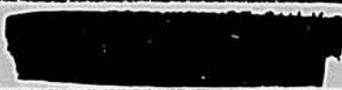


AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON, D. C. 20523  
BIBLIOGRAPHIC INPUT SHEET



SUBJECT CLASSIFICATION: A. PRIMARY Urban development and housing LD00-0000-6512  
D. SECONDARY Housing--Bolivia

2. TITLE AND SUBTITLE: Bolivia shelter sector assessment

3. AUTHOR(S): Robbins, E.H.; Ynastrilla, Antonia; Clifton, C.W.

4. DOCUMENT DATE: 1976  
5. NUMBER OF PAGES: 145p.  
6. ARC NUMBER: ARC

7. REFERENCE ORGANIZATION NAME AND ADDRESS: AID/SER/H

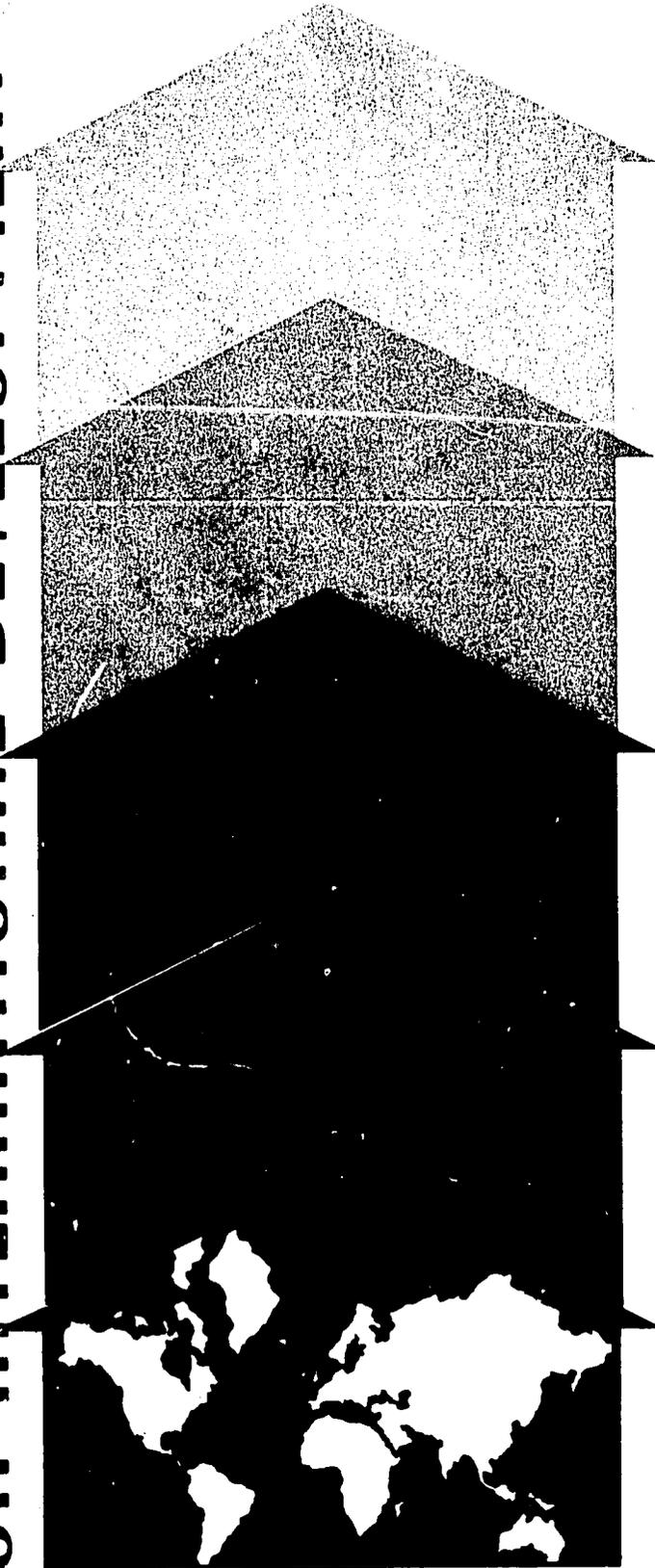
8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publishers, Availability)

9. ABSTRACT: [Redacted]

10. CONTROL NUMBER: PN-AAE-054  
11. PRICE OF DOCUMENT  
12. DESCRIPTORS: Bolivia Sector analysis  
13. PROJECT NUMBER  
14. CONTRACT NUMBER: AID/SER/H  
15. TYPE OF DOCUMENT

**THIS DOCUMENT HAS BEEN EVALUATED AS SUBSTANDARD COPY FOR  
ROUTINE REPRODUCTION. EFFORTS IN AID/W TO OBTAIN A MORE  
ACCEPTABLE COPY OF THE DOCUMENT HAVE NOT BEEN SUCCESSFUL.  
DESPITE THIS DISADVANTAGE, WE HAVE CHOSEN TO REPRODUCE THE  
DOCUMENT BECAUSE OF THE SUBJECT TREATED AND TO MAKE THE  
DISCERNIBLE INFORMATION AVAILABLE.**

**AGENCY FOR INTERNATIONAL DEVELOPMENT**



**OFFICE OF HOUSING**

**BOLIVIA**

**SHELTER  
SECTOR  
ASSESSMENT**

**DECEMBER 1976**

BOLIVIA  
SHELTER SECTOR ASSESSMENT

PREPARED BY  
NATIONAL SAVINGS AND LOAN LEAGUE

TEAM MEMBERS:

Edward H. Robbins, Vice President,  
Program Development and Research

Antonio Ynastrilla, Housing Design  
Advisor

Dr. C. Wade Clifton, Economic  
Consultant

DECEMBER 1976

DEPARTMENT OF STATE  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON, D C. 20523

FOREWARD

This study was conducted by the National Savings and Loan League under the auspices of the Office of Housing of the Agency for International Development and through financing provided by this Office. The purpose of the study was to develop information and make recommendations relating to the shelter sector in Bolivia.

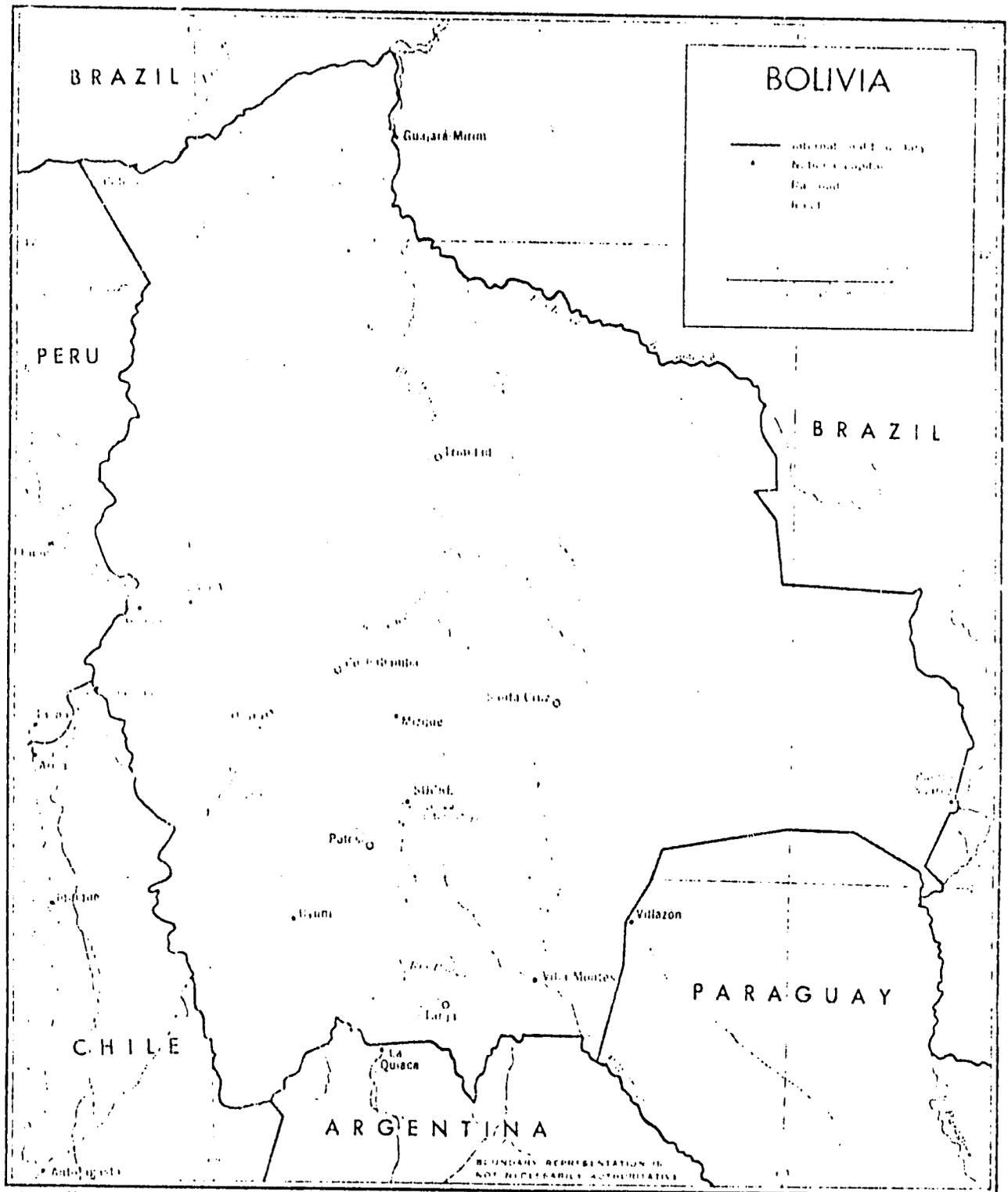
The study team was headed by Edward H. Robbins with other team members being Antonio Ynastrilla and C. Wade Clifton.

While the findings and recommendations of the report have been discussed with representatives of the Government of Bolivia, the report is not to be interpreted as an official position of either the Government or of the Agency for International Development.

We hope, however, that the Government of Bolivia will find the report and its recommendations useful to it as it formulates and implements its future shelter programs.



Peter M. Kimm  
Director  
Office of Housing



## TABLE OF CONTENTS

I.	Introduction and Acknowledgement	1
II.	Summary and Recommendations	3
III.	National Socio-Economic Conditions	12
	A. Demographic Data	12
	1. Population	12
	2. Family Size and Composition	12
	3. Migration	14
	4. Projections	15
	B. The Economics of the Family	15
	1. The Rural Poor	15
	2. The Urban Worker	17
	a. Family Income	17
	b. Cost of Living	19
	3. Summary of Family Income Findings	22
	C. Housing Stock	22
	D. National Economic Conditions	26
IV.	The Housing Sector	29
	A. Policies and Institutions	29
	1. National Housing Policy	29
	a. National Housing Law	30
	b. The Five-Year Plan	31
	2. The Institutions: Their Roles and Authorities	32
	a. Housing Councils	32
	b. Ministry of Urban Development and Housing	35

ANEXO DE CONTENIDO (CONT.)

c.	Banco de la Vivienda	35
d.	National Industrial Corporations	37
e.	Municipal Government	39
f.	The Savings and Loan System	39
g.	Banco Hipotecario Nacional and Commercial Banks	42
h.	Cooperatives	43
i.	Roman Catholic Church	44
B.	Housing Finance	44
1.	The Housing Councils	44
2.	Banco de la Vivienda (BANVI)	47
3.	The Central Savings and Loan Bank (CACEN) and the S + L System	49
4.	The Central Bank and Commercial Banking System	52
5.	The Cooperatives	52
6.	Other Housing Producers	55
7.	Conclusions	56
C.	Housing Programs: Past and Present	58
1.	Public Sector	58
a.	Programs of the Recent Past	58
b.	The 5-Year Plan	61
c.	The City of La Paz	63
d.	COMIBOL	65
2.	The Private Sector	66
3.	Other Institutions	68
V.	Housing Production: Costs and Techniques	69
A.	Construction Industry	69
B.	Construction Materials + Costs	70
1.	Materials In Use	71
2.	Materials Cost	74

TABLE OF CONTENTS (CONT.)

C.	Construction Labor	75
D.	Land and Urbanization	75
E.	Construction Methods, Unit Design and Cost	76
	1. Lowest Cost Housing	76
	2. Medium Priced Housing	77
	3. Multifamily Units	78
F.	Conclusions	78
VI.	Environmental Impact	80
A.	Identification and the Nature of the Problem	80
B.	The Institutions Involved	81
	1. Ministry of Indian Affairs and Agriculture	81
	2. Centro de Desarrollo Forestal	82
	3. Ministerio de Urbanismo y Vivienda	83
	4. Comités de Obras Públicas/Cor- poraciones de Desarrollo	84
	5. Municipal Government	85
	6. Servicio Nacional de Desarrollo Urbano	85
	7. Other Institutions	86
C.	The Potential Impact of Housing Projects in Bolivia	86
	Bibliography	88

LIST OF TABLES AND FIGURES

Figure 1: Map of Bolivia	Frontispiece
Figure 2: National Housing Finance System	38
Figure 3: Balance Sheets - Caja Central and S + L System 31 December 1975	41
Table 1: Population	13
Table 2: Consumer Price Index (La Paz)	21
Table 3: Estimate of Housing Demand in Urban Areas - 1974	24
Table 4: Classification of Housing According to the Quality of Construction	25
Table 5: Five-Year Financial Review Bolivian Housing Councils	46
Table 6: CONAVI Investment Calculations	48
Table 7: Housing Units Produced by Public Sector	58
Table 8: Distribution First CONAVI/Bid Loan by Labor Sector	59
Table 9: Public Sector Production: Five-Year Plan	62
Table 10: Income Distribution - Lazareto Families	64
Table 11: Distribution of Construction Oriented Professionals	70
Table 12: Price Increase of Basic Construction Materials	74

LIST OF TABLES AND FIGURES (CONT.)

Table 13: CONAVI Low Cost Unit Price	76
Table 14: CONAVI Medium Cost Unit Price	78

## APPENDICES

### Appendix A: (Chapter III) National Socio-Economic Conditions

- Table A: Household and Family Size
- Table B: Percent Living in Province Where Born
- Table C: Percent Born in Province Where Living
- Table D: Average 1975 Salaries by Department and Sex
- Table E: Additional Salary Benefits
- Table F: Wages and Salaries for Various Occupations --  
La Paz, 1976
- Table G: Employment by Sex and Economic Sector
- Table H: Percentage Distribution of Nonagricultural Em-  
ployment by Economic Sector for Each Department,  
1975
- Table I: Estimate of National Housing Deficit (CONAVI)
- Table J: City of Sucre - Housing Density
- Table K: Housing Density - City of Oruro
- Table L: Percent of Housing Units with Services
- Table M: Number of Houses and Occupancy

### Appendix B: (Chapter IV) The Housing Sector

- Table A: Sources of Housing Plan Financing
- Table B: Distribution - First CONAVI - Bid Loan
- Table C: Distribution - Second CONAVI - Bid Loan
- Table D: Distribution - Second CONAVI - Bid Loan by  
Labor Sector

APPENDICES (CONT.)

Table E: Housing Production: CONAVI Bid Loan

Table F: Current Status - CONAVI Production

Table G: Construction Plan for 1976-77 - CONAVI

Figure A: Principales Políticas Programas y Proyectos

Appendix C: (Chapter V) Housing Production: Costs and Techniques

Table A: Current Construction Labor Wage Rates

Table B: Increases in Labor Costs

Table C: Analysis of the Increase in Cost of Construction Labor

Table D: Summary Chart of Semester Averages for Construction Materials and Labor

Table E: Casa de un Dormitorio Ampliable a Tres Tipo Económico

Table F: Estimated 30.5 M<sup>2</sup> Unit Cost

Figure A: Floor Plan CONAVI unit Type A

Figure B: Floor Plan and Elevation CONAVI unit Type A Variation

Figure C: Floor Plan and Elevation Lazareto Unit - La Paz

Figure D: Site and Floor Plan - Low Cost Housing Unit

Figure E: Elevation - Low Cost Housing Unit

Appendix D: List of Persons Contacted

## 1. Introduction

The following assessment of the shelter sector in Bolivia has been drawn from field work performed in October 1976. During this work the first national population and housing census since 1950 was carried out. The assessment draws on some of the preliminary population data developed in the census. None of the housing information was available.

The census was not designed to develop any income related information. For this reason, a lack of accurate nation-wide income distribution data will continue to plague housing program analysts and developers. Production of standard housing falls well short of demand, however, a condition which may lessen the need for highly accurate income data. It is clear that production of a \$1,500 to \$2,000 unit in large quantity would meet with ready acceptance and would satisfy the housing needs of a large segment of the low income portion of the population. Producing units of such a cost presents a difficult but not impossible challenge to Bolivia's housing production institutions. Producing such units in quantity appears even more difficult.

The Bolivian government is well aware of the challenge, and was most helpful in giving the assessment team ready access to information and to its experts as part of an effort to bring about a better understanding of the problems and the potentials of meeting the challenge. Particular thanks are due the Minister of Housing and Urban Development, Central Mirante Santiago Maese Beca, the Executive Director of the National Housing Council (CONAVI), Ing. Rene de Grandchant N., and the Deputy Mayor of La Paz for Technical Affairs, Arq. Adolfo Navarro.

Important perspective on the problem of meeting the tremendous demand for housing for all income levels, and on the ability of Bolivia's capital markets to develop the greater strength needed to confront the challenge of increasing housing production, was provided by Ernesto Wende F., President of the Caja Central de Ahorro y Préstamo and creator of the nation's savings and loan system. The following report owes a considerable debt to him and to his associates throughout the system.

The assessment team was guided throughout the study by John Kilgore and Mario Pita of the Office of Housing and by Laurence

Hoffman and Ernesto Garcia with the AID mission in La Paz. The orientation provided by these experts is gratefully acknowledged.

The assessment team sincerely hopes that its reflections on the shelter sector will help these experts and their related institutions as they map the strategy for a more forceful attack on the need for greater housing production.

## 11. SUMMARY AND RECOMMENDATIONS

### A. Summary

1. Bolivian housing institutions are not producing sufficient quantities of low and medium priced housing to reduce the national deficit or to keep up with the annual increase in need for such housing. The nation's major institutions, both public and private, are producing less than 2,000 units a year. The national deficit is well in excess of 100,000 units. The annual increase in need may be as high as 10,000 units.

2. The institutions with the most direct responsibility and greatest authority to carry out the task of housing production are the Consejo Nacional de la Vivienda (CONAVI), a branch of the national government, and the national savings and loan system led by the Caja Central de Ahorro y Préstamo para la Vivienda. CONAVI receives its financing from a 2% payroll tax contributed by employers in those sectors of industry, commerce and government which do not have their own housing council. CONAVI, in the past, has received important levels of financing from the Inter-American Development Bank. In 1976, the 2% payroll tax received by CONAVI was estimated to equal \$963,000. This plus income from mortgage repayment and interest was expected to provide CONAVI with \$2.4 million in working capital for the year.

The S + L system run by the Caja now has nine member associations located in the principal cities of the country. The system's assets totaled \$22.4 million in 1975. The system's principal resources are savings accounts and foreign financing generated by AID. This latter resource has provided over \$18 million to the system since 1964.

3. The focus of the nation's private and public housing program is the urban areas. Though the majority of the nation's population of roughly 5 million lives in rural areas, migration to the cities is gradually changing the balance. The problem of density is one of the major factors in making the urban housing situation a more critical concern for the nation's policy makers.

4. Though accurate data does not exist, estimates of the median income for families in the urban areas suggests that it

lies between \$US130 and \$US150 per month. If we apply the rule of thumb that housing expenses should not exceed 25% of family income and consider a mortgage of 20 years bearing 12% p. a. interest, we conclude that the unit required to serve the median income must cost no more than \$3,400 (68,000 pesos). CONAVI and the city of La Paz are now delivering units of this price or less. The 3 + 1 system is not involved at these levels.

5. The national economy is heavily dependent on the world price of mineral commodities including oil and gas, and many metals. In addition, new efforts at commercial farming in the Santa Cruz area have added sugar and cotton to the list of important export items.

The government is following a policy of industrial development in an effort to reduce reliance on foreign processing of domestic products. Major investments are being directed at development of new plants and more jobs. Housing is not a major component of national budget policy. The government has never provided any direct budgetary support for CONAVI programs.

6. There is some question as to the validity of CONAVI's 5 Year Plan for Housing. Though an integral part of the 5 Year Social and Economic Development Plan, the details of the Housing Plan have never been officially released. The first year of the Plan has passed without implementation. Negotiations are being carried on with the World Bank in the hopes of obtaining roughly \$10 million for the construction of the low-cost units called for in the Plan.

CONAVI's performance in recent years has been hurt as a result of a reorganization process which took place in the early 1970's. In this period four new housing councils were established for important labor groups. The effect was to siphon off financial resources from CONAVI while leaving it with the staff built up during the years when projects supported by Inter-American Development Bank loans were under construction. CONAVI appears to have passed through the worst part of the adjustment process and now has a full scale program underway. The new councils, however, have produced few units. The fragmentation of authorities has severely weakened the national housing production effort.

7. The S + L system is dependent upon generation of savings to build its operating strength. To date, it has been successful in attracting substantial increases in savings deposits each year, however, it has not been able to reach a healthy balance between savings and lending activities (e. g. loans equaling 80% of savings). The system must continue a high rate of mortgage lending if it is to attract savings as most savings clients are attracted by the system's ability to get them a house following a good savings performance, not by the rate of return on their accounts. Foreign borrowings have provided the bulk of the system's working capital. Prompt conversion of these funds into mortgages has been essential to establish the viability and credibility of the system, but the result has been a loan portfolio which has outpaced the system's ability to generate its own internal resources.

8. The competition for savings is spread among four types of financial institutions: the commercial banks, which include the Banco Hipotecario Nacional, and account for 83% of the total, the S + L system which has approximately 5% of the total, the cooperatives and the newly established mixed ownership housing bank, BANVI, which account for the remainder. Currently the commercial banks must accept all accounts of \$25 or more. They pay 10% on passbook accounts and up to 12% for time deposits.

While the Caja has the authority to set all rates for the S + L system, it does so in practice only after consultation with the Central Bank and the Ministry of Finance. To date the Caja has been unable to persuade the Central Bank to permit it to receive time deposits or maintain a rate advantage. The commercial banking system has the advantage of lending short term only, thereby generating a higher return on its funds.

9. The Savings and Loan Cooperatives enjoy ready acceptance from the middle and lower middle class because they offer facilities for small consumer loans. Many of these cooperatives are members of a national federation which in response to the greatly increased demand for housing related financing is now considering establishment of subsidiary institutions directed specifically at housing finance. The cooperatives have no experience with large scale production financing, however, and any such venture will require a major technical and financial investment.

10. The Banco Nacional de la Vivienda (BANVI) was established in 1974 with a very broad mandate to deal with housing finance in both the public and private sectors. The BANVI's role and its authorities are now undergoing considerable adjustment as a result of unfavorable initial reactions from both the public and private sectors. The Bank is owned 51% by the government and 49% by the private sector. The private sector, however, has been very slow to subscribe to the Bank's shares and savings accumulation has also proceeded slowly.

11. The focus of the national development plans on increased heavy industrial activity, on commercial agriculture and on national infrastructure networks has not been complemented by a related allocation of resources to housing and urban infrastructure. The sense of these plans is that the latter will automatically follow the former.

As a result, national resources are not being directed at the housing sector in sufficient quantity to match the need for new production which has been identified by each of the above mentioned institutions. Thus, the CONAVI and the other housing councils, the S + L system, the cooperatives and the BANVI, are all bidding for foreign loans to help support their programs. The amounts requested are large, and would equal, or often outweigh, the domestic resources programmed for housing finance.

These same institutions are likewise bidding for the same savings resources, though here their major competition comes from the commercial banks. The nation's capital resources and its foreign borrowing capacity are not large enough to permit such competition and still produce an effective housing program.

12. The construction industry in Bolivia is capable technically of handling the demands made by an increased housing production program. Skilled labor, certain materials and financing, however, are limiting further industry involvement in the housing sector. Of these limitations, construction financing appears to be the most severe. The commercial banking sector is not showing an interest in construction lending at present, preferring short term commercial financing.

The country is not now producing enough cement to meet demand. Expansion of existing plants is underway. Imports from Chile are covering the difference at present.

The national supply of wood appears sufficient to absorb greatly increased demand. New processing facilities are being constructed and improvement of intranational transportation will also result in better use of this national resource.

13. The costs of construction materials and labor have increased dramatically in recent years, driven by a boom in urban area construction. Continued metropolitan area growth, particularly in La Paz and Santa Cruz, has also driven up land prices. In some sections of La Paz, the price per square meter has increased ten times in the last four years.

14. The municipality of La Paz and CONAVI are now building the lowest price institutionally developed housing units. These units are one room core units with toilet and kitchen of approximately 18 M<sup>2</sup>. The lots offer room for considerable expansion. The prices range from \$2,000 to \$3,000. The Municipality is relying on a self-help program to construct the basic unit, which is located on a site close to the urban center. CONAVI is constructing on the flat altiplano, above La Paz where land costs are lower at \$2 to \$4/M<sup>2</sup>.

The S + L system is presently looking for ways to trim the cost of its two-bedroom units in order to continue offering lower priced units in spite of cost increases. Recent proposals submitted for S + L consideration suggest a minimum unit cost of around \$4,000, not including land and urban development costs.

15. Low income Bolivians are skilled at building units with local materials. In the mountain regions adobe blocks are used; in the warmer regions sun baked brick and wood or plant products are used. The skills available offer good prospects for self-help projects.

16. A growing awareness of the need for environmental concern exists among Bolivia's professional class. This awareness continues to be reflected largely in planning documents, the most important of which is the new Ecological Map of the country. Public administrators are also increasingly aware of the environmental impacts of urban development. Problems of topography, sewer collection and treatment and garbage collection are the most obvious and severe.

The undeveloped, and even unexplored areas of Bolivia are still so vast that the Bolivian public continues to be develop-

ment oriented, looking forward to the opening of new roads, and exploiting more effectively the nation's considerable resources, both mineral and agricultural. There is, therefore, no public sense of conservation though a national reforestation program has been given a great deal of press coverage.

17. Urban environmental problems are being handled at the municipal level only, though a series of regional development authorities have begun to take on a powerful role because of their greater financial strength. No sewer treatment facilities exist in the country. Garbage collection and related disposal are also primitive and inadequately funded.

Unstable land on steep slopes has been recognized as a major problem in the La Paz area and a program has been initiated both to prohibit building in dangerous areas and to stabilize already developed sections of the city. The program is in its earliest stages of implementation.

#### B. Recommendations

1. Pre-census data suggests that the national housing production target should be a minimum of 10,000 units annually. The bulk of the units produced should cost between \$US2,000 and \$US8,000.

2. A more specific national housing policy is needed. The competition between a wide range of producing and financing institutions, a phenomenon of recent years, should be minimized. The following recommendations will deal with ways to rationalize the attack on the deficit.

a. The national government should concentrate its production activities in the hands of CONAVI and BANVI working as the producing and financing organizations respectively. BANVI should be converted to a public sector entity only, removing it from direct competition in the private sector. Ideally, it would fit best as the financing arm of the Ministry of Housing, with CONAVI carrying out project development. The focus of the government program should be limited to units costing below \$5,000. All units carrying higher prices can be accommodated comfortably by the S + L system and do not require any direct government involvement. Any

production of these more expensive units merely dilutes the government's capacity to deal with the low-cost, low-income segment of the market.

To the extent possible, the housing efforts of the newer Councils should be controlled by the Ministry of Housing and carried out by its major producing arm CONAVI. Further fragmentation of the production effort will only be detrimental.

b. The national government should consider a more direct allocation of the nation's domestic resources to its housing effort, increasing investment in this area from the projected 2% of total investment for the 1976-80 period. To date, the commitment has been an indirect one including the guaranty of foreign borrowings and allocation of the 2% payroll tax. Commitment to a 10,000 unit yearly production pace would imply investment, both public and private of at least \$10 million annually, not including extension of related infrastructure networks. This is the figure the authors of the Five-year plan considered realistic for the entire plan period. While the Housing Councils may be talking of even larger sums, reliance on foreign funding to provide more than 60% of the resources for implementation of the 5-year Housing Plan suggests that insufficient attention has been paid to the planning process.

Though much higher levels of output are in order, expansion of CONAVI activity will have to be gradual. If CONAVI receives the \$10 million in foreign financing now in its plans, it should be allowed to absorb this inflow before additional amounts are considered.

c. The S + L system should be the focus of the non-governmental effort to increase production of moderate priced housing. If the system can find a way to include low priced housing within its range of products it should be encouraged in this effort as well.

The system will not be able to fulfill its mission, however, if the resources available for long-term finance are not directed its way. Increasing the availability of long term housing finance requires a coor-

minated effort by both the private and the public sector. Bolivia's central financial authorities should consider giving the S + L system a savings-attracting advantage over the commercial banks. Such an advantage would recognize the importance of increased housing production as a component of national policy. Thus any disintermediation which resulted would be considered beneficial as it represented a shift of resources from short term to long term lending.

The most obvious form of advantage would result from allowing S + L member organizations to pay higher interest rates on savings deposits. Other approaches, including placing a higher floor on the size of accounts to be accepted by commercial banks, might also be used.

The commercial banks' dominance of the savings market and their disinclination to become involved in long term lending severely inhibits the flow of national resources to housing production.

While the cooperative movement offers a base for a housing finance system, full development of such a system would merely dilute already insufficient efforts to concentrate capital for housing production. A further inefficiency would result from the effort to build up the cooperatives' technical capabilities in the field of housing finance and production. The nation would be far better off to concentrate on a strengthening of its existing housing finance and production institutions.

d. National policy should aim to increase the amount of research devoted to demographic factors in an effort to offer more housing and infrastructure outside the La Paz area in conjunction with national development plans. The encouragement of migration to the nation's largest cities only will exacerbate the housing deficiency.

Research efforts should also be directed at development of land use and construction controls, not in order to create obstacles to housing production, but in order to avoid damaging use of available land, and to assure that production of low-cost construction materials is adequate to support increased building activity. The

activities of the Servicio Nacional de Desarrollo Urbano are of particular interest in this light.

Given the ability of low income families to complete a great deal of their own construction, CONAVI should consider using technical assistance and loans for purchase of building materials in order to foment self-help construction activities which require less direct commitment of staff and operating funds.

Research will have to focus persistently on techniques to hold unit costs to the \$2,000 to \$3,000 level.

e. CONAVI may also find that direct financing of projects developed by municipalities or local public works committees would permit it to expand its impact on standards and production quantity without large commitments of technical and financial resources. By providing site and unit plans as well as design requirements CONAVI might be able to encourage municipalities to initiate self-help projects without the need for more complex municipal staffs.

The possibilities for coordination between CONAVI and municipal governments require special attention. Municipal frustration at the lack of adequate support from the central government will only lead to the creation of new housing agencies and a less efficient use of the nation's technical and financial resources.

3. The nation's urban areas require treatment of some increasingly severe environmental problems. Foremost among these is sewer treatment. Housing programs should be tied to efforts to upgrade sewer collection and treatment facilities. The problem has been left at the municipal level where funds are insufficient to cope with the pace of development. Urban growth is such that remedial efforts will become increasingly more difficult and costly. The investments included in the Five-year plan must be given the highest priority.

### III. NATIONAL SOCIO-ECONOMIC CONDITIONS

#### A. Demographic Data

##### 1. Population

On September 30, 1976, the government of Bolivia initiated a carefully planned and well-advertised national census, the first since 1950. While preliminary counts were available for some cities within a few days, a careful and complete reporting will require several months.

There are, however, some noncensus data available from the 1975 National Demographic Study of some 10,000 households from all parts of Bolivia. Another source of data is the national precensus study conducted this year in preparation for the census. Table 1 shows precensus population counts for the nine departmental capital cities and compares them to the preliminary census counts and to the National Institute of Statistics estimates which were widely used before the census work began.

The Ministry of Planning and Coordination estimates the 1974 population at 5,470,100, and the 1975 population at 5,633,800, based on a growth rate of 2.7 percent per year. These figures are widely used but may be a little high.

##### 2. Family Size and Composition

Study team calculations based on data from the 1975 National Demographic Study show that the average Bolivian family has 5.00 members. (Table A in the Appendix summarizes the calculations made from the study on this topic and includes the labor force participation rates as well.) The average household has 5.11 persons, as follows:

Head of household	1.00	per household
Spouses	.76	" "
Sons and Daughters of head	2.73	" "
Other relatives	.51	" "
Non-relatives	.11	" "
TOTAL	5.11	" "

TABLE 1

Cities	1950 Census	1976 Precensus	Preliminary Census Numbers	Institute's 1975 Estimates
La Paz	267,008	640,944	654,713	660,700
Oruro	98,558	178,978	174,091	110,490
Cochabamba	74,810	178,680	194,156	184,340
Sucre	38,404	87,275	62,931	57,000
Potosí	43,306	77,113	77,233	76,550
Tarija	16,298	36,589	38,548	31,700
Trinidad	10,687	25,318	27,546	22,330
Cobija	1,711	3,845	3,640	3,112
Santa Cruz	11,461	220,398	237,128	149,230

<sup>1</sup>News release from the National Institute of Statistics and Census.

Many of the sons and daughters are adults who still live at home, and many of the other relatives are also likely candidates for the labor force. The potential for multiple earners in a family is high, especially in urban areas. The median age of the population of Bolivia is about 18.6 years, but this drops to 16.8 years for rural areas and rises to 21 years for the city of La Paz. The difference between family and household size becomes significant when efforts are made to determine family income and the capacity to make major housing expenditures.

### 3. Migration

There is in Bolivia, as in most developing countries, a tendency to migrate to the major urban centers. The percentage of the population living in urban areas rose from 30.5 percent in 1965 to 34 percent in 1975. During this same period, the rural population grew at an annual rate of 2.1 percent while urban areas experienced a growth rate of almost 4 percent per year. The city of Santa Cruz grew most dramatically, with an average growth rate of 7 percent per year since 1950 and an estimated annual rate of 10 percent during the last ten years. Migration from one province to another occurs, but not on a massive scale. Eighty-four percent of the people living in the city of La Paz were born in the province of that same name, and 80 percent of those living in urban Santa Cruz were born in that province. Tables B and C in the Appendix summarize the magnitude of this kind of migration. They are based on the 1975 National Demographic Study.

One final point should be made about the nature of migration in Bolivia. Both gross and age-specific birth rates are highest in the rural areas, lower in urban areas, and lowest in the city of La Paz. Yet urban population is growing faster than rural, as a result of migration. Also, according to reports from the National Council of Salaries and Wages of the Ministry of Labor, La Paz, Santa Cruz and Cochabamba had the highest salaries in the country. In fact, Santa Cruz had both the highest growth rate and the highest salary levels. Cochabamba was second on both these statistics, and La Paz third. The pattern is certainly consistent with the behavior one would expect in a free market labor force where workers are drawn to high salary areas.

#### 4. Projections

If indeed the moving force behind the migratory pattern is the higher wages available in certain urban areas, then it is reasonable to expect the current high-growth cities to continue to be growth poles in the foreseeable future. Although the birth rate has declined steadily since 1950 (from 47.13/thousand in 1950-55 to 43.72 in 1970-75), mortality declined even more rapidly (from 23.71/thousand to 17.96 over the same period). Life expectancy has risen from 41 years in 1950-55 to 47 years in 1970-75. Obviously this is still very low, and further declines in the mortality rate are almost certain.

The hope for further declines in the birth rate stem from observations that birth rates are lower in urban areas and that an even larger percentage of the population lives in urban areas. Birth rates in La Paz are 24 percent lower than in rural areas, but they are still very high.

The Ministry of Planning and Coordination predicts that for the period 1976-80 the population will grow at a rate of 2.8 percent per year. If this is correct, then by 1980 some 42 percent of the population will be less than 15 years of age, according to the Ministry's estimates. In fact, the 1975 National Demographic Study shows that this percentage is already at 41.6 percent. The population is expected to double in less than 25 years.

#### B. The Economics of the Family

There are no comprehensive data on income distribution in Bolivia. There are only bits and fragments of the total picture--distributions of salaries and wages for certain subgroups, and one estimate of the distribution of income in 1972. Cost of living data are equally inadequate. Recent data exist only for the city of La Paz, and even these data are not entirely trustworthy.

##### 1. The Rural Poor

The paucity of standard statistics on economic welfare corresponds to the irrelevance of such statistics as descriptors of the large majority of the Bolivian population. In 1975, some 66 percent of the population was in rural areas. Market exchange with its associated money-denominated prices intrudes only slightly

into the lives of most rural Bolivians. They are mainly subsistence farmers who sell or trade only the small surplus they have beyond their own needs for their produce. It would be extremely difficult to measure the in-kind income of this group. They are clearly among the poorest elements of Bolivian society, and many are in desperate poverty. They use labor-intensive construction techniques to build their homes since manpower is about the only economic resource they have in excess. Since their adobe houses are not frequently bought and sold, there is no well-established market value, but a 1970 survey of similar homes in Peru found that the generally accepted value was about twenty-three dollars. Even allowing for inflation, current value in current dollars is probably less than \$50.00.

It is possible to gain some idea about income levels for rural families by reasoning from productivity figures for the agricultural sector of the economy. The estimates obtained may be high, but will be informative. The Ministry of Planning estimates that the 1,403,100 agricultural workers counted for 14.5 percent of the nation's Gross National Product. The Ministry of Labor estimates that the productivity of these 1.4 million workers engaged in agriculture is only \$211.00 per year per worker. According to these figures, the urban worker is almost ten times better off than his rural counterpart.

Another Ministry of Labor estimate shows productivity per worker to be \$256.00 for the year 1975 and agriculture's share of GNP at 16.2 percent. By combining the average family size of 5.0 and the rural sector's 41 percent labor force participation rate, we get 2.08 workers per family for a total annual family income of \$532.00, or \$44.00 per month. These estimates are probably too high for the families of the unskilled workers in agriculture. By assuming that skilled workers make twice the wages of unskilled workers we can estimate this latter group's probable average monthly share in GNP at \$40.00 per month per family.

These estimates could well be widely wrong and yet not change in any way the conclusion that the overwhelming majority of the rural population of Bolivia doesn't participate to any significant extent in the market economy and therefore can't be expected to enter into a long-term contract to retire a money-denominated debt. Further, even if their meager income were entirely in money, it would still be inadequate to meet their most basic

needs for food, clothing, and shelter. They currently spend very little on housing because they have very little to spend. There is no surplus to be diverted into increased housing expenditures.

The government's homesteading program in the vast, underpopulated eastern part of the country is proceeding slowly (each land title must be approved and signed by the President of the Republic) and the tracts are of less than 100 acres each. So far, a total of 57,000 families, some 230,000 people, have been relocated. It will be a long time before this program produces a significant number of prosperous middle-income farmers.

In conclusion, while little is available in the way of specific detail about the economic circumstances of the large rural population of Bolivia, it is clear that this group will include about the bottom half of Bolivia's income distribution, and thus may also include Bolivia's median income group.

The Five-Year Plan of the Ministry of Planning and Coordination discusses the difficulties of providing services to rural homes, and notes that only 9 percent of the rural population in communities of up to 2,000 inhabitants has potable water and only 7 percent has some kind of sewage disposal. Nevertheless, the strategy for rural development outlined in that document includes an answer to the problem of infrastructure and services--the "nuclearization" of the campesinos or the establishment of small, organized villages. The government reasons that if the sites for these villages are chosen carefully, services can be provided and agricultural land can be freed from use as home sites.

## 2. The Urban Worker

### a. Family Income

While there may be some urban dwellers whose incomes fall into the lower half of the income distribution, the rural poor surely dominates that income group. Nevertheless, the problems of the urban areas require urgent consideration.

In establishing the characteristics of urban area housing, it's not clear whether the basic unit for housing consumption is the family or the household. As pointed out in the section on Family Size and Composition, the average Bolivian household contains .51 "other relatives" and .11 "nonrelatives." In urban areas, the "nonrelatives" account for .22 persons per household.

The comparable figure for rural area households is only .05. In the absence of a clear understanding of who these nonrelatives are and why they're there, it seems safest to focus on the family (defined to include all relatives in the household) as the basic economic unit. It is important to realize that this will result in a lower estimate of family income, since the only ways to estimate family income in the absence of family income data are to estimate median earnings per worker from salary and wage data and multiply that by earners per family, or to calculate mean per capita income from macro-economic data and multiply that by persons per family.

The latter of these two methods is the least informative since it yields a mean rather than a median figure. But it is a valuable check since we can be sure that the mean is above the median, given the nature of income distribution curves.

Making calculations similar to those made for rural workers yields mean annual productivity estimates for urban workers of \$US\$2,085.00 in 1975. One must remember, however, that income distributions in Latin America are remarkably skewed, but calculations as done earlier for rural workers, and using an average family size of 5.1 and 34 percent labor force participation rate, yield 1.73 workers per family. Multiplying this figure by the mean productivity per worker produces a mean estimate of each family's share of nonfarm GNP of \$301.00 per month.

This figure is certainly above the median family income. To get an idea as to how much above it it is, we must consider other data on wages and salaries. The Bolivian Social Security Administration reports that the average number of earners per family is 2.2. This average is based upon those who earn salaries and wages upon which social security taxes are paid, and may not apply to all urban families. It suggests that the 1.73 earners per family calculated earlier may be too low.

There are about 900,000 urban workers\*, 419,000 of whom receive salaries and wages. Using median salaries (see Table D of Appendix A) and assuming (as a compromise between 1.73 and 2.2) 2 workers per family, 1.6 male and .4 female (men outnumber women

\*The Ministry of Labor reports 915,000 urban workers, but only 875,594 nonagricultural workers.

almost four to one in the nonagricultural labor force), one obtains a median income estimate for this group of 3,444 pesos per month (\$172.00). For La Paz, Cochabamba, and Santa Cruz, the median income estimates for wage and salary earners obtained in this way would be \$173 per month, \$184 per month, and \$222 per month, respectively. While these estimates are crudely calculated, and are appropriate only for that 47 percent or so of urban workers who earn wages and salaries, they do help to establish a range of credibility. The problem with Bolivia as with many developing countries is that even while the unemployment rate is low (3.5% of the labor force), the rate of underemployment is quite high. No good estimates of the extent of underemployment are available, but, judging from the number of people selling lottery tickets, candy, cigarettes, etc. on the streets, it is sizable. Slightly more than half the urban work force doesn't draw wages or salaries which are covered by the Social Security System. While many of this group may include successful businessmen, shopkeepers, artisans, professionals, etc., and a few are rich, many more work as day laborers, gardeners, janitors, vendors, shoeshine men, etc. Women work mainly in manufacturing, services (many as maids), and commerce and finance. The difficulty is that we have no idea how the better, more regular jobs are distributed among the families. That kind of cross-sectional data can come only from surveys, and no recent surveys have been conducted on family economics.

The wage data available suggest that most of the families with incomes of less than \$150/month would be either single-earner households or households where all the earners were either underemployed or frequently unemployed. The data used are for La Paz. Wages are expected to be higher in Santa Cruz, about the same in Cochabamba, and somewhat lower in other urban areas. (Appendix A includes more detailed considerations of reported and non-reported wage levels as well as the relationship between the mean and the median income levels applied to this assessment.)

b. Cost Of Living

No current cost of living statistics for Bolivia are available except for the city of La Paz. In the late 1950s and early 1960s, and even as far back as the 1930s, cost of living statistics were available for the different department capitals. A

review of these data showed that there were, at least at that time, great differences in the costs of living for the different cities, and also great differences in the inflation rates. From 1957 to 1962, for example, the COL in Trinidad increased by only 14%, whereas in Santa Cruz it increased by 112%. Such large differences in COLs and inflation rates reflect the fragmentation of the Bolivian economy caused by an inadequate transportation network.

Because the La Paz area is less sensitive to local bottlenecks and shortages or surpluses in specific factors of production or commodities than more isolated areas, the La Paz COL information may be a better indicator of the Bolivian economy's performance than would a national COL index.

The COL index for La Paz is based on a budget study conducted among very low-income families in 1966. The weights shown in Table 2 reflect the allocation found at that time among the different budget items: food, housing, clothing, and other. Each of these budget items is in turn made up of a number of commodities. The weights for the budget items have remained constant since 1966, but the weights applied to the prices of individual commodities within each budget item change from time to time, without a clearly described justification.

The index, nevertheless, is the best measure available of price increases in Bolivia. It was designed to measure increases in the cost of living for families of very low incomes in La Paz, and it may do a fairly good job of that. Since very low income families in La Paz are probably in the bottom half of the nation's income distribution, the budget items are of special interest. Their weights should at least roughly reflect the allocation of spending among consumption categories by the target population. In this respect, the most interesting observation is that only 16.1% of the family budget is spent on housing. More than half goes just for food.

Indeed, given the differential inflation rates among the budget items, one wonders whether 54.8% is still enough to buy the food required. Over the ten-year period, food prices have increased at a rate of more than 14% per year whereas housing prices have gone up less than 9% per year.

Pressure on land resources and the attendant increase in land prices will probably reverse this relationship. In fact, they

TABLE 1

Consumer Price Index (La Paz)  
1966 = 100

Period	General Index	Food	Housing	Clothing	Other
Weights:	100.0	54.8	16.1	13.9	15.2
1966	100.00	100.00	100.00	100.00	100.00
1967	111.18	116.09	112.32	100.36	102.14
1968	117.28	124.65	118.01	102.16	103.78
1969	119.88	127.27	120.45	105.34	105.92
1970	124.53	133.09	125.21	109.23	106.96
1971	129.11	138.37	130.69	114.21	107.62
1972	137.51	147.20	138.05	124.58	113.82
1973	180.83	198.64	158.64	172.75	147.48
1974	294.43	360.98	193.89	252.10	199.73
1975	317.92	360.19	331.26	291.94	219.94
Jan. '76	327.40	384.64	235.71	315.68	228.88
Feb. '76	331.42	392.30	235.84	316.26	227.04
Mar. '76	326.15	382.41	235.47	317.70	227.11

Source: National Institute of Statistics

may already have done so. Since 1974, food prices have gone up only 5.9% while housing prices have increased 21.4%. This may merely be a reflection of the fact that it takes the effects of a devaluation\* longer to show up in less transportable goods. Or it may be the beginning of sharply increased housing costs in La Paz.

The principal message of these COL data, however, is that Bolivia has recently brought its inflation under control. The table is incomplete, but official government reports covering the period through June 1976 claim that the inflation rate is only 6% per year for the first half of 1976. That is a very modest level for a booming developing economy.

Despite their general usefulness for information purposes the La Paz COL data are not sufficiently accurate nor reliable to be used for indexing financial transactions. The wide regional variations, about which so little is currently known, and the methodology used to determine relative weights lead to the conclusion that a more exacting COL calculation will have to be developed before a nationwide inflation thermometer is available.

### 3. Summary of Family Income Findings

Reviewing the above information in the light of national per capita income, GNP and labor force data, it is possible to estimate a median family income of about \$130.00/month in urban areas. For La Paz and Cochabamba, this should probably be raised to \$135 and \$140 respectively, and for Santa Cruz, the median family income is probably \$150. These differences are due not only to productivity and wage level considerations, but also to variations in the age and structure of the labor force, the education levels, the stability of employment, and the obvious boom now in progress in Santa Cruz.

#### C. The Housing Stock

The census now in the process of computation will develop more current national housing stock data than has been available

\*In October 1972 the peso was devalued by 40%.

since 1950. A variety of interim studies of housing conditions have been carried out for certain metropolitan areas in recent years. Estimates of current stock and condition are based on compilation of the information produced by these interim efforts. Two estimates of housing stock and deficit have been made available to the shelter sector survey team. Both deal with the nation's principal urban areas, all of which are departmental capitals. The population figures used as the basis for these calculations should be considered in the light of preliminary census information which suggests a population for the nation's nine departmental capitals of 1,420,000.

Table 3 reflects the 1974 estimates used by the Ministry of Planning in preparation for the 5-Year Plan. A 1975 estimate by the National Housing Council (CONAVI) (Table I in Appendix A) suggests a deficit of 199,980 units. Though this substantial difference will be at least partially resolved by the data collected in the recent census, it seems safe to conclude that the deficit is well in excess of 100,000 units.

The annual production required to meet rising urban population needs and the loss of units due to deterioration may approximate 10,000 units. Production at this level would not reduce the existing deficit.

Data made available by the Ministry of Planning indicates that as of 1972, 83% of the housing stock for the cities of La Paz, Cochabamba, Oruro, Potosí, Sucre, and Tarija consisted of marginal units, lacking adequate public facilities, often overcrowded. Table 4 is itself a very severe statement about the condition of the nation's housing, particularly when one notes that Santa Cruz, the country's second largest city, is not included, and when one remembers that over 60% of the population live in rural areas where facilities are even more scarce. It seems possible that classification of housing conditions has followed standards which are unrealistically high. The visual impression does not suggest such a high percentage of marginal units. Detailed housing density analysis will also have to await the outcome of the recent census. Data from the 1972 studies of Oruro and Sucre indicate that 36% of Oruro's housing stock were one room units. Such units accounted for 33% of the stock in Sucre. If a density standard of two people per room is selected then between 35 and 40% of the units in these two cities are overcrowded. The national condition is probably not far different. (Tables J and K in Appendix A give further details.)

TABLE 3  
ESTIMATE OF HOUSING DEMAND IN URBAN AREAS-1974

Urban Area	Population	Family Composition	No. of Housing Required	No. of Existing Houses	Potential Demand for New Houses
La Paz	633,100	4.8	131,986	98,525	33,371
Oruro	101,370	4.8	21,119	15,834	5,285
Potosí	70,230	4.8	14,631	10,248	4,383
Santa Cruz	139,030	4.8	28,964	23,856	5,108
Beni (Trinidad)	19,940	4.8	4,154	3,543	609
Pando (Cobija)	3,190	4.8	664	405	259
Cochabamba	192,440	4.8	40,092	25,917	14,175
Tarija	25,690	4.8	5,352	3,780	1,572
Sucre	52,560	4.8	10,950	8,190	2,760
TOTAL	1,237,550		257,822	190,300	67,522
					Substitution of houses in bad condition 23% <u>43,769</u>
					TOTAL DEFICIT OR POTENTIAL DEMAND <u><u>111,291</u></u>

Source: Ministerio de Coordinación y Planificación, Background Documents for Five-Year Plan, 1976-80.

TABLE 4  
 CLASSIFICATION OF HOUSING  
 ACCORDING TO THE QUALITY OF CONSTRUCTION  
 1971 Data

CITIES	Total Inhabitants	Type I*	Type II	Type III	Type IV	TOTAL
La Paz	582,000	2,802 5.81%	6,965 14.45%	12,403 25.73%	26,032 54.01%	48,202 100%
Cochabamba	163,940	1,359 7.99%	2,985 17.55%	5,697 33.51%	7,861 46.23%	17,002 100%
Oruro	103,740	88 0.65%	1,055 7.85%	5,372 40.0%	6,928 51.54%	13,443 100%
Potosí	72,070	22 0.32%	313 4.51%	2,407 34.71%	4,193 60.46%	6,935 100%
Sucre	52,890	80 1.1%	488 6.57%	2,837 38.86%	3,903 53.46%	7,308 100%
Tarija	29,110	127 3.19%	350 8.80%	1,239 31.18%	2,258 56.82%	3,974 100%
TOTAL	1,003,750	4,478 4.62%	11,248 11.61%	29,955 30.93%	51,175 52.84%	96,856 100%

SOURCE: Ministerio de Planeamiento y Coordinación. "Diagnóstico de Vivienda."

- \*Type I: good quality construction with a full endowment of public facilities and amenities.
- Type II: less luxurious than Type I but of good construction and access to public utilities. Includes most of the public sector housing.
- Type III: marginal units, built of simple materials with no amenities, poor access to public utilities and inhabited often by more than one family. This class includes deteriorating tenement buildings and boarding houses.
- Type IV: slums or squatter units. The least stable construction, combined with an absence of all or most utilities and comforts.

The provision of public infrastructure lags well behind housing development in Bolivia. (See Table L, Appendix A, for data on five intermediate sized metropolitan areas.) Electricity is clearly the simplest service to provide, and nationwide provision of water is under much better control than the handling and treatment of sewage.

More than half of the units counted in seven intermediate sized cities in census efforts ranging from 1966 through 1972 were rented. (See Table M, Appendix A, for more detail.) The data suggests that public and private sector programs need not be focused solely on the provision of direct sale units. In rural areas, the data available suggests that 98% of the units are owned.

#### D. National Economic Conditions

Five years of stable government, responsible fiscal and monetary policies, improved prices for mineral and agricultural exports, and fairly heavy inflows of foreign capital (in both lending and direct investment) have put Bolivia in a relative boom economically. In fact, price fluctuations for the minerals which still constitute 90% of Bolivia's exports have been so erratic and large that it is difficult to see through the price variations to the real performance of the Bolivian economy. In 1974, for example, real output in the mining and petroleum sectors fell, as did petroleum production again in 1975. But price increases were so dramatic that, for the first time in twenty years, Bolivia had a surplus (\$62.3 million) in the current account in foreign exchange. Higher prices for minerals and petroleum products simultaneously sparked huge net capital inflows (\$59 million in 1974) in large part to finance investment in these sectors, so that although the balance of payments was in deficit in 1975, it appears that it will be in surplus again in 1976 in spite of a predicted balance of trade deficit of some \$44.4 million. Net foreign exchange reserves rose to \$178 million in August 1976, one of the highest levels in Bolivian history.

Inflation appears to be under control. Conservative fiscal and monetary policies brought the inflation rate down to 10-12% in 1975 and then on down to a 6% annual rate in the first six months of 1976.

The strength of the peso, sound economic management, and prospects of continued political stability are fostering a climate of confidence, boosting domestic savings and private sector investment.

Bolivia's continued prosperity is predicated on the assumption, which will probably be realized, of continued high prices for minerals. But a high level of foreign financing for development projects has given the economy an important additional stimulus.

During 1975, Bolivia's economy grew by 6.8% in real terms, despite a fall in mineral prices. Mineral prices have since recovered and the prospects for 1976 and 1977 are very good. Over \$400 million in development loans to the public sector were signed in 1975 with international lending agencies, private foreign banks and third-country bilateral donors. An even higher level of external financing is expected in 1976, with some \$550 to \$600 million in public sector loans expected to be signed.

Petroleum production declined by about 15% during 1974 and 1975 because of falling petroleum reserves, but new discoveries of oil and gas in 1976 should lead to increased production beginning in 1977. Exports of natural gas are expected to increase by 31% in 1976. The government's petroleum company, YPF, is spending some \$11 million per year on exploration activities. Heavy investment financed mostly by foreign capital is occurring or planned in mineral (including petroleum) extraction and processing. This will be a source of considerable stimulation to the economy for at least the next several years.

The agricultural export sector, though small in relation to minerals, has grown rapidly during the last several years. It is centered mainly in rapidly-growing, prosperous Santa Cruz, and is based on sugar, cotton, cattle, and lumber. Sugar prices are very depressed relative to 1974 levels but cotton prices are good. In 1975, Bolivia became a net exporter of rice for the first time, and production levels are climbing rapidly.

In sum, the economic conditions in Bolivia today are very good because mineral prices are high. This does not mean that there are no problems. A miners' strike is always a possibility in Bolivia, and the government's wage freeze will be increasingly difficult to enforce. But some wage increases could occur without derailing the economy, so long as export prices remain high.

Another nagging worry is that imports follow exports up much more quickly than they follow them down, and the government has had to take rather stern measures to curb imports. Still, they are exceeding exports this year. The present government, however, has demonstrated a willingness to make the difficult decisions necessary to adjust to fluctuating economic conditions while

avoiding inflationary monetary and fiscal policies. Its successful searching for foreign funds for development projects is a testimony to its commitment to continue non-inflationary economic growth. Heavy investment in infrastructure demonstrates its confidence in Bolivia's economic future, and in its own development policy.

In sum, the GOB gets high marks for responsible management of the economy. But in the final analysis, the success or failure of their program will depend mainly on world mineral prices. While Bolivia is not the classic one-crop economy of economic development theory, it is not nearly diversified enough in its exports.

IV. THE HOUSING SECTOR

A. Policies and Institutions

1. National Housing Policy

In a message delivered June 7, 1976, presenting the Five-Year Plan (1976-1980) to the nation, President Banzer noted that:

"The Plan will serve to appropriately transfer the positive economic results of national programs to the areas of wealth, housing and culture, social benefits to which all Bolivians should have access." (Author's translation).<sup>1</sup>

Chapter XVII of the Plan includes a more specific outline of the objectives of the new plan and related policy:

"In spite of governmental actions taken in recent years to benefit the housing sector, demographic growth, migration to the cities and the demand of the Bolivian people for their own house are creating a serious housing deficit."<sup>2</sup>

The strategy established to reduce this deficit is described as follows:

"Priorities

- To improve the quality of existing units, particularly for low income populations.
  
- To diminish the quantitative deficit in accordance with the country's savings and financing capabilities, giving preference to housing for the low income population.

<sup>1</sup>Resumen del Plan de Desarrollo Económico y Social. Ministerio de Planeamiento y Coordinación de la Presidencia de la República. La Paz, August 1976. p. 3.

<sup>2</sup>Ibid., p. 249.

Objectives

- To extend coverage of water and sewer services.
- To channel more resources to the sector and make more effective the financing system by use of a central regulatory and supervisory agency.
- To discourage development of luxury, single family housing
- To study ownership patterns of housing built by the various housing councils in order to consider redirecting its distribution and provide increased access to low income populations.
- To control housing prices and rents.
- To incorporate housing activities into rural, mining and urban development projects."<sup>3</sup>

The Plan indicates that housing policy will be directed at urban areas where efforts will be made to achieve efficient use of land through multifamily unit construction and the focusing of both foreign borrowings and private and public savings on the needs of the low income urban population. (Figure A in Appendix B depicts the interaction between policies, programs and national objectives.)

a. National Housing Law

The directions of the Plan reflect the basic tenets of the nation's housing law, a decree promulgated in September 1973. In its opening paragraph, the law notes:

"Whereas one of the most important social postulates of the nationalist Government is to facilitate for all Bolivian families, and in particular those with the least economic resources, acquisition of housing developed according to modern urban concepts. . . "<sup>4</sup>

<sup>3</sup>Ibid., p. 251-2.

<sup>4</sup>Decreto Ley No. 11085 (Ley Fundamental de la Vivienda), second paragraph of preamble. La Paz 19 September 1973.

The preamble goes on to establish the need to coordinate the nation's housing production activities with efforts in urban planning, the provision of infrastructure, development of rural nuclei, laws relating to housing rental, apartment ownership ("propiedad horizontal") and economic and technological development in general.

The first three articles of the Law recognize the government's responsibility to both provide and encourage the provision of housing for all sectors of the population. The right to housing is established as a basic human right. The bulk of the Law deals with the organizational elements that will be required if the government is to meet its responsibility.

b. The Five-Year Plan

The Plan calls for a combination of private and public sector performance which will lead to the construction of 41,900 units requiring an investment of \$389 million. Of these totals the private sector is expected to construct 13,000 units, expending \$187 million. The public sector will rely on domestic resources to cover 93% of the total investment.

In the background papers which served as a guide to the preparation of the final plan it is recognized that the resources do not exist to eliminate the housing deficit. The authors suggest, instead, that to use the deficit as the focus of the housing plan merely serves to separate the housing sector from the overall development planning process. They recommend that housing be considered an intermediate asset investment which must be self-liquidating. In this way, subsidy (direct investment of government resources) can be reserved for the development of the related and supporting infrastructure. The authors further recommend that housing plans be considered primarily for their impact on the nation's economic development where such programs may contribute importantly to the generation of employment and the development of stable monetary conditions.

Finally, the authors conclude that the institutional framework in which the housing plan is to be placed must be adjusted to guarantee a more effective result. While these comments are reflected only in general terms in the policy

statements included in the plan, they specifically focus on the need to have a group of government institutions charged with coordination of the nation's housing production, financing, direction of technical research, and coordination of housing with the provision of infrastructure and related services.

2. The Institutions: Their Roles and Authorities

During the 1920s and 1930s the nation's constitution and related laws were revised to include regular reference to the need to make greater quantities of low-cost housing available to the workers, the target group of all the populist governments, particularly since the late 1930s. These adjustments to national law authorized establishment of a variety of organizations at departmental (state) and municipal levels, and also involved the social security system in the housing business. The net result was, however, very little action. Many of the entities authorized by law were never established and data for the 1948-1955 period reflect either direct construction or mortgage financing of only 1,384 units.

In April of 1950, the national government established the Instituto Nacional de Vivienda (INV) in an effort to resolve the problem of fragmented government involvement in the housing development process and by 1959 the Institute had economic, legal and administrative independence. This first concentrated effort to create a central government role was undermined by the powerful union movements, given new life by the 1952 revolution. Funds which were to be passed on to the INV were retained by the unions thereby greatly weakening the INV's financial resources. By law the INV was also required to absorb 50% of the cost of the units constructed, a condition which, in the absence of any regular support from government resources, led rapidly to a decapitalization of the institution. In an eight-year span ending in July 1964, the Institute was responsible for the construction of 836 units.

a. The Housing Councils

Recognition that the INV was hardly touching the surface of the nation's housing problem led to the creation of the CONSEJO NACIONAL de la VIVIENDA in July of 1964. The Consejo (CONAVI) was established as an autonomous entity falling

under the overall direction of the labor Ministry. Among its responsibilities was the development of a national housing policy. The law noted that its constituency would include those workers subject to the provisions of the social security program; professionals, artisans, small businessmen and pensioners.

CONAVI's principal financial resources were from three sources:

- 1) a 2% payroll tax paid exclusively by employers, public or private.
- 2) a 2% tax on the income of pensioners
- 3) an amount drawn from the national government's general resources.

CONAVI was given a general supervisory or regulatory position over public and private institutions including the savings and loan system. The law also freed CONAVI of any tax obligations.

It is important to understand that the 2% payroll tax which was to serve as one of the legs of CONAVI's financial tripod, in fact as the strongest leg, was a source which in modified form had existed since the early 1950s. These funds originally to be concentrated in the Fondo Nacional de Vivienda, had actually been managed by each labor union whose members were covered. Use of the funds was often not accounted for and as a result rarely included housing projects directed by the INV. Thus, CONAVI at birth was faced with a similar situation of only having actual access to that portion of the payroll tax which was not transferred immediately to union control.

The power of the important union groups was displayed more clearly in the early 1970s when a series of decrees established separate housing councils for miners (December 1970), oil and gas workers (May 1971), factory workers, construction labor and printers (February 1973) and teachers (also February 1973). (In addition, the Armed Forces have their own Council.) Establishment of the separate councils also served to exacerbate the imbalance between staffing levels at CONAVI (then working to produce units for all sectors of the working population under programs funded largely

ly Inter-American Development Bank loans) and its domestic financial resources, creating a disproportionate level of administrative expenses. This condition continues to plague the organization today.

By 1970, governmental analysis had once again reached the conclusion that the nation's housing programs, at least those for low-income groups, the government's principal concern, were far too fragmented to be effective, and a reform program was put in motion.

In late 1973, a fresh attempt at a national housing law charged the Ministry of Urban Development and Housing, established in 1970, with direction and control of the national policy in these two aspects of the national life. The Law was a further attempt to focus the control over the nation's public sector housing activities. Shortly after the housing law was promulgated, in June 1974, a revised charter for CONAVI was accepted following almost six years of review and amendment. While this charter makes possible the use of CONAVI for broader purposes than those benefiting only the particular working groups whose employers make direct contribution to the resources of the organization, it does not limit the power of the other councils to make demands on the national government or on international resources available to the government, and, therefore, does not end the fragmentation of public sector housing production efforts. The revised charter has permitted the Minister of Urban Development and Housing to direct CONAVI to concern itself with housing for the rural migrant groups who form the squatter settlements on the urban periphery. Though no specific program exists which focuses directly on resettlement, CONAVI has become involved in such programs as may result from location of a highway through squatter settlements.

In March and April of 1975, the present government further strengthened the capacity of CONAVI to realize low income housing programs by decreeing that past due contributions, which had been deferred as a result of previous government actions during the early 1970s when CONAVI was being dismembered, were to be paid up. The decrees made explicit reference to the unfavorable balance between CONAVI's income and the need for continued high levels of production.

b. The Ministry of Urban Development and Housing

Through chronologically junior to CONAVI, the Ministry, established in 1970, was given the predominant role in the development of national housing policy and production activities by the Housing Law of September 1973. The various articles of the Law repeatedly charged the Ministry with policy making, resource coordination, and technological research in an effort to give single source direction to the housing effort. The Ministry is to choose which sections of the population are to be the focus of the public sector effort, and to coordinate public and private efforts to assure efficient allocation of housing resources. The Ministry is to direct both urban and rural planning processes so that the provision of infrastructure is coordinated with housing production. The Ministry is to have final approval over all measures adopted by governmental entities which deal with housing matters.

The Ministry has been given the task of developing rural areas in an effort to better focus the provision of basic infrastructure as well as housing. In urban areas the Ministry is charged with the approval of Socio-Economic development plans and Master Plans (Plan Regulador) prepared by municipal governments. The Ministry is to provide technical direction and assistance to those agencies carrying out these plans.

The Housing Law has placed the Ministry in the central position in order to bring about rational government control over the housing and urban development process. The Ministry was to be assisted in this process by the creation of a financial entity capable of allocating the resources to be consumed in the housing production process. Establishment of the Banco de la Vivienda (BANVI) resulted. This plan has run into difficulties as noted below.

c. Banco de la Vivienda

The establishment of the financial entity as included in the Housing Law proved considerably more controversial than provisions affecting the coordination of policy and execution discussed above. The authorities and the financial resources granted the Banco de la Vivienda (BANVI) were ambitious and

in fact were interpreted by the nation's existing financial institutions as a serious infringement on their territories, in terms of both operations and resources.

The objectives of the Bank as established by the Housing Law are by themselves not controversial. (See Appendix B for a transcription.) Article 45 of the law, however, contains highly controversial provisions:

"Article 45 - All economic resources administered or managed by the nation's public, private or mixed capital institutions which are related to housing will be deposited in the Construction and Housing Bank."<sup>5</sup>

The intent of Article 45 is confirmed in the charter of the bank which notes in Chapter VI, Article 30, paragraph (N) that the bank will act as trustee for funds to be used for the development of housing and basic infrastructure programs.

The impact of the controversy on the functioning of the Bank has been entirely negative to date. Clearly the breadth of coverage of this authority could be expected to meet with considerable resistance from the existing financial institutions. This resistance has been such that the bank's charter, and the Housing Law have been held in partial limbo pending reform, or adjustment of these provisions. The outcome of this adjustment process is not yet clear, but it is evident that the bank, established in January 1974, will continue to exist, though with a substantially reduced scope of authority.

At present, the bank's resources consist of \$2.5 million, the initial capital subscription. Ownership should be one half public and one half private sector but sale of stock in the private sector has not met with the expected favorable response. Savings generated by the Bank's own activities amounted to \$31,250 by the end of 1975. In addition, BANVI will receive \$1 million from the government as a result of a distribution of a foreign loan.

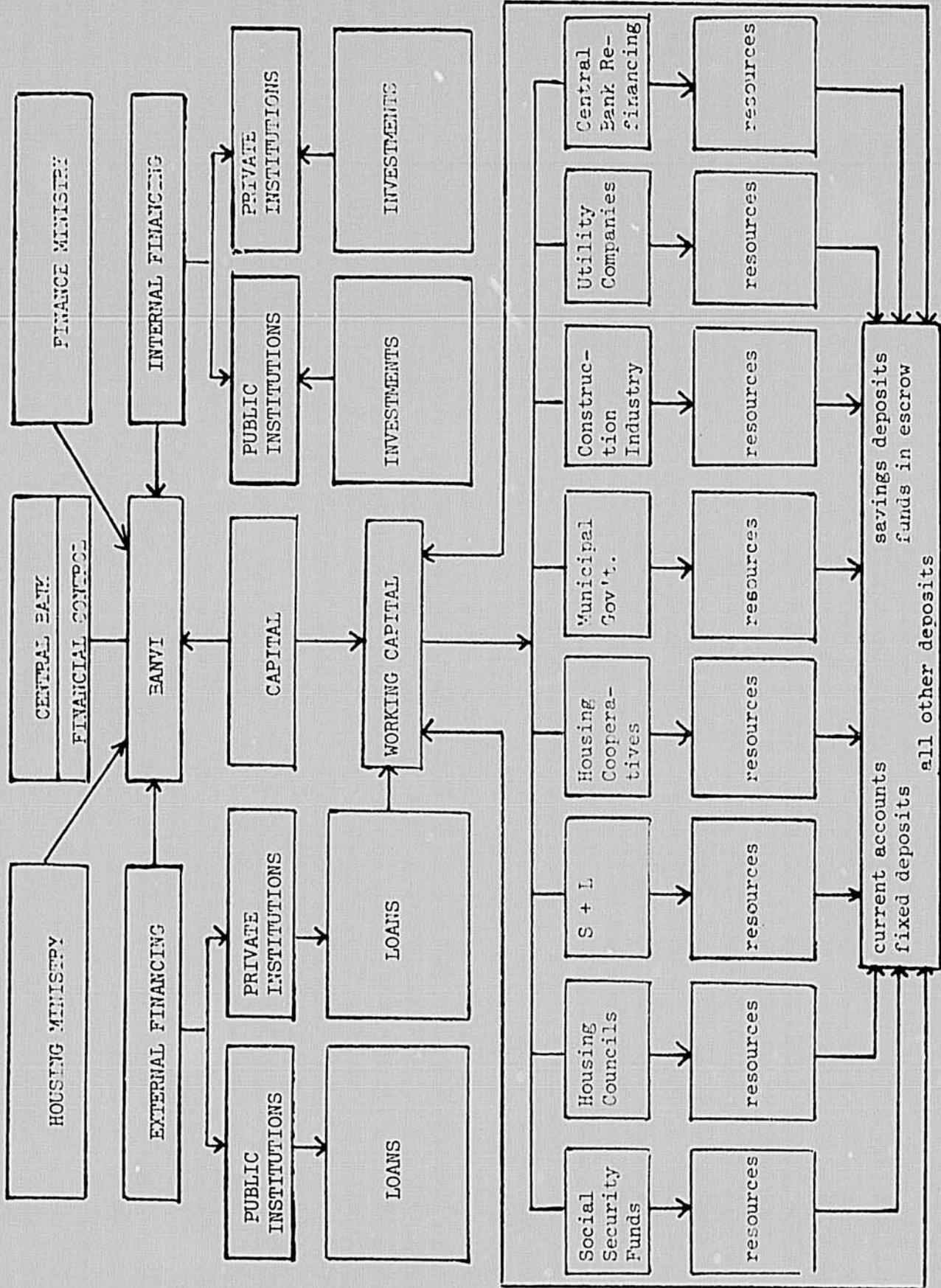
<sup>5</sup>Ibid., Title III, Chapter I, Article 45.

The originally intended location of the bank within the nation's housing production process may be seen in Figure 2. Even if major modifications occur in the scope of the Bank's authority it may be appropriate to maintain the Bank's central role as a coordinator of public sector housing programs and as a source of financial planning for the allocation of national resources to the housing and urban development sector. It would appear that operating under the political direction and budgetary control of the Ministry of Urban Development and Housing, the Bank could serve effectively as the financing arm while the CONAVI serves as the executing agency. It seems doubtful that the Bank could serve effectively as another addition to the private financial community. Institutions already exist which, if given the proper incentives, can absorb the increases in activity which may be needed to meet satisfactory production levels. A more specific public function is more appropriate at this time.

#### d. National Industrial Corporations

To complete the review of central government institutions mention must be made of the major national corporations, the COMIBOL (Corporación Minera Boliviana) and YPFEB (Yacimientos Petroliferos Fiscales Bolivianos). These entities have considerable autonomy and financial strength, contributing between the two of them, for example, 27% of national government revenues. Because of their size, and because of the political influence of their labor forces, these organizations may enter the housing production field without previous coordination with national housing programs. Their production is used exclusively for the active work force, and therefore does not represent an addition to the stock available for direct ownership or any form of personal economic investment. COMIBOL has been considering production of large quantities of units, recently asking for bids on the production of 6,000 units part of a widely advertised social plan. It seems unlikely, however, that they will be able to carry out a program of this size without outside financial assistance. Current investment programs relating to the nation's mining activities are directed principally at modernization of production techniques and increased productivity, in some contrast to the heavily social orientation of COMIBOL investments in the past twenty years.

FIGURE 2  
NATIONAL HOUSING FINANCE SYSTEM



e. Municipal Government

Municipal governments have not dealt with housing production traditionally, and, in fact, most such governments in Bolivia are hard pressed to generate the funds required to maintain adequate infrastructure systems. These governments do feel the pressure of the steady rural-to-urban migration, and are often unwittingly involved in housing matters through their efforts to upgrade the capacity and quality of housing support systems (water supply, sewer treatment, transportation).

Since La Paz is the nation's major city, the pressures are greater there and the Municipality has become involved in housing production as a result of its urban renewal efforts. Road widening and repair and land slides, an all too common occurrence in the rainy season (January/February), have caused displacement of families, often those living in the most precarious housing. The result has been formation of an office of community action (Acción Comunal) within the city government. This office is fully embarked on a program to replace over 100 units lost in 1975 in a slide. The program requires the commitment of the displaced group to assist in building the retaining walls, and then proceeds to the construction of the replacement housing.

The municipality has identified a number of parcels which it owns that might effectively be used for housing. Plans are currently being made to solicit international financing to assist in the development of these projects.

The municipality has shown that it has the capacity to deal with very low income groups. Its projects if combined with the financial resources of the Central Government or the S + L system could result in some of the most effective low income, low cost efforts undertaken in Bolivia.

f. The Savings and Loan System

The only institutional source of long-term financing of housing ownership in the private sector is the Bolivian Savings and Loan System. The system is made up of the Caja Central de Ahorro y Préstamo, established in 1966, which serves as the system's central bank and regulatory agency, and nine member savings and loan associations with histories dating back

to 1964. The system's assets totaled almost \$22.5 million by year end 1975. About \$11.7 million in mortgage loans were outstanding by the same date. The system's resources were composed principally of savings deposits of \$8.7 million and long-term loans of \$12.8 million. (see Fig. 3.) (Accurate comparison of long term debt levels with AID assistance levels --\$18 million-- requires consideration of the 1972 devaluation of the peso from 12 to 20 per dollar.)

The importance of the Caja Central to the system may be seen in its balance sheet. Where, of total assets of \$12.9 million 85% (\$11 million) are loans to the member associations. The system was responsible for construction of 3,803 units in the ten years ending in 1975.

The nine member associations are located in the nation's major urban areas and appear to be in an excellent position to benefit from the land development process going on nationwide. The S + L member associations are often the first to receive information about an intended land sale, and as the principal lenders of financial resources for construction, may be able to direct the development process.

With the exception of the two member associations in La Paz, the member institutions are, because of their small size, directed by the part-time efforts of professionals who receive low salaries and rely on a small cadre of technical personnel to carry out day-to-day operations. The permanent staff of the Caja Central remain critical to the operations of the various member associations because they are the most highly trained in S + L management and housing related matters.

The S + L system has shown a steady growth in all the major indicators of activity during its history. Its ability to achieve greater impact by expanding the numbers of units sponsored is limited principally by its inability to attract a larger percentage of the annual savings inflow. It is doubtful that any further competition in the field of long-term housing-oriented lending would be beneficial in Bolivia as the S + L system itself has not yet attained an adequate level of self-sufficiency.

The charter of the S + L system and its regulatory agency, the Caja Central, is unusual in the scope of authority and the independence given the institution. The Caja has the

## SISTEMA BOLIVIANO DE AHORRO Y PRESTAMO PARA LA VIVIENDA

## CAJA CENTRAL DE AHORRO Y PRESTAMO PARA LA VIVIENDA

BALANCE CONSOLIDADO Y COMPARATIVO  
AL 31 DE DICIEMBRE DE 1975

BALANCE GENERAL COMPARATIVO  
AL 31 DE DICIEMBRE DE 1975

(CONSOLIDATED BALANCE SHEET AS DECEMBER 31, 1975)

(COMPARATIVE BALANCE SHEET AS DECEMBER 31, 1975)

(En pesos bolivianos)  
(In Bolivian Pesos)

(En pesos Bolivianos)  
(In Bolivian Pesos)

<b>ACTIVO ASSETS</b>	1975	%	1974	%
Disponible en Caja y Bancos Cash and Banks	30.762.884	-	26.600.570	8
Préstamos Hipotecarios Loans Receivable	234.211.918	52	188.707.328	58
Intereses y Cuentas por Cobrar Interest and Accounts Receivable	27.042.816	6	17.895.412	6
Activo Fijo Fixed Assets	6.511.729	2	6.540.328	2
Cargos Diferidos Deferred Charges	5.394.821	1	917.346	-
Otros Activos (*) Other Assets	145.070.146	32	82.985.983	26
<b>TOTAL ACTIVO TOTAL ASSETS</b>	<b>448.994.314</b>	<b>100</b>	<b>323.646.967</b>	<b>100</b>

<b>ACTIVO ASSETS</b>	1975	%	1974	%
Disponible en Caja y Bancos Cash and Banks	14.947.167	6	16.318.135	8
Préstamos a las Asociaciones Loans to Associations	219.746.451	85	170.550.316	84
Intereses y Cuentas por Cobrar Interest and Accounts Receivable	12.302.741	5	9.707.625	5
Activo Fijo Fixed Assets	1.374.252	-	1.191.070	1
Cargos Diferidos Deferred Charges	4.723.205	2	4.509.456	2
Otros Activos Other Assets	5.156.865	2	584.466	-
<b>TOTAL ACTIVO TOTAL ASSETS</b>	<b>258.250.681</b>	<b>100</b>	<b>202.861.068</b>	<b>100</b>

<b>PASIVO LIABILITIES AND RESERVES</b>	1975	%	1974	%
Obligaciones a la Vista Free Savings and Accounts Payable	172.622.309	38	106.313.452	33
Préstamos a Largo Plazo Long Term Loans	255.340.542	57	181.611.076	56
Otros Pasivos Other Liabilities	2.133.615	1	24.637.886	8
Reservas y Provisiones Reserves	18.897.857	4	11.084.553	3
<b>TOTAL PASIVO Y RESERVAS TOTAL LIABILITIES AND RESERVES</b>	<b>448.994.314</b>	<b>100</b>	<b>323.646.967</b>	<b>100</b>

<b>PASIVO LIABILITIES AND RESERVES</b>	1975	%	1974	%
Obligaciones a la Vista Accounts Payable	3.070.336	1	3.403.473	2
Préstamos recibidos a Largo Plazo Long Term Loans Payable	244.950.495	95	193.451.394	95
Otros Pasivos Other Liabilities	1.560.561	1	1.485.878	1
Reservas y Superavit Reserves and Surplus	8.669.289	3	4.520.323	2
<b>TOTAL PASIVO TOTAL LIABILITIES AND RESERVES</b>	<b>258.250.681</b>	<b>100</b>	<b>202.861.068</b>	<b>100</b>

(\*) Incluye las inversiones para proyectos habitacionales en desarrollo y terrenos para edificar, en estudio, por un total de \$b. 132.251.871.

sole responsibility for development of the body of regulations which governs the working of the system. The Caja can also intervene directly in the operations of a member association and can apply sanctions such as fines, removal of officers and suspension of activities if an association does not comply with the Caja set regulations.

It is also interesting that the S + L system is specifically exempted from the coverage of the Housing Law, their authorities being sufficiently explained in their chartering law (Decree No. 07585 of April 20, 1966). The system is required, however, to coordinate with the Ministry of Urban Development and Housing as necessary, and consults with the Central Bank before taking any major financial action.

g. The Banco Hipotecario Nacional and the Commercial Banks

The Banco Hipotecario Nacional, though its title gives the impression that it is predominantly a housing institution, is in effect a commercial bank which has devoted some of its resources to housing related loans, though of much shorter term than those of the Savings and Loan system. The bank has also issued paper based on its mortgage portfolio. These "letras hipotecarias" have had a mixed history of acceptance, though they are dollar denominated. Central Bank restrictions on the issuance of these instruments resulted in a decrease in the BNH mortgage portfolio to less than \$US 1 million by mid-1975. The Central Bank restrictions were applied as a result of a switch from peso to dollar savings in anticipation of a devaluation in 1972. The shift in BHN activities brought the mortgage portfolio to 13% of its total lending portfolio, down from 51% in 1971. Recently, the Bank negotiated a capital increase which included a \$US 180,000 investment by the International Finance Corporation. The intent of the capital increase was purportedly an increase in the Bank's housing loan activities.

The commercial banks are active housing lenders only to the degree that they can lend on a short-term basis. Thus, their construction and home finance lending is limited to a small segment of the population and cannot be expected to contribute significantly to programs which call for a large increase in the numbers of units produced nationally.

It is unclear to what extent a general antipathy to long-term lending and the commercial bank's ability to attract the majority of the available savings can be overcome by efforts to develop a strong long-term housing finance industry. Furthermore, the need to use such savings for housing must be considered in the light of their importance to the nation's commercial and industrial development.

h. The Cooperatives

The cooperative movement is seriously considering entry into the housing production field as a natural sequel to the granting of consumer credit. The formation of cooperatives is very much in vogue in Bolivia not only in rural but also in urban areas. The movement in some ways appears to be a reaction to the lack of public facilities, particularly medical ones. Cooperatives have become centers for health care activities. They also offer short-term credit to members for day-to-day household needs. It is simple to foresee the extension of such loans to home improvement activities and subsequently even home construction.

There are a variety of different types of cooperatives. Some are multifaceted including grocery and pharmaceutical sales, insurance and traditional banking services. Others have a purely agricultural purpose, selling farm implements, trading in and storing harvest output and providing technical assistance.

The government, with some AID assistance, is actively promoting rural cooperatives. The impact on social organization is perhaps foremost among the government's objectives. Some privately funded groups such as the Center for Economic and Social Development (DESEC) in Cochabamba are also involved in the effort to generate new cooperatives.

Many of the cooperatives are united in the National Federation of Savings and Loan Cooperatives (FENACRE). This group is considering establishment of related housing cooperatives. FENACRE believes it offers two advantages over other housing finance institutions: the ability to lower the cost of building materials through the cooperative process, and the ability to service a lower income group than that serviced by the S + L system. By year end 1975 FENACRE estimated that its 187 member organizations had 130,000 members, and that the system's savings and loan totals reached \$US 12 million and \$US 11 million respectively. The FENACRE housing plan will require external financing as well as considerable technical assistance to get off the ground.

i. The Roman Catholic Church

The Archbishop of Bolivia, Cardinal Maurer, has established a program of low-cost housing construction for large-low-income families in Sucre, home of the Church's national headquarters. The program has used funds solicited in West Germany as seed capital. The Cardinal hopes to continue this program and has requested additional foreign assistance. The program is essentially charitable in nature. A minimum payment scheme has been developed but little pressure is being applied to families unable to pay. To date, the program has had the personal interest and supervision of the Cardinal and his staff. There are no plans to expand the program in the near future beyond the Sucre area.

B. Housing Finance

In Bolivia, there has been an acute shortage of capital for long-term housing loans. To some extent, this is simply a manifestation of the fact that capital is very productive in an economy with an excess supply of labor and inadequate savings. But to some degree, it is also a result of other factors: prior experience with economic and political instability which has made long-term lending in local currency an uncertain enterprise; an inadequate system of financial intermediaries, especially those with long-term liabilities such as insurance companies and savings and loan associations; utilization of currency as the principal kind of money.

The GOB has made repeated attempts to solve this problem and develop some kind of institution which could capture long-term savings and direct them to the construction of housing units. The programs and resources of the major agencies created for this purpose are reviewed below.

1. The Housing Councils

The Consejo Nacional de la Vivienda (CONAVI) and the other councils described earlier employ a straightforward approach to the problem of housing finance. An amount equal to 2% of an employee's wages is paid by the employer directly to the appropriate council which then has the responsibility to finance the construction and sale of housing units to its constituency. Table

It offers a generalized review of the financial resources and activities of the various councils. To date, the deficits have been financed out of reserve funds.

CONAVI is clearly the largest and most active of the councils. It is the only one to have received any foreign assistance. CONAVI was the beneficiary of two loans from the Inter-American Development Bank, negotiated in 1963 and 1967 for amounts of \$4,000,000 and \$5,500,000 respectively. These loans resulted in construction of 7,249 units. Under the terms of the loans, financing was made available at 6% interest for self-help and other single family construction, and at 8% for multifamily units. Loans carried 10 to 25-year terms depending on the age of the purchaser. The average cost of all types of units constructed under the second loan was about \$2,285. The last of these units was delivered in 1973.

Presently CONAVI lends at 8% with mortgages running out to 20 years. Loans are granted to applicants following an intensive review of family income, employment history, and present housing conditions.

The various factors are weighed in accordance with the order shown below:

- years of employment
- size of family
- family income
- present housing condition
- education level attained by family members  
(higher is better)

Under one program about to be completed, CONAVI, in response to directions from the Minister of Urban Development and Housing, took charge of a program to relocate families displaced by the right-of-way of a new highway. Since many of the units demolished belonged to squatters, appraisal of unit value and compensation were complex matters. CONAVI built a variety of units based on analysis of family needs and ability to pay. The simplest is an 18M<sup>2</sup> unit with no public facilities. Public baths and water taps are provided. Families whose land and dwelling unit was assessed at \$650 will pay nothing for the new unit and lot. Payment programs are adjusted upward for those with greater assets who will be moving into more complex and costly homes.

TABLE 5

FIVE-YEAR FINANCIAL REVIEW BOLIVIAN HOUSING COUNCILS  
1974-1975 (thousands of pesos)

COUNCIL + YEAR ESTABLISHED	OPER- ATING INCOME	OPER- ATING EXPENSES	CURRENT ACCOUNT SURPLUS	CAPITAL ACCOUNT INCOME			CAPITAL ACCOUNT OUTFLOW			SURPLUS (DEFICIT)
				LOAN REPAY- MENT	OTHER	TOTAL	INVEST- MENT	LOANS	TOTAL	
CONAVI (1964)	193,717	104,331	89,386	109,634	--	109,634	3,820	204,686	208,506	(9,486)
VIVIENDA MINERA (1970)	57,812	8,553	49,259	34,846	--	34,846	1,893	87,000	88,893	(6,199)
VIVIENDA PETROLERA (1971)	23,573	3,431	20,142	5,626	--	5,626	935	24,681	25,616	(152)
VIVIENDA FABRIL, Constructores y Gráficos (1973)	45,851	4,736	41,115	1,600	968	2,568	1,054	43,199	44,253	(770)
VIVIENDA MAGISTERIO (1973)	26,917	2,347	24,570	--	--	--	870	24,137	25,007	(437)
TOTALS	347,870	123,398	224,472	151,706	968	152,674	8,572	383,703	392,275	(17,044)
TOTALS - thou- sands \$US (\$US 1 = 20 pesos)	17,393	6,170	11,224	7,585	48	7,634	429	19,185	19,614	(852)

CONAVI's projections of its own resources and expenditures for the period of the 5-Year Plan (1976-1980) may be seen in Table 6. These projections indicate, by maintaining the same level of expenditure for payroll and general expense for each year, that the agency has a staff which can absorb much more work. Operating expenses averaged 53% of income during the 1970-1975 period, largely the result of the breakup of the organization into new councils which left all the personnel with the central unit.

The 5-year CONAVI program anticipates that foreign borrowings will finance 58% of the activity (see Table A in Appendix B). The agency hopes to secure a credit of over \$28 million at no more than 8% so that it can relend at 10% for single family dwellings (20 years, 15% down) or 12% for multifamily (20 years, 20% down). To complete the 10,000 unit 5-year plan, the S + L system is expected to base a 3,500 unit program on foreign assistance as well.

The remaining councils have considerably less in the way of resources, but also less in the way of overhead as they do not become involved in project development. They often rely on CONAVI's staff to carry out their projects or at least project design. The miner's council is the strongest (also the oldest) of the new group and of its projected five-year total of 1,989 units, it has plans to use its own resources for 75% of the project cost.

The others expect foreign resources to cover as much as 84% of their projected financing programs. At present, it seems highly doubtful that such resources will materialize.

## 2. Banco de la Vivienda (BANVI)

The problems attendant to the establishment of the BANVI, as described earlier, make it difficult to assess the organization's future role as a source of housing finance. At present BANVI offers two types of loans:

- short term - 1 to 8 year term at 15%
- long term - 10 to 20 year term at 12%

About 90% of the institution's present portfolio of \$US5 million are of the long-term type, with most having a 15 year term.

TABLE 6

CONAVI INVESTMENT CALCULATIONS

(in thousands of dollars)

	1976	1977	1978	1979	1980
<u>INCOME</u>	<u>2,483</u>	<u>2,551</u>	<u>2,618</u>	<u>2,692</u>	<u>2,759</u>
Contributions 2%	963	1,001	1,037	1,079	1,114
Recovery & Interest	1,380	1,407	1,435	1,464	1,494
Various	140	143	146	149	151
<u>EXPENSES</u>	<u>1,687</u>	<u>1,680</u>	<u>1,674</u>	<u>1,667</u>	<u>1,661</u>
Personal Services	849	849	849	849	849
General Costs	174	174	174	174	174
Financial Obligations	554	547	541	534	528
Other	110	110	110	110	110
Net for Investment	796	871	944	1,025	1,098
Estimate by S & L Department of 3,500 units	147	98	98	98	98
Net for Investment in Project of 6,500 units	649	773	846	927	1,000

The BANVI is now involved in a study of the potential for secondary market improvement and has requested technical assistance from abroad. BANVI is considering a variety of new programs which include sales of mortgage certificates, which the Bank may begin to market in November 1976, direct purchase of mortgages, mortgage bonds and a fund of insured mortgages. The BANVI expects that the Councils and even the S + L system can be directed to place funds with it that otherwise might be placed with the Central Bank or with the commercial banks in interest earning accounts. This concept of the BANVI role within the financial sector is still controversial and will require greater evidence of the Bank's central government support if it is to be accepted.

The BANVI also plans to become active in the financing of infrastructure projects, noting that housing and infrastructure development in Bolivia are inseparable. Plans call for the BANVI to finance up to 60% of project costs, the remainder to come from the developing agency (the Public Works Committees of Municipalities). Once again, foreign financing is held to be the key to such a program.

Because of its newness, and because of the complex reaction to its charter, financial plans for the Bank's cash flow do not reveal up-to-date information. Bank executives expect operations to reach a break-even point by June 1977. More time will have to pass for a clearer picture of the Bank's progress.

### 3. The Central Savings and Loan Bank (CACEN) and the Savings and Loan System

The Caja Central de Ahorro y Préstamo para la Vivienda (CACEN) was established in 1966 to facilitate creation of a national system of savings and loan associations. As the chartering authority, it holds reserves, sells the required life insurance to mortgagors, borrows money from foreign sources (often with the guaranty of the Bolivian government), and yet is not really a public agency. It receives no income from the government.

The Caja was established with the assistance of two seed capital loans from AID, one for \$1 million in 1967 and one for \$500,000 two years later. AID had also helped the nation's first S + L (La Primera in the city of La Paz) get started in 1964 with seed capital loans totalling \$700,000 over a two year period. Subsequently,

the Caja has negotiated two Housing Investment Guaranty program loans (511-HG-003 in 1969, for \$3.6 million and 511-HG-004 in 1972 for \$6 million). These loans carry rates (inclusive of the guaranty fee) of 8 7/8% and 7 7/8% respectively. Only \$3.1 million of the second loan has been disbursed to date. These loans have been absolutely critical to the financial programs of the S + L system. In addition, the Caja received a development loan from AID in 1973 of \$6 million (511-DL-048). The loan carries the following terms: 2% per year interest only paid for the first 10 years, and 4% on the amortizing balance of the loan over the following 20 years. The GOB was required to lend the system an additional \$2 million to match the AID loan. This was to carry a 6% rate.

The Caja has applied the development funds as follows: \$1.5 million to be used for offices and equipment of the associations, and for advertising and promotion, carrying a 5% interest; \$4.5 million, to be used to originate new mortgages, which is lent to the associations carrying a 7% rate, and then relent to individuals at the prevailing mortgage rate of 12%. The \$2 million GOB loan was relent by the Caja to the associations at 7%, and was intended to assist them in absorbing the impact of the devaluation and readjustment.

The Caja has served as the secondary mortgage market for the system using the AID program loans to purchase mortgages from the S + L's in order to more rapidly turn funds back to housing investment. The S + L's today charge 12% on 20-year mortgages (the average term is 17.5 years with many prepaid). The Caja discounts up to 100% of the value of the mortgages for 11% giving the S + L's a 1% margin.<sup>6</sup>

This discount ability is of great importance to the member S + L institutions as it permits them to finance a larger number of units than would otherwise be possible. In this way, the associations maintain their image as a source of new housing, not merely a savings institution.

The dependence on foreign borrowings for the life blood of the system is clearly a mixed blessing. The HIG program loans are specifically directed at project development. They must be committed at a reasonable speed. The result **has** been that the

<sup>6</sup>100% of mortgages below \$8,000 may be rediscounted; 75% of those between \$8,000 and \$12,000.

S + L system has to advance its lending activities at a faster pace than its ability to generate funds from local resources, principally savings. In all but two of the associations, and for the system as a whole, mortgage portfolios exceed savings deposits. At this time, the objective of a self-sufficient system seems elusive.

Savings, nevertheless, have grown at quite a spectacular pace in the last two years. Another excellent increase is expected in 1976. Savings have grown steadily since the system's creation with the exception of 1972, a year of devaluation. If this growth suggests that the system may be capturing more than its proportional share of the increase in national savings, it is probably because the system has effectively convinced the public that a good savings record, plus the 20% downpayment, will indeed produce a housing loan. Unfortunately, a much greater shift in the location of savings will be required before the S + L system's share corresponds with the need for housing units.

Up to the present time, borrowers have been required to deposit 20% of the desired loan (the loan is made for the full value of the unit if under \$12,000) in a savings account, receiving a 5% interest rate. There has been some consideration of dropping this requirement in order to spread available funds more widely. The required savings account offers however, the benefit of a reserve which can be helpful in absorbing the impact of devaluation, or could be used to offset late payments. The value of this reserve was clearly demonstrated at the time of the devaluation in 1972. Its benefits would seem to offset any disadvantages, particularly in the absence of any real complaint from the system's clients.

The S + L's pay 10% on savings deposits, a rate comparable to other private financial institutions. The S + L's are offered no advantage over the commercial banking sector which has the largest percentage of national savings. The S + L system's dependence on foreign financing will not change rapidly, but the existence of a strong and self-sufficient S + L system is most important to the future of Bolivian housing production. An effective increase in the system's ability to attract savings would result from an interest rate spread which favors housing directed savings.

The Caja has a better established base of earnings than the member organizations. It is the depository for member reserves (these must equal 8% of deposits), it receives a mortgage insurance (FHA) fee of 1/2% and it sells the mortgage life insurance for a fee of 1% per annum of the amount of the original loan, unless the sum of the borrower's age plus the term of the mortgage exceeds 65, in which case a 1-1/2% fee is charged. The Caja regularly takes its excess funds and relends these to the system members for up to three-year terms. By law both the savings deposits with the S + L's and the mortgages must be indexed. In fact, they are adjusted for fluctuations in the exchange rate. As mentioned earlier, the cost-of-living indices available are not adequately reliable, nor do they apply nationally. Tying savings and mortgage value to the dollar/peso relationship is an effective and well understood mechanism for value maintenance, and is the most appropriate technique for Bolivia at present.

#### 4. The Central Bank and the Commercial Banking System

The Banco Central from 1970 to 1974 loaned approximately \$10.3 million to the commercial banks for housing loans. The banks used these funds to make loans with a term of eight years and a one-year grace period. During the program's life interest rates to the borrower rose from an initial 10% per year to 13% per year. Consideration of monetary policy (principally the result of the devaluation) ended the program.

The commercial banking system, aside from its involvement in the aforementioned program has shown little interest in making housing or construction loans of any type. Commercial bank financing is dominated by 90-day commercial lending at about 15%. Taxes add another 7% to the cost of financing.

The Banco Hipotecario Nacional lends at around 12% interest for a 5-year term. Like all commercial banks, it has savings accounts, but its main source of funds for housing loans are the receipts from the sales of "letras hipotecarias," which are dollar denominated.

#### 5. The Cooperatives

The Cooperatives have entered the housing finance field because of their role as lenders for a wide variety of consumer

needs. Housing loans, either for home improvement or construction made up 70% of the loans initiated by the members of the National Federation of Savings and Loan Cooperatives (FENACRE) during the first half of 1976. This is a recent development, but represents a very real pressure on the cooperatives' lending policy. The absence of any major success in the attack on the nation's housing problem has caused these institutions, which were not originally chartered to operate in the housing sector, to distrust the ability of the existing housing institutions to fulfill their purpose, and to enter the field.

"In this field there is no organization in the country inclined to emphasize and resolve these problems (housing) for the low and middle income population, evidence for which may be found in the fact that the Central Savings and Loan Bank (CADEN) through the S + L associations cannot reach our members even with enormous help from the Government. The various Housing Councils, beginning with CONAVI, do not achieve their objectives since they give precedence to housing type over the real needs of their clients. Finally, the recently established Housing Bank (BANVI), merely by virtue of its being a bank will solve the housing problems only for those people who are familiar with the banker's manner of thinking, generally people who already have housing, but will deny it to get a loan."<sup>7</sup>

Currently, the housing loans made by the cooperatives are of a short-term nature, not exceeding five years. They often have a direct relationship to the size of the person's savings account. Loans may be made to cover the whole range of housing payments, including the "anticresis" process through which a family may obtain full use of a house and land for a fixed term (say two years) by lending a negotiated sum to the owner.

The Cooperative La Merced of Santa Cruz is the nation's largest cooperative. It offers a broad range of services, and operates independently of the FENACRE. Housing-related loans are running

<sup>7</sup>Memoria 1975. Federacion Nacional de Cooperativas de Ahorro y Credito de Bolivia. XIV Asamblea Anual. Cochabamba. (Translation by author).

at about 50% of its annual investments. They generally carry a five-year term, an interest rate of 15% and are granted for construction only if the prospective owner puts up a 25% down-payment before construction begins. Ownership of the unit constructed under the program does not pass to the borrower until the loan has been repaid. The program is presently financing homes costing between \$7,500 and \$16,000.

In reaction to the previously described distrust of the traditional housing finance institutions, FENACRE has drawn up a detailed plan to establish Housing Cooperatives within the Savings and Loan Cooperative system. These units are to be subordinate to the existing cooperatives, drawing on them for expertise. The housing finance system will rely on a variety of savings mechanisms to generate its principal resources; however, foreign borrowings are also held essential to its getting off the ground.

The basic features of the program will be as follows:

- a. Contract Savings: each member will deposit 150 pesos (\$7.50) monthly into an account. Interest will be accumulated and no withdrawals will be possible for three years, without prior renunciation of the depositor's interest in getting a housing loan.
- b. Free Savings: standard passbook savings.
- c. Housing Loans: members will be eligible to receive 20-year loans with interest rates set in accordance with family income.
- d. Reciprocal Savings: to get a loan a member will have to deposit 15% of the value of the loan for the duration of the loan. These savings will earn at the same rate as the loan rate. The 15% will be drawn from the other savings accounts held by the member at a gradual pace determined by the member's financial capabilities.
- e. Commissions: a front end fee of 3% of the original loan value paid by the borrower to cover the cooperative's operating costs.

FENACRE expects to make loans averaging between \$2,500 and \$10,000 carrying interest rates of between 5% and 10%. They anticipate construction of about 1,550 units in a five year period,

for a total investment of \$8.2 million.

The program calls for adjustments for fluctuations in exchange rates and for mortgage insurance. Once the system is established, it will look for foreign borrowings at low interest rates to give it momentum.

Past experience with contract savings (one example is Argentina in the 1960's) suggests that it is difficult to raise enough funds in this manner to guarantee the availability of a housing unit when the contract is completed. S + L systems must have a large block of unrestricted or non-directed savings to make up the difference. Reliance on foreign borrowings merely postpones recognition of the chronic imbalance between savings and lending activities.

#### 6. Other Housing Producers

Mention has been made of other housing producers: the Catholic church in Sucre, the large construction companies, the La Paz city government. In all these cases, the institutions are either unable to make any impact without substantial infusions of foreign funds, or as in the case of the construction companies, deal with a very small segment of the population and are unlikely to expand their involvement. The Church in Sucre requests a \$10 monthly payment for a unit that may have cost \$2,000 to \$3,000, indicating a 16 to 25 year payout on an interest free loan. Collection procedures are lax. The effort is considered a charitable one and as such does not fit well into discussion of the development of housing institutions which can offer the prospect of a long-term, large scale attack on the nation's housing problems.

The construction industry will lend to clients at 24% for up to five years. The industry receives little or no construction financing from the banking system and does not appear inclined to get into the land development business on a large scale. An adjustment of commercial bank lending practices could change this situation radically.

The city of La Paz is financing the construction and sale of the houses in the Lazareto development via a process of self-help

which greatly reduces the amount of funds which must be loaned. The homes run at about \$1,925 for the core unit and lot. The financing scheme divides the housing unit cost (\$1,500) into three components:

- |  |     |
|--|-----|
| 1) donation by the municipality<br>because damage results from<br>natural disaster | 20% |
| 2) self-help contribution<br>(construction)  | 30% |
| 3) loan, maximum \$750 at<br>2% average length 7 years                             | 50% |

While it is estimated that this will require payments of about \$10 monthly, there are some families who can only pay \$5.00. Adjustments will be made to the term of the loan.

The municipality has begun discussions with the S + L system regarding financing for its larger projects such as the Liman-Pata development in Achachicala. In order for the City's plans to proceed at their projected pace, outside financing will be necessary.

## 7. Conclusions

During the 1970-1974 period, international financing for housing loan programs in Bolivia amounted to more than \$22 million and accounted for 47% of all the financing available for housing loan programs during this period. National financing amounted to another \$24.8 million.

Of the \$22 million of foreign lending, 30% went to CONAVI and 70% to CACEN and the commercial banking system combined. The latter received the funds through the Central Bank.

The private sector accounted for \$34.1 million of 73% of total housing finance during the 1970-1974 period, with 58% of the funds coming from foreign sources. CACEN obtained only 20% of its funds from domestic sources.

The various institutions actively producing housing or considering entry into the field must deal more seriously with the problem of generating internal resources. Savings activity has increased steadily in recent years but because the available funds

are spread too thinly among the various institutions of the nation's financial community it is doubtful that the housing lenders will ever generate sufficient resources to mount a really serious attack on the deficit. The continued inability of the existing housing finance institutions to produce large quantities of units annually only reinforces the trend toward greater fragmentation of the effort. Suppliers of foreign credit must consider this fragmentation foremost, and work to prevent a worsening.

It seems advisable that the S + L system be given a distinct advantage over the commercial banking sector in the attraction of savings deposits. One way of bringing this about without causing problems of disintermediation may be to raise the minimum deposit a commercial bank can accept for a savings account.

Another approach, which might have greater impact on the commercial banking system, would include favoring the savings and loan system with a differential on the interest paid on savings accounts. This differential would specifically recognize the need to channel a greater percentage of savings into the housing sector, a concept which has had much verbal support in Bolivia but little practical application.

The Housing Bank (BANVI) should be steered away from solicitation of savings accounts. This institution merely competes directly with the already underfunded S + L system for the same funds and cannot hope to achieve anything more than further dilution of this primary resource.

The plans to make the BANVI the secondary market institution for the nation's housing finance system should also be closely considered. The Caja Central already plays this role for the S + L system, and logically, as the major private sector repository of mortgages, is the appropriate institution to issue paper backed by its portfolio in order to generate additional funds. The BANVI once again should not be injected into the existing market merely to compete for the favors of the same group of investors. The BANVI's focus could best be directed at those areas of housing finance relegated to government intervention, including collection of payroll taxes, solicitation of foreign financing and issuance of government housing bonds. Direct competition with the S + L system can only be counter-productive. The nation's capital market cannot absorb involvement of too many institutions.

The dominant effort of national housing policy must be not merely to produce units, but to refine the institutional capacity to assure a long-term program of unit production. Savings attraction must lie at the heart of this effort, and the connection between a good savings record and the ability to obtain financing must be strengthened both by government regulation and by institution performance. The ability of the Savings and Loan system to change people's savings habits is directly proportional to the long term ability of the S + L system to encourage the production of housing units.

C. Housing Programs: Past and Present

1. The Public Sector

a. Programs of the Recent Past.

During the period 1970 through 1975, the various councils and national government entities have produced the following numbers of housing units:

TABLE 7

	<u>Year of Founding</u>	<u>Units const. 1970 - 1975</u>
CONAVI	1964	4,898
Vivienda Minera	1970	1,235
Vivienda Petrolera	1971	326
Vivienda Fabril	1973	--
Vivienda Magisterio	1973	--
COMIBOL	N.A.	1,017*
Vivienda Militar	N.A.	300*
Banco de la Vivienda	1974	<u>113</u>
	TOTAL	7,889

\* through 1974

As mentioned earlier, the units produced by the military and COMIBOL are exclusively for the use of active duty personnel and belong to the producing entity.

The principal efforts of the public sector have resulted from two loans made by the Inter-American Development Bank

(IDB) to CONAVI. The first loan, of \$US4,000,000, made 1963, resulted in the construction of 3,473 units during the period 1964-1968 (see Table B in Appendix B). The average price per unit of those fully constructed (not merely finished) under the program was \$1,931. Three types of units were built:

2 bedroom, living, dining, bath, kitchen	600 units
3 bedroom plus as above	2,753 units
4 bedroom plus as above	120 units

The units were distributed among the following labor groups:

TABLE 8\*

Government	1,081
Mining	622
Manufacturing	329
Oil and Gas	217
Transportation	136
Construction	18
Electric Power	7
Others	<u>831</u>
TOTAL	3,473

\*Source: Murillo, Aspectos . . . opcit., p. 33.

The IDB funds accounted for 60% of the total expended. CONAVI funds accounted for 25% and individual proprietors contributed 15%.

The second loan, of \$5.5 million, made in 1967, led to the construction of 3,776 units during the period 1968-1974. (The regional and sectoral distribution may be seen in Tables C and D of Appendix B). The average unit cost was \$2,285. Two and three bedroom designs were employed. Of the total, 202 units were in multifamily structures.

One critical difference between the first and second loan was the inclusion in the second of the funds needed to cover the cost of public facilities within the planned investments. Provision of all infrastructure, and often community facilities such as markets, public baths and schools, is now incorporated into all CONAVI budgets as an integral part of the development cost.

The combined IDB-CONAVI programs led to construction of 7,249 units and related facilities, and investment of \$10.6 million, during the nine-year period 1964-1973, giving an average of 805 units constructed yearly and an average investment of \$US1.2 million per year. (Table E in Appendix B shows the yearly activity under the program.)

Following the distribution of the IDB loans and the dismemberment of the housing production entities in the public sector, production fell off dramatically and CONAVI went through a period of administrative readjustment. This process seems now to have been completed and a combination of renewed emphasis on output as well as a more experienced technical direction has returned CONAVI to its previous leadership in public sector housing production. The plans for 1976-1977 production and delivery call for an output of 2,163 units financed by CONAVI's own resources. Of this total, 610 are in the delivery process or will be delivered before year end 1976. Another 1,321 units are either currently under construction, or will be let out for contractor bids before year end. (See Table F in Appendix B).

CONAVI projections for construction generated by its own resources (2,163 units) call for expenditures of \$2.4 million in 1976 and \$5.4 million in 1977. The total investment, including contributions made by the future owners (downpayments) by year-end 1977 will be roughly \$9.6 million, giving an average unit cost (gross) of \$4,438. The range of prices of the

housing units themselves is from \$3,030 to \$12,622. A careful study of Table G in Appendix B will reveal that the conditions under which CONAVI will undertake a program vary. Many of the labor groups which form CONAVI's constituency have their own land, and merely lack the resources and technical staff to get into the building process. Often these parcels have already been distributed to individual owners. Thus, no land cost will enter into the final unit cost, permitting construction of a higher cost unit. The same situation may apply to infrastructure.

CONAVI plans also reflect investment in a project labeled "Plan Quinquenal," the 5 Year Plan. The 1,900 single family units and 90 multifamily units described here are designed to be funded by foreign borrowings. CONAVI is negotiating funding of this project with the World Bank. The single family dwellings are expected to have a housing cost of \$4,290 and a gross cost of \$6,368. The apartment units will carry costs of \$12,613 and \$15,346 respectively.

b. The 5-Year Plan

The summary of the 5-year plan notes that a total of 41,900 units are projected for construction, 28,900 of which are to be built by the public sector and 13,000 to be built by the Savings and Loan System. Overall investment calculations suggest a total of \$389 million during the period. The summary notes, however, that a more realistic figure would be almost \$50 million.

The plan was drawn up in 1975, and since that time events have changed much of the data. Furthermore, the housing component of the plan has not been officially published. CONAVI has not obtained the foreign financing which is critical to completion of the Plan. The Plan includes calendar year 1976 when CONAVI's plan projections called for completion of 795 single-family units and 90 multifamily units. As mentioned earlier, about 610 units will be delivered this year.

TABLE 9

PUBLIC SECTOR PRODUCTION  
(5 Year Plan)

<u>Agency</u>	No. of Units by Year					<u>Total</u>
	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1978</u>	
CONAVI	1,285	1,990	2,560	2,190	1,975	10,000
Vivienda Minera	700	240	288	346	415	1,989
Vivienda Petrolera	100	130	200	250	300	1,000
Vivienda Fabril	1,450	1,958	1,958	1,958	1,958	9,282
Vivienda Magisterio	*					6,721
Pando	*					<u>2,600</u>
					TOTAL	31,592

\* not distributed by year

These figures served as the base for development of the 5 Year Plan, and were adjusted lower (to 28,900) for final inclusion. The Plan, however, recognizes that a substantial degree of wishful thinking is involved. This thinking is confirmed by notations in the preliminary studies as well as more recent information that the vast majority of the funds for investment will have to be obtained from international sources. The CONAVI projections call for foreign loans of \$28 million to make up 68% of the total investment of \$41 million for its own programs, plus more than \$9 million in foreign borrowings as part of the \$26 million program to be jointly developed by CONAVI and the Savings and Loan system. Thus, of the total projected investment of \$67 million, \$37 million or 55% is expected from foreign sources. The Mining sector Council (Vivienda Minera) planned to have 36% of its requirements met by foreign assistance. The oil and gas Council (Vivienda Petrolera) planned to obtain 46% of its financing needs abroad,

the Factory Workers Council (Vivienda Fabril) 84% of its planned investment and the Teachers Council 73% of its program. The total foreign funding anticipated by this approach would have reached \$131.9 million, an extremely high level given the inclinations and resources of the major housing-oriented foreign lenders.

By the time these figures had been adjusted for inclusion in the official version of the 5-Year Plan the foreign borrowings had been cut to roughly one-tenth of the earlier estimate, or \$13.9 million, but the total quantity of units had only been reduced from 31,592 to 28,900. It seems highly doubtful that the Councils will be able to realize even 50% of their projections.

The Executive Director of CONAVI has been given the role of coordinator for all solicitations of foreign borrowings on behalf of the Councils. The Ministry of Urban Development and Housing in this manner will be able to apportion any credits obtained to the various councils in accordance with their capacity to use the available funds.

c. The City of La Paz:

The La Paz City government has only recently entered the housing production field, but is developing plans for more ambitious work in the near future. Drawn to housing by problems such as land slides and the need to up-grade or extend public facilities networks and thereby remove some dwelling units, the city has entered the field at the bottom rung, dealing with squatter areas, or areas with home owners who have no financial ability to replace their present unit.

The city's first project, "Lazareto," followed a land slide which demolished or severely damaged 103 units in a very steep area of the city. Property records identified the owners and surveys revealed that for 97 families the following income distribution applied:

TABLE 10

INCOME DISTRIBUTION-LAZARETO FAMILIES

No. of families	Monthly Income	
	Pesos	\$US
4	500	25
21	600-1,000	30-50
37	1,100-1,500	55-75
22	1,600-2,000	80-100
13	2,100-4,100	105-205

The men were mostly employees or artisans; the women, housewives or small shop owners.

The challenge of producing affordable replacement housing was further complicated by the need to complete a major earth stabilization effort before the area would be habitable. The Municipal Government's Office of Community Action developed a program of self-help which would require participation of all families in the stabilization program as well as in the construction of each housing unit. The government has provided heavy machinery as needed, but all retaining walls and housing units are constructed by the community members. Stabilization work at Lazareto is now complete and the government hopes to achieve a construction rate of 12 houses per month in the near future.

The government has identified some 76 areas in the city which are seriously prone to land slides. At present, plans call for operations similar to Lazareto at four other locations giving a total program of about 500 units.

The municipal government has also done preliminary work on a slightly different type of project. On a 70 hectare property (173 acres) in one of the northern valleys of the city (Achachicala) the city proposes to channel the river to reclaim some land and develop a 3,000 unit community. An architectural firm has completed feasibility studies using a design that incorporates simple industrial housing production materials and features. While use of traditional materials is to be limited to about 50% of each unit, the designers expect potential owners to be able to handle the simplified

construction techniques and on-site component processing plants. Extensive analysis of the public facilities needs of future residents has permitted inclusion of lower cost infrastructure development. Smaller water conduits, community clothes washing areas and other features are part of the effort to hold the unit costs to the \$2,500 to \$4,000 range.

The design is now being studied by local construction companies who have been asked to build prototype units. The project will require special financing as its size places it outside the municipal budget. The S + L system is now considering a joint program with the city.

d. COMIBOL

Within the last year COMIBOL sent out a request for design of a 6,000 unit project. The request was stated in general terms permitting interested parties to design a production process which they felt would best meet the agency's need. One of the respondents was the Godwin-Bevers Construction Company through its factory housing affiliate, In Group.

The In Group proposal has interested COMIBOL and active negotiations are underway to develop contracting positions. The In Group unit would make maximum use of locally available materials, and would employ on-site processing techniques. It consists of a prepackaged frame and materials which can be assembled by labor with minimal amounts of training. Some of the processing equipment would have to be shipped from the U. S. Factory output at full production is one unit every two hours. The units have been priced at \$7,200 if the order reaches 5,000 units.

The COMIBOL effort is particularly interesting because it reflects current aspects of the Bolivian housing production situation:

- a large number of factory housing or prefabricated housing designers and manufacturers are attempting to sell their products to all branches of the Bolivian government.
- the speed of completion of factory housing units is far greater than the self-help process now favored, and this factor may be important if a determined attack is to be made on the national deficit.

-the cost of pre-fab units is still well above the range considered adequate for low-cost, low-income housing programs (a top of \$4/5000).

In addition, though COMIBOL is one of the most autonomous and financially independent of the government agencies, it is being pressured to devote more attention to modernization of plant and increased production levels. It is, therefore, unable to launch so ambitious a housing program without important assistance from foreign sources. In fact, COMIBOL has called on the Savings and Loan system to help construct 1,000 units for its miners.

## 2. The Private Sector

While the private sector has been the producer of the largest quantity of units in recent years, this production has generally been disorganized and directed at either the very highest income levels where financing is not a critical ingredient to housing construction, or at the very lowest levels where shelter is the prime objective and standards of public health and welfare are virtually unknown.

As mentioned earlier, the only private sector institution which offers a coordinated approach to increasing both the quantity and the quality of the national housing stock is the Savings and Loan system.

S + L plans for the coming years vary considerably with each city and region. The Caja Central (CACEN) is maintaining contact with government agencies as part of its program to retain full government support when necessary, and as part of a related effort to share if possible in the national government effort to obtain large foreign credits. CACEN projects a total six-year production (1976-1981) of 10,734 units, an average of 1,789 units per year, well above the System's current capacity of about 700 units yearly.

These impressive levels of production will not be possible without foreign borrowing, and of the \$59 million of investment anticipated, \$37 million (63%) is to be found outside Bolivia.

The S + L system feels considerable pressure from its savings clients to construct units of two and three bedroom size which may

cost as much as \$15,000. A number of these types of units are now under construction in La Paz and Sucre. Only partial loans can be made in such cases because of the current ceiling of \$12,000 established in foreign loan agreements. The S + L system must also deal with changes in income, construction cost and urban area development which, in recent years, have caused the value of houses built for \$5,000 in 1970 to reach \$35,000 today and the price of a square meter of land to increase from \$2 to \$80. On the one hand its clientele no longer save with the intention of buying a \$5,000 home, but rather a \$15,000 home. On the other, because of price limits set into earlier lending agreements, the S + L's find it difficult to pass on to the consumer the price increases which may result during the construction of a large and complex project involving the sale of units over a period of years. As a result, the system is unable to realize any of the profit inherent in land development, profits which could help materially to advance the growth of the system's financial strength.

Projections for coming years have been developed taking into consideration the range of demands being made on the S + L system. Of the approximately 1,000 units now scheduled for financing in the 1976-1978 period, approximately 30 would be directed at rural areas near La Paz and Cochabamba where the loans would run between \$1,400 and \$2,000. In Cochabamba the S + L's are planning to join forces with the private, internationally funded Center for Social and Economic Development (DESEC), an organization which has been actively involved in the development of rural cooperatives. These cooperatives are fundamentally oriented toward improvements in the cost and techniques of agricultural production, but find that community development becomes an integral part of such a process and that help with housing construction is both needed and requested. DESEC does not finance housing construction or improvements, but attempts to help build the organizational base of the rural community so that the financial institutions are attracted to serve the existing market.

Approximately 470 of the projected units in the S + L program for the coming two years would require loans of between \$4,000 and \$8,000. The majority of these projects, which would be located in the country's principal metropolitan areas, would require loans of about \$5,000 and are generally directed at labor and middle class professionals (teachers, nurses, etc.). These groups have been pressuring the S + L's to return to the production of lower cost units.

The remaining 500 units would carry loans between \$8,000 and \$12,000 and represent the system's response to the absence of middle management and professional level housing. This lack is now causing serious problems for government agencies and private industry as they try to locate new facilities or shift experienced personnel to areas where activity is expanding.

A number of the S + L's are also in the process of acquiring their own office space. In some cases, particularly that of Cochabamba, a building will be built which will provide the S + L with leasable space at a central location, thereby permitting the association earnings in addition to those of its normal financing transactions. These earnings should serve well to add to the association's efforts to increase its capital base and its operating flexibility.

### 3. Other Institutions

Mention has been made of the Catholic Church programs in Sucre. In recent years, the program initiated by Cardinal Maurer has produced 160 units of three bedrooms. These units are built on donated land and are for ownership by families of 3 or more persons. Another sixteen are now being completed, but no further development is planned pending location of available land and more consistent financing. The financing of these units has come largely from solicitations in the Cardinal's home town in Germany. The developments do not carry a full complement of sewer and rain-water drainage systems.

The National Community Development Service, an AID assisted agency of the national government, is primarily involved in the development of rural cooperatives (as is DESEC, mentioned earlier). The agency has become involved in assisting with housing production at this time, however, the process relies mostly on the organization of mutual aid efforts combined with some technical assistance in order to build the traditional housing unit of the altiplano. There have been no special institutional efforts to develop housing programs of any size.

V. HOUSING PRODUCTION: COSTS AND TECHNIQUES

A. Construction Industry

There are about 176 construction companies in Bolivia, most of which are concentrated in La Paz (104), Cochabamba (25), and Santa Cruz (22).

The Bolivian Chamber of Construction has divided these companies in five categories, according to working capital, equipment, technical support and experience.

Construction companies classified as first class must have a working capital of U.S. \$200,000 or more, a staff which includes three professionals and 60% of their capital invested in equipment and tools.

Second class companies must have a working capital of U. S. \$100,000, staff of two professionals and 50% invested in equipment.

For third class companies working capital must equal U. S. \$50,000, the staff includes one professional, and their investment in equipment must be 40%.

Fourth class requirements are U.S. \$10,000, one consulting professional and 35% in equipment.

The fifth class must have U. S. \$2,500, one technical and 25% in equipment.

First and second class contractors deal primarily in office and apartment buildings, as well as large public works projects. They are the only classes of contractors permitted to work on structures of more than two storeys. They might be attracted to housing if the size of the projects would warrant it. Third class contractors deal primarily in housing or as subcontractors to larger companies. Fourth and fifth class, because of their small size do not figure in institutional efforts to produce housing.

"Bartos" is the largest construction company in the country, with an average volume of work of approximately U. S. \$60 million a year. They are involved in the construction of large office and apartment buildings, highways and other public works

projects of large scale. They also own the concrete distribution system in La Paz. Their experience and the quality of work are considered excellent.

"ICA" is probably the second largest construction company of the country, with a yearly volume of about U.S. \$8 million. They are one of the contractors for the Savings and Loan Systems' Los Pinos project. Their work is primarily office and apartment buildings and public works such as the new municipal stadium in La Paz, presently under construction. Their work, organization and experience are also considered very good.

The city of La Paz is experiencing a construction boom. The increase in activity has brought on problems including the scarcity of cement and skilled labor. Government plans call for steadily increasing construction activity, giving prospect to continued shortages of labor and materials in the near future.

Bolivia appears to have an adequate supply of technicians and professionals to cover the present necessities of the industry. Most of these professionals work out of the La Paz area. From the registration lists of the Institute of Architects and Engineers, we have the following distribution of construction-oriented professionals:

TABLE 11

Architects	130
Civil Engineers	665
Electrical Engineers	61
Mechanical Engineers	69
Industrial Engineers	71

The construction industry has been unable to obtain sufficient levels of financing to permit entry into the land development process as the developers of speculative housing projects. Demand for housing units is good, therefore, other factors apparently have been the primary cause for this absence of financing for construction activities. The cash basis orientation of the industry has impeded the development of the private housing sector, and limited construction initiative only to the largest, most financially secure firms.

#### B. Construction Materials and Costs

About 90% of the cost of materials for low cost housing production relates to products of domestic manufacture. The country produces cement, brick, block, cement tiles, adobe and wood components for windows and doors. Reinforcing steel, aluminum, sanitary fixtures, electrical conduit, pipes, glass and hardware are

imported. Prices of imported materials and, to a lesser extent, of domestic materials have increased substantially in the last three years. Transportation costs and general inflation, external and domestic, have been the cause of some sharp increases. Purchase orders have to be made well in advance, with working capital tied up and possible construction delays if deliveries are not on schedule, as is the case very often.

1. Materials in Use

Concrete and Cement

There are three cement factories in the country with an estimated yearly production of 266,000 tons. In 1974, the country used 196,500 tons with a remnant of about 24% of the total production. Projections for the next ten years have been made, starting in 1975. From 1977 to 1985, the deficit in the production of cement could reach more than 350,000 tons per year. Extensions of the existing cement factories are now being contemplated in order to meet the forthcoming demand. In the meantime, the GOB has been importing cement from Chile at a rate of 5,000 tons per month.

In April 1976, the Government decreed a cement price to be applied nationwide. The result was a 66% increase in the price for the Sucre area, which has long had a cement plant. The price increase, when combined with the importation from Chile, caused a momentary but substantial drop in demand for the production of the Sucre plant. Since construction activity seems to be increasing steadily, the long-term impact of this distortion will probably relate to price only, but it provides an example of the problems of distribution of construction materials which plague the country.

The incidence and impact of cement and concrete in the construction of low cost housing units is very small, because of the reliance on traditional materials, as cyclopean footings, adobe walls, and tin or clay tile roofing. Only infrastructure work uses large quantities of cement. Large scale housing developments, however, will be slowed if the concrete and the cement scarcity continues, particularly if public works and high rise office construction continue at the present high pace.

### Wood

Each major city has lumberyards and sawmills to meet the wood demand. Wood is widely used in the cold climates, especially for floors and roof structure. The wood available in the low lands is of excellent quality and is exported in quantity to La Paz where it is used primarily for wall coverings, good quality doors and parquet flooring. Structural wood for roofing and other rough construction needs is obtained throughout the country without major problem. Plywood is also produced in the department of Santa Cruz.

Even though the country has excellent wood products, most of the high quality construction uses aluminum framing for windows. Since aluminum is imported and more expensive, the only rationale for its use is the preference for imported materials, regardless of its higher cost.

### Roofing

The most common materials used for roofing are clay tiles, asbestos, aluminum, tin and concrete slabs. Clay tiles are widely used in La Paz, especially for housing. Concrete slabs are only used for high rise buildings.

Though reinforced concrete slabs are more expensive and require reinforcing bars which are imported, and sometimes difficult to obtain, their use obviates the need for ceilings as an extra item and the durability could, in the long run, offset the higher initial cost.

Imported asbestos and aluminum roofing sheets are used in increasing quantities though the cost is at present higher than that of clay tiles. This type of roofing does not offer many of the aesthetic advantages of tile.

Zinc roofing is widely used. It is cost-competitive with clay tiles and may eventually displace them. Zinc roofing lacks the thermal characteristics as well as the beauty of the clay tiles but is easier and quicker to install.

### Flooring and Other Components

Concrete slabs are the simplest but not necessarily the most economical flooring used. In some localities, including La Paz, Potosi and others, situated at high altitudes, the

weather can make the house unlivable unless a heating system is installed. Wood floors are preferable for higher altitudes. Floors of this kind may be parquet or simply wood strips. Cement tiles are used in the low lands. These tiles are either set in mortar bed or on compacted earth. Vinyl, ceramic and other materials are used only in apartments or special rooms.

#### Windows

Aluminum frames are used in most high-rise units, although the cost is higher and availability may cause problems which lead to delays in construction. Low cost units use either wood or iron frames.

#### Sanitary and Electrical Fixtures

These are imported and expensive. Normally, a toilet and a sink are the only fixtures in the bathroom. Bathtubs are not included in the low cost housing units. A shower stall is used, in combination with an electric water heating unit placed directly at the shower head. All piping and fittings are imported. The minimum in electrical wiring and outlets are used in low cost units.

#### Walls

There are several wall systems in common use. Probably the most widely used for low cost housing is adobe bricks. This kind of wall has been the traditional system on the altiplano and offers the advantages of excellent shelter and ease of workmanship.

In the low lands the use of clay brick and cement blocks is more suitable and common. The local brick can be of good quality. Most high-rise buildings use a reinforced concrete framework with clay blocks as curtain walls.

#### Footings

For small houses the most widely used footing system is cyclopean concrete, because of its low cement ratio. High rise buildings use reinforced concrete footings for the columns.

2. Materials Cost

Materials costs have increased dramatically since 1973. Table 12 reflects the changes in many of the essential items employed in construction projects.

TABLE 12  
PRICE INCREASE OF BASIC CONSTRUCTION MATERIALS

<u>Item</u>	<u>Unit</u>	<u>June 73</u>	<u>June 74</u>	<u>June 75</u>	<u>June 76</u>	<u>Increase</u>
Cement	Kg	0.74	0.94	0.87	1.29	74%
Nails	Kg	13.33	25.43	31.71	30.56	129%
Roofing Sheets	M2	68.84	107.44	100.73	83.40	21%
PVC 1/2"	LM	3.74	14.00	17.46	18.02	380%
Reinf. bars	Q	451	745	677	681	50%
Bricks	U	0.38	0.78	0.92	0.86	126%
Constr. Wood	BF	3.50	5.04	5.08	6.08	73%
Cement Tiles	M2	53	82	69	82	54%
Parquet	BF	7.60	15.30	12.98	16.35	128%
Paint	G	100	179	171	170	70%
Glass	SF	6.16	9.28	11.72	14.06	133%
Adobe	U	0.47	0.70	1.05	0.90	91%
WC	U	768	950	1004	1275	66%
Hardware	U	122	163	220	256	109%
Wiring No. 14	LM	--	3.57	7.83	4.01	12%
Cer. Tile	M2	--	4.31	4.83	6.03	39%

### C. Construction Labor

Cost of labor has increased by about 120% in the last three years. About 80% of the total labor force used in construction is unskilled. There is enough manpower to fill the common labor portions, but not the skilled laborers that have become scarce, due mainly to the sharp increase in the construction volume, especially in La Paz.

The basic salary of a common laborer in the city is about U.S. \$1.70 a day. However, the yearly income, including the social benefits and other fringe benefits, comes to \$1,250. Social benefits amount to 116% of his net salary. (See discussion Chapter III.)

Skilled laborers correspond to carpenters, masons, plumbers, electricians and the like. The salaries vary from \$120 a month to \$180 a month. At the present time there is a serious shortage of skilled labor, to the extent that many craftsmen from other countries, especially Chile, are now in the Bolivian labor force. Labor costs account for about 30% of the direct cost of construction of a housing unit.

Tables A, B, C and D in Appendix C give detailed information on wage rates and cost increases.

### D. Land and Urbanization

Rapid urban development is causing land prices to rise dramatically in Bolivia's major cities. The complex topography of La Paz has added further to pressures there. Downtown land, both in the high-rise areas, and in the popular but traditional shopping areas costs about \$250/M<sup>2</sup>. To the south in Calacóte, the city's highest class suburban residential area land prices may reach \$100/M<sup>2</sup>, a dramatic increase from the \$5 to \$10 levels of 1972.

In El Alto, on the higher altiplano to the north of the city, land can be found within reach of municipal services for from \$2 to \$4/M<sup>2</sup>. This area is developing rapidly as the city's industrial core. The airport is there, and in spite of the cold and up to 60 mph winds, the land is flat and easily developed. El Alto is growing rapidly and serves as La Paz's tie to the altiplano, the source of most of the city's immigration.

Water has traditionally been a problem and wells dug to over 100 meters in depth have shown poor results. A new treatment plant

and related trunk lines are under construction and are expected to be on line in 1978 eliminating one of the major restraints to rapid development on the altiplano.

Sanitary sewage is handled by collectors which feed directly to the most appropriate river. No sewer treatment is used in Bolivia. A plant is being considered for the La Paz area. Septic tanks are used where soil conditions permit.

Urbanization costs are estimated at \$5 to \$6/M<sup>2</sup> throughout the country.

E. Construction Methods, Unit Design and Cost

1. Lowest Cost Housing

The basic low cost house now being constructed consists of cyclopean concrete footings, adobe brick walls for the exterior and clay blocks for the wet partitions, wood flooring and roof structure, and clay tiles or zinc sheets for roofing. Windows and doors use wood frames.

CONAVI has built two lower cost models on the altiplano above La Paz. The simplest of these units is a 16M<sup>2</sup> room with a toilet. This may be expanded to a 33M<sup>2</sup> unit (including kitchen and small patio) prior to delivery. Subsequent development is left to the owner. The costs of these units have been broken down as follows:

TABLE 13

CONAVI LOW-COST UNIT PRICES

	<u>16M<sup>2</sup></u>	<u>33M<sup>2</sup></u>
Construction of Unit	\$US 500	\$US 1,400
160M <sup>2</sup> Lot (\$US2.00/M <sup>2</sup> )	320	320
Utilities*	1,050	1,050
Other Expenses	<u>75</u>	<u>75</u>
TOTAL UNIT COST	\$US 1,945	\$US 2,845

\*Utilities costs are spread evenly over all units in the development

Sanitary fixtures are kept to a minimum. They include a shower stall and toilet and a sink in the kitchen. (Floor plans may be seen in Figures A + B in Appendix C).

Construction in the mountain regions of the country is based on adobe bricks. In rural areas the roofs will often be thatched, in the urban areas roofs will be of a variety of materials and of varying degrees of permanency. The low income Bolivians are skilled at constructing with adobe blocks. There are almost no lean-tos or shacks in the slums of Sucre and La Paz for example. The walls of each unit will be solid, the floor dirt, and there will be few, if any, windows. The topography of La Paz often requires squatters to select hill-side locations. The problem of durability of construction is secondary to poor site choice, residential density and the absence of water and sewer service in these slum areas.

In the lowlands, low-income families use a great deal more natural plant materials in the construction of their home. Reeds, palm fibers and thatch are extensively used. Sun baked bricks are also particularly common in the urban areas. Slum housing in these areas is a lot less durable than that built on the altiplano.

CONAVI officials both in La Paz and in other metropolitan areas feel that a \$US2,000 unit is the cheapest, reasonably appointed unit (i.e., bath and kitchen) that can be constructed in relative proximity to the urban area. Appendix C includes details of three low-cost units either under construction or in design for the municipality of La Paz, CONAVI, the Savings and Loan system in Santa Cruz. In addition, Shelter Sector Assessment team members adapted Bolivian cost information to a simple unit used elsewhere in low cost programs in an effort to place the Bolivian information in a broader context.

## 2. Medium Priced Housing

The best summary of the average range of unit costs and sizes currently being offered by both private and public sectors to the great majority of the Bolivian public is available in Table G, in Appendix 3, CONAVI's Construction Plan for 1976/77. The size ranges from 510 to 1900 square feet and may include up to three bedrooms, one bath, a kitchen and a combination living and dining room. The price will range from \$US3,000 to \$US12,600 exclusive of infrastructure, land and design or administrative costs. The summary shows that the three bedroom units being built near the airport above La Paz (Villa Adela - one of CONAVI's largest projects) carry the following per unit costs:

TABLE 14

	<u>\$US</u>
Project Development	110
Lot (2000 sq. ft. at \$0.35/sq. ft.)	700
Utilities	750
Housing Unit (685 sq. ft.)	4,440
General Expenses	<u>160</u>
	\$6,160

This type of what might be called middle priced housing, designed to serve the middle class (teachers, low level professionals, higher income labor), will include a ceiling, ceramic tile in the bathroom (shower stall, water heater, toilet), and kitchen plus full plastering and painting both inside and out.

### 3. Multifamily Units

Multifamily units have not been constructed for low-income families to date. In the medium price range units are built to four story height only in order to avoid installation of an elevator. In the difficult topography of La Paz, careful attention to site placement has permitted CONAVI to construct nine-story buildings with the entrance placed in the middle of the buildings so that no tenant has more than four stories to travel. Apartments are in demand, but costs are too high to make possible sales to those families at or below the median income.

### F. Conclusions

The difficulty of reaching Bolivian families earning \$b2,500 or less can be seen by comparison of these various approaches to low cost units. The Godwin-Bevers construction company, now negotiating with COMIBOL to build 5,000 industrialized housing units, is unable to envision a cost of less than \$US7,200 per house, a cost which implies a monthly income of roughly \$US325

(\$6,500) a substantial amount for the Bolivian low and lower middle income groups. The use of traditional materials continues to offer lower unit costs, but implies construction at a much slower pace than would be possible with the industrialized process. The deficit of housing in Bolivia for all class levels is so great that production in any price range will be marketable. Production of middle class housing (\$5,000 to \$10,000) may well be essential to any economic growth programs which require mobility and regional development. The inability of industry to house employees has a severe dampening effect on industry's efforts to establish new production centers and expand output.

Mass production of extremely basic low cost units has not been programmed by any institution to date, though examples have been produced in recent years. The increasing cost of land which is forcing housing institutions to increase the distance from the city core of new developments may contribute to a tighter use of land in future programs. Local professionals have suggested using an 80M<sup>2</sup> lot as standard. The 16M<sup>2</sup> to 18M<sup>2</sup> unit may also offer the only hope of getting costs down, but the \$2,500 home is not yet a regular output of the nation's housing production schemes.

## VI. ENVIRONMENTAL IMPACT

### A. Identification and the Nature of the Problem

Bolivia has adopted a traditional attitude towards development of its natural and human resources. In the pattern of many Third World countries the national development policies reflect a desire to control more of the processing of the mineral products extracted from its territory, and at the same time to expand the quantity of products available for sale. Thus, the prime objective of the 1976-1980 development plan is the development of more heavy industry.

Bolivians also want to open up the country to gain access to areas rich in natural resources. This desire leads to more roads, and more transportation activity, much of it to be through almost uncharted forest. Certainly this drive to open up the country and to increase mobility will lead to increased air travel, increased quantities of motor vehicles and increased levels of fuel consumption.

The development urge today is directed also at commercial agriculture. The convulsions which followed the land reform of the 1950's are abating and minifundia has replaced latifundia as the name of a problem. Self-sufficiency in food production is an objective of the development plans. Colonization of agriculturally productive land is encouraged. Modern agribusiness techniques are discussed and dreamt of.

The problems of ecological limits and environmental contamination are not perceived as relevant or serious by the Bolivian public. Immediate rather than long-term survival is the concern of the majority of the population. The set of priorities is made clear by such activities as:

- washing clothes in shallow rivers to which waste water is channeled without treatment;
- dumping garbage in streets or gullies;
- building housing on geologically unstable, or flood prone land;
- hunting and fishing without restriction;
- grazing sheep and goats on already overgrazed land;

-indiscriminate use of automobiles both in and outside of urban areas; and

-mining according to traditional extractive techniques.

The problems of environmental contamination will first become apparent to the public in the nation's urban areas. The traditions of rural living carry certain well learned lessons of accommodation to ecological laws such as housing construction and placement related to climate, rotating use of arable land and hunting and fishing related to need. The urban dweller loses sight of many of these cultural lessons in the face of increased density and a faster pace of activity.

The problems are being recognized, however, by a certain level of technician and professional. The results of floods and land slides create operational problems for municipal governments as do traffic problems. The same is true for garbage collection and sewer treatment. The breakdown of cultural patterns and sanitary conditions as a result of excessive density, and the concern for the structural integrity of urban building are increasingly the subject of debate amongst Bolivia's professional urban managers and builders. Outside the city, interest in the most effective development of agricultural capacity has forced a good look at soil conditions, erosion and water supply.

The gradual swelling of the group of Bolivians who recognize the existence of environmental problems does not, by itself, imply a consistent, broad scale attack on these problems in the near future. The five-year plan mentions environmental health only as an afterthought in the section dealing with urban infrastructure investments.

## B. The Institutions Involved

### 1. Ministry of Indian Affairs and Agriculture

At the national government level perhaps the most dramatic expression of environmental concern has been the publication in 1975 of the Ecological Map of Bolivia (Mapa Ecológico) and accompanying text. The result of many years of work (in coordination with technical experts provided by the Organization of

American States), the Map provides a detailed review of the location, climate, physiography, soils, vegetation, and appropriate land uses of the 48 different zones attributed to the country.

In the preamble to the text, the Minister of Indian Affairs and Agriculture sets out the hope that the document can serve to coordinate the development urge with a sensible understanding of the ecological limitations which exist:

"Knowledge of our territory will provide the base for future development plans. It has been necessary to become aware of the differences in climate, soils and the distribution of animal and vegetal relationships as they relate to the possibilities for increases in exportable agricultural production, the location of all types of industry, the construction of road networks, the location of zones suitable for colonization, the classification of agricultural zones, the reasoned exploitation of natural wealth, the correction of improper use of land and the planning required to provide the resources to support future generations . . .

From this time forward the private and public sectors will have in the Ecological Map a scientific document, which like a mathematical table, will make possible planning, the conservation of wealth and, what's more, the recuperation of land and animal species now in the process of liquidation." (author's translation. Mapa Ecológico de Bolivia: Memoria Explicativa. Ministerio de Asuntos Campesinos y Agropecuarios. La Paz, 1974. Presentación.)

Maps and plans are a dime a dozen in Bolivia, but the seed has been planted for a more environmentally sound approach to use of the nation's land and natural resources.

## 2. Centro de Desarrollo Forestal

This area of the Agriculture Ministry is charged with implementation of a nationwide reforestation program which has urban as well as rural application. Foreign assistance is helping the effort to introduce appropriate trees to lands long cleared of trees and severely overgrazed. Large advertisements appeared in

the newspapers proclaiming the 2nd of October, 1976 as "Tree Day." The mountain region of the country is the focus for this effort, and a wide range of government organizations are being involved in implementation of the program. The City of La Paz has invited public participation in a city beautification scheme, and also plans to use large scale plantings to stabilize dangerous land areas.

### 3. Ministerio de Urbanismo y Vivienda

This Ministry, principally through the Division of Urban Engineering, has the major role of establishing the nation's building codes and public infrastructure regulations. The regulation setting standards for water and sewer connections was only recently approved. No other codes exist.

The scarcity of water in many parts of the Altiplano has led to more advanced recognition of the need for supply and treatment facilities. Sewer treatment has been completely neglected, and the only existing requirements call for a housing development to have a collector system and be tied into the trunk line.

The Ministry is also sponsoring a study of garbage collection requirements in conjunction with the City of La Paz. Pilot projects are underway but no regulation is anticipated for some time.

The absence of building codes has led local civic groups in La Paz to request action by the municipal government. Two problems have arisen as a result that are cause for concern among those technicians sensitive to the nation's urban environmental problems: the blocking of sunlight by high-rise buildings and the provision of off-street parking.

The climate of La Paz is severe and becomes more so when the brilliant tropical sun is not permitted to help. Some professionals suggest that the recent spate of high-rise buildings has caused the temperature to drop significantly during the day along certain streets. This temperature change, it is feared, will lead not only to changes in comfort levels, but also, if not accompanied by stricter construction quality controls, to structural weakness in tall buildings not adequately designed and built to withstand the abrupt temperature changes.

4. Comités de Obras Publicas  
Corporaciones de Desarrollo

These organizations play an important role in urban environmental protection because they have, in many cases, acquired influence as the planning and public utilities providers for the nation's major metropolitan areas. Administratively, they have a curious position as they originally were established as regional development agencies and fell into their present role because of the inability of municipal governments to handle the task of planning and infrastructure development. To further confuse the issue the Comités de Obras Publicas report to the Ministry of Urban Development and Housing, the Corporaciones de Desarrollo to the Ministry of Planning and Economic Coordination.

Financing for these organizations comes from a percentage of the export sales value of the major products of the department (state) in which they are located. The most powerful, therefore, are those located in the principal mining and oil producing departments. Perhaps the most influential and effective Comité in the country is located in the city of Santa Cruz. The Comité funds the Master Planning Office which produces a control document of considerable strength. Santa Cruz has a well-defined system of ring roads, with right-of-ways already obtained for the third and fourth rings which are not yet paved. Land use and density are also considered. The Comité is also the main provider of drinking water, sewer collection and street paving. Its responsibility runs throughout the department of Santa Cruz though the bulk of the work is done in the rapidly growing city itself.

Because of its control over land development, the Comité is in an excellent position to determine the future impact of construction on such aspects of the urban environment as traffic, density, water use and the consumption of agricultural land.

The Committees and Corporations work closely with municipal governments, though not always in harmony. There is an uneasiness that the former are not truly operating within their area of authority. Their financial might is acknowledged. Recently, the President of the Country had to intervene personally to break up a feud between the City of Oruro and its Development Corporation. In some cases, most notably that of La Paz, the municipal government is by far the more dynamic entity. The Department of La Paz

does not have any major export produce and therefore, the Development Corporation is not particularly important financially.

#### 5. Municipal Government

Existing municipal charters as well as the proposed new Law of Municipal Government (Ley Organica de Municipalidades) all provide this level of government with the principal authorities and responsibilities for the maintenance of a healthful urban environment. As mentioned earlier, the authorities and the financial capabilities are not always combined. That is the case in Bolivia.

The most immediate environmental problems facing municipal governments are those of garbage collection and sewer treatment. In La Paz, garbage collection is uncoordinated and disposal is handled by primitive land operations. More dramatic, all of the city's untreated waste water is channeled to the Choqueyapu, a river of very modest flow prior to the December to March rainy season, which flows directly to the valley in which the bulk of the capital city's food is produced.

The municipality currently is negotiating development of a treatment system with the West German Government. No facility could be expected before 1978 at the earliest.

In Sucre and Cochabamba, conditions are identical. One development of 13 units being constructed by the S + L system in downtown Sucre will use a central septic tank because the city's main collector is located in a different, though proximate, drainage area. In Cochabamba, the main river below the city center is actively used for washing clothes.

Sucre has developed a solid waste recycling system of a primitive nature, selling a truckload of putrified waste for about six dollars to farmers interested in its fertilizer value. The very existence of such a system is testimony to the organic character of the waste.

#### 6. Servicio Nacional de Desarrollo Urbano

This autonomous agency of the national government has the task of upgrading the technical, administrative and financial capacity of municipal government, and as such is the principal distributor

of modern concepts and techniques to municipal government. It disburses loans, grants and technical assistance, much of it from foreign sources including AID, to municipalities. It holds courses on a wide range of subjects, and holds as one of its principal objectives raising municipal government to a level of capacity that obviates the need for the Regional Committees and Development Corporations. In 1974, SENDU made urban infrastructure loans of \$3,135,000, of which \$625,000 was put up by the national government. The national government accepts the liability for all foreign loans passed through SENDU so the agency itself has no debt. It will finance up to 90% of a project. The Municipality must pay off the loan via collection of front foot benefit charges.

SENDU has been the main force behind preparation of the new Law of Municipal Government. A SENDU supported adjustment to the Chapter on the jurisdiction of Municipal Government includes specific mention of the authority to regulate against contamination of the environment and to promote a healthful environment. This is the only mention of this subject in the proposed Law.

#### 7. Other Institutions

Among those institutions whose authorities relate to community or urban development, the Servicio Nacional de Caminos, the Empresa de Nacional de Electricidad (ENDE), and the water processing entity CORPAGUAS deserve mention as their projects may hold the key to housing or urban development in any area. These entities are fully imbued with the national development fever and are unlikely to place environmental impact high on their list of concerns. Their actions, however, may have a very immediate impact on the location and development of human settlements, and for that reason may have a long-term impact of significance. Their plans would have to be considered in any environment impact assessment of major housing programs.

#### C. The Potential Impact of Housing Projects in Bolivia

Housing projects of any scale in Bolivia will imply important environmental impact touching almost every category delineated in the AID guidelines for the Initial Environmental Examination. Among the most important will be those affecting land and soils, water supply and water courses, the atmosphere as a result of traffic concentration and the socio-economic patterns as a result of migration.

The negative effects of such developments, implied in the identification above of some of the impacts will have to be balanced against the positive ones of higher health standards, population transfer from areas of improper land use, and opportunities for better control of sewage and waste disposal and transportation.

The housing deficit in Bolivia is such that any existing national policy will focus on the provision of modern housing rather than the environmental impact of such projects. Nevertheless, it does seem possible that the environmental assessment process can be used effectively to outline the need for projects with fully developed supporting infrastructure included in the plans and cost estimates.

The growing awareness of environmental impact by Bolivia's professional class must be supported at every turn.

BIBLIOGRAPHY

1. Anteproyecto de Ley Orgánica de Municipalidades, Comisión Rea-  
dactora: Ministerio de Coordinación y Planificación, Ministerio  
del Interior, Migración y Justicia, Servicio Nacional de Desar-  
rollo Urbano, H. Alcaldía Municipal de La Paz, La Paz, Bolivia,  
1975.
2. XVI Asamblea Anual, Federación Nacional de Cooperativas de  
Ahorro y Crédito de Bolivia, Memoria 1975, Cochabamba, Bolivia,  
1975.
3. Bolivian Savings and Loan System, Financial and Administrative  
Evaluation Report, November 17, 1971, Housing Guaranty Program,  
(Contract No. AID/csd-3317).
4. Decreto Ley 07585 y Reglamentación, 4ta Edición, Caja Central  
de Ahorro y Préstamo para la Vivienda, Sistema Boliviano de  
Ahorro y Préstamo para la Vivienda, Edit. "Letras," Yanacocha  
712, La Paz, Bolivia, 1976.
5. Decreto Ley No. 11085 (Ley Fundamental de la Vivienda), La Paz,  
Bolivia, Sept. 19, 1973.
6. Gómez, Martha M., Complementación datos encuesta adjudicatarios  
zona Lazareto-Sector Central (plataformas), Inf. No. 45:76,  
Departamento Servicio Social, Anexo No. 2, La Paz, Bolivia.
7. Gómez, Martha M., Encuesta adjudicatarios zona Lazareto Central,  
May 27, 1975, Departamento Servicio Social, Oficina No. 106/75,  
La Paz, Bolivia.
8. Grupo Ad Hoc de Estudio por País de la Cepcies Sobre Bolivia,  
Situación, Principales Problemas y Perspectivas del desarrollo  
Económico y Social de Bolivia (Versión Preliminar), Washington,  
D. C., Sept. 15-19, 1975.
9. Memoria 1975, Federación Nacional de Cooperativas de Ahorro y  
Crédito de Bolivia. XIV Asamblea Anual. Cochabamba. (Transla-  
tion by author.)
10. Ministerio de Coordinación y Planificación, Background Documents  
for 5 Year Plan, 1976-80.

11. Murillo, Salcedo, Walter, Aspectos de Vivienda y Marginalidad, CONAVI, La Paz, Bolivia, 1975.
12. Murillo, Salcedo, Walter, Bases para un Plan Nacional de Vivienda, La Paz, Bolivia, June 19, 1973.
13. Plan Socio Urbano: Breve Diagnóstico Socio Habitacional de la Ciudad de Sucre, Informe segundo semestre 1975, Comité de Obras Deportivas Departamentales, Bolivia, 1975.
14. Resumen, Plan de Desarrollo Económico y Social, 1976-1980, Ministerio de Planeamiento y Coordinación de la Presidencia de la República, La Paz, Bolivia, August 1976.
15. Unzueta Q., Orlando, Mapa Ecológico de Bolivia: Memoria Explicativa, Ministerio de Asuntos Campesinos y Agropecuarios, División de Suelos, Riegos e Ingeniería, La Paz, Bolivia, 1975.
16. Valle Antela, Guido, and Céspedes Tero, Antonio, Financiamiento Externo del Desarrollo de Bolivia, Interamerican Development Bank, Washington, D. C. 1973.
17. Financiamiento Cooperativo de la Vivienda. Federación Nacional de Cooperativas de Ahorro y Crédito. (FENACRE). Unpublished proposal. Cochabamba, Bolivia, 1976.

APPENDIX A

(Chapter III)

NATIONAL SOCIO ECONOMIC CONDITIONS

TABLE A

## Household and Family Size

	Persons per Household	Family Members per Household*	Labor Force Participation Rates
Bolivia	5.11	5.00	39%
The City of La Paz	4.72	4.51	38%
Other Urban Areas	5.32	5.10	34%
Rural Areas	5.12	5.07	41%
<u>Provinces:</u>			
Chuquisacu	5.21	5.11	34%
La Paz	4.76	4.67	44%
Cochabamba	5.10	4.95	40%
Oruro	5.04	4.97	32%
Potosi	5.19	5.15	33%
Tarija	5.67	5.48	36%
Santa Cruz	5.85	5.56	36%
Beni	6.84	6.67	36%
Pando		no data available	

\* excludes non-relatives living in the household

Other sources, including the Ministry of Planning and Coordination, list this number as 42%.

TABLE B  
PERCENT LIVING IN PROVINCE WHERE BORN

Province of Birth	Percent Living In:		Total
	Province of Birth	Other Province	
Chuquisaca	92%	8%	100%
La Paz	97%	3%	100%
Cochabamba	92%	8%	100%
Oruro	87%	13%	100%
Potosi	91%	9%	100%
Tarija	91%	9%	100%
Santa Cruz	95%	5%	100%
Beni	91%	9%	100%

TABLE C  
PERCENT BORN IN PROVINCE WHERE LIVING

Province of Residence	Percent Born In:		Total
	Province of Residence	Other Province	
Chuquisaca	94%	6%	100%
La Paz	94%	6%	100%
Cochabamba	96%	4%	100%
Oruro	84%	16%	100%
Potosi	95%	5%	100%
Tarija	94%	6%	100%
Santa Cruz	87%	13%	100%
Beni	97%	3%	100%

### Additional Family Income Findings

The rural poor and the urban workers have been treated separately because the rural poor are alleged to be only slightly connected to Bolivia's market economy. Nevertheless, previous calculations of per capita GNP and per capita income have been made for the entire population of Bolivia, and they need to be quickly reviewed here.

In 1975, per capita GNP was reported by the Ministry of Planning and Coordination to be \$377.00. Using GNP and labor force data from this source to calculate productivity yields a figure of \$897.00 per worker. International Monetary Fund calculations for the years 1971 to 1974 point out that only between 82% and 89% of GNP is private sector income and only 72% to 80% of GNP is disposable personal income. Eighty percent of \$897.00 is \$718.00. With two workers per family, this translates to a mean disposable family income of almost 2400 pesos (\$120.00) per month. If 89% of GNP is private sector income, then mean income would be 2670 pesos (\$134.00) per month. Median income would be lower. In fact, the median family income for all Bolivian families is extremely low - surely less than \$100.00 per month, probably much less. Our best estimate is \$80.00 per month. But the reason for this is that about half the labor force is engaged in either subsistence farming or very low-paid and seasonal farm labor, or both. According to the Ministry of Planning and Coordination, the rural two-thirds of the labor force spends, according to the area, from five to fourteen percent of its time gainfully employed in non-agricultural activity. But most of their income from their agricultural activity is in kind, and this has not been measured well. In the main, these workers are not integrated into Bolivia's market economy.

For urban workers, especially those in the cities of La Paz, Cochabamba, and Santa Cruz, the economic situation is much better. Being more precise than that requires basing estimates on very fragmentary data, but it is necessary.

For all urban areas, a median family income estimate of about 2,600\$b (\$130.00) per month seems a reasonable estimate. General discussions with Ministry of Planning and the Central Savings and Loan Bank staffs suggest the following data for La Paz:

-lower middle income: between \$200 and \$400 per month;

-middle middle income: \$400 to \$700/month

-higher middle income: \$700 to \$1,000/month

These income levels are clearly not defined in terms of positions in the income distribution for La Paz since such data are not available. Study team conversations with knowledgeable officials in various ministries produced no estimates of median family income higher than \$200.00 per month and they ranged down to \$110.00 per month.

Perhaps the most reliable and informative income distribution data available are those obtained from the Ministry of Labor's National Council on Salaries and Wages. Table D below was obtained from this source. These averages are calculated from salary data obtained from forms sent in to the Ministry of Labor. While such reporting is mandatory, it is by no means universal, even among those firms for whom it is required by law. Only 18 percent of the labor force receive wages or salaries, according to Ministry reports.

In addition, there may be problems of accuracy. In construction, for example, actual wages often exceed reported wages. Though maximum as well as minimum limits have been set, in labor--short sectors such as construction (where employment has grown at a rate of 16.3 percent per year over the last five years)--additional payments may be required to get and keep skilled labor.

The issue is further complicated by the elaborate system of legally required extra payments outlined in Table E. The worker's basic wages may reflect less than half the cost to the employer of employing him. Employers may have to pay 116 percent of wages either to the worker or to governmental agencies in addition to the basic salary. Such extra payments are included in the income data in Table D, according to the Ministry of Labor, even though the employee doesn't receive them all.

The most reliable conclusions to be reached from Table D, then, are those pertaining to the relationships between the mean, median, and mode, and the sex differences in income. In all cases the mean exceeds the median which in turn exceeds the mode. This indicates, not surprisingly, that the income distribution is skewed to the right. It is also clear that men consistently earn more than women, and that the distribution is markedly more skewed for men than it is for women. This latter fact is supported by variance data available but not shown.

This question of skewness is very important, especially since it appears so dramatically among those earning salaries--a group one would expect to be more homogeneous than, for example, the self-employed.

Another approach to take is simply to list occupations and government and industry data on wages or salaries earned in each of these. Table F shows some of the data of this type obtained by the study team. Some of it comes from official documents, and some from informed observers. Table G shows how employment is distributed by sex across economic sectors and may be used to put the data in Table F in perspective.

The main conclusion to be drawn from the wage and salary data shown in Table F is that workers' earnings are low, but not that low. With an average of two earners per family, even waiters' families would have an average family income in excess of 3,000 pesos/month (\$175.00) if only the workers could remain fully employed.

TABLE D  
AVERAGE 1975 SALARIES BY DEPARTMENT AND SEX

Department	Sex	(Bolivian pesos *)		
		Mean	Median	Mode
La Paz	M	2258	1736	1345
	F	1919	1704	1430
Cochabamba	M	2377	1957	1380
	F	1626	1391	1312
Oruro	M	1972	1628	1383
	F	1510	1412	1341
Potosí	M	1852	1634	1418
	F	1482	1380	1222
Chuquisaca	M	2244	1663	1234
	F	1466	1242	1157
Santa Cruz	M	2851	2401	1393
	F	1879	1484	1284
Tarija	M	2239	1801	1358
	F	1580	1419	1293
Beni	M	2223	1699	1390
	F	1442	1352	1357
Pando	M	2010	1470	1348
	F	1694	1430	1321
Bolivia	M	2256	1750	1364
	F	1840	1612	1380

\* 20 pesos (b.) = U.S. \$ 1.00

TABLE E

A-7

ADDITIONAL SALARY BENEFITS

BONUSES

1. Patriotic salary	30 days	
2. Christmas bonus	30 "	
3. Premium	30 "	
4. Compensation	30 "	
5. Seniority	45 "	
	<hr/>	
	165 days	58.51%

CONTRIBUTIONS TO GOVERNMENT ORGANIZATIONS

1. C.N.S.S.	20%		
2. CONAVI	2%	80.3 days	24.48%
3. CONES	1%		
	<hr/>		
	23%		

PAID HOLIDAYS

1. Sundays	52 days	
2. Holidays	7 "	
3. Vacation	15 "	
4. Leave + Rain	6 "	
5. Sickness	3 "	
	<hr/>	
	83 days	29.43%

NET YIELD

1. Days paid	365	
2. Days not worked	83	
3. Total days net	282 days	100.00%
4. Total paid	610.30 days	216.42%
5. Total days net of work	282 days	
6. Incidence	$\frac{610}{282} = 216.42$	
7. % Increase over net		116.42%

TABLE F  
 WAGES AND SALARIES FOR VARIOUS  
 OCCUPATIONS - LA PAZ, 1976

---

(Bolivian pesos per month)

Economic Sector	Occupation	Typical Wages or Salaries
Construction:	Common Laborers	2,040
	Drivers	6,000
	Carpenters	3,000
	Electricians	3,500
	Plumbers	3,500
	Masons	3,000
	Foremen	4,000
	Draftsmen	3,200
	Secretaries	3,200
	Clerks	2,000 to 4,000
	Engineers	12,000 to 16,000
	Plasterers	1,650
	Administrators	6,565
Mining and Petroleum:	Member of Board of Directors	13,800
	Administrators	10,042
	Office Director	2,959
	Miners and Drillers	2,122
	Office Workers in Petroleum	4,184
Manufacturing:	Member of Board of Directors	7,533
	Administrators	7,056
	Weavers	2,202
	Tanners	2,106
	Workers in Canning and Bottling Plants	3,459
Electricity:	Electrical Engineers	4,648
	Administrators	13,874
	Foremen	3,467
	Electrical Workers	2,579

---

TABLE F cont.

Economic Sector	Occupation	Typical Wages or Salaries
Commerce:	Owners and Managers	7,841
	Directors of Sales Departments	6,855
	Sales Inspectors	2,890
	Salesmen, Shopclerks, and Demonstrators	2,377
Finance:	Executives	13,470
	Office Directors	10,504
	Chiefs of Sections	4,792
	Junior Officers	4,034
Transportation and Communication:	Directors of Businesses	11,531
	Technical Chiefs	6,290
	Foremen	2,105
	Drivers	2,477
	Pilots	3,187
	Radio Technicians	4,432
Services:	Business Executives	6,055
	Office Directors	4,053
	Owners and Managers of Hotels	5,516
	Waiters and Attendants	1,657
	Administrative Employees	2,038
	Receptionists and Employees of Travel Offices	1,960
Miscellaneous:	Teachers	5,000 to 8,000
	Maids	600 + room + board

TABLE G  
EMPLOYMENT BY SEX AND ECONOMIC SECTOR

Economic Sector	Total Employed in 1975	Men	Women
Agriculture	1,403,100	813,798	589,302
Mining	78,262	69,653	8,609
Petroleum	10,605	9,014	1,591
Manufacturing	195,730	140,595	55,135
Construction	88,200	82,026	6,174
Energy, water and sewer	6,673	6,273	400
Transportation and Communications	82,065	77,141	4,924
Commerce and Finance	150,000	111,600	38,400
Government	99,059	79,926	19,133
Services	165,000	118,800	46,200
Total	2,278,694	1,508,826	769,968
Nonagricultural Total	875,594	659,028	180,666

Inspection of Table H, which presents employment by sector for each department along with a very crude measure of productivity in each sector, provides a better understanding of income variations among departments. The productivity measure was obtained by simply dividing the value of that sector's output by the number of workers in it. The bottom row shows the weighted mean productivity for each department. Santa Cruz and Beni are high because they have higher proportions of their labor force in the very productive petroleum industry. This is somewhat spurious since the industry is extractive and the profits accrue not to the workers in the industry, but to the government. Nevertheless, it is noteworthy that for no department does the mean fall below \$150/month. Again, it must be emphasized that these are means and not medians. In this case, the implication is that mean monthly incomes for all urban families could be as high as \$300. Medians are much less.

TABLE H  
 PERCENTAGE DISTRIBUTION OF NONAGRICULTURAL EMPLOYMENT  
 BY ECONOMIC SECTOR FOR EACH DEPARTMENT, 1975

Economic Sector	Department										Total	Productivity (pesos)
	Cauquisaca	La Paz	Coban- bamba	Potosí	Oruro	Santa Cruz	Tarija	Beni	Pando			
Mining		5	4	43	15	-	-	-	-	-	9	3,514
Petroleum	1	1	2			4	1	1	-		1	19,543
Manufacturing	12	42	28	1	15	19	6	3			22	2,515
Construction	15	9	10	8	14	8	20	14	33		10	2,208
Energy, water, sewer	1	1	1	1	1	1	1	1	1	1	1	9,441
Transportation and communica- tion	11	9	10	6	9	13	10	4	4		17	4,004
Commerce and finance	25	12	20	19	19	20	23	33	28		11	3,378
Government	12	15	7	5	6	12	15	7	22		11	3,375
Services	<u>23</u>	<u>17</u>	<u>17</u>	<u>17</u>	<u>20</u>	<u>24</u>	<u>24</u>	<u>33</u>	<u>13</u>		<u>19</u>	<u>2,039</u>
	100	101	99	100	100	101	100	99	101		99	
Total	39,971	378,672	120,324	100,003	71,365	114,569	25,692	21,217	3,776		875,594	
Weighted average of productivity	3,224	3,149	3,378	3,355	3,085	3,695	3,182	3,685	3,075		3,222 <sup>a</sup>	

\*This figure is lower than the 3,475b./month estimate for GNP per worker because the imputed value of owner-occupied housing is excluded here.

Source: Study Team Compilation

TABLE I  
ESTIMATE OF NATIONAL HOUSING DEFICIT  
(CONAVI)

Cities	Population	Housing Demand	Number of Existing Houses	Housing Deficit
La Paz	806,448	161,289	49,500	111,789
Cochabamba	173,779	34,755	15,900	18,855
Santa Cruz	159,410	31,882	17,040	14,842
Oruro	138,768	27,753	10,556	17,197
Potosí	114,969	22,993	6,850	16,143
Sucre	100,836	20,167	6,300	13,867
Tarija	42,401	8,480	3,700	4,700
Trinidad	27,080	5,416	3,545	1,871
Cobija	5,609	1,121	405	716
TOTALS	1,569,300	313,856	113,876	199,980

Source: Murillo S., Walter, Aspectos de Vivienda y Marginalidad.  
CONAVI, La Paz, 1975.

TABLE J  
CITY OF SUCRE - HOUSING DENSITY

# of Persons # of Rooms	1	2	3	4	5	6	7	8	9	10 & More	Total Houses	Total Rooms
1	734	697	620	356	512	268	153	91	71	25	3,527	3,527
2	166	299	295	323	316	243	183	142	112	55	2,134	4,268
3	101	171	198	197	181	150	139	107	83	62	1,389	4,167
4	61	117	141	154	174	152	124	999	109	78	1,209	4,836
5	31	53	104	97	165	107	80	61	60	53	771	3,855
6	22	35	66	56	81	75	64	52	48	42	541	3,246
7 & more	36	52	81	97	120	144	127	118	136	128	1,039	8,000 +
Total Families	1,151	1,424	1,505	1,436	1,333	1,139	870	670	639	443	10,610	31,899
Total Persons	1,151	2,848	4,515	5,744	6,665	6,834	6,090	5,360	5,751	5,000*	49,958	

\* Estimated

SOURCE: Population and Housing Census (1972)

TABLE K  
HOUSING DENSITY - CITY OF ORURO

No. of Persons No. of Rooms	1	2	3	4	5	6	7	8	9	10	11	More	Houses	Rooms
1	1,598	1,569	1,429	1,210	937	568	338	158	74	126	10	4	7,921	7,921
2	326	569	672	777	761	632	438	281	181	62	22	19	4,740	9,480
3	174	303	399	463	521	452	318	270	183	63	30	36	3,212	9,636
4	111	225	294	364	422	361	311	225	183	60	33	29	2,528	10,112
5	46	111	178	208	246	220	185	138	109	33	22	29	1,527	7,635
6	21	75	89	111	124	127	107	90	81	25	16	24	893	5,358
7	48	73	120	136	162	195	176	147	122	42	21	35	1,275	8,925
	2,324	2,925	3,181	3,269	3,173	2,555	1,873	1,309	933	311	157	176	22,091	59,067
	2,324	5,850	9,543	13,076	15,865	15,330	13,111	10,472	8,397	3,110	1,727	2,112	100,917	

A-15

SOURCE: Population and Housing Census of the City of Oruro (1972).

PERCENT OF HOUSING UNITS  
WITH SERVICES

TABLE L

City	Year of Census	Water	Electricity	Sewer
Potosi	1972	43%	65%	32%
Tarija	1970	*	82%	*
Cochabamba	1967	61%	72%	41%
Oruro	1972	58%	83%	27%
Sucre	1972	71%	78%	46%

\* No data available

SOURCE: Ministerio de Planeamiento y Coordinacion

TABLE II  
NUMBER OF HOUSES AND OCCUPANCY

	YEAR OF CENSUS	TOTAL	OWNER OCCUPIED	%	LEASED	%	ASSIGNED RENTS	%	OTHER	%
Cochabamba	1967	27,339	12,347	45.06	8,192	29.89	2,457	8.97	4,403	16.08
Santa Cruz	1966	16,564	9,301	56.15	3,315	19.41	1,240	7.48	2,808	16.96
Oruro	1972	22,091	10,244	46.37	8,292	37.53	1,959	8.87	1,596	7.23
Potosí	1972	15,174	6,491	42.77	6,596	43.47	760	5.81	1,327	8.75
Sucre	1972	10,610	4,818	45.40	4,692	44.23	622	5.36	478	4.51
Tarija	1970	5,385	2,456	45.60	2,306	42.83	--	--	623	11.57
Cobija	1970	2,794	1,664	59.56	640	22.90	--	--	490	17.54
TOTAL:		100,017	47,321	47.31	33,933	33.92	7,038	7.04	11,725	11.73

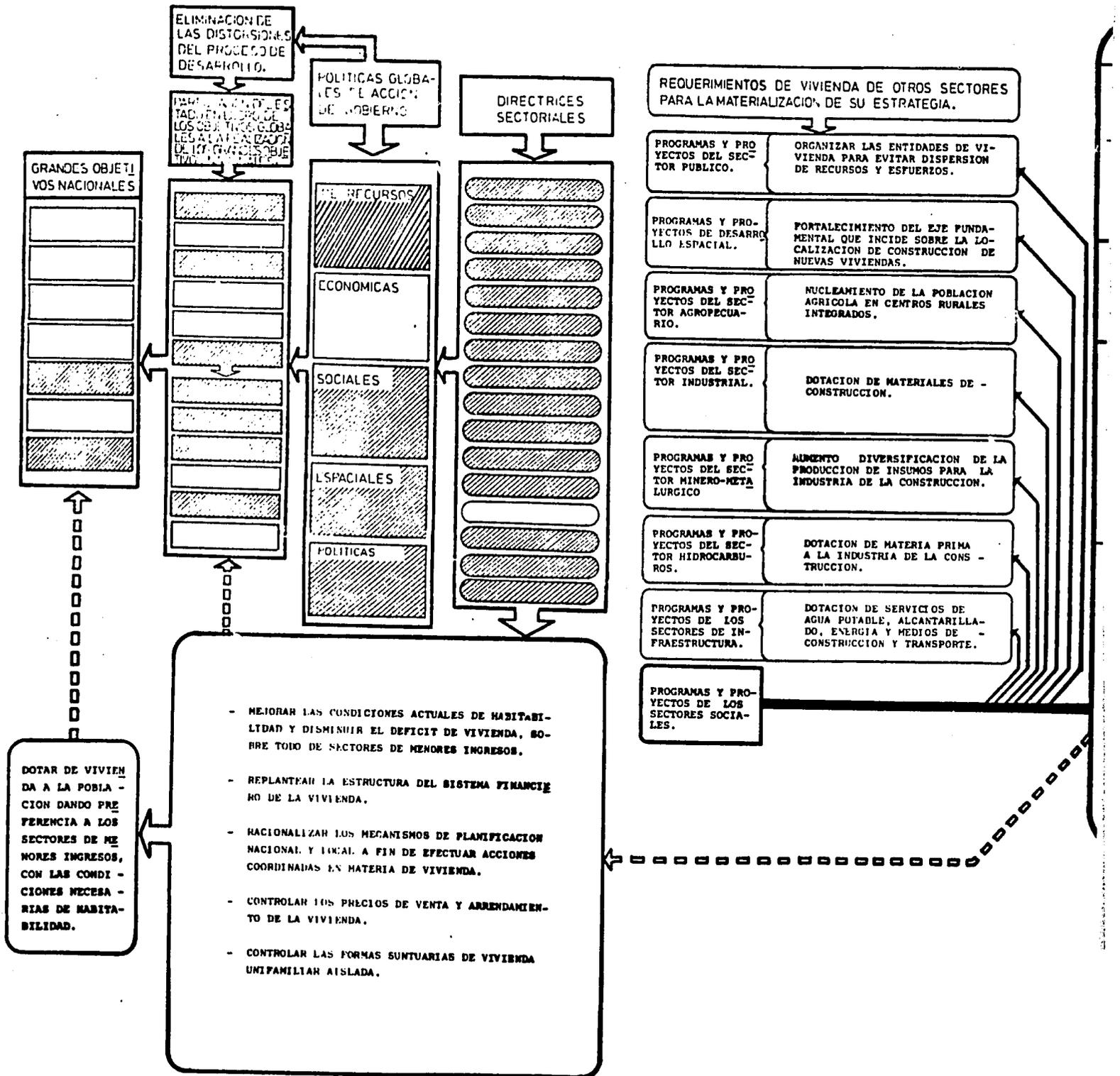
Source: Censo de Población y Vivienda.

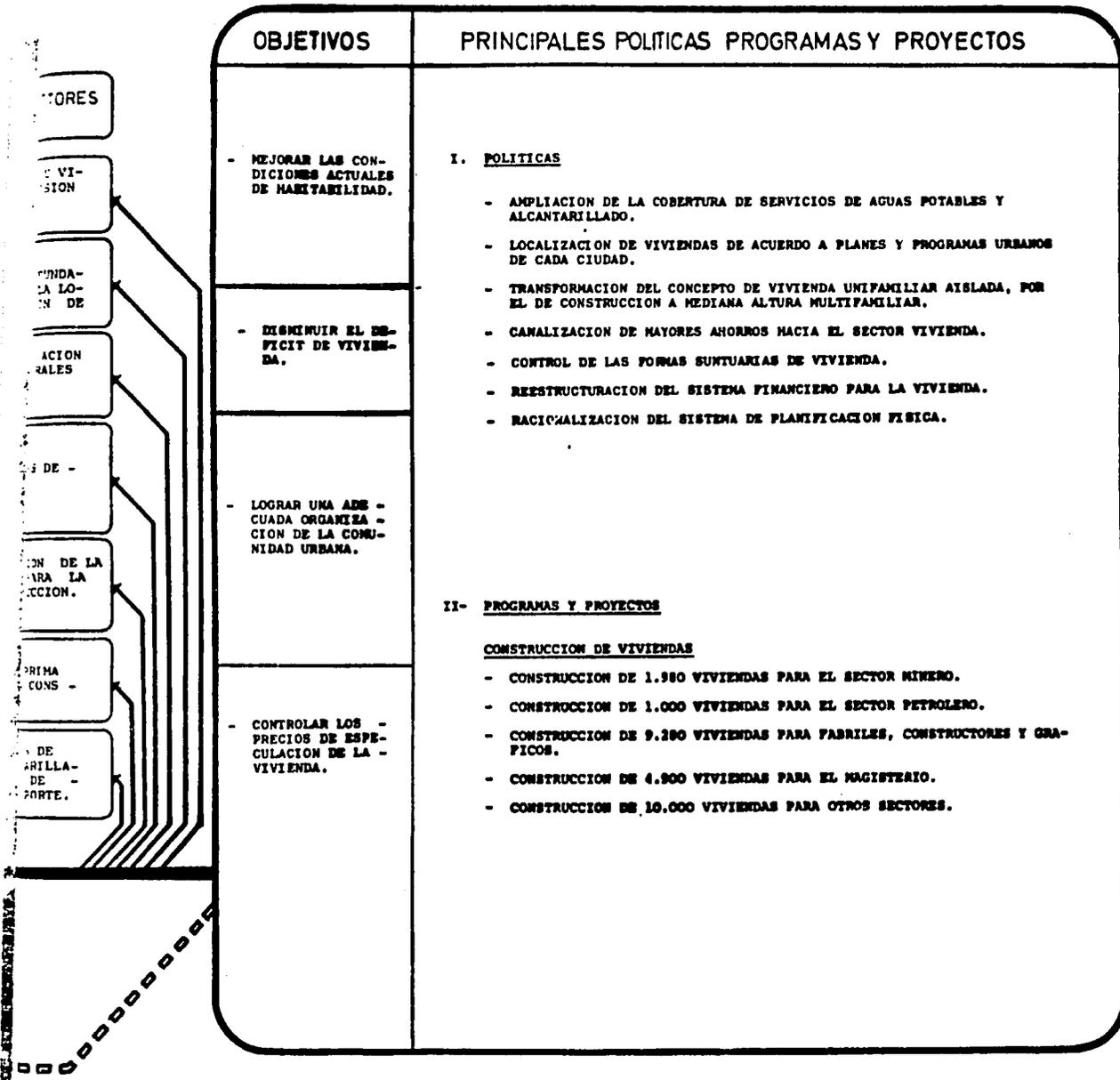
APPENDIX B  
CHAPTER IV  
THE HOUSING SECTOR



# BOLIVIA

## ESTRATEGIA Y PLAN DE VIVIENDA





The Objectives of the Banco Nacional de la Vivienda

- "a) To channel those internal and external financial resources destined for housing production and related services.
  - b) To intervene in the capital market via issuance to negotiation of fixed and variable rate instruments.
  - c) To operate in accordance with the housing policy set by the Ministry...
  - d) To encourage and promote the establishment of businesses and financial resources relating to construction and construction materials.
  - e) To make available financial aid and guaranties to public and private entities engaged in construction in general, housing, processing of construction materials, infrastructure, community facilities and others.
  - f) To offer technical assistance to entities dealing in construction and housing project execution.
  - g) To finance the technification of the housing development process in order to make more feasible the mass production of housing units." \*
- \* Decreto Ley No. 11085 (Ley Fundamental de la Vivienda), Title II, Chapter VII, Article 41.

TABLE A  
 SOURCES OF HOUSING PLAN FINANCING  
 In Thousands of Dollars

	Construction of Units \$US	S + L Program \$US	TOTAL \$US
<u>DIRECT</u>			
CONAVI	4,195.00	539.00	4,734.00
Foreign Credit	28,480.00	9,313.00	37,793.80
Initial Quota	6,832.00	-	6,832.00
<u>INDIRECT</u>			
Savers	-	13,025.90	13,025.90
S + L System	-	2,856.60	2,856.60
Reinvestment	1,283.00	-	1,283.00
TOTAL	40,790.00	25,735.30	66,525.30
Number of Units	6,500	3,500	10,000

TABLE B-- DISTRIBUTION--FIRST CONAVI-BID LOAN

B-4

DISTRITO	UNIDADES CONS- TRUIDAS CON FON- DOS BID-CONAVI	UNIDADES CONS- TRUIDAS CON FONDOS CONAVI	TOTAL
La Paz	2.646	13	2.659
Cochabamba	338	20	358
Potosí	5	-	5
Oruro	15	-	15
Sucre	198	-	198
Tarija	124	-	124
Santa Cruz	114	-	114
	3.440	33	3.473

TABLE C-- DISTRIBUTION--SECOND CONAVI-BID LOAN

DEPARTAMENTO	CON FONDOS BID-CONAVI	CON FONDOS CONAVI	TOTALES UNIDADES DE VIVIENDA
La Paz	1.741	15	1.756
Santa Cruz	509	82	591
Cochabamba	467	2	469
Oruro	450	-	450
Potosí	153	-	153
Beni	108	-	108
Chuquisaca	80	-	80
Tarija	76	-	76
Pando	52	-	52
	3.636	140	3.776

TABLE D

SECTOR	No. DE VIVIENDAS CREDITO BID-CONAVI	No. DE VIVIENDAS FONDOS CONAVI	TOTAL
1 Fabriles	744	-	744
2 Ferroviarios	688	-	688
3 Magisterio	533	-	533
4 Gobierno	465	7	472
5 Emp. descentral.	449	-	449
6 Minería	220	2	222
7 Particular	218	-	218
8 Comercio	161	-	161
9 Petroleros	104	114	218
10 Varios	54	17	71
	3.636	140	3.776

Source: Murillo, Aspectos ... op.cit., pp. 31, 39.

TABLE E  
HOUSING PRODUCTION: CONAVI/BID LOANS

YEAR	FIRST PLAN				SECOND PLAN				TOTAL	
	No. UNITS	FIRST BID CONAVI LOAN	No. UNITS	CONAVI FUNDS (000b.)	No. UNITS	BID/ CONAVI LOAN (000b.)	No. UNITS	CONAVI FUNDS (000b.)	No. UNITS	TOTAL ANNUAL INVESTMENT (000b.)
1964	172	3,892	---	---	---	---	---	---	172	3,892
1965	458	10,363	---	---	---	---	---	---	458	10,363
1966	1,192	26,971	---	---	---	---	---	---	1,192	26,971
1967	1,374	31,089	---	---	---	---	---	---	1,374	31,089
1968	244	5,521	33	771	451	16,077	---	---	728	22,369
1969	---	---	---	---	539	10,214	131	4,187	670	23,401
1970	---	---	---	---	805	28,697	9	287	814	28,984
1971	---	---	---	---	883	31,477	---	---	883	31,477
1972	---	---	---	---	769	27,413	---	---	769	27,413
1973	---	---	---	---	189	6,737	---	---	189	6,737
	3,440	77,836	33	771	3,636	129,615	140	4,474	7,249	212,696

Source: Murillo, Aspectos... op.cit., p. 42.

## CURRENT STATUS - CONAVI PRODUCTION

UNITS IN CONSTRUCTION

La Paz	Rio Seco	194**	viviendas
Sta. Cruz	Guaracachi	183**	"
Tarija	Morros Blancos	63**	"
La Paz	Villa Adela	107**	"
Potosí	Ciudad Satélite	16	"
Sucre	Garcilazo	63**	"
Sta. Cruz	Puerto Suárez	50	"
La Paz	Viacha	35	"
	TOTAL	<u>819</u>	

IN THE PROCESS OF NEGOTIATION

Beni	Trinidad	50	viviendas
Oruro	Senac	57	"
	TOTAL	<u>107</u>	

IN THE PROCESS OF BIDDING

Potosí	Ticaloma	28	viviendas
Sta. Cruz	Universidad	56	"
La Paz	Villa Adela	88	"
	TOTAL	<u>172</u>	

TO BE BID IN OCTOBER

Potosí	Tupiza	100	viviendas
Cochabamba	Pacata	111	"
La Paz	San Isidro	24	"
Tarija	Senac-Morros B.	40	"
	TOTAL	<u>275</u>	

TO BE BID IN NOVEMBER

Sta. Cruz	Equipetrol	50	viviendas
Cochabamba	Sarco	76	"
Oruro	Agua de Castilla	20	"
Cochabamba	Pacata	50	"
Sta. Cruz	Socio Urbano	62	"
	TOTAL	<u>258</u>	

TO BE BID IN DECEMBER

La Paz		100	viviendas
Sta. Cruz		50	"
Tarija		50	"
Cochabamba		100	"
	TOTAL	<u>300</u>	

\*\* Delivery 1976

Source: CONAVI - October, 1976



CONSEJO NACIONAL DE VIVIENDA  
 GERENCIA TECNICA  
 ESTUDIOS Y PROYECTOS  
 La Paz - Bolivia  
 ----0----

P L A N	V I V I E N D A		ELABORACION PROYECTOS Y PRE-INVERSION	TERRENO	INFRAESTRUCTURA
	Nº VIV.	T I P O			
<u>LA PAZ</u> 1.976					
RIO SECO PLAN 194	42	T.A (3 Dorm.)	1.960.--	12.000.--	10.536,44
	152	T.A1- B (2 Dorm.)	1.966.--	12.000.--	10.536,44
VILLA ADELA PLAN 107	107	M - A - M - A1	--	--	--
" " PLAN 108	108	M - E	--	--	--
" " PLAN 88	88	E (3 Dorm.)	2.200.--	14.000.--	15.000.--
" " PLAN 111	111	E (3 Dorm.)	2.200.--	14.000.--	15.000.--
SAN ISIDRO PLAN 24	24	V3 (3 Dorm.)	2.200.--	--	22.000.--
VIACHA PLAN 35	35	B1 (3 Dorm.)	2.200.--	14.000.--	15.000.--
ACHACHICALA PLAN 300	-	-	--	--	--
POSTA MANT. CONAVI	-	-	--	--	--
<u>ORURO</u>					
SENAC	44	M (2 Dorm.)	2.200.--	--	--
SENAC PLAN 57	13	M (3 Dorm.)	2.200.--	--	--
AGUA CASTILLA PLAN 64	64	B2 (3 Dorm.)	2.200.--	14.000.--	15.000.--
<u>COCHABAMBA</u>					
PACAYA PLAN 200	30	I1 (3 Dorm.)	2.200.--	20.000.--	--
" "	52	F4 (3 Dorm.)	2.200.--	20.000.--	--
" "	118	V3 (3 Dorm.)	2.200.--	20.000.--	--
SARCO (CONCLUSION) P. 76	24	A (3 Dorm.)	--	--	--
" "	27	B (2 Dorm.)	--	--	--
" "	25	D (2 Dorm.)	--	--	--
<u>SANTA CRUZ</u>					
FERR.(RED ORIENTAL) P. 183	6	I (3 Dorm.)	1.960.--	--	--
	11	I1 (2Dorm.)	1.960.--	--	--
	13	E3 (3 Dorm.)	1.960.--	--	--
	14	E (3 Dorm.)	1.960.--	--	--
	1	E (2 Dorm.)	1.960.--	--	--
	4	F3 (3 Dorm.)	1.960.--	--	--
	20	F (3 Dorm.)	1.960.--	--	--
	15	F (2 Dorm.)	1.960.--	--	--
	60	F4 (3 Dorm.)	1.960.--	--	--
	23	F5 (3 Dorm.)	1.960.--	--	--
	13	F6 (3 Dorm.)	1.960.--	--	--
	3	F6 (3 Dorm.)	1.960.--	--	--
PUESTO SUAREZ PLAN 50	23	F3 (3 Dorm.)	1.960.--	--	--
	27	F4 (3 Dorm.)	1.960.--	--	6.693.--
UNIV. G.R.M. PLAN 56	56	E1 (3 Dorm.)	1.960.--	--	6.693.--
SENAC PLAN 100	100	E3 (3 Dorm.)	1.960.--	--	--
<u>POTOSI</u>					
CIUDAD SATELITE PLAN 16	16	A1 (2 Dorm.)	1.960.--	16.000.--	8.206,45
TICALOMA PLAN 28	28	M (2 Dorm.)	2.200.--	20.000.--	--
TUPIZA PLAN 100	70	Q1 (2 Dorm.)	2.200.--	--	8.000.--
	30	Q (3 Dorm.)	2.200.--	--	8.000.--
<u>SUCRE</u>					
GARCILAZO PLAN 63	33	A (2 Dorm.)	1.960.--	12.000.--	12.890,96
	30	A1 (3 Dorm.)	1.960.--	12.000.--	12.890,96
<u>TARIFA</u>					
MORROS BLANCOS PLAN 63	63	E (2 Dorm.)	1.680.--	12.000.--	13.690.--
MORROS BLANCOS PLAN 90	90	F (2 Dorm.)	2.200.--	--	--
<u>BENI-TRINIDAD</u>					
PLAN 90	30	E (2 Dorm.)	2.200.--	20.000.--	12.500.--
	20	F4 (3 Dorm.)	2.200.--	20.000.--	12.500.--
<b>TOTAL</b>	<b>2163</b>				

1.977

<u>LA PAZ</u>							
VILLA ADELA	PLAN 108	108		M = 96	--	--	--
"	PLAN 88	88		N = 12	--	--	--
"	PLAN 111	111		H (3 Dors.)	2.200.--	14.000.--	15.000.--
SAN ISIDRO	PLAN 24	24		H (3 Dors.)	2.200.--	14.000.--	15.000.--
VIACHA	PLAN 35	35		V3 (2 Dors.)	2.200.--	--	22.000.--
				B1 (3 Dors.)	2.200.--	14.000.--	15.000.--
<u>ORURO</u>							
SENAC	PLAN 57	44		H (2 Dors.)	2.200.--	--	--
		13		H (3 Dors.)	2.200.--	--	--
AGUA DE CASTILLA	PLAN 64	64		B2 (3 Dors.)	2.200.--	14.000.--	15.000.--
<u>COCHABAMBA</u>							
PACATA	PLAN 200	30		I1 (3 Dors.)	2.200.--	20.000.--	--
		52		V4 (3 Dors.)	2.200.--	20.000.--	--
		118		V3 (2 Dors.)	2.200.--	20.000.--	--
SARCO	PLAN 76	24		A (3 Dors.)	--	--	--
		27		B (2 Dors.)	--	--	--
		25		D (2 Dors.)	--	--	--
<u>SANTA CRUZ</u>							
FERR. (RED ORIENTAL) P.183		6		I (3 Dors.)	1.960.--	--	--
		11		I1 (2 Dors.)	1.960.--	--	--
		13		E3 (3 Dors.)	1.960.--	--	--
		14		E (3 Dors.)	1.960.--	--	--
		1		E (2 Dors.)	1.960.--	--	--
		4		F3 (3 Dors.)	1.960.--	--	--
		20		F (3 Dors.)	1.960.--	--	--
		15		F (2 Dors.)	1.960.--	--	--
		60		F4 (3 Dors.)	1.960.--	--	--
		23		F5 (3 Dors.)	1.960.--	--	--
		13		F6 (3 Dors.)	1.960.--	--	--
		3		F6 (3 Dors.)	1.960.--	--	--
PUERTO SUAREZ	PLAN 50	23		F3 (3 Dors.)	1.960.--	--	6.693.--
		27		F4 (3 Dors.)	1.960.--	--	6.693.--
UNIV. SANTA CRUZ	PLAN 56	56		E3 (3 Dors.)	1.960.--	--	--
SENAC	PLAN 100	100		E3 (3 Dors.)	1.960.--	--	--
<u>POTOSI</u>							
CIUDAD SAT.	PLAN 16	16		A1 (2 Dors.)	1.960.--	16.000.--	8.206,45
TICALOMA	PLAN 28	28		M (2 Dors.)	2.200.--	20.000.--	--
TUPIZA	PLAN 100	70		Q1 (2 Dors.)	2.200.--	--	8.000.--
		30		J (3 Dors.)	2.200.--	--	8.000.--
		30		E (2 Dors.)	2.200.--	20.000.--	12.500.--
		20		F4 (3 Dors.)	2.200.--	20.000.--	12.500.--
<u>TRINIDAD</u>							
PLAN		1900					
<u>TARIJA</u>							
MORROS BLANCOS	PLAN 63	63		H (2 Dors.)	1.680.--	12.000.--	13.690.--
MORROS BLANCOS	PLAN 90	90		F (2 Dors.)	2.200.--	--	--
PLAN QUINQUENAL (1977)		50		UNIFAMILIAR	1.500.--	19.000.--	15.000.--
		50		MULTIFAMILIAR	4.000.--	33.000.--	--

HAL/ger

PLAN DE CONTRUCCION DE VIVIENDAS  
PARA LA GESTION 1977

P L A N E	VIVIENDA		FISCALIZACION SUPERVISION Y VIGILANCIA G.GENERALES	C O S T O		F I N A N C I A M I		
	SUP. M2.	C O S T O		UNITARIO	T O T A L	ADJUDICATARIOS 20 %	CONAVI 80 %	T O T A L
<b>LA PAZ</b> 1.07 F								
RIO SECO PLAN 194	62.70 51.40	70.147,75 60.594,92	2.354,52 2.354,52	96.998.71 87.445,88	4.073.945,82 13.201.773,76	-- --	-- --	-- --
VILLA ADELA PLAN 107	--	--	--	--	10.930.753,20	--	--	--
" PLAN 108	--	--	--	--	10.913.227,66	--	--	--
" PLAN 88	68.30	88.790.--	3.200.--	123.190.--	10.840.720.--	4.927,60	19.710,40	24.638.--
" PLAN 111	68.30	88.790.--	3.200.--	123.190.--	13.674.090.--	4.927,60	19.710,40	24.638.--
SAN ISIDRO PLAN 24	77.--	100.100.--	3.200.--	127.500.--	3.060.000.--	5.100.--	20.400.--	25.500.--
VIACHA PLAN 35	74.40	96.720.--	3.200.--	131.120.--	4.589.200.--	5.244,80	20.979,20	26.224.--
ACHACHICALA PLAN 300	-	--	--	--	--	--	--	--
POSTA MANT. CONAVI	-	--	--	--	--	--	--	--
<b>ORURO</b>								
SENAC	53.10	69.030.--	3.200.--	74.430.--	3.274.920.--	2.977,20	11.908,80	14.886.--
SENAC PLAN 57	81.30	105.690.--	3.200.--	111.090.--	1.444.170.--	4.443,60	17.774,40	22.218.--
AGUA CASTILLA PLAN 64	71.80	93.340.--	3.200.--	127.740.--	3.175.360.--	5.109,60	20.438,40	25.548.--
<b>COCHABAMBA</b>								
PACATA PLAN 200	116.20	151.060.--	3.200.--	176.460.--	5.293.800.--	7.058.--	28.233,60	35.292.--
"	93.50	121.550.--	3.200.--	146.950.--	7.641.400.--	5.878.--	23.512.--	29.390.--
"	77.--	100.100.--	3.200.--	125.500.--	14.809.000.--	5.020.--	20.080.--	25.100.--
SARCO (CONCLUSION) P. 76	100.--	99.254,08	--	99.254,08	2.382.097,91	3.970,16	15.880,65	19.850,81
"	70.--	72.491,05	--	72.491,05	1.957.269,05	2.899,66	11.598,63	14.498,29
"	70.--	69.201,61	--	69.201,61	1.730.040,37	2.768,06	11.072,26	13.840,32
<b>SANTA CRUZ</b>								
FEER. (RED ORIENTAL) P. 183	90.50	143.329,19	4.900.--	150.189,19	901.135,14	--	--	--
"	116.30	168.256,67	4.900.--	175.116,67	1.926.283,37	--	--	--
"	30.50	111.307,18	4.900.--	118.147,18	1.536.173,34	--	--	--
"	75.70	109.493,38	4.900.--	116.353,38	1.628.947,32	--	--	--
"	66.40	96.753,83	4.900.--	103.613,83	1.03.613,83	--	--	--
"	67.20	109.459,76	4.900.--	116.319,76	465.279,04	--	--	--
"	66.20	106.364,72	4.900.--	113.223,72	2.264.474,40	--	--	--
"	56.00	93.391,37	4.900.--	100.251,37	1.503.773,55	--	--	--
"	93.50	133.989,72	4.900.--	140.849,72	8.450.983,20	--	--	--
"	123.30	175.717,88	4.900.--	182.577,88	4.199.291,24	--	--	--
"	128.60	178.950,71	4.900.--	185.810,71	2.415.539,23	--	--	--
"	128.60	178.950,71	4.900.--	185.810,71	557.432,13	--	--	--
PUERTO SUAREZ PLAN 50	67.20	130.000.--	4.900.--	143.553.--	3.301.719.--	14.929,51	59.718,05	74.647,56
"	93.50	158.000.--	4.900.--	171.553.--	4.631.931.--	17.841,51	71.366,05	89.207,56
UNIV. G.R.M. PLAN 56	80.50	111.307,18	4.900.--	118.167,18	6.617.362,08	4.726,69	18.906,75	23.633,44
SENAC PLAN 100	80.50	111.307,18	4.900.--	118.167,18	11.816.718.--	4.726,69	18.906,75	23.633,44
<b>POTOSI</b>								
CIUDAD SATELITE PLAN 16	51.40	68.545,61	2.841,36	97.533,42	1.560.854,72	3.902,14	15.608,55	19.510,69
TICALONA PLAN 28	53.10	69.030.--	3.200.--	94.430.--	2.644.040.--	3.777,20	15.108,80	18.886.--
TUPIZA PLAN 100	67.40	97.730.--	3.200.--	111.130.--	7.779.100.--	4.445,20	17.780,80	22.226.--
"	78.90	110.460.--	3.200.--	123.860.--	3.715.800.--	4.954,40	19.817,60	24.772.--
<b>SUCRE</b>								
GARCILAZO PLAN 63	51.40	74.554,04	2.595.--	104.000.--	3.432.000.--	8.465,60	33.862,40	42.328.--
"	62.70	85.304,04	2.595.--	114.750.--	3.442.500.--	9.340,65	37.362,60	46.703,25
<b>TARJIA</b>								
MORROS BLANCOS PLAN 63	52.00	68.508,41	2.486,65	98.368,06	6.197.187,78	16.028,09	64.112,37	80.140,46
"	56.00	78.400.--	4.900.--	85.500.--	7.695.000.--	3.420.--	13.680.--	17.100.--
MORROS BLANCOS PLAN 90	66.50	179.550.--	4.900.--	219.150.--	6.574.500.--	8.766.--	35.064.--	43.830.--
BEINI-TRINIDAD PLAN 90	93.50	252.450.--	4.900.--	292.070.--	5.841.000.--	11.682.--	46.728.--	58.410.--
<b>TOTAL</b> 2163								

TOTALES:

1.977

LA PAZ

VILLA ADELA PLAN 108  
 " " PLAN 88  
 " " PLAN 111  
 SAN ISIDRO PLAN 24  
 VIACHA PLAN 35

53.10  
 81.30  
 68.40  
 68.40  
 77.00  
 74.40

--  
 --  
 88.790.--  
 88.790.--  
 100.100.--  
 96.720.--

--  
 --  
 3.200.--  
 3.200.--  
 3.200.--  
 3.200.--

--  
 --  
 123.190.--  
 123.190.--  
 127.500.--  
 131.120.--

--  
 10.913.227,66  
 10.840.720.--  
 13.674.090.--  
 3.060.000.--  
 4.589.200.--

--  
 --  
 --  
 --  
 --  
 --

--  
 --  
 --  
 --  
 --  
 --

--  
 --  
 --  
 --  
 --  
 --

ORURO

SENAC PLAN 57  
 AGUA DE CASTILLA PLAN 64

53.10  
 81.30  
 71.80

69.030.--  
 105.690.--  
 93.340.--

3.200.--  
 3.200.--  
 3.200.--

74.430.--  
 111.090.--  
 127.740.--

3.274.920.--  
 1.444.170.--  
 8.175.360.--

--  
 --  
 --

--  
 --  
 --

--  
 --  
 --

COCHABAMBA

PACATA PLAN 200  
 SARCO PLAN 76

116.30  
 93.50  
 77.00  
 100.00  
 70.00  
 70.00

151.060.--  
 121.550.--  
 100.100.--  
 99.254,08  
 72.491,05  
 69.201,61

3.200.--  
 3.200.--  
 3.200.--  
 --  
 --  
 --

176.460.--  
 146.950.--  
 125.500.--  
 99.254,08  
 72.491,45  
 69.201,61

5.293.800.--  
 7.641.400.--  
 14.809.000.--  
 2.382.097,91  
 1.957.269,05  
 1.730.040,37

--  
 --  
 --  
 --  
 --  
 --

--  
 --  
 --  
 --  
 --  
 --

--  
 --  
 --  
 --  
 --  
 --

SANTA CRUZ

FERR. (RED ORIENTAL) P.183  
 190.80  
 116.30  
 80.50  
 75.70  
 66.50  
 67.20  
 66.20  
 56.00  
 93.50  
 123.30  
 128.60  
 128.60

143.329,19  
 168.256,67  
 111.307,18  
 109.493,38  
 96.753,83  
 109.459,76  
 106.363,72  
 93.391,37  
 133.989,72  
 175.717,88  
 178.950,71  
 178.950,71

4.900.--  
 4.900.--  
 4.900.--  
 4.900.--  
 4.900.--  
 4.900.--  
 4.900.--  
 4.900.--  
 4.900.--  
 4.900.--  
 4.900.--  
 4.900.--  
 4.900.--

150.189,19  
 175.116,67  
 118.167,18  
 116.353,38  
 103.613,83  
 116.319,76  
 113.223,72  
 100.251,57  
 140.849,72  
 182.577,88  
 185.810,71  
 185.810,71

901.135,14  
 1.926.283,37  
 1.536.173,34  
 1.628.947,32  
 103.613,83  
 465.279,04  
 2.264.474,40  
 1.503.773,55  
 8.450.983,20  
 4.199.291,34  
 2.415.539,23  
 557.432,13

--  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --

--  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --

--  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --  
 --

PUEBLO SUAREZ

PLAN 50  
 UNIV. SANTA CRUZ PLAN 56  
 SENAC PLAN 100

67.20  
 93.50  
 80.50  
 80.50

130.000.--  
 158.000.--  
 111.307,18  
 111.307,18

4.900.--  
 4.900.--  
 4.900.--  
 4.900.--

143.553.--  
 171.553.--  
 118.167,18  
 118.167,18

3.301.719.--  
 4.631.931.--  
 6.617.362,08  
 11.816.718.--

--  
 --  
 --  
 --

--  
 --  
 --  
 --

--  
 --  
 --  
 --

POTOSI

CIUDAD SAT. PLAN 16  
 TICALOMA PLAN 28  
 TUPIZA PLAN 100

51.40  
 53.10  
 67.40  
 78.60  
 66.50  
 93.50

68.545,61  
 69.030.--  
 97.730.--  
 110.400.--  
 179.550.--  
 252.450.--

2.841,36  
 3.200.--  
 3.200.--  
 3.200.--  
 4.900.--  
 4.900.--

97.553,42  
 94.430.--  
 111.130.--  
 171.800.--  
 219.150.--  
 292.050.--

1.560.854,72  
 2.644.040.--  
 7.779.100.--  
 1.714.500.--  
 6.574.500.--  
 5.841.000.--

--  
 --  
 --  
 --  
 --  
 --

--  
 --  
 --  
 --  
 --  
 --

--  
 --  
 --  
 --  
 --  
 --

TRINIDAD

PLAN 50  
 MORROS BLANCOS PLAN 63  
 MORROS BLANCOS PLAN 90

52.00  
 56.00  
 52.00  
 67.00

68.508,41  
 78.400.--  
 85.800.--  
 252.254,18

2.489,65  
 4.900.--  
 7.056.--  
 17.660.--

98.368,06  
 85.500.--  
 127.396.--  
 306.914,18

6.197.187,78  
 7.695.000.--  
 241.976.400.--  
 27.622.276,20

--  
 --  
 --  
 --

--  
 --  
 --  
 --

--  
 --  
 --  
 --

T O T A L E S :

RAL/gor

*Rosario*  
 DEPARTAMENTO DE ESTUDIOS Y PROYECTOS

La Paz, Octubre de 1976

*[Signature]*  
 Ing. Arqto.  
 GERENTE



1.977

LA PAZ

VILLA ADELA	PLAN 108	1.537.673,78	6.150.695,11	7.688.368,89	70,45
"	PLAN 88	1.734.515,20	6.938.060,80	8.672.576,--	80%
"	PLAN 111	2.187.854,40	8.751.417,60	10.939.272,--	80%
SAN ISIDRO	PLAN 24	489.600,--	1.558.400,--	2.448.000,--	80%
VIACHA	PLAN 35	734.272,--	2.937.088,--	3.671.360,--	80%

ORURO

SENAC	PLAN 57	523.987,20	2.095.948,80	2.619.936,--	80%
AGUA DE CASTILLA	PLAN 64	231.067,20	924.268,80	1.155.336,--	80%
		1.308.057,60	5.232.230,40	6.540.288,--	80%

COCHABAMBA

PACATA	PLAN 200	847.008,--	3.288.032,--	4.233.040,--	80%
		1.222.624,--	4.890.496,--	6.113.120,--	80%
		2.369.440,--	9.477.760,--	11.847.200,--	80%
SARCO	PLAN 76	381.135,67	1.524.542,66	1.905.678,33	80%
		313.163,05	1.252.652,19	1.565.815,24	80%
		276.806,46	1.107.225,84	1.384.032,30	80%

SANTA CRUZ

FERR.(RED ORIENTAL)P.183		111.740,76	446.963,03	558.703,79	62%
		238.859,14	955.436,55	1.194.295,69	62%
		190.485,49	761.941,98	952.427,47	62%
		201.989,47	807.957,87	1.009.947,34	62%
		12.848,12	51.392,46	64.240,58	62%
		57.694,60	230.778,40	288.473,--	62%
		280.794,83	1.123.179,30	1.403.974,13	62%
		186.467,92	745.871,68	932.339,60	62%
		1.047.921,92	4.191.687,66	5.239.609,58	62%
		520.712,11	2.082.848,46	2.603.560,57	62%
		299.526,86	1.198.107,46	1.497.634,32	62%
		69.121,53	276.486,34	345.607,92	62%

PUERTO SUAREZ

PLAN 50		316.965,02	1.267.860,10	1.584.825,12	48%
		444.665,38	1.778.661,50	2.223.326,88	48%
UNIV.SANTA CRUZ	PLAN 56	1.058.777,93	4.235.111,73	5.293.889,66	80%
SENAC	PLAN 100	1.890.674,88	7.562.699,52	9.453.374,40	80%

POTOSI

CIUDAD SAT.	PLAN 16	249.736,66	998.947,02	1.248.683,68	80%
TICALOMA	PLAN 28	423.046,40	1.692.185,60	2.115.232,--	80%
TUPIZA	PLAN 100	1.244.656,--	4.978.624,--	6.223.280,--	80%

TRINIDAD

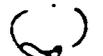
PLAN 50		504.428,--	2.378.112,--	2.973.640,--	80%
		1.051.920,--	4.207.680,--	5.259.600,--	80%
		934.560,--	3.738.240,--	4.672.800,--	80%

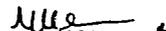
TARIJA

MORFOS BLANCOS	PLAN 63	229.667,78	918.671,12	1.144.338,90	18,53
MORFOS BLANCOS	PLAN 90	1.231.200,--	4.924.800,--	6.156.000,--	80%
PLAN QUINQUENAL (1977)		48.395.280,--	193.581.120,--	241.976.400,--	100%
		5.524.455,24	22.097.820,96	27.622.276,20	100%

80.965.500,65	323.862.002,94	404.827.503,59
---------------	----------------	----------------

Solamente conclusion Viv.

  
RAL/gor

  
Walter Murillo Salcedo  
TECNICO DE COMAVI

APPENDIX C

CHAPTER V

HOUSING PRODUCTION: COSTS AND TECHNIQUES

CURRENT CONSTRUCTION LABOR WAGE RATES  
(including comparison with other wages)

<u>Category</u>	<u>Monthly wage</u>
Laborers	68.22 pesos/day
Carpenters	79.11 pesos/day
Electricians	138.33 pesos/day
Plumbers	138.33 pesos/day
Masons	79.11 pesos/day
Foremen	110.00 pesos/day
Draftsmen	3,300 pesos/month
Secretaries	3,300 pesos/month
Engineers	10,000 pesos/month
Drivers	4,000 pesos/month
Soldiers	3,000 pesos/month
Police	3,000 pesos/month
Teachers	5,000 pesos/month
Clerks	2,200 pesos/month

TABLE B

## INCREASES IN LABOR COSTS

<u>ITEM</u>	<u>June 73</u>	<u>June 74</u>	<u>June 75</u>	<u>June 76</u>	<u>Increase</u>
Common laborer	15.64	32.31	44.43	68.22	336%
Masons	30.82	53.08	67.00	79.11	156%
Carpenters	30.82	53.08	67.00	79.11	156%
Foreman	38.31	63.53	88.02	110.00	187%
Plumbers	42.10	57.93	86.50	138.33	228%
Electricians	45.70	58.93	100.00	138.33	202%

Notes

1. The above figures represent pesos per day. The monthly salary considers 30 days per month.
2. No social benefits are included. The above figures represent basic salaries.

TABLE C

## ANALYSIS OF THE INCREASE IN COST OF CONSTRUCTION LABOR

	DEC-72	DEC-73	DEC-74	DEC-75	DEC-76
BASE	300	300	300	300	300
Compensation bond	135	135	135	135	135
Patriotic bond		46.25	79.58	79.58	137.91
Subsidy 10/12/73 (\$b120)		120	420	420	420
Bonus of (\$b400)			400	400	400
Increase of (\$b400)					400
RASIC TOTAL	435	601.25	1,034.58	1,034.58	1,792.91
INDEX	1,000	1,083.3	2,378.3	2,378.3	4,121.63

TABLE D

SUMMARY CHART OF SEMESTER AVERAGES FOR  
CONSTRUCTION MATERIALS AND LABOR

No. Item	CATEGORY	July71	Dec.71	July72	Dec.72	July73	Dec.73	July74	Dec.74	July75	Dec.75	July76
1	Laborers	11.16	11.33	11.41	14.8	15.64	23.05	32.31	37.00	44.43	46.28	68.22
2	Masons	23.00	22.14	21.66	30.00	30.82	38.94	53.08	64.00	67.00	70.28	79.11
3	Foreman	32.50	32.50	33.57	32.60	38.31	49.27	63.53	83.33	88.02	98.02	110.00
4	Plumber Per Point Daily	57.60 -	43.37 -	49.37 -	81.60 -	65.81 -	128.75 42.10	123.57 57.93	150.71 70.00	124.00 86.50	87.50 95.75	251.67 138.33
5	Electrician Per Point Daily	25.83 -	22.87 -	25.71 -	65.00 -	51.07 -	47.50 45.70	92.14 58.93	96.18 73.33	80.00 100.00	91.25 102.50	122.22 138.33

Figures A + B show the floor plans of the basic unit now under consideration by the CONAVI technical staff. This unit (Type A) will measure 17.5 M<sup>2</sup> in the simplest configuration (dark line) and 27.4 M<sup>2</sup> when the kitchen and patio are added. CONAVI is also cutting the size of lot used to 90 M<sup>2</sup>, having realized that the 200 M<sup>2</sup> and 160 M<sup>2</sup> lots used until early 1976 were both larger than necessary and had too great an impact on the unit price as land prices continued to increase. The most fundamental unit construction by CONAVI to date has been a 16 M<sup>2</sup> unit supplied with electricity but not water. Public water taps and bath houses are placed throughout these neighborhoods. These units were built to permit the agency to offer something to the poorest residents being relocated by the highway from the airport into La Paz, those with housing assets appraised at below \$US 650. CONAVI has more recently decided that it must offer even the poorest of clients a water tap on their own property; therefore, this type of unit will only be built in the future with a connection.

The almost \$US 3,000 unit (33 M<sup>2</sup>, the more complete version) is sold with a 20-year mortgage at 8% interest. An initial down payment of \$US 250 is required. The monthly payment is approximately \$US 22.80. If the 25% of income for housing rule is applied, the homeowner must have \$US 91.20 in monthly income, or almost 2000 pesos.

Figure C depicts the floor plan and an elevation for the unit being constructed by the City of La Paz in the Lazareto development. Land has been priced at \$US 2.00/M<sup>2</sup> and utilities (water and electricity) are priced at \$US 127.50 per unit. The unit itself costs about \$ 15,000 to construct. As mentioned elsewhere, 50% of the total cost of this unit is being covered by self-help commitments, and 20% is being donated by the city. A great deal of land stabilization work had to precede construction. The government makes available a \$US 750 loan. The unit may be expanded to a size of 74 M<sup>2</sup> by the owner.

The S + L system has also asked for designs of an economical unit which, however, will have two bedrooms as a minimum, reflecting the needs and requests of the system's savings clients. Efforts along these lines have resulted in construction cost estimates of about \$US 4,100 (see Table E) in the Santa Cruz area. This cost does not include land and infrastructure costs, so it seems doubtful that such a unit could be kept below the \$US 5,000 level in total cost. The unit would be about 62 M<sup>2</sup> in size.

Ongoing S + L projects run from \$US 8,000 to \$US 15,000. In Sucre construction costs on apartment units now approaching completion are running \$US 105/M<sup>2</sup>. Land costs in the center of the city which in 1974 ran between \$US 4.00 and \$US 7.50/M<sup>2</sup> have more recently reached as high as \$US 30. Single family home lots have been around 230 M<sup>2</sup>.

# PRESUPUESTO

C-6  
HOJA No. ....

TABLE E

OBRA ..... CASA DE UN DORMITORIO AMPLIABLE A TRES .....

TIPO ECONOMICO

2)

Item No.	DESCRIPCION	Unidad	Cantidad	Precio Unitario Sb.	Importe del Item Sb.
1.-	Limpieza, obrador y faena	G1	---	-----	500.-
2.-	Replanteo	G1	---	-----	200.-
3.-	Excavación	m3	9,36	50.-	468.-
4.-	Cimientos	m3	9,36	550.-	5.148.-
5.-	Sobrecimientos	m3	1,76	700.-	1.232.-
6.-	Capa aislante	m1	46,80	20.-	936.-
7.-	Muros vistos de 0,15 cm	m2	138.-	125.-	17.250.-
8.-	Viga de amarre	m3	0,74	3.000.-	2.220.-
9.-	Cubierta tejas planas sobre listeneria y tijeras	m2	62,00	210.-	13.020.-
10.-	Revestimiento de baño y cocina	m2	31,50	45.-	1.417.50
11.-	Contrapiso de cascote	m2	49,70	50.-	2.485.-
12.-	Piso cerámico de 20 x 20	m2	40,70	90.-	3.663.-
13.-	Zócalo de cerámica	m1	44,00	30.-	1.320.-
14.-	Puertas con marcos	m2	9,88	600.-	5.928.-
15.-	Ventanas	m2	6,72	400.-	2.688.-
16.-	Vidrios simples	m2	6,87	180.-	1.236.-
17.-	Quincalleria	G1.	---	-----	2.000.-
18.-	Instalación eléctrica	pto.	11,00	250.-	2.750.-
19.-	Instalación sanitaria	G1.	---	-----	10.000.-
20.-	Artefactos sanitarios				
	a.- Inodoro	pza.	1	1.300.-	1.300.-
	b.- Lavamanos	pza.	1	600.-	600.-
	c.- Ducha	pza.	1	250.-	250.-
	d.- Lavaplatos cocina	pza.	1	1.300.-	1.300.-
21.-	Instalación de agua potable	pto.	5	300.-	3.000.-
22.-	Pintura de puertas y ventanas	m2	16,60	25.-	415.-
23.-	Pintura de paredes	m2	31,50	25.-	787.50
24.-	Limpieza	G1	---	-----	500.-
<b>\$ 82.614.--</b>					
=====					

= OCHENTA Y DOS MIL SEISCIENTOS CATORZE 00/100 PESOS BOLIVIANOS.

**SINCA LTDA.**  
EMPRESA CONSTRUCTORA

*[Firma]*  
Ing. Walter Guido Cho

Low-Cost Units: A Sample Design

C-7

To further illustrate the impact of the labor and materials costs on the design of a house of minimal cost, which maintains acceptable levels of durability and marketability, the team has made a quantity "take-off" of a 30.50 M<sup>2</sup> core housing unit.

The results are included in Table F, with the design reflected in Figs. D + E.

The lot for this house could be 7 x 20 M, or 140 M<sup>2</sup>. Land and urbanization, taking into account waste factors, open areas, pedestrian walkways, etc., could be as low as \$ 7.00/M<sup>2</sup>. Other costs, including financing, overhead and subcontractor profits, could add about \$ 1,000.

Construction costs	\$ 2,210
Infrastructure	1,000
Miscellaneous	<u>350</u>
Selling Price	3,560
Down payment (5%)	<u>178</u>
Mortgage Required	3,382

A mortgage with terms of 20 years at 12% interest would require about \$ 37.22 per month. With housing expenses held at 25% of income, purchase of the unit would require a monthly income of \$ 149. (Chapter III suggests a median monthly income of between \$ 130 and \$ 150, depending on the urban area).

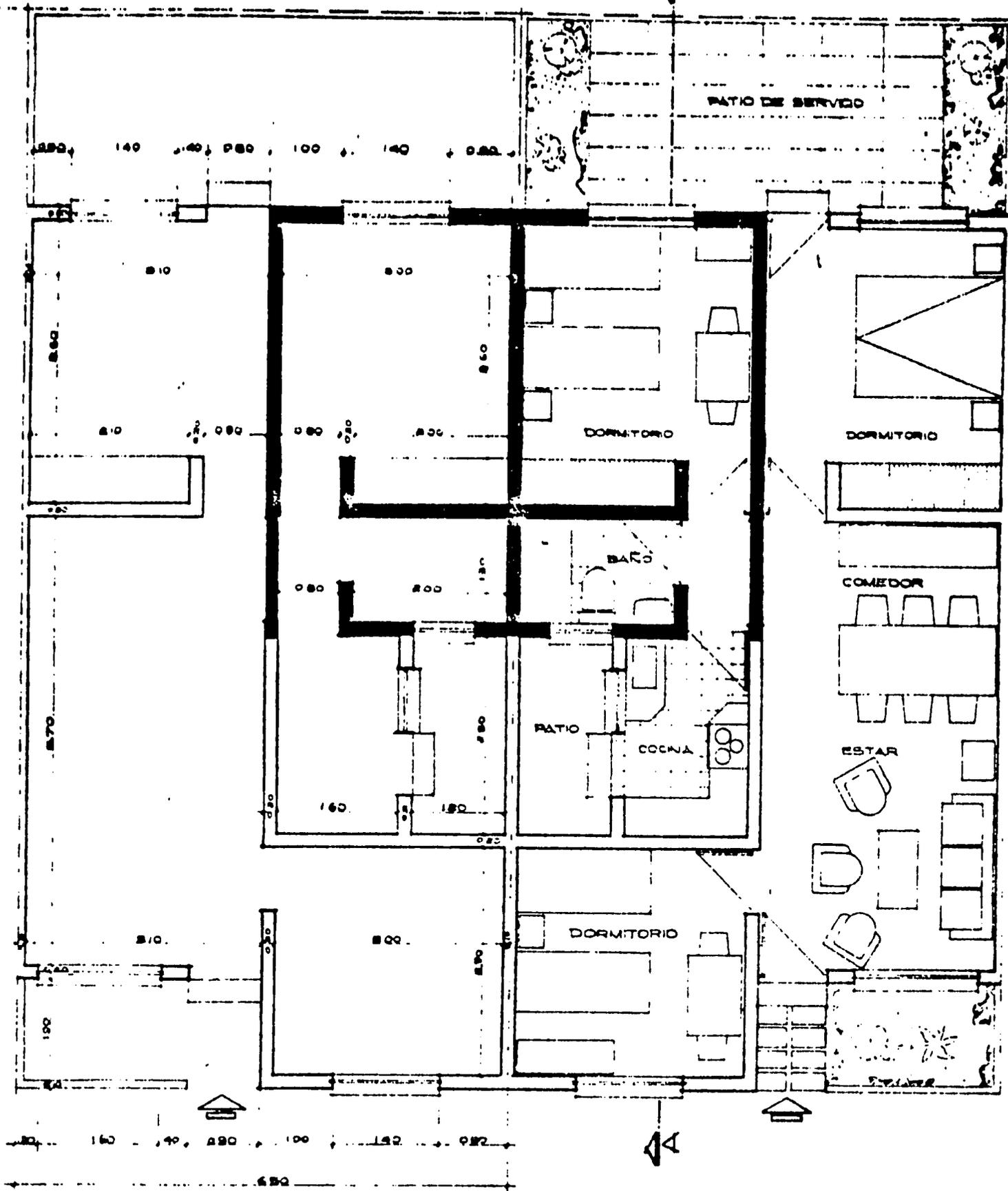
TABLE F

ESTIMATED 30.5 M<sup>2</sup> UNIT COST

No.	ITEM	UNIT	QUANTITY	UNIT PRICES	TOTAL COST
1	Layout	G1	----	----	200.00
2	Excavation	M3	7.02	30.00	237.60
3	Footings, concrete	M3	6.72	406.00	2,728.32
4	Foundation wall, concrete	M3	0.50	406.00	203.00
5	Adobe walls	M2	58.50	89.00	5,206.50
6	Lintels	M1	7.00	80.00	560.00
7	Roof structure	M2	31.00	100.00	3,100.00
8	Tin roofing	M2	33.70	125.00	4,212.50
9	Wood ceiling	M2	30.50	100.00	3,050.00
10	Cement floor	M2	30.50	114.00	3,477.00
11	Int. plaster	M2	56.20	35.00	1,967.00
12	Int. plaster, fine	M2	12.10	75.00	907.50
13	Ceiling plaster	M2	30.50	31.00	945.50
14	Exterior plaster	M2	25.80	87.00	2,244.60
15	Wood doors	M2	5.20	450.00	2,340.00
16	Wood windows	M2	3.40	400.00	1,360.00
17	Glass	P2	32.00	19.00	608.00
18	Paint	M2	112.50	20.00	2,250.00
19	Plumbing	Points	4.00	700.00	2,800.00
20	Electricity	"	7.00	120.00	840.00
21	Hardware	"	3.00	220.00	660.00
22	Hinges	"	14.00	15.00	210.00
23	Knobs	"	3.00	25.00	75.00
24	W.C.	"	1.00	800.00	800.00
25	Shower	"	1.00	360.00	360.00
26	Fittings	"	1.00	100.00	100.00
27	Sink (laundry)	"	1.00	40.00	40.00
28	Sink	"	1.00	250.00	250.00
					<u>40,182.52</u>
	CONTINGENCIES				<u>4,018.25</u>
					<u>44,200.71</u>

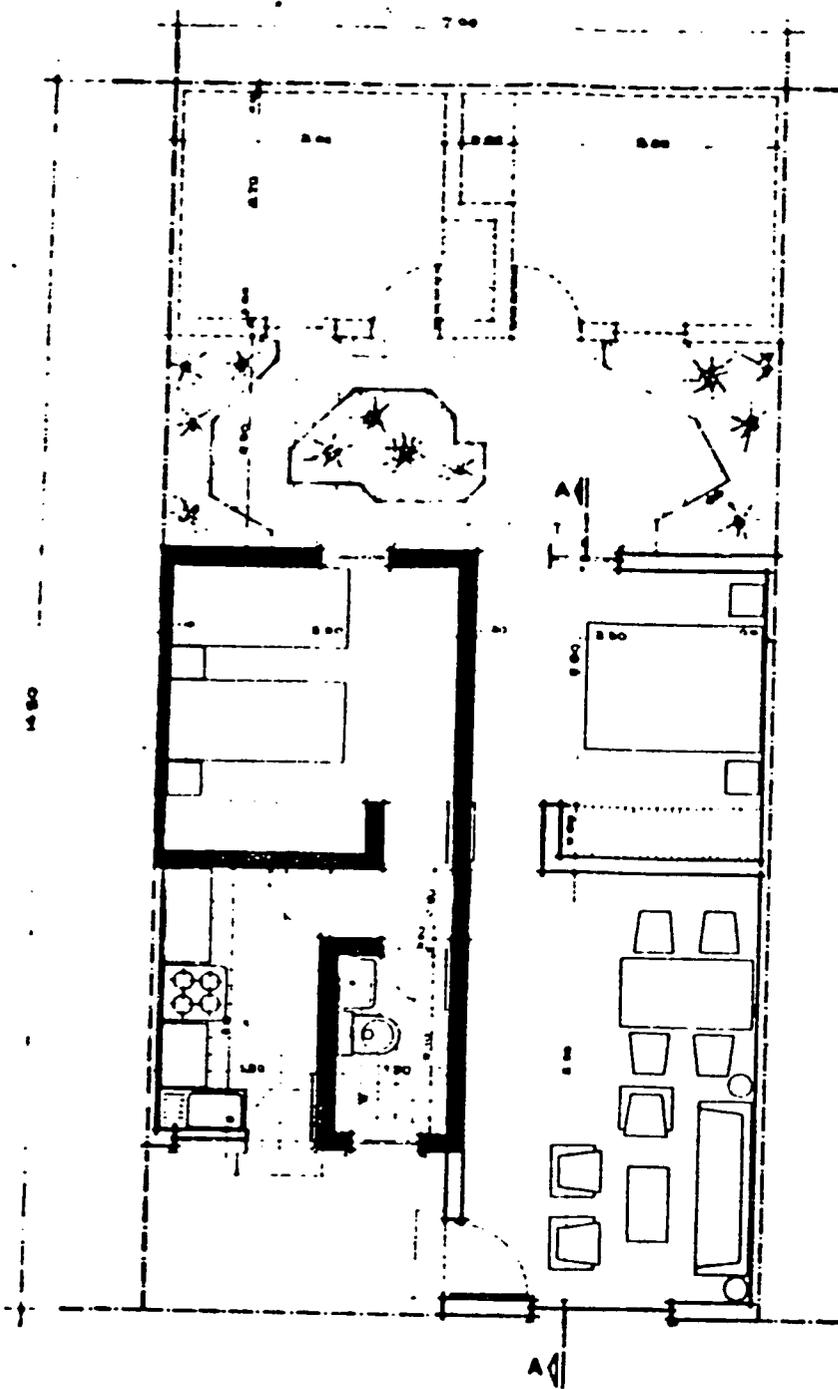
FIGURE A

C-9



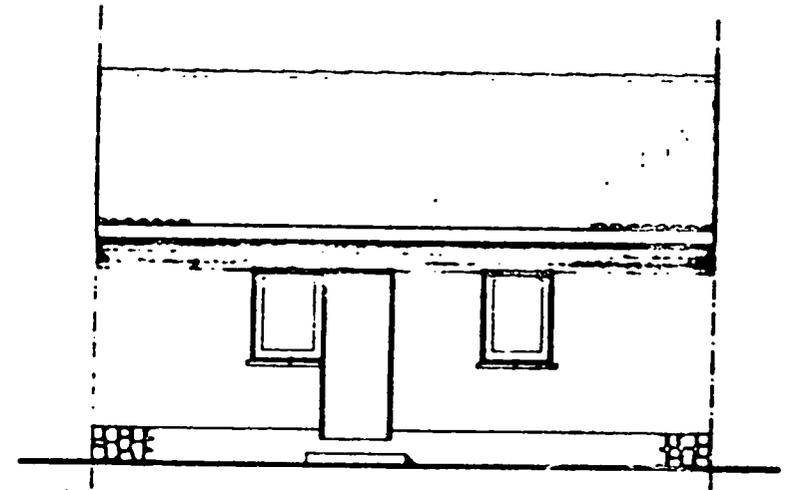
PLANTA ACOTADA

PLANTA AMOBLADA



**PLANTA**

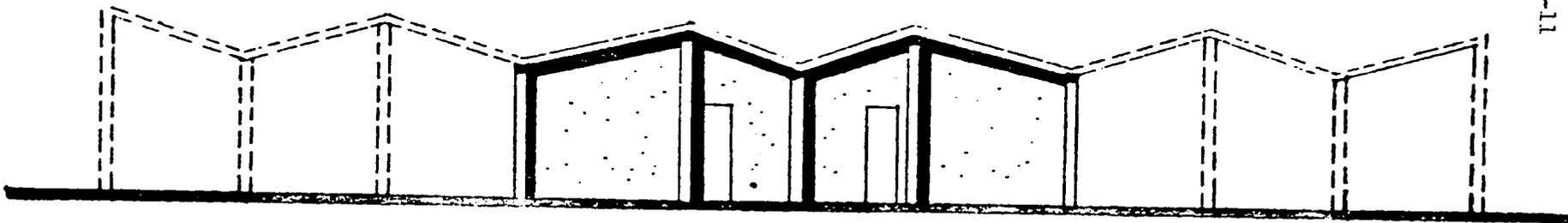
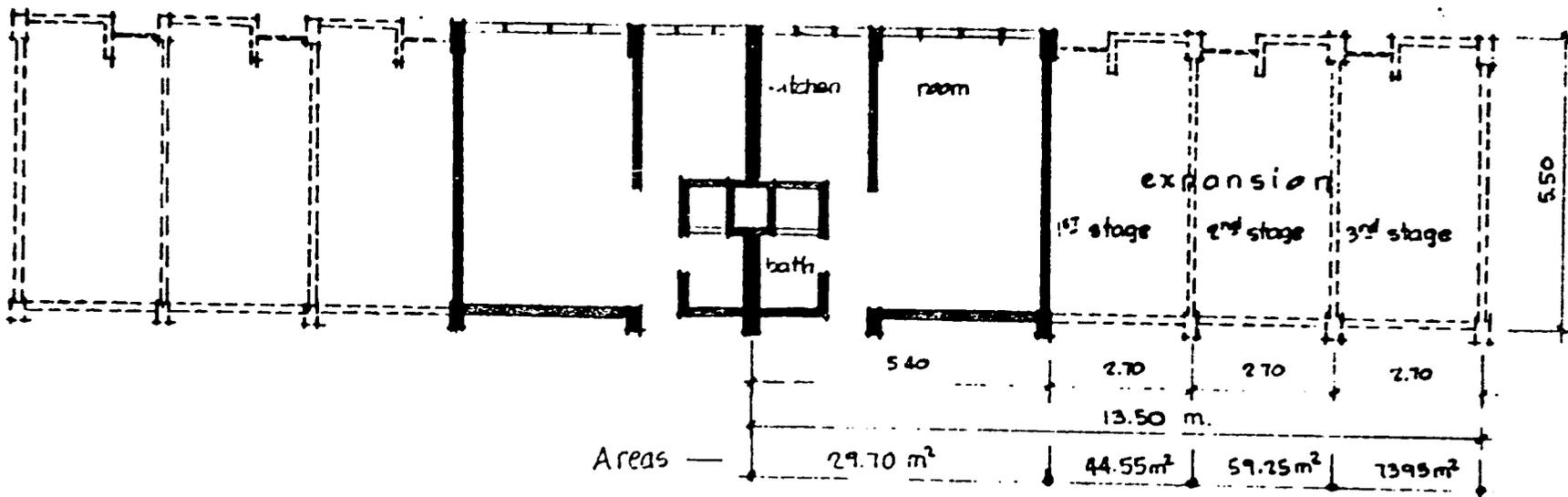
**FIGURE B**



**ELEVACION POSTERIOR**

C-10

FIGURE C



C-11

FIGURE D

SITE + FLOOR PLAN - LOW COST HOUSING UNIT

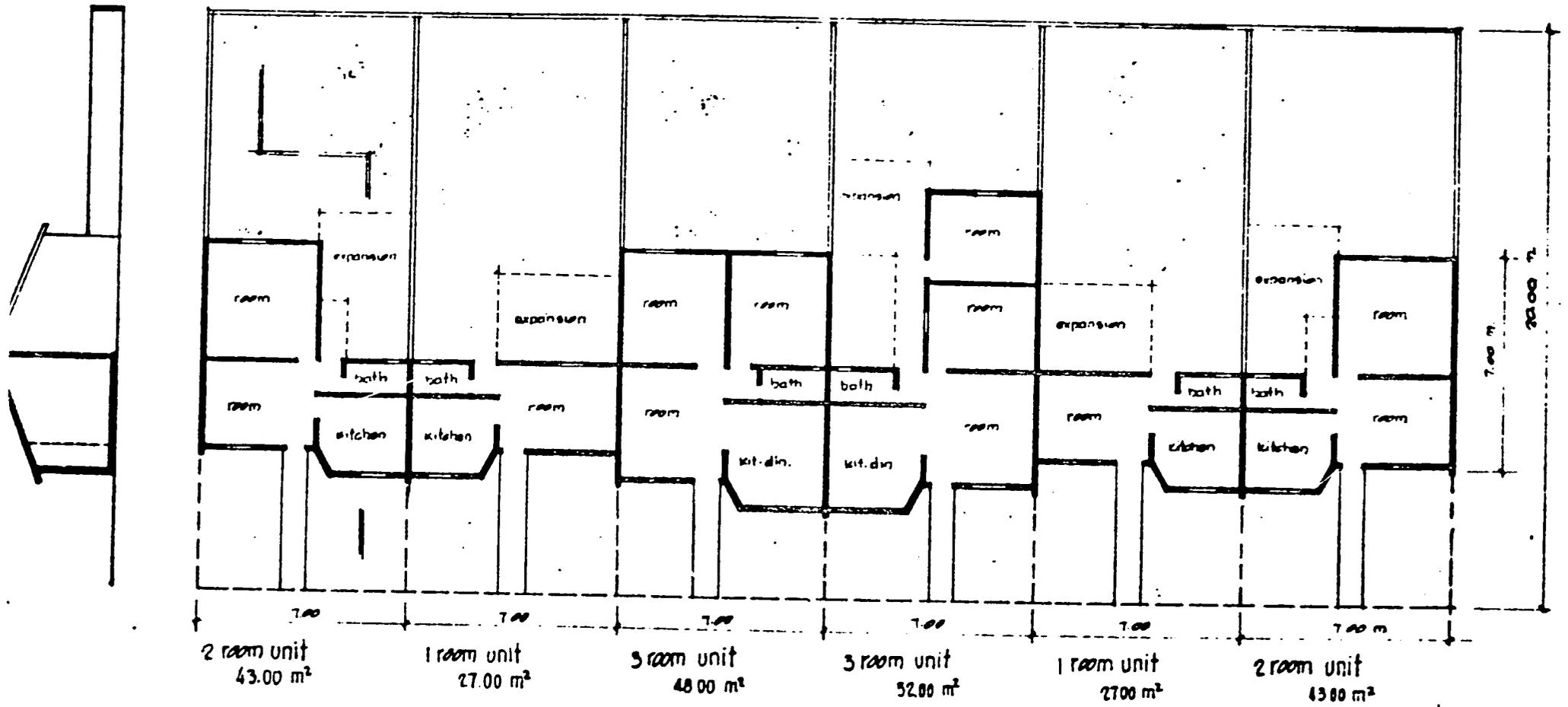
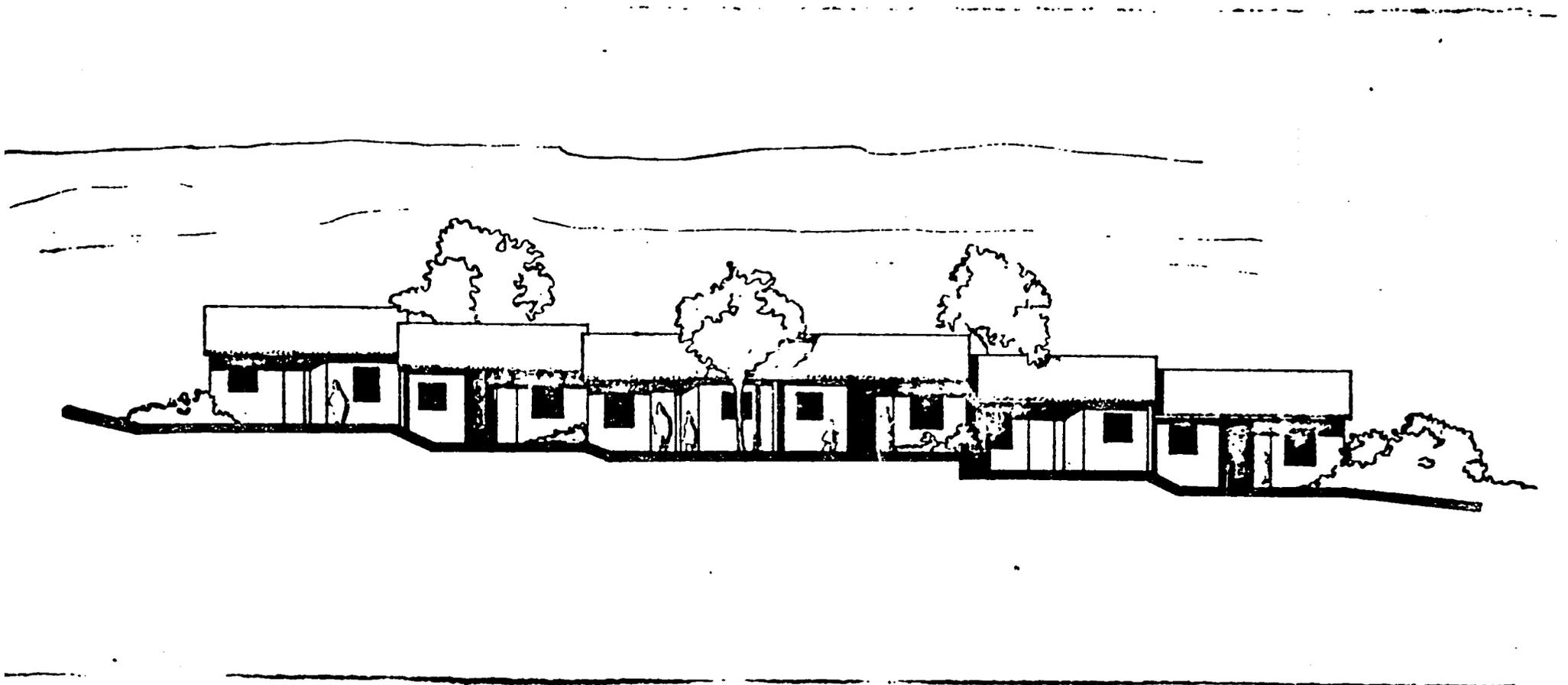


FIGURE E  
ELEVATION - LOW COST HOUSING UNIT



LIST OF PERSONS CONTACTEDWASHINGTON  
U.S.A.I.D.

- John Colby
- Mario Pita
- Ronald Russell

INTER AMERICAN DEVELOPMENT BANK

- Hugo Romero

WORLD BANK

- Mario Cortes

LA PAZ  
U.S.A.I.D.

- James Van Fleet
- Laurence R. Hausman
- Ernesto Garcia
- Steven Wingert

MINISTRY OF HOUSING AND URBAN DEVELOPMENT

- Contralmirante Santiago Maese Roca, Minister
- Ing. Floyd Foster, Under Secretary for Urban Development
- Ing. Rene de Grandchant Navajas, Executive Director, CONAVI
- Arq. Walter Murillo Salcedo, Technical Director, CONAVI

CAJA CENTRAL DE AHORRO Y PRESTAMO

- Ernesto Wende F., President
- Arq. Jorge Traverso V., Director, FHA Department

MUNICIPALITY OF LA PAZ

- Arq. Adolfo Navarro, Deputy Mayor for Technical Affairs
- Arq. Jorge Rivera, Director, Community Action Department

BANCO DE LA VIVIENDA

- Dr. Augusto Reguerin Guzman, Managing Director
- M. A. Fernando Aguila Navia, Chief, Financial Division

List of Persons Contacted  
(continued)

OTHERE

- Arq. Carlos Calvimontes Rojas, Technical Director, CPM Group
- Lic. Guillermo Gomez Vila, Vice President, National Federation of Savings and Loan Cooperatives
- William Godwin, President, Godwin Bevers Corporation., Colorado Springs, Colorado
- Inq. David Vargas, Ministry of Planning

SUCRE

- Inq. Jorge Moscoso, Regional Director, CONAVI
- Dr. Adrian Urriolagoitia Campero, Managing Director, La Plata Savings and Loan Association

SANTA CRUZ

- Sres. Landivar and Pena, CONAVI Regional Office
- Dr. Oscar Coronado Pinto, Legal Advisor, Guapay Savings and Loan Association

COCHABAMBA

- Ronny Rojas Duarte, Managing Director, La Promotora Savings and Loan Association
- Juan Demeure Vander, Managing Director, Center for Social and Economic Development (DESEC)
- Sr. Analmibar, Regional Director CONAVI