

| | | | |
|---|---|---|---|
| Number of households | | 86 : | |
| | | 87 : | 710 |
| | | 88 : | 1,066 |
| | | 89 : | 1,776 |
| | | 90 : | |
| Household contribution | | : | 0 |
| Grant | | : | 0 |
| Target Dwelling Status | | : | 1 |
| Target Tenure Status | | : | 1 |
| Cost of Structural Upgrade | | : | 0 |
| Subsequent year upgrade rates | 1 | : | 0 |
| | 2 | : | 0 |
| | 3 | : | 0 |
| | 4 | : | 0 |
| | 5 | : | 0 |
| Savings/Informal Mobilization | | : | .25 |
| Earmarked loan: Aggregate amount | | 87 : | 8,500,000 |
| | | 88 : | 12.750,000 |
| | | 89 : | 21,250,000 |
| Interest rate | | : | .14 |
| Market Interest rate | | : | .14 |
| Loan term (years) | | : | 20 |
| Estimated avg. loan amt. | | : | 11,966 |
| Maximum loan amt. | | : | 11,966 |
| Maximum loan/value | | : | .9 |
| Allocation: | | | |
| Deciles | | : | 1,2,3,4,5 6:10% |
| Tenure | | : | 1,2,3 |
| Dwellings | | : | 2,3,4,5,6 |

Calculations:
Proposed 35 million Lps. increased 21% for ESF = 42.5 million Lps.
Assume all funds used for basic cores and 1 br. in same mix as HG-008.

| | | | |
|---|---|---|---|
| 42,500,000 * .2 = | 8,500,000 / 11,966 = | 710 | (1987) |
| 42,500,000 * .3 = | 12,750,000 / 11,966 = | 1,066 | (1988) |
| 42,500,000 * .5 = | 21,250,000 / 11,966 = | 1,776 | (1989) |
| | 42,500,000 | 3,552 | |

Source: Table #4/6 of Consuplane proposal.

CONSUPLANE BASIC UNITS (RURAL)

| | | | |
|---|---|---|---|
| Number of households | | 86 : | |
| | | 87 : | 680 |
| | | 88 : | 1,020 |
| | | 89 : | 1,700 |
| | | 90 : | |
| Household contribution | | | : 0 |
| Grant | | | : 0 |
| Target Dwelling Status | | | : 1 |
| Target Tenure Status | | | : 1 |
| Cost of Structural Upgrade | | | : 0 |
| Subsequent year upgrade rates | 1 | | : 0 |
| | 2 | | : 0 |
| | 3 | | : 0 |
| | 4 | | : 0 |
| | 5 | | : 0 |
| Savings/Informal Mobilization | | | : .25 |
| Earmarked loan: Aggregate amount | | 87 : | 3,400,000 |
| | | 88 : | 5.100,000 |
| | | 89 : | 8,500,000 |
| Interest rate | | | : .14 |
| Market Interest rate | | | : .14 |
| Loan term (years) | | | : 20 |
| Estimated avg. loan amt. | | | : 5000 |
| Maximum loan amt. | | | : 5000 |
| Maximum loan/value | | | : .9 |
| Allocation: | | | |
| Deciles | | | : 1,2,3,4,5 6:10% |
| Tenure | | | : 1,3 |
| Dwellings | | | : 2,3,4,5,6 |

Calculations:
Proposed 14 million Lps. increased 21% for ESF = 17 million Lps.
Use AID Engineering Office estimate (from conversation) that basic rural unit costs 5,000 L.

| | | | |
|---|---|---|---|
| 17,000,000 * .2 = | 3,400,000 / 5000 = | 680 | hhs (1987) |
| 17,000,000 * .3 = | 5,100,000 / 5000 = | 1,020 | hhs (1988) |
| 17,000,000 * .5 = | 8,500,000 / 5000 = | 1,700 | hhs (1989) |
| | 17,000,000 | 3,400 | |

Source: Table #4/6 of Consuplane proposal.

## ———— POLICY 3: ADMINISTRATION ————

GENERAL DESCRIPTION

Our stylized version of the Administration's proposal confines all additional activity to the metro and urban sectors, and divides a total budget of Lps. 85 million (70 million HG plus 15 million ESF) among three programs: 13.5 million in home improvement loans, 40.0 million for infrastructure upgrading and 31.5 million for basic unit construction. The loan and construction programs each dedicate 90 percent of funding to the metro sector, while the infrastructure upgrading program is divided equally among the metro and urban sectors.

For the home improvement loan programs, we assume an average loan of 2,000 Lps., with a market rate of 14 percent interest over a 5 year term. Only present owners are eligible, and dwellings must be permanent or upgradable, but not fully adequate prior to participation. Eligible households are limited to the lower half of the income scale, with the exception of 10 percent program leakage into the sixth decile.

For the infrastructure upgrading programs, we assume an average unit cost of 2,819 (explained above), that all participating households obtain adequate water and sanitation services, and that the program is distributed according to need to households in all ten income deciles regardless of their present tenure.

Our simulated new construction program in the Administration's scenario represents a combination of two separate components. In the first, a mix of one bedroom and basic core units are offered with accompanying loans. Using the mix and costs described in the HG-008 project paper, we estimate an average cost for these units of Lps. 13,295 each, requiring a loan of 11,966 (with 10 percent downpayment). The second program offers wet core / serviced lots, also with accompanying loans, plus additional upgrading loans for those who qualify, to upgrade their wet cores to basic units. From the mix and costs described in the HG-008 project paper, we estimate average cost per participant for this second program to be Lps. 9,160, requiring an average loan of 8,244. Combining the two programs in a 30/70 mix for modeling simplicity, we approximate the two with a single basic unit construction program with average cost per unit of Lps. 12,000, requiring a 10,800 loan.

This loan is assumed issued at 14 percent interest with a 20 year term and a minimum of 10 percent downpayment required. All households in the lower half of the income scale are considered eligible, subject only to affordability limitations.

As with the CONSUPLANE scenario, we assume that an additional Lps. 4 million in rural CHF funds is released in this scenario, and is divided equally between home improvement loans (average 5 year loan of 708 at market interest) and a wet core construction project financed by loans averaging 1,778 per household with a 20 year term at market interest rates. CHF funds are distributed over the 1988-1990 period according to a schedule described in the "Benchmarks" letter.

ADMINISTRATION: HOME IMPROVEMENT LOANS (METRO)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 2,430,000 |
| | 88 | : 3,645,000 |
| | 89 | : 6,075,000 |
| | 90 | : |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment Period | | : 5 |
| Expected Average Loan: | | : 2,000 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 3 |
| Minimum Cost of Target Dwelling | | : 3,500 |
| Maximum Loan | | : 2,000 |
| Maximum Loan/Value | | : 1.0 |
| Allocation: | | |
| Decile | | : 1,2,3,4,5 6:10% |
| Tenure | | : 1 |
| Dwellings | | : 2,3,4 |

Average home improvement loan=2000 (J.L)
Funds split 90% Metro/ 10% Urban.

1987: 12,150,000 * .2 = 2,430,000
1988: 12,150,000 * .3 = 3,645,000
1989: 12,150,000 * .5 = 6,075,000
---
12,150,000

ADMINISTRATION: HOME IMPROVEMENT LOANS (URBAN)

HOME IMPROVEMENT LOANS

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 270,000 |
| | 88 | : 405,000 |
| | 89 | : 675,000 |
| | 90 | : |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment Period | | : 5 |
| Expected Average Loan: | | : 2,000 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 3 |
| Minimum Cost of Target Dwelling | | : 3,500 |
| Maximum Loan | | : 2,000 |
| Maximum Loan/Value | | : 1.0 |
| Allocation: | | |
| Decile | | : 1,2,3,4,5 6:10% |
| Tenure | | : 1 |
| Dwellings | | : 2,3,4 |

Average home improvement loan=2000 (J.L)
Funds split 90% Metro/ 10% Urban.

```
1,350 * .1 = 135   * 2000 = 270,000
2,025 * .1 = 202.5 * 2000 = 405,000
3,375 * .1 = 337.5 * 2000 = 675,000
                            ---------
                            1,350,000
```

CHF HOME IMPROVEMENT LOANS (RURAL)

(RURAL CHF FUNDS ARE ASSUMED LINKED TO HG-008 FOR PURPOSES OF THIS ANALYSIS. CHF POLICY IS THEREFORE INCLUDED IN THOSE THREE OF OUR POLICY SCENARIOS WHICH USE THE HG-008 AND ESF FUNDS)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 : | |
| | 87 : | 884,956 |
| | 88 : | 442,478 |
| | 89 : | 672,566 |
| | 90 : | |
| Interest rate | : | .14 |
| Market interest rate | : | .14 |
| Repayment Period | : | 5 |
| Expected Average Loan: | : | 708 |
| Savings/Informal Mobilization | : | .25 |
| Target Dwelling Status | : | 3 |
| Minimum Cost of Target Dwelling | : | 3,500 |
| Maximum Loan | : | 708 |
| Maximum Loan/Value | : | .9 |
| Allocation: | | |
| Decile | : | 1,2,3,4,5 6:10% |
| Tenure | : | 1 |
| Dwellings | : | 2,3,4 |

Calculations:
Average loan = 2,000,000 / 2,825 hhs = 708

| | | |
|---|---|---|
| 1988: | 1,250 * 708 = | 884,956 |
| 1989: | 625 * 708 = | 442,478 |
| 1990: | 950 * 708 = | 672,566 |
| | 2,825 | 2,000,000 |

Source: Prcposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

ADMINISTRATION: WATER AND SANITATION (METRO)

| | | | |
|---|---|---|---|
| Number of Households | | 86 | : |
| | | 87 | : 1,419 |
| | | 88 | : 2,128 |
| | | 89 | : 3,547 |
| | | 90 | : |
| Household Contribution | | | : 0 |
| Grant | | | : 0 |
| Cost of Structural Upgrade | | | : 0 |
| Subsequent yr upgrade rates | year1 | | : 0 |
| | year2 | | : 0 |
| | year3 | | : 0 |
| | year4 | | : 0 |
| | year5 | | : 0 |
| Savings/Informal Mobilization | | | : .25 |
| Earmarked loan: Aggregate amount | | 87 | : 4,000,000 |
| | | 88 | : 6,000,000 |
| | | 89 | : 10,000,000 |
| Interest rate | | | : .14 |
| Market Interest rate | | | : .14 |
| Loan term (years) | | | : 12 |
| Estimated avg. loan amt. | | | : 2,819 |
| Maximum loan amt. | | | : 2,819 |
| Maximum loan/value | | | : 1.0 |
| Allocation: | | | |
| Deciles | | | : All |
| Tenure | | | : 1,3 |
| Dwelling | | | : 2,4,6 |

Upgrade costs 2,250 (explained elsewhere).
Metro/Urban split 50/50.
40,000,000 / 2,819 = 14,118 or 7,094 units metro, 7,094 units urban.

1987: 7,094 * .2 = 1,419
1988: 7,094 * .3 = 2,128
1989: 7,094 * .5 = 3,547
---
7,094

ADMINISTRATION: WATER AND SANITATION (URBAN)

| | | | |
|---|---|---|---|
| Number of Households | | 86 | : |
| | | 87 | : 1,419 |
| | | 88 | : 2,128 |
| | | 89 | : 3,547 |
| | | 90 | : |
| Household Contribution | | | : 0 |
| Grant | | | : 0 |
| Cost of Structural Upgrade | | | : 0 |
| Subsequent yr upgrade rates | year1 | | : 0 |
| | year2 | | : 0 |
| | year3 | | : 0 |
| | year4 | | : 0 |
| | year5 | | : 0 |
| Savings/Informal Mobilization | | | : .25 |
| Earmarked loan: Aggregate amount | | 87 | : 4,000,000 |
| | | 88 | : 6,000,000 |
| | | 89 | : 10,000,000 |
| Interest rate | | | : .14 |
| Market Interest rate | | | : .14 |
| Loan term (years) | | | : 12 |
| Estimated avg. loan amt. | | | : 2,819 |
| Maximum loan amt. | | | : 2,819 |
| Maximum loan/value | | | : 1.0 |
| Allocation: | | | |
| Deciles | | | : All |
| Tenure | | | : 1,3 |
| Dwelling | | | : 2,4,6 |

Upgrade costs 2,250 (explained elsewhere).
Metro/Urban split 50/50.
40,000,000 / 2,819 = 14,118 or 7,094 units metro, 7,094 units urban.

1987: 7,094 * .2 = 1,419
1988: 7,094 * .3 = 2,128
1989: 7,094 * .5 = 3,547
---
7,094

## ADMINISTRATION: BASIC UNITS (METRO)

| | | | |
|---|---|---|---|
| Number of households | | 86 : | |
| | | 87 : | 525 |
| | | 88 : | 788 |
| | | 89 : | 1,312 |
| | | 90 : | |
| Household contribution | | : | 0 |
| Grant | | : | 0 |
| Target Dwelling Status | | : | 1 |
| Target Tenure Status | | : | 1 |
| Cost of Structural Upgrade | | : | 0 |
| Subsequent year upgrade rates | 1 | : | 0 |
| | 2 | : | 0 |
| | 3 | : | 0 |
| | 4 | : | 0 |
| | 5 | : | 0 |
| Savings/Informal Mobilization | | : | .25 |
| Earmarked loan: Aggregate amount | | 87 : | 5,670,000 |
| | | 88 : | 8,505,000 |
| | | 89 : | 14,171,760 |
| Interest rate | | : | .14 |
| Market Interest rate | | : | .14 |
| Loan term (years) | | : | 20 |
| Estimated avg. loan amt. | | : | 10,800 |
| Maximum loan amt. | | : | 10,800 |
| Maximum loan/value | | : | .9 |

Allocation :

| | |
|---|---|
| Deciles | : 1,2,3,4,5 6:10 |
| Tenure | : 1,2,3 |
| Dwellings | : 2,3,4,5,6 |

Assume 70% funding to Basic Units (Basic Core/1 Br)
90% construction in Metro
Assume all funding to basic mix at 12,000 = 10,800 loan.

31,500,000 * .9 = 28,350,000

| | | | | |
|---|---|---|---|---|
| 1987: | 28,350,000 * .2 = | 5,670,000 / | 10,800 = | 525 |
| 1988: | 28,350,000 * .3 = | 8,505,000 / | 10,800 = | 788 |
| 1989: | 28,350,000 * .5 = | 14,175,000 / | 10,800 = | 1,312 |
| | | 28,350,000 | | 2,625 |

ADMINISTRATION BASIC (URBAN)

| | | | |
|---|---|---|---|
| Number of households | | 86 : | |
| | | 87 : | 58 |
| | | 88 : | 88 |
| | | 89 : | 146 |
| | | 90 : | |
| Household contribution | | : | 0 |
| Grant | | : | 0 |
| Target Dwelling Status | | : | 1 |
| Target Tenure Status | | : | 1 |
| Cost of Structural Upgrade | | : | 0 |
| Subsequent year upgrade rates | 1 | : | 0 |
| | 2 | : | 0 |
| | 3 | : | 0 |
| | 4 | : | 0 |
| | 5 | : | 0 |
| Savings/Informal Mobilization | | : | .25 |
| Earmarked loan: Aggregate amount | | 87 : | 630,000 |
| | | 88 : | 945,000 |
| | | 89 : | 1,575,000 |
| Interest rate | | : | .14 |
| Market Interest rate | | : | .14 |
| Loan term (years) | | : | 20 |
| Estimated avg. loan amt. | | : | 10,800 |
| Maximum loan amt. | | : | 10,800 |
| Maximum loan/value | | : | .9 |

Allocation :

| | |
|---|---|
| Deciles | : 1,2,3,4,5 6:10 |
| Tenure | : 1,2,3 |
| Dwellings | : 2,3,4,5,6 |

Assume 70% funding to Basic Units (Basic Core/1 Br)
10% construction in Urban
Assume all funding to basic mix at 12,000 = 10,800 loan.

31,500,000 * .1 = 3,150,000

3,150,000 * .2 = 630,000 / 10,800 = 58
3,150,000 * .3 = 945,000 / 10,800 = 88
3,150,000 * .5 = 1,575,000 / 10,800 = 146

CHF WET CORE / SERVICED SITES (RURAL)

(RURAL CHF FUNDS ARE ASSUMED LINKED TO HG-008 FOR PURPOSES OF THIS ANALYSIS. CHF POLICY IS THEREFORE INCLUDED IN THOSE THREE OF OUR POLICY SCENARIOS WHICH USE THE HG-008 FUNDS)

| | | | |
|---|---|---|---|
| Number of households | | 86 : | |
| | | 87 : | 500 |
| | | 88 : | 250 |
| | | 89 : | 375 |
| | | 90 : | |
| Household contribution | | : | 0 |
| Grant | | : | 1,778 |
| Target Dwelling Status | | : | 3 |
| Target Tenure Status | | : | 1 |
| Cost of Structural Upgrade | | : | 0 |
| Subsequent year upgrade rates | 1 | : | 0 |
| | 2 | : | 0 |
| | 3 | : | 0 |
| | 4 | : | 0 |
| | 5 | : | 0 |
| Savings/Informal mobilization | | : | .25 |
| Earmarked loan: Aggregate amount | | 86 : | |
| | | 87 : | 888,889 |
| | | 88 : | 444,444 |
| | | 89 : | 666,667 |
| | | 90 : | |
| Interest rate | | : | .14 |
| Market Interest rate | | : | .14 |
| Loan term (years) | | : | 20 |
| Estimated avg. loan amt. | | : | 1,778 |
| Maximum loan amt. | | : | 1,778 |
| Maximum loan/value | | : | .9 |

Allocation:

| | |
|---|---|
| Deciles | : 1,2,3,4,5 6:10% |
| Tenure | : 1,2,3 |
| Dwellings | : 4,5,6 |

Calculations:

Average loan = 2,000,000 / 1,125 hhs = 1,778 per household

| | | |
|---|---|---|
| 1988: | 500 * 1,778 = | 888,889 |
| 1989: | 250 * 1,778 = | 444,444 |
| 1990: | 375 * 1,778 = | 666,667 |
| | 1,125 | 2,000,000 |

Source: Proposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

## ---------- POLICY 4: SNAP ----------

GENERAL DESCRIPTION

The program proposed by the Savings and Loans associations would involve an additional Lps. 85.0 million of HG and ESF funding beyond the programs simulated in Policy 1. All of the new funds would be allocated to mortgage loans, of which 90 percent would be issued in the metro sector, and the remaining 10 percent in other urban areas. We assume a minimum selling price of Lps. 17,000 for the mortgaged units, requiring a loan of Lps 15,300. We assume that the loans are for 20 year terms, at 14 percent interest and with a minimum of 10 percent downpayment. Loans are available to all households below median income in the metro and urban sectors, subject only to the households' ability to afford the loans.

In addition to the mortgage loan programs, the SNAP scenario, like the Administration and CONSUPLANE scenarios, also contains a Lps. 2 million CHF new construction , and a Lps. 2 million CHF home improvement loan program for rural areas.

SNAP MORTGAGE LOANS (METRO)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 15,300,000 |
| | 88 | : 22,950,000 |
| | 89 | : 38,250,000 |
| | 90 | : |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment Period | | : 20 |
| Expected Average Loan: | | : 15,300 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 1 |
| Minimum Cost of Target Dwelling | | : 7,000 |
| Maximum Loan | | : 15,300 |
| Maximum Loan/Value | | : .9 |
| Allocation: | | |
| Decile | | : 3,4,5, 6:10% |
| Tenure | | : 1,2,3 |
| Dwellings | | : 1,2,3,4,5,6 |

Calculations:
HG-008+ESF=85 million Lps.
Assume 90% of funds go to metro area.
Assume minimum selling price of unit=17,000.
85,000,000 * .9 = 76,500,000 to metro.

| | | |
|---|---|---|
| 76,500,000 * .2 = | 15,300,000 | (1987) |
| 76,500,000 * .3 = | 22,950,000 | (1988) |
| 76,500,000 * .5 = | 38,250,000 | (1989) |
| | 76,500,000 | |

17,000 value * .9 =15,300 loan.
To afford 17,000 dwelling requires income of about 8,400 / yr, (from chart supplied by SNAP) = 3, 4, and 5 deciles in metro region. All tenures and dwelling types eligible for loan.

Source: "Alternativa para Reactivar la Industria de la Construccion y el Sistema Nacional de Ahorro y Prestamo," March 1986 (Camara Hondurena de Asociaciones de Ahorro y Prestamo)

SNAP MORTGAGE LOANS (URBAN)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 : | |
| | 87 : | 1,700,000 |
| | 88 : | 2,550,000 |
| | 89 : | 4,250,000 |
| | 90 : | |
| Interest rate | : | .14 |
| Market interest rate | : | .14 |
| Repayment Period | : | 20 |
| Expected Average Loan: | : | 15,300 |
| Savings/Informal Mobilization | : | .25 |
| Target Dwelling Status | : | 1 |
| Minimum Cost of Target Dwelling | : | 7,000 |
| Maximum Loan | : | 15,300 |
| Maximum Loan/Value | : | .9 |
| Allocation: | | |
| Decile | : | 4,5 6:10% |
| Tenure | : | 1,2,3 |
| Dwellings | : | 1,2,3,4,5,6 |

Calculations:
HG-008 + ESF = 85 million Lps.
Assume 10% of funds go to metro area.
Assume minimum selling price of unit=17,000.
85,000,000 * .1= 8,500,000 to metro.

8,500,000 * .2 = 1,700,000 (1987)
8,500,000 * .3 = 2,550,000 (1988)
8,500,000 * .5 = 4,250,000 (1989)
8,500,000

17,000 value * .9 =15,300 loan.
To afford 17,000 dwelling requires income of about 8400 / yr, (from chart supplied by SNAP) = 4 and 5 deciles in urban region. All tenures and dwelling types eligible for loan.

Source: "Alternativa para Reactivar la Industria de la Construccion y el Sistema Nacional de Ahorro y Prestamo," March 1986 (Camara Hondurena de Asociaciones de Ahorro y Prestamo)

CHF HOME IMPROVEMENT LOANS (RURAL)

(RURAL CHF FUNDS ARE ASSUMED LINKED TO HG-008 FOR PURPOSES OF THIS ANALYSIS. CHF POLICY IS THEREFORE INCLUDED IN THOSE THREE OF OUR POLICY SCENARIOS WHICH USE THE HG-008 AND ESF FUNDS)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 : | |
| | 87 : | 884,956 |
| | 88 : | 442,478 |
| | 89 : | 672,566 |
| | 90 : | |
| Interest rate | : | .14 |
| Market interest rate | : | .14 |
| Repayment Period | : | 5 |
| Expected Average Loan: | : | 708 |
| Savings/Informal Mobilization | : | .25 |
| Target Dwelling Status | : | 3 |
| Minimum Cost of Target Dwelling | : | 3,500 |
| Maximum Loan | : | 708 |
| Maximum Loan/Value | : | .9 |
| Allocation: | | |
| Decile | : | 1,2,3,4,5 6:10% |
| Tenure | : | 1 |
| Dwellings | : | 2,3,4 |

Calculations:
Average loan = 2,000,000 / 2,825 hhs = 708
1988: 1,250 * 708 = 884,956
1989: 625 * 708 = 442,478
1990: 950 * 708 = 672,566

| | |
|---|---|
| 2,825 | 2,000,000 |

Source: Proposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

CHF WET CORE / SERVICED SITES (RURAL)

(RURAL CHF FUNDS ARE ASSUMED LINKED TO HG-008 FOR PURPOSES OF THIS ANALYSIS. CHF POLICY IS THEREFORE INCLUDED IN THOSE THREE OF OUR POLICY SCENARIOS WHICH USE THE HG-008 FUNDS)

| | | | |
|---|---|---|---|
| Number of households | | 86 : | |
| | | 87 : | 500 |
| | | 88 : | 250 |
| | | 89 : | 375 |
| | | 90 : | |
| Household contribution | | : | 0 |
| Grant | | : | 1,778 |
| Target Dwelling Status | | : | 3 |
| Target Tenure Status | | : | 1 |
| Cost of Structural Upgrade | | : | 0 |
| Subsequent year upgrade rates | 1 | : | 0 |
| | 2 | : | 0 |
| | 3 | : | 0 |
| | 4 | : | 0 |
| | 5 | : | 0 |
| Savings/Informal mobilization | | : | .25 |
| Earmarked loan: Aggregate amount | | 86 : | |
| | | 87 : | 888,889 |
| | | 88 : | 444,444 |
| | | 89 : | 666,667 |
| | | 90 : | |
| | Interest rate | : | .14 |
| | Market Interest rate | : | .14 |
| | Loan term (years) | : | 20 |
| | Estimated avg. loan amt. | : | 1,778 |
| | Maximum loan amt. | : | 1,778 |
| | Maximum loan/value | : | .9 |

Allocation:

| | | |
|---|---|---|
| Deciles | : | 1,2,3,4,5 6:10% |
| Tenure | : | 1,2,3 |
| Dwellings | : | 4,5,6 |

Calculations:

Average loan = 2,000,000 / 1,125 hhs = 1,778 per household

| | | |
|---|---|---|
| 1988: | 500 * 1,778 = | 888,889 |
| 1989: | 250 * 1,778 = | 444,444 |
| 1990: | 375 * 1,778 = | 666,667 |
| | 1,125 | 2,000,000 |

Source: Proposed Rural Housing and Water Benchmarks for FY87-FY90, Engineering Office, US AID Honduras, 4/22/86.

## ---------- POLICY 5: EXPANDED FORMAL FINANCE ----------

GENERAL DESCRIPTION

This policy includes all the government programs of the Administration proposal, plus an additional Lps. 163 million for mortgage and home improvement loans assumed generated by the recommendations in our report. Of that sum, 98 million is dedicated to the metro sector, 41 million is dedicated to the urban sector, and 24 million to the rural sector. The mortgage loan program is assumed to issue loans of Lps. 20,000-35,000 to metro and urban households, and of 10,000-25,000 for rural households, each with 20 year terms at 14 percent interest. The loans are issued to households of all income deciles, tenures and present dwelling types, subject only to the households' ability to afford the loans.

The home improvement loans are issued to owner and squatter households in permanent or semi-permanent dwellings. As with mortgages, households of all income deciles are eligible, subject only to their ability to repay the loans. For metro and urban areas, we assume an average loan of Lps. 3,000, with a 20 year term and 14 percent interest; for rural areas we assume an average loan of 1,500.

EXPANDED FINANCE: HOME IMPROVEMENT LOANS (METRO)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 7,500,000 |
| | 88 | : 11,000,000 |
| | 89 | : 14,000,000 |
| | 90 | : 16,500,000 |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment Period | | : 3 |
| Expected Average Loan: | | : 3,000 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 3 |
| Minimum Cost of Target Dwelling | | : 3500 |
| Maximum Loan | | : 3000 |
| Maximum Loan/Value | | : 1.0 |
| Allocation: | | |
| Decile | | : Eligible from 1-10 |
| Tenure | | : 1,2 |
| Dwellings | | : 1,2,3,4 |

Calculations:

Anticipated Metro and Urban Resources:

| | 1987 | 1988 | 1989 | 1990 | Total |
|---|---|---|---|---|---|
| Savings: | 10 | 18 | 26 | 31 | 85 |
| IHSS: | 4 | 5 | 6 | 6 | 21 |
| Increased Formal: | 6 | 6 | 6 | 7 | 25 |
| Total: | 20 | 29 | 38 | 44 | 131 |

Assume 75% to metro and split evenly to home improvement and mortgage:

| | | | |
|---|---|---|---|
| 1987: 20 * .75 metro = 15 | * .5 HILS = | 7.5 |
| | * .5 Mort = | 7.5 |
| 1988: 29 * .75 metro = 22 | * .5 HILS = | 11.0 |
| | * .5 Mort = | 11.0 |
| 1989: 38 * .75 metro = 28 | * .5 HILS = | 14.0 |
| | * .5 Mort = | 14.0 |
| 1990: 44 * .75 metro = 33 | * .5 HILS = | 16.5 |
| | * .5 Mort = | 16.5 |
| 131 * .75 metro = | | 98.0 |

Assume 3 year term home improvement, 20 year mortgage, both at market interest rates. Assume average metro mortgage loan 20,000 average HIL 3,000. HILS made available to all owners or squatters who can afford payments. Mortgages available to all who can afford, independent of present tenure.

EXPANDED FINANCE: HOME IMPROVEMENT LOANS (URBAN)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 : | |
| | 87 : | 3,000,000 |
| | 88 : | 4,500,000 |
| | 89 : | 6,000,000 |
| | 90 : | 7,000,000 |
| Interest rate | : | .14 |
| Market interest rate | : | .14 |
| Repayment Period | : | 3 |
| Expected Average Loan: | : | 3,000 |
| Savings/Informal Mobilization | : | .25 |
| Target Dwelling Status | : | 3 |
| Minimum Cost of Target Dwelling | : | 3500 |
| Maximum Loan | : | 3000 |
| Maximum Loan/Value | : | 1.0 |

Allocation:

| | |
|---|---|
| Decile | : Eligible from 1-10 |
| Tenure | : 1,2 |
| Dwellings | : 1,2,3,4 |

Calculations:

Anticipated Metro and Urban Resources:

| | 1987 | 1988 | 1989 | 1990 | Total |
|---|---|---|---|---|---|
| Savings: | 10 | 18 | 26 | 31 | 85 |
| IHSS: | 4 | 5 | 6 | 6 | 21 |
| Increased Formal: | 6 | 6 | 6 | 7 | 25 |
| Total: | 20 | 29 | 38 | 44 | 131 |

Assume 25% to urban and split evenly to home improvement and mortgage. Add in additional funds from rural savings plan.

| | | | | | |
|---|---|---|---|---|---|
| 1987: 20 * .25 urban = | 5 | * .5 HILS = | 2.5 + | .5 from rural | = 3.0 |
| | | * .5 Mort = | 2.5 + | .5 from rural | = 3.0 |
| 1988: 29 * .25 urban = | 7 | * .5 HILS = | 3.5 + | 1.0 from rural | = 4.5 |
| | | * .5 Mort = | 3.5 + | 1.0 from rural | = 4.5 |
| 1989: 38 * .25 urban = | 10 | * .5 HILS = | 5.0 + | 1.0 from rural | = 6.0 |
| | | * .5 Mort = | 5.0 + | 1.0 from rural | = 6.0 |
| 1990: 44 * .25 urban = | 11 | * .5 HILS = | 5.5 + | 1.5 from rural | = 7.0 |
| | | * .5 Mort = | 5.5 + | 1.5 from rural | = 7.0 |
| 131 * .25 metro = | | | 33.0 | | |

Assume 3 year term home improvement, 20 year mortgage, both at market interest rates. Assume average metro mortgage loan 20,000 average HIL 3,000. HILS made available to all owners or squatters who can afford payments. Mortgages available to all who can afford, independent of present tenure.

EXPANDED FINANCE: HOME IMPROVEMENT LOANS (RURAL)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 1,500,000 |
| | 88 | : 2,000,000 |
| | 89 | : 4,000,000 |
| | 90 | : 4,500,000 |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment Period | | : 3 |
| Expected Average Loan: | | : 1,500 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 1 |
| Minimum Cost of Target Dwelling | | : 2,250 |
| Maximum Loan | | : 1,500 |
| Maximum Loan/Value | | : 1.0 |
| Allocation: | | |
| Decile | | : Eligible from 1-10 |
| Tenure | | : 1,2,3 |
| Dwellings | | : 1,2,3,4 |

Calculations:

Anticipated Resources from Rural Savings Plan:

| | 1987 | 1988 | 1989 | 1990 | Total |
|---|---|---|---|---|---|
| Total: | 4.0 | 6.0 | 10.0 | 12.0 | 32.0 |

Assume 75% to rural (25% to urban) and split evenly to home improvement and mortgage.

| | | | |
|---|---|---|---|
| 1987: | 4 * .75 rural = 3 | * .5 HILS = 1.5 | |
| | | * .5 Mort = 1.5 | |
| 1988: | 6 * .75 rural = 4 | * .5 HILS = 2 | |
| | | * .5 Mort = 2 | |
| 1989: | 10 * .75 rural = 7.5 | * .5 HILS = 4 | |
| | | * .5 Mort = 4 | |
| 1990: | 12 * .75 rural = 9 | * .5 HILS = 4.5 | |
| | | * .5 Mort = 4.5 | |
| | 32 * .75 metro = | | 24 |

Assume 3 year term home improvement, 20 year mortgage, both at market interest rates. Assume average mortgage loan 10,000, maximum mortgage 25,000, average HIL 3,000. HILS made available to all owners or squatters who can afford payments. Mortgages available to all who can afford, independent of present tenure.

EXPANDED FINANCE: MORTGAGE LOANS (METRO)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 : | |
| | 87 : | 7,500,000 |
| | 88 : | 11,500,000 |
| | 89 : | 14,000,000 |
| | 90 : | 16,500,000 |
| Interest rate | : | .14 |
| Market interest rate | : | .14 |
| Repayment Period | : | 20 |
| Expected Average Loan: | : | 20,000 |
| Savings/Informal Mobilization | : | .25 |
| Target Dwelling Status | : | 1 |
| Minimum Cost of Target Dwelling | : | 7000 |
| Maximum Loan | : | 35,000 |
| Maximum Loan/Value | : | .9 |
| Allocation: | | |
| Decile | : | Eligible from 1-10 |
| Tenure | : | 1,2,3 |
| Dwellings | : | 1,2,3,4 |

Calculations:

Anticipated Metro and Urban Resources:

| | 1987 | 1988 | 1989 | 1990 | Total |
|---|---|---|---|---|---|
| Savings: | 10 | 18 | 26 | 31 | 85 |
| IHSS: | 4 | 5 | 6 | 6 | 21 |
| Increased Formal: | 6 | 6 | 6 | 7 | 25 |
| Total: | 20 | 29 | 38 | 44 | 131 |

Assume 75% to metro and split evenly to home improvement and mortgage:

```
1987: 20 * .75 metro = 15 * .5 HILS =  7.5
                         * .5 Mort =  7.5
1988: 29 * .75 metro = 22 * .5 HILS = 11.0
                         * .5 Mort = 11.0
1989: 38 * .75 metro = 28 * .5 HILS = 14.0
                         * .5 Mort = 14.0
1990: 44 * .75 metro = 33 * .5 HILS = 16.5
                         * .5 Mort = 16.5
     ----                          ------
     131 * .75 metro =              98.0
```

Assume 3 year term home improvement, 20 year mortgage, both at market interest rates. Assume average mortgage loan 20,000, maximum mortgage 35,000, average HIL 3,000. HILS made available to all owners or squatters who can afford payments. Mortgages available to all who can afford, independent of present tenure.

EXPANDED FINANCE: MORTGAGE LOANS (URBAN)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 3,000,000 |
| | 88 | : 4,500,000 |
| | 89 | : 6,000,000 |
| | 90 | : 7,000,000 |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment Period | | : 20 |
| Expected Average Loan: | | : 20,000 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 1 |
| Minimum Cost of Target Dwelling | | : 7000 |
| Maximum Loan | | : 35,000 |
| Maximum Loan/Value | | : .9 |
| Allocation: | | |
| Decile | | : Eligible from 1-10 |
| Tenure | | : 1,2,3 |
| Dwellings | | : 1,2,3,4 |

Calculations:

Anticipated Metro and Urban Resources:

| | 1987 | 1988 | 1989 | 1990 | Total |
|---|---|---|---|---|---|
| Savings: | 10 | 18 | 26 | 31 | 85 |
| IHSS: | 4 | 5 | 6 | 6 | 21 |
| Increased Formal: | 6 | 6 | 6 | 7 | 25 |
| Total: | 20 | 29 | 38 | 44 | 131 |

Assume 25% to urban and split evenly to home improvement and mortgage. Add in additional funds from rural savings plan.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1987: 20 * .25 urban = | 5 | * .5 HILS = | 2.5 | + .5 from rural | = | 3.0 |
| | | * .5 Mort = | 2.5 | + .5 from rural | = | 3.0 |
| 1988: 29 * .25 urban = | 7 | * .5 HILS = | 3.5 | + 1.0 from rural | = | 4.5 |
| | | * .5 Mort = | 3.5 | + 1.0 from rural | = | 4.5 |
| 1989: 38 * .25 urban = | 10 | * .5 HILS = | 5.0 | + 1.0 from rural | = | 6.0 |
| | | * .5 Mort = | 5.0 | + 1.0 from rural | = | 6.0 |
| 1990: 44 * .25 urban = | 11 | * .5 HILS = | 5.5 | + 1.5 from rural | = | 7.0 |
| | | * .5 Mort = | 5.5 | + 1.5 from rural | = | 7.0 |
| 131 * .25 metro = | | | 33.0 | | | |

Assume 3 year term home improvement, 20 year mortgage, both at market interest rates. Assume average mortgage loan 20,000, maximum mortgage 35,000, average HIL 3,000. HILS made available to all owners or squatters who can afford payments. Mortgages available to all who can afford, independent of present tenure.

EXPANDED FINANCE: MORTGAGE LOANS (RURAL)

| | | |
|---|---|---|
| Aggregate amount of loans: | 86 | : |
| | 87 | : 1,500,000 |
| | 88 | : 2,000,000 |
| | 89 | : 4,000,000 |
| | 90 | : 4,500,000 |
| Interest rate | | : .14 |
| Market interest rate | | : .14 |
| Repayment Period | | : 20 |
| Expected Average Loan: | | : 10,000 |
| Savings/Informal Mobilization | | : .25 |
| Target Dwelling Status | | : 1 |
| Minimum Cost of Target Dwelling | | : 4,500 |
| Maximum Loan | | : 25,000 |
| Maximum Loan/Value | | : .9 |
| Allocation: | | |
| Decile | | : Eligible from 1-10 |
| Tenure | | : 1,2,3 |
| Dwellings | | : 1,2,3,4 |

Calculations:

Anticipated Resources from Rural Savings Plan:

| | 1987 | 1988 | 1989 | 1990 | Total |
|---|---|---|---|---|---|
| Total: | 4.0 | 6.0 | 10.0 | 12.0 | 32.0 |

Assume 75% to rural and split evenly to home improvement and mortgage.

| | | | |
|---|---|---|---|
| 1987: | 4 * .75 rural = 3 | * .5 HILS = 1.5 | |
| | | * .5 Mort = 1.5 | |
| 1988: | 6 * .75 rural = 4 | * .5 HILS = 2 | |
| | | * .5 Mort = 2 | |
| 1989. | 10 * .75 rural = 7.5 | * .5 HILS = 4 | |
| | | * .5 Mort = 4 | |
| 1990: | 12 * .75 rural = 9 | * .5 HILS = 4.5 | |
| | | * .5 Mort = 4.5 | |
| | 32 * .75 metro = | | 24 |

Assume 3 year term home improvement, 20 year mortgage, both at market interest rates. Assume average mortgage loan 10,000, maximum mortgage 25,000, average HIL 3,000. HILS made available to all owners or squatters who can afford payments. Mortgages available to all who can afford, independent of present tenure.

# ANNEX D

## RESULTS FROM BASELINE POLICY SIMULATIONS 1986-1990

### Summary

As described in Annex C, we have simulated four "baseline" policy scenarios for 1986-1990: one which makes no use of HG-008 and ESF funds (Policy 1), and three which use the funds according to differing allocation schemes (Policies 2-4). This Annex uses simulation results to compare those four scenarios in terms of expenditures, impacts, and distribution of impacts. We stress that many of the findings reported are highly sensitive to certain key assumptions underlying our simulations. For further detail concerning those assumptions, the reader should consult Annex C.

By all of the criteria used in our comparison, the SNAP proposal is the least effective at improving the condition of Honduran housing stock. The CONSUPLANE proposal rates highest at serving the most households and at producing the most newly acceptable dwellings, but the Administration's proposal is the most successful at increasing total investment in the housing sector, at improving water and sanitation services, and at improving the metropolitan housing stock.

If we compare policies by the income distribution of their beneficiaries, we find the CONSUPLANE proposal to be the most progressive of the three alternative uses for HG and ESF funds. As explained in Annex C, we assume that infrastructure upgrading sometimes reach households with above-median incomes when those households are located in lower income target neighborhoods. This effect leads to more expenditure above the

median income for the Administration's proposal, which allocates more funds to infrastructure programs. The difference is more pronounced if we consider household incomes relative to the country as a whole, since CONSUPLANE's programs give higher priority to households in urban and rural areas -- both of which have lower median incomes than Tegucigalpa and San Pedro Sula.

**Program Expenditures**

Total program expenditures for the Base Case scenario (Policy 1) were set at 81.6 million Lempiras; each of the other three scenarios was given an additional Lps. 89.0 million (70 HG-008 plus 15 ESF plus 4 CHF). Although Policies 2-4 involve the same total program expenditures, they differ significantly in their allocation of those additional funds among metro, urban, and rural areas. As can be seen in Table D.1, only about 16% of Policy 1 expenditures are allocated to metro and urban areas. The CONSUPLANE proposal allocates almost 30% of its additional funds to rural areas, whereas the Administration and SNAP proposals allocate less than 5% each (CHF funds only). The policies also differ in their division of funds between metro and urban areas. The CONSUPLANE proposal dedicates the lowest portion to metro areas (30%), the SNAP proposal dedicates the highest (86%), and and the Administration's proposal falls between those two.

Policies differ further in the mix of programs they fund. The CONSUPLANE proposal devotes 15 percent of its additional

Table D.1

INVESTMENT LEVELS AND PROGRAM IMPACTS
1986-1990

| | POLICY 1 (Base) | POLICY 2* (CONSUPLANE) | POLICY 3* (Admin.) | POLICY 4* (SNAP) |
|---|---|---|---|---|
| Total Investment (millions) | 2,362.3 | 120.3 | 145.0 | 103.5 |
| Metro | 58.94% | 29.33% | 66.81% | 84.76% |
| Urban | 16.19% | 41.45% | 29.18% | 9.62% |
| Rural | 24.88% | 29.22% | 4.01% | 5.62% |
| Total Program Expenditures (millions) | 81.6 | 89.0 | 89.0 | 89.0 |
| Metro | 12.73% | 23.87% | 67.97% | 85.96% |
| Urban | 2.94% | 47.75% | 27.62% | 9.55% |
| Rural | 84.31% | 28.38% | 4.49% | 4.49% |
| Total Policy Participants | 50,718 | 33,239 | 31,113 | 11,514 |
| Metro | 2.39% | 18.64% | 54.99% | 52.22% |
| Urban | 1.86% | 20.73% | 30.55% | 8.69% |
| Rural | 95.75% | 60.62% | 14.46% | 39.09% |
| Participants Achieving Acceptable Units | 14,361 | 23,798 | 21,085 | 5,031 |
| Metro | 4.02% | 14.65% | 68.64% | 74.62% |
| Urban | 3.84% | 28.96% | 29.16% | 16.16% |
| Rural | 92.14% | 56.38% | 2.20% | 9.22% |
| Net Increase in Adequate Water and Sanitation | 114,046 | 21,430 | 27,882 | 6,300 |
| Metro | 20.29% | 32.31% | 54.67% | 44.65% |
| Urban | 6.12% | 24.64% | 34.96% | 9.46% |
| Rural | 73.59% | 43.05% | 10.37% | 45.89% |

* values refer only to increment beyond Base Case

funds to infrastructure upgrading, 72 percent to new construction, and 2 pecent to home improvement loans (CHF rural only). The Administration's proposal spends 45 percent on infrastructure upgrading, 38 percent on new construction, and 17 percent on home improvement loans. The SNAP proposal, by constrast, spends 98 percent of its funding on mortgage loans, and only 2 percent on new construction (CHF rural only).

**Program Impacts**

In comparing impacts among the policies simulated, we rely on four measures: 1) the total amount of housing investment 2) the number of policy participants, 3) the number of households achieving acceptable units through program participation, and 4) improvement in water and sanitation.

From Table D.1, we see that policies 2, 3, and 4 increase total housing investment beyond that of the Base Case by an additional Lps. 120.3, Lps. 145.0 and Lps. 103.5 million respectively, or 35, 63 and 16 percent beyond the Lps. 89 million actually disbursed by the programs. Additional investment beyond program expenditure can be explained by the fact that households can be induced to mobilize funds from savings in response to suitable financing or program opportunities. The Administration's plan, by concentrating its funding on infrastructure upgrading programs in the metro and urban sectors, serves households with higher average incomes than those participating in the CONSUPLANE

or SNAP programs. Since we allow extra savings mobilization of up to three months income for each policy participant, program participation by higher income households raises the total amount of savings mobilized, and hence total investment.

A second measure of program impact is the number of households participating. Naturally, the program spending the least funds per participant will show the largest count of participants, since the total budgets of Policies 2-4 are identical. From Table D.1, we can see that the CONSUPLANE proposal (Policy 2) shows the highest count of additional policy participants. The Administration's proposal is only slightly lower - presumably reflecting CONSUPLANE's higher allocation to (less expensive) rural programs. The SNAP proposal, not surprisingly, shows the lowest count of participants, since it concentrates on relatively large mortgage loans in the metro and urban areas.

A third, and perhaps more revealing measure of program impact is the count of households achieving acceptable housing under the program. Table D.1 shows the counts of policy participants achieving acceptable housing from 1986-1990. This measure excludes those households already living in acceptable dwellings at the beginning of the study period, even though program participation may have improved their living conditions. It also excludes households that improved their dwellings, but not enough to reach acceptable status. Table D.1 shows that the CONSUPLANE proposal yields an estimated

23,798 additional acceptable units beyond those resulting from the Base Case. The Administration's proposal produces a slightly lower 21,085 acceptable units, and the SNAP proposal, with its concentration on relatively expensive mortgage loans, devotes a significant fraction of its funds to households already living in dwellings defined as "adequate" by the model.

Given the Administration's proposal's higher funding for water and sanitation programs, it is interesting to compare the four baseline policies from that perspective. Figure D.1 shows projected increases in the number of dwellings with adequate water and sanitation for each policy scenario[1]. The Administration's proposal achieves higher pass rates in the metro and urban sectors, but the CONSUPLANE proposal compensates somewhat in the rural. In total, the Administration's plan produces more additional dwellings with adequate water and sanitation facilities than the CONSUPLANE proposal, while the SNAP proposal produces far fewer.

---

1. These increases include those resulting from unassisted upgrading activity, from new household formation, and from public program participation. As explained in Annex C, we have assumed that the dwellings of newly formed households have the same dwelling quality distribution as those of existing households. Since many existing dwellings possess adequate water and sanitation, that assumption requires a natural background production of new dwellings with adequate infrastructure. In addition, it creates a multiplier effect for public infrastructure upgrading programs. If, for example, a public program increases the number of urban dwellings with adequate water and sanitation in 1987, then the model will assume that an increased fraction of the next year's newly formed urban households will begin with adequate water and sanitation.

## Measures of Program Efficiency

Table D.2. presents a more detailed examination of program efficiency for the four baseline policy scenarios we have simulated. If we combine all three sectors, the CONSUPLANE proposal shows the most efficiency in using additional HG and ESF resources. Its lead over the Administration's proposal is slight, however, in terms of program cost per participant and per participant achieving an acceptable dwelling.

In the metro area, the Base Case shows a relatively high average expenditure per participant, reflecting the influence of mortgage loans from the government's Housing Fund (FOVI). Of the remaining three policies, CONSUPLANE's and the Administration's proposals show similar costs per participant for their additional expenditure, with the Administration's inclusion of a basic unit construction program explaining the slight difference. By the next criterion -- program expenditure per participant achieving acceptable dwelling -- the advantage is reversed; the Administration's proposal, with its basic unit construction in the metro area, succeeds in raising more households to fully acceptable dwelling status.

In the urban areas, CONSUPLANE's emphasis on a new construction program is reflected by a higher program cost per participant. The Administration's proposal, with a mix of home improvement loans, water and sanitation programs, and a smaller

TABLE D.2

MEASURES OF PROGRAM EFFICIENCY

| | BASE | CONSUPLANE* | ADMIN.* | SNAP* | EXPANDED* |
|---|---|---|---|---|---|
| -- Metro -- | | | | | |
| Total Program Expenditures Per Participant | 3,539 | 3,429 | 3,535 | 12,722 | 4,036 |
| Total Program Expenditures Per Participant Achieving Acceptable Dwelling | 18,024 | 6,094 | 4,180 | 20,378 | 3,365 |
| Total Investment Per New Acceptable Dwelling | 60,833 | 52,715 | 38,395 | 55,551 | 5,730 |
| -- Urban -- | | | | | |
| Total Program Expenditures Per Participant | 2,540 | 6,167 | 2,586 | 8,500 | 3,358 |
| Total Program Expenditures Per Participant Achieving Acceptable Dwelling | 4,348 | 6,166 | 3,998 | 10,455 | 3,623 |
| Total Investment Per New Acceptable Dwelling | 55,281 | 31,302 | 31,357 | 50,755 | 5,812 |
| -- Rural -- | | | | | |
| Total Program Expenditures Per Participant | 1,410 | 1,253 | 889 | 889 | 1,642 |
| Total Program Expenditures Per Participant Achieving Acceptable Dwelling | 5,197 | 1,882 | 8,621 | 8,621 | 1,076 |
| Total Investment Per New Acceptable Dwelling | 16,321 | 12,601 | 16,273 | 16,273 | 1,506 |
| -- Total -- | | | | | |
| Total Program Expenditures Per Participant | 1,602 | 2,678 | 2,860 | 7,730 | 3,323 |
| Total Program Expenditures Per Participant Achieving Acceptable Dwelling | 5,679 | 3,740 | 4,221 | 17,690 | 2,763 |
| Total Investment Per New Acceptable Dwelling | 35,896 | 27,495 | 34,807 | 26,298 | 4,541 |

* values refer only to increment beyond Base Case

construction program, is less costly.

In rural areas, program costs per participant in the Base Case scenario fall below those for metro and urban programs, but the proportion of program participants achieving acceptable dwelling units also falls. Consequently, program expenditure per participant attaining acceptable housing rises above that found in the urban Base Case. Of the three remaining policies simulated, the Administration and SNAP proposals each allocate only Lps. 4 million of additional funds (CHF) to rural areas, while the CONSUPLANE proposal spends an additional Lps. 25.3 million on a mix of programs with average cost of Lps. 1,253 per participant. While these programs are more expensive than the CHF programs included in Policies 2-4, they are also more efficient at producing acceptable dwellings, since the CHF sites and services programs are assumed rarely to result in fully acceptable dwellings over the duration of the study period. Of course, some households will obtain acceptable dwellings without participating in programs; the <u>total</u> number of households gaining acceptable dwellings is used in Table D.3.

**Distribution of Program Impacts by Household Income**

How are program benefits distributed by income? Table D.3 shows the net increase in acceptable dwellings, and in dwellings with adequate water and sanitation for households with incomes below the median for their sector. The CONSUPLANE scenario is

TABLE D.3

NET INCREASE IN ACCEPTABLE DWELLINGS 1986-1990

| | | BASE | | CONSUPLANE* | | ADMIN.* | | SNAP* | |
|---|---|---|---|---|---|---|---|---|---|
| METRO | Low income: | 10,418 | 45.51% | 1,772 | 50.80% | 10,610 | 73.30% | 3,424 | 91.19% |
| | Total: | 22.894 | | 3,488 | | 14,474 | | 3,755 | |
| URBAN | Low income: | 2,700 | 39.05% | 6,203 | 90.02% | 3,524 | 57.33% | 736 | 90.53% |
| | Total: | 6,914 | | 6,891 | | 6,147 | | 813 | |
| RURAL | Low income: | 16,903 | 46.94% | 10,336 | 77.01% | 391 | 84.63% | 391 | 84.63% |
| | Total: | 36,010 | | 13,421 | | 462 | | 462 | |
| TOTAL | Low income: | 30,021 | 45.61% | 18,311 | 76.94% | 14,525 | 68.89% | 4,551 | 90.48% |
| | Total: | 65,818 | | 23,800 | | 21,083 | | 5,030 | |

NET INCREASE IN ADEQUATE WATER AND SANITATION 1986-1990

| | | BASE | | CONSUPLANE* | | ADMIN.* | | SNAP* | |
|---|---|---|---|---|---|---|---|---|---|
| METRO | Low income: | 10,664 | 46.09% | 4,764 | 68.81% | 10,784 | 70.75% | 2,542 | 90.39% |
| | Total: | 23,138 | | 6,924 | | 15,244 | | 2,813 | |
| URBAN | Low income: | 2,821 | 40.44% | 4,792 | 90.75% | 6,361 | 65.26% | 543 | 91.01% |
| | Total: | 6,976 | | 5,281 | | 9,747 | | 596 | |
| RURAL | Low income: | 51,122 | 60.91% | 7,509 | 81.40% | 2,542 | 87.93% | 2,542 | 87.93% |
| | Total: | 83,932 | | 9,225 | | 2,891 | | 2,891 | |
| TOTAL | Low income: | 64,607 | 56.65% | 17,065 | 79.63% | 19,687 | 70.61% | 5,627 | 89.32% |
| | Total: | 114,046 | | 21,430 | | 27,882 | | 6,300 | |

* represents increment beyond Base Case

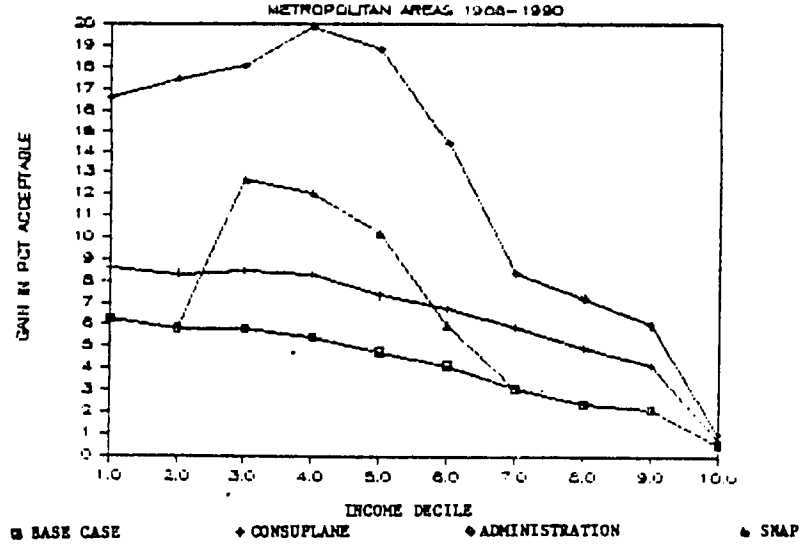
most successful at providing fully adequate dwellings to those populations, but the Administration scenario maintains its lead in water and sanitation.

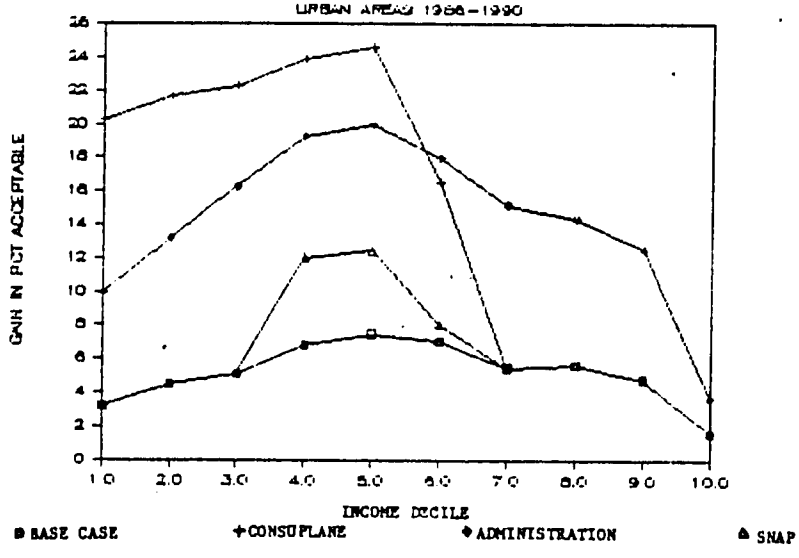
Figure D.1 presents a more detailed look at the income distribution of gains to the housing stock from the policy scenarios. The values plotted represent the 1986-1990 change in the percent of each decile's dwellings that are acceptable quality. For example, in the third metropolitan income decile in 1986, 31.2% of all dwellings were fully adequate; in 1990, after the Base Case simulation, 37.0% were adequate. A gain of 5.8% is therefore plotted on the graph.

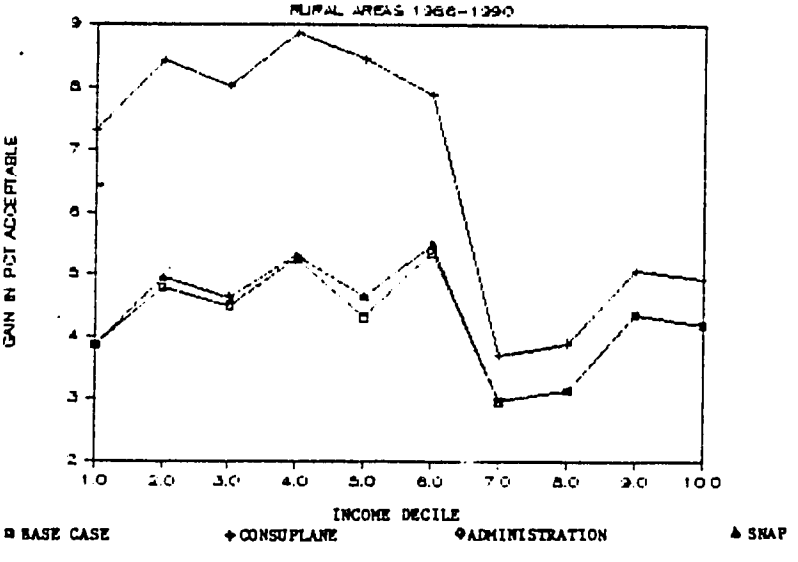
In the metro region, the distribution of gains for the Base Case shows a rather smooth downward slope, with more than six percent gain in the lowest decile, and less than one percent in the highest. We assume that CONSUPLANE's wet core construction program does not yield fully adequate dwellings within the study period, so its effects are invisible to Figure D.1. As explained in Annex C, we have allocated the benefits of infrastructure upgrading programs in proportion to the need in each income decile. Since both the need and the number of permanent dwellings with inadequate water or sanitation are highest in the lowest deciles, the CONSUPLANE curve is roughly parallel to that caused by natural transitions in the Base Case.

For the SNAP proposal, we see a pronounced bulge in the curve for the third through fifth deciles, and, to a lesser

# GAIN IN PERCENT ACCEPTABLE DWELLINGS



extent, into the sixth. Since borrowers in the third decile are less likely to begin with fully adequate dwellings, the rate of improvement is highest there. A lower level of activity in the sixth decile reflects our assumption of 10% program leakage to the sixth decile.

The higher rates of improvement shown by the Administration's proposal in the metro area reflects its higher funding than the CONSUPLANE proposal (Lps. 60.5 million versus 21.3) and its greater efficiency at providing newly acceptable dwellings than the SNAP proposal (Lps. 4,180 per dwelling versus Lps. 20,378). Allocation of funds to water and sanitation programs explain the gains in the seventh through tenth deciles; allocation to home improvement loans and basic unit construction explain the progress in the lower six. (Note that gains peak in the fourth income decile).

In urban areas, fewer households begin in permanent dwellings, and the number of semi-permanent dwellings with passing infrastructure peaks toward the middle of the income spectrum; therefore the number of "natural" transitions to adequate dwellings is highest in the fifth decile. Peak 1987 CHF success in the fifth decile accentuates the effect. The SNAP proposal shows a similar impact to the one it displayed in the metro regions, except that lower urban incomes constrain all gains to the fourth and fifth income deciles. CONSUPLANE's higher allocation to urban areas (Lps. 42.5 million versus 24.5

Administration and 8.5 SNAP) explains its 17 percent additional gain in acceptable dwellings for the lowest five deciles. The Administration's proposal, through its inclusion of infrastructure programs, extends gains to the higher income deciles while attaining substantial gains in the lower deciles also.

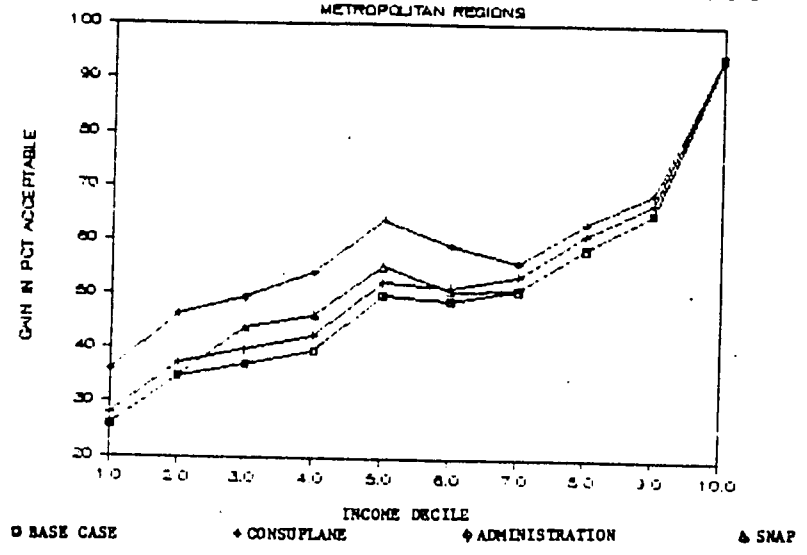
In the rural areas, the Administration and SNAP proposals differ from the Base Case only by their inclusion of an additional Lps. 4 million of CHF program funding between the first and sixth income deciles. The CONSUPLANE proposal, on the other hand, allocates an additional Lps. 25.3 million to new construction and water and sanitation programs in the rural areas. As can be seen from the graph, the water and sanitation programs produce about a one percent gain over the entire income scale, while the new construction program produces an additional two to three percent gain in the lower five deciles.

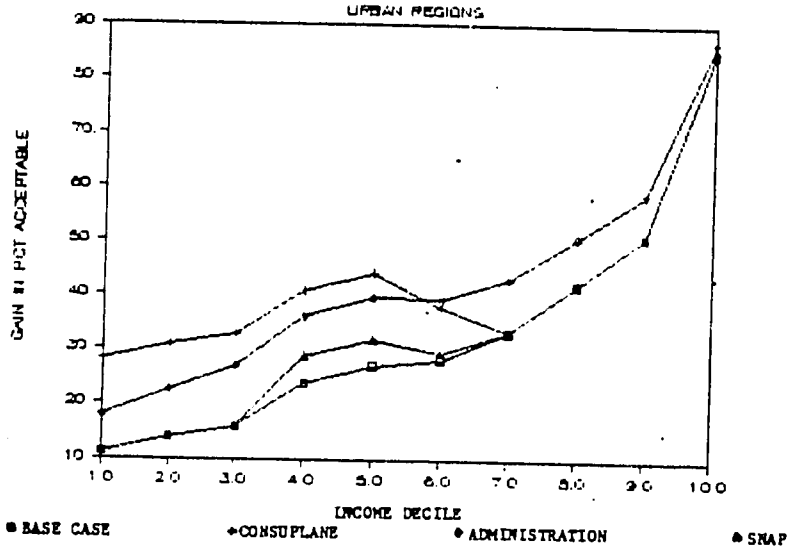
**Estimated Housing Quality in 1990**

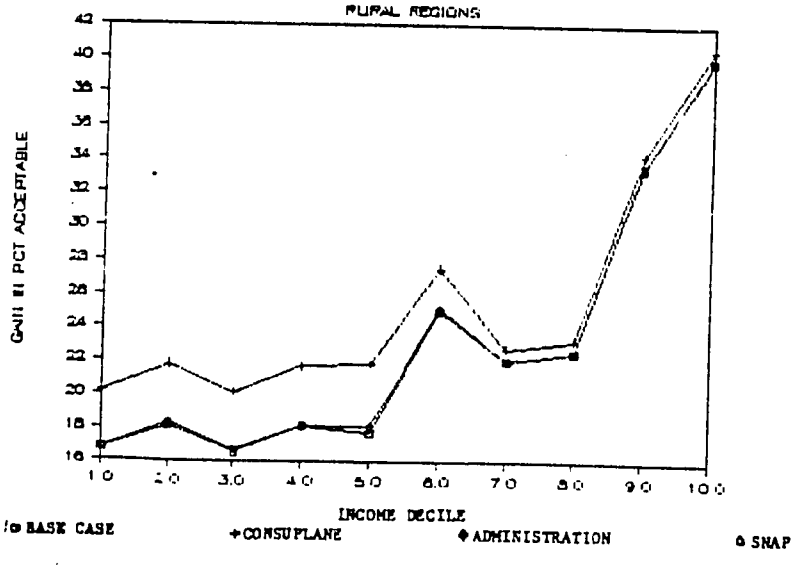
Figure D.2 shows projected percentages of fully acceptable dwellings in 1990 for each of the four baseline policies in each of the three sectors. Both the Administration and the CONSUPLANE proposals yield substantial flattening and elevation of the quality curves in the urban sector; the Administration's policy is most effective in the metropolitan sector, and CONSUPLANE's is most effective in the rural.

FIGURE D-2

# PERCENT ACCEPTABLE DWELLINGS 1990



Regardless of the policy selected, however, serious housing needs remain, especially for the lower income deciles, and in the rural sector.

## ANNEX E

## GENERAL DESCRIPTION OF THE HOUSING QUALITY MODEL

The Housing Quality Model projects year-to-year changes in the housing conditions of developing countries under alternative policy scenarios.[1] The HQM can best be understood as a record-keeping or accounting model, rather than a behavioral model; most behavioral assumptions must be explicitly supplied by model users when they assemble the required data inputs.[2] The Housing Quality Model uses the same data as the Housing Needs Assessment on future demographic and economic developments, housing costs and affordability, and the quality of the housing stock. Thus, the results should be roughly consistent.

The Housing Quality Model classifies households according to income, tenure, and quality of dwelling. The initial distribution of households within the classification matrix was developed using public data,[3] and the model simulates year-to-year shifts by households between cells in the matrix.

In Honduras, within each income decile, households are assigned to one of three tenure categories: (a) owners; (b) squatters; and (c) unit

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1. For a complete description of the model, see M. Turner and R. Struyk, The Housing Quality Model: Basic Description, (Washington, D.C.: Urban Institute Report to USAID Office of Housing and Urban Development, 3492-04, 1985).

2. This is primarily a demand-side model, focusing on the capacity of households to achieve improvements in their housing circumstances, either independently or through participation in publicly sponsored assistance programs. Supply constraints are reflected in the cost of various housing options and in interest rate trends, but the HQM does not attempt to represent supply behavior endogenously or to simulate a market clearing process.

3. The construction of the matrix, including documentation of the data sources, is described in Annex B. Also described is the way in which we constructed the matrix for 1985 from the 1978 data from the income and expenditure survey and other data.

renters. Since squatters are by and large excluded from formal sector financing and since the model measures the impact of various resource mobilization schemes upon tenure, income, and dwelling quality, there was a need to distinguish between owners and squatters. However, in Honduras both groups are virtually certain that they will not be evicted from their property so that for some purposes — such as investment behavior — they can be regarded as one group.

Within each tenure category, households are distributed across six possible dwelling statuses, defined on the basis of structural adequacy and infrastructure acceptability. In Honduras, structures are defined as (1) permanent — and therefore presumably adequate; (2) semi-permanent — not fully adequate, but upgradable; or (3) improvised — inadequate and not upgradable. Infrastructure is defined as either acceptable or unacceptable, on the basis of drinking water and toilet facilities.

Starting with this initial distribution of households, the Housing Quality Model records year-to-year shifts by households from one cell to another, and computes the resource requirements generated by the tenure and dwelling status transitions. The transitions of primary interest to model users stem from publicly-sponsored housing assistance initiatives, but significant changes in the distribution of households also occur in the absence of government interventions. Therefore, the Housing Quality Model begins by simulating a set of "natural" or "no government" transitions, and then simulates additional transitions brought about by publicly-sponsored programs.

There are three sets of transitions that the Housing Quality Model simulates each year, even in the absence of government interventions. These include: (1) the net addition of new households; (2) improvements in the existing stock of housing units — from semi-permanent to permanent structures, and from unacceptable to acceptable infrastructure; and (3) replacements of units lost due to depreciation.

Once the HQM completes its processing of newcomers, transitions, and replacements, it sums up the implied levels of new construction for each dwelling status, and the aggregate level of financial resources consumed. The HQM then goes on to simulate the impacts of any publicly-sponsored housing assistance programs specified by the user.